

COMPLETE
MINOLTA
USER'S GUIDE

MAXXUM · DYNAX
600si



AN ORIGINAL

 **HOVE FOTO BOOKS**

Damian Dinning
John Clements

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**MINOLTA
DYNAX/MAXXUM
*600si***

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**Damian Dinning
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DEDICATIONS:

Thank you to Caroline for keeping me awake. I am looking forward to her changing her surname to mine on 20th June, 1996. Also thank you, John - I have enjoyed writing this with you.

Damian.

My thanks go to Damian and Chris for making this book possible, and to my wife - also called Caroline - for her usual support while I work away in solitude.

John.

INTRODUCTION - WHY THE 600si (“Classic”)?

On January 23rd, 1985, Minolta made a big investment in the future of SLR photography with the launch of the 7000 camera - the world's first effective AF SLR. This camera dramatically changed the direction of camera development - the consequences of which are still being felt. It is therefore rather ironic that 10 years later, almost to the day, Minolta launched the Dynax 600si - part of the ongoing development process as started by the 7000, but one that through its external design takes a retrospective journey back to the days when a camera was operated by dials and levers.

As part of the si series, the 600 is the result of the company radically changing the way in which their products are developed. Experience and market research showed that cameras of the early 1990's were a little too complex for many people to operate instinctively, something that is surely a barrier to instinctive and imaginative photography. The desire however was still to utilise many of the capabilities that modern technology had to offer.

In introducing the 600si, Minolta have shown the world a refreshing product. It is a different kind of beast, or should we say beauty? The more you use it, the more you begin to appreciate the amount of work that has gone on to provide, at last, a high tech product that remains straight forward to use.

A capable autofocus system and a superb multi pattern metering option, advanced flash automation and pleasing ergonomics - the list goes on. This is a camera that is adaptable to many working methods as befits the concept of an SLR, so it is unlikely to become a barrier due to its own limitations.

When you buy an SLR camera, you are making a statement of intent. Non photographers want no more than a fixed lens, point and shoot compact to obtain their “likenesses”. They should not be looked down upon for that, but this is not

photography in an artistic sense, unlike the potential work of someone using an SLR who has a little flair and understanding of the technicalities. The 600si is in tune with such an approach as it is very much a controllable but capable machine. But if you do want to point and shoot, it will not disappoint.

After careful consideration, the designers came to the conclusion that the basis for the new camera would come from the Dynax/Maxxum 700si - a camera that has been awarded every major camera accolade and continues to be applauded the world over!

Whilst the electronic and mechanical heart of the highly successful and award winning 700si was maintained, the face was replaced with one of a conventional manual focusing SLR. As is often the case with modern equipment, there is much about the camera that is not immediately apparent in the company's supporting literature. The 600si is no different. As joint authors we have combined knowledge gained over many months of using the 600si, with our numerous years of photographic experience to give you the whole story of what this camera can do. We look at potential problems and different ways of overcoming them. We can help to shorten dramatically the length of your learning curve.

We hope you like our honest approach as there are positive but occasionally negative comments raised - nothing is perfect. But after considering our thoughts and adjusting them to your own experiences, we think you will find that in most respects, this is an exceptional camera. It does the right thing when it matters the most - at the right time.

So impressed are we, that we wonder when, not if, other manufacturers will follow Minolta's lead reminding us that the interaction between man and machine should be, and is in the 600si, instinctive.

CHAPTER ONE

The Body Beautiful

Those of you who are already familiar with the camera may wish to move on to Chapter 4 about exposure control. However, through use, we have uncovered a few tips that may still make this chapter concerning the handling control positioning worth reading.

Most people see the 600si first in an advertisement or magazine review. It looks substantial, quite macho in fact, with a distinctive shape. There was, for us, a slight feeling of disappointment when first picked up due to its weight - or the lack of it. Being used to heavy openly professional cameras this became with time a pleasant surprise. Without meaning to be sexist, this makes it as much a camera for a lady of slight frame as much as for a six foot Adonis male. This lack of weight is due to the use of electronics and tough plastic components leaving us with a body-weight without a battery of 565 grams.

Some would argue that it has a plastic feel and we would not disagree - it does. But experience over the last decade has taught us that this is not always something to dismiss as callous penny pinching by a manufacturer.

Whilst we agree that the 600si, if made from an outer metal construction, may have been placed in a different price bracket, it would have been a significant step as it would have helped the camera feel as good as it looks.

In fairness there are characteristics of plastic that make it a viable alternative to a metal construction and not only the weight saving. Its spring-like flexibility resists impact and therefore does not dent, carrying the impact onto components under the outer body, while its ease of shaping is convenient

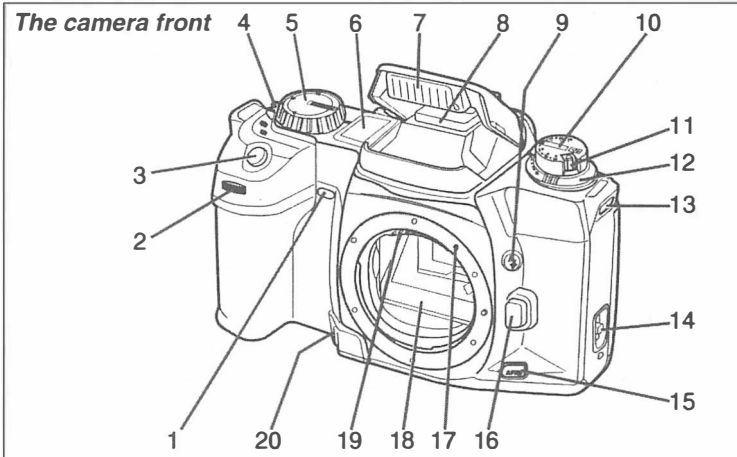
for manufacture. We thought it only fair to treat this camera like any other: so yes, it has picked up a few marks after it was knocked against other equipment, sat on, dropped and used in the rain - but so have many metal-bodied cameras.

Minolta are not trying to mislead anyone as the need for a fully featured but lightweight camera is essential if most of us are going to carry and use an SLR system. This is an important point when we consider that there are now quality compact cameras small and light in size and weight, offering an easy to carry camera. The joy and real benefit of SLR photography is the flexibility offered by building our own system complete with lenses, flash units and other accessories which all add weight. It is sadly common for some people to have a new camera, add a few accessories, use them for a few weeks but then get fed up with carrying the weight. 'Op/Tech' straps are the answer here.

If you want further reassurance that no short cuts have been used where it matters, open the back door and you see that the film guide rails are in the most suitable material - metal. This shows that quality has still been at the top of the agenda. Similarly, the lens mount is made from sintered stainless steel that has been impregnated with oil to make the interface between lens and body smooth to operate over many years. We can now take a close look at the body by starting with its front facing us.

The Front Of The 600si

On this side of the camera the lens mount is the dominating feature. This is Minolta's A mount for AF fitting lenses. It is different to the earlier mounts used by the company, but it is possible with an adapter to attach older Minolta MD fitting lenses. However, using an adapter will add certain limitations such as loss of autofocus and possibly autoexposure, and maybe even the loss of the ability to focus on infinity, if the adapter has no optics within its housing.



- | | |
|--|-----------------------------------|
| 1. Self-timer lamp | 12. Flash-compensation dial |
| 2. Front control dial | 13. Strap eyelet |
| 3. Shutter-release button | 14. Back-cover release |
| 4. Drive-mode selector | 15. AF/M focus-mode button |
| 5. Exposure-mode dial | 16. Lens release |
| 6. Body data panel | 17. Mounting index |
| 7. Built-in flash | 18. Mirror * |
| 8. Accessory shoe | 19. Lens contacts * |
| 9. Flash-control button | 20. Depth-of-field-preview button |
| 10. Exposure compensation dial | |
| 11. Exposure compensation lock release | |
- * Do not touch!

Fitting A Lens

On the mount is a red spot at the 1 O'Clock position. This is the lens indexing point against which we match the raised red spot from the outside of a Minolta AF lens, before pushing the lens into the body and turning clockwise until a click is heard as the lens slides home. You cannot fit a lens in the wrong way, so do not panic if it seems strange and fiddly at first - you will soon be doing this quickly without having to think about it.

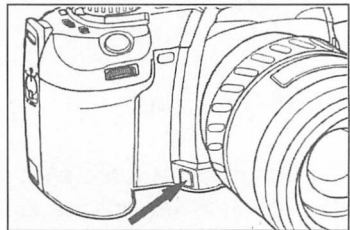
Detaching A Lens

To release a lens, depress the lens release button situated at the 3 O'Clock position on the outside of the lens mount. It is coloured black and sufficiently large to make the control of it very easy. It depresses in towards the body and should be held down to release a lens by turning it counter-clockwise.

Below the lens release button we have a control to allow us to select either Manual or Autofocus. It is not surprisingly marked AF/M. Whichever mode was last in use will be the one that is made available by the camera when switching the 600si on.

Moving above the lens release button we reach a button marked with a thunderbolt symbol. This is the Flash control button. It allows us to force the flash to fire in program, should the camera decide not to and it allows us to set a 2:1 lighting ratio when using the off-camera flash feature.

On the other side of the lens between the mount and the grip is another black control button that when depressed, adjusts the opening size in the lens to the one that the picture will be taken at. Let us explain that normally the lens is wide open until the shot is taken to allow the brightest viewfinder image as more light comes through the lens at this stage. The feature is called the depth of field preview and we will discuss this when talking about exposure in Chapter 4.



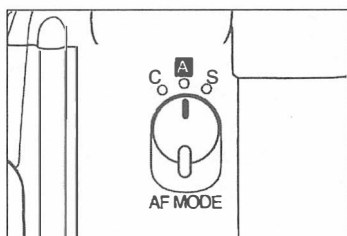
Adding a subtle break in the black finish of the body is a red window near the top of the camera between the grip and the lens mount. A bright red light will pulsate from it when we have set the camera's self-timer sequence in operation. This sequence is activated with the top plate selector switch

positioned at the self-timer symbol, followed by full pressure placed on the shutter release button. (Don't forget that both focus and exposure are locked when you press all the way down on the shutter release. - DD)

On the grip of the camera we find at the top one of two control dials. Subtly placed, but this is a control we will probably use most often. It rotates both left and right and changes features depending on the exposure mode at the time. Now turn the camera to the right and look at its side.

The Sides Of The 600si

There are two points to mention about this side of the camera. The top control, as indicated in this diagram, is the AF Mode Selector. In real language it sets the way the autofocus operates from one of three modes.



The **A** setting is the most common one to use. It will automatically adjust the camera's performance between the other two settings as the camera's computer software decides. In effect we found it was useful to leave the camera set to this position all of the time.

Single Shot Autofocus (S)

In this mode the camera will not fire unless the AF system has achieved sharp focus on something covered by the AF sensor. If the subject is moving, the AF system may not be able to drive the focusing system to match the speed of movement and the camera will refuse to fire. This is where the alternative setting is useful.

Continuous Autofocus (C)

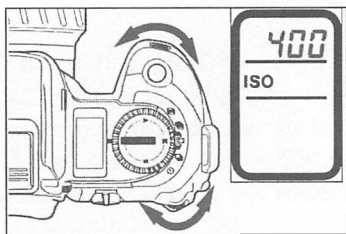
As the name suggests this is the AF mode where a moving subject is matched by a more flexible AF system. If the shutter release is held down, with the motor-drive selected and the subject in focus, the camera continues to fire for the duration of the held down shutter release.

At the top of this side of the camera is one of two lugs into which the camera strap fits. On this is a cover for the camera's eyepiece which should be used when we will not be taking a picture with our eye to the camera. Otherwise light will enter the viewfinder and may mislead the metering system: the metering cell is housed in the viewfinder.

The left side of the camera is, in comparison, quite spartan with a control for opening the camera back with a small triangle on it pointing downwards. It is spring loaded and releases the door when pushed in the direction of the triangle. At the top of this side is the second attachment lug for the camera strap.

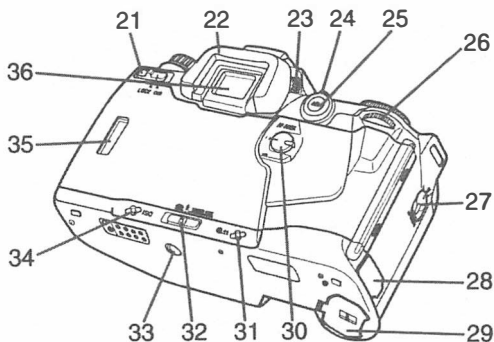
The Camera Back

Moving to the camera's back we find a plethora of controls. When we hold the camera our thumb sits in a groove between the second control dial and the metering system selector and auto exposure lock button. The control dials therefore sit at the front and back of the camera, easy to reach when the camera is in the most important place - to our eye.



The Auto Exposure Lock is controlled by depressing the button marked with the letters AEL. This button and its usage is discussed in Chapter 7 about exposure metering. Around the outside of this button is a rotatable dial with a lip to grip it and turn the dial by. As it is rotated a white index line clicks

The camera back

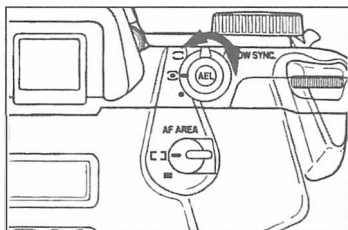


- | | |
|-----------------------------|-------------------------|
| 21. Main switch | 30. AF-area selector |
| 22. Eyepiece cup | 31. Rewind button |
| 23. Diopter-adjustment dial | 32. Flash-mode selector |
| 24. Metering-mode selector | 33. Tripod socket |
| 25. AE-lock button | 34. ISO button |
| 26. Rear control dial | 35. Film window |
| 27. AF-mode selector | 36. Eyepiece * |
| 28. Remote-control terminal | |
| 29. Battery cover | |

* Do not touch!

into position against one of the three light measurement or metering mode symbols of the camera. The top represents Centre-weighted Average metering, the middle is for 14-zone Honeycomb metering, while the bottom represents Spot metering.

A big word of warning! We found that the initial setting would often be accidentally knocked off position when the camera was carried in a camera bag. In the end we used blue tack to keep the marker against the required mode. It is a shame, as in use this is a layout that makes the change from one mode to another quite easy - if only it was lockable or tighter!

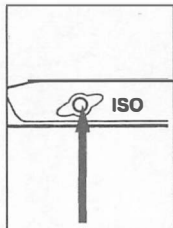


To the right of the metering and AEL settings are the words Slow Sync. This is a term to describe a particular method of using either the built-in, or add-on flash unit and is dealt with in the later chapter on flash use. The words show that the AEL button doubles up as the slow sync control when this technique is used.

Below the metering control is the second control for the AF system. This one determines the width and height over which the camera will attempt to detect focus. Again we refer you to a later chapter for more detail, but for now, be aware that the top, jaw-like position is for Wide Area Focus, and the horizontal line for Spot Area Focus.

Along the bottom of the back are five further controls for flash, film rewind and film speed settings. Three are for flash control and are therefore grouped together. Each one is set by a switch marked with a white vertical line moved to a position below the appropriate symbol. On the left is the red-eye reduction setting with a diagram of an eye, in the middle is the Flash Mode Selector marked with a thunderbolt symbol for normal use, while on the right, is the Off Camera Wireless control for triggering units not physically connected to the 600si directly. The setting is indicated with the word - wireless.

The ISO position is marked by these letters to the left of the control switch for flash. It has a small rubber button to its left. A press on it at any time will show the current film speed in operation on both LCD panels. Should we wish to override the setting, either control dials can be turned to set in 1/3rd E.V. values another film speed rating. A press on the shutter release will at any time remove the ISO number from the display panels and return the display to normal.



Opposite the ISO control to the right is the film rewind button. Although the 600si will

automatically start the procedure by sensing the tension once the film has been removed as far as it can from its canister, we have the option, by depressing this button, to start the rewind sequence at any time.

A couple of points to mention are that the camera will rewind the film at a very quiet noise level. If we wish however to have the fastest possible rewind time, the quiet rewind mode should be overridden by a second press on the ISO button if we have activated the sequence, or a single press on it if the camera has taken that action.

There will be an increase in the accompanying noise, but the two options are nicely thought out to meet the needs of all - very well done Minolta.

Technique Tip:

Although not recommended in the instruction manual, we have found the following quite useful - particularly to those who do their own processing and wish to have the film leader left out of the cassette on completion of the rewind.

- A) Start the rewind sequence if the camera does not do so.
- B) Watch the frame count on the top-plate LCD as it subtracts during the sequence.
- C) Flip the camera back control when the counter reaches zero.

This cuts off the power to the sequence leaving the leader out of the cassette. Be careful at first - practice on an unimportant film to start with so you do not open the back too soon and fog the film. The term fog refers to a film receiving an uncontrolled exposure to light that is so strong as to lose all detail in an image.

Q) Can I change the camera back and fit a data-back?

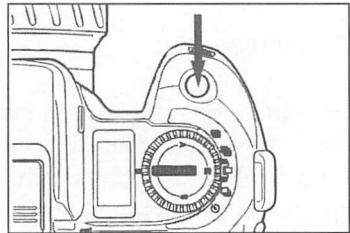
A) The camera back cannot be changed. Minolta do offer a Quartz Date model already fitted with the data-back facility.

On The Camera's Base

The serial number is painted in white on the camera's underside. We also find a traditional 1/4" tripod bush and eight metal contacts which allow communication with the optional VC-600 grip.

The 600si's Top-Plate

Looking down upon the camera we are probably attracted to the dials on the top-plate as much as the LCD panel. Starting on the right is the shutter release, comfortably within reach as we grip the 600si for secure handling. The release button is just about



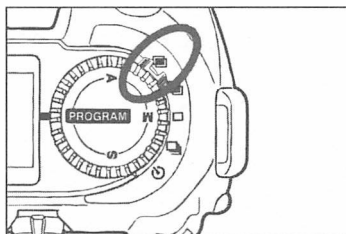
The release button is just about the right size for my trigger finger and I certainly like the resistance placed on it. This is a shutter release that encourages a gentle pressure rather than an excessive downward motion that can induce camera shake. There are three stage to its operation. The first light pressure activates the display panel information, slightly more, the AF and exposure measurement systems, then the final stage of pressure releases the shutter.



Moving the same finger backwards, we reach the drive mode selector. This is a lever which can be set at one of five positions - each controlling a different aspect of the camera. The settings, moving from the front to the back of the camera, are as follows.

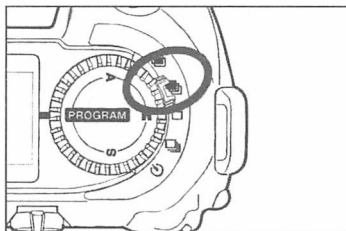
Multiple Exposure

A multiple exposure is a means by which we record separate images on top of each other but on one single frame of film. It is denoted by two overlapping oblong shapes. To use this feature we press the shutter release button after setting the drive mode selector to the ME (Multiple Exposure) position (it will refuse to fire at this stage). By turning either of the control dials the top-plate LCD shows progressively a number between 1 and 9 with the letters ME in the base of the display. Please note that the viewfinder goes blank. Setting the number of frames we wish to have on top of each other is simply a case of setting the same number on the display. Turning one of the control dials the other way will subtract the number, with 1 the standard setting if we change our mind. The techniques to employ are discussed in the chapter on exposure.



Exposure Bracketing

The next feature down is shown as three overlapping rectangles. They are each shaded differently and seem a logical way to indicate that exposure bracketing takes place when the drive mode selector is set to this position. In a bracketing sequence each separate exposure is slightly different from the other in the sequence to give us a selection from which to choose the very best exposure.

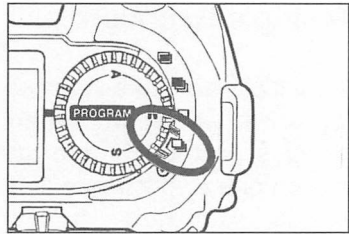


Single Frame Advance

This is probably the most used position of the drive mode selector. One frame at a time is shot at this position. A single rectangle indicates this feature.

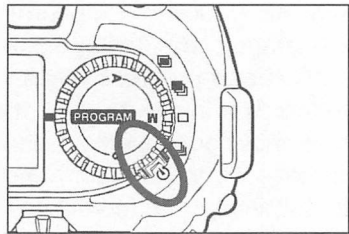
Continuous Film Advance

When at this position, and a suitable shutter speed is set above 1/125 of a second, a motor-drive firing rate up to 2 frames per second is available.



Self-Timer

A ten second delay, between tripping the camera via the shutter release button and it firing, operates with this setting. It is indicated by the now common self-timer symbol. As the delay sequence unfolds a red light pulsates on the camera's front, rapidly for the last second before firing. Just for the record, focus and exposure are locked when the shutter release is pressed all the way down.



- Q)** Why is the top motor-drive speed only two frames per second?
- A)** In reality, only those involved with action will fire a camera at faster rates. Even then, many photographers prefer to “choose” the moment to trip the shutter, rather than shoot blindly in a faster sequence. Film is not that cheap!
- Q)** How do we cancel the self-timer sequence if we change our mind after activating it?

- A)** Move the drive mode selector to an alternative position.
The camera will not waste a frame as it will not fire.

The pentaprism of the 600si is not overly large, keeping in tune with other Minolta cameras. On its top is a Minolta designed hotshoe. It is frustrating that this will not accept conventional ISO designed flash units, but in fairness the shoe works very well. Don't forget though that there is the FS-1100 hotshoe adapter which allows us to attach standard hotshoe fitting accessories etc.

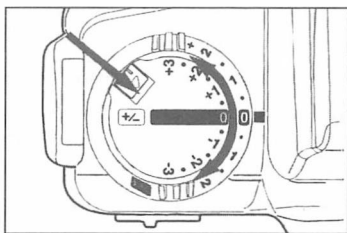
Interesting information - Did you know that Minolta introduced the first camera with a built in hotshoe!?

When fitting a separate Minolta flash unit, an automatic locking feature keeps the flash and body securely together to resist knocks. On the 5400HS flash that we have been using, a release button is used on the flash unit. This system works better than other systems which use a more primitive, and therefore susceptible to breakage, locking pin controlled by the flash unit's attachment screw.

Either side of the pentaprism are the lips to raise the integral flash. On the left of the prism are two other controls, both to adjust the amount of light reaching the film.

Exposure Compensation

This is the top dial of the two. It has a small spring-loaded and depressable button marked with an arrow around its outside. When pressed in the indicated direction, it allows us to rotate the dial both clockwise and anti-clockwise.

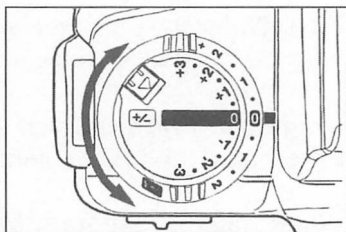


As we do so the numbers indicated from +3 to -3 move. At the base of the exposure compensation dial and the flash

exposure compensation dial is a white line. This is the index point against which to set the desired amount of compensation. Between each marked number is a white spot to show this is a half stop setting.

Flash Exposure Compensation

Like the dial above that controls the effect of a continuous light source such as daylight or room lighting, we can independently have the same effect on flash illumination with the lower of the two dials. There is no



locking switch on this control, but in use we have yet to find it knocked out of place. Although those with bigger fingers may find it hard to grip, it clicks into position very positively indeed.

In Use.....

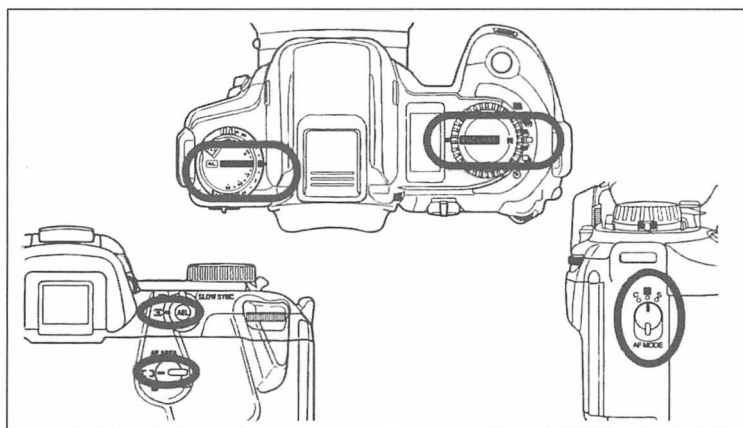
At first, we were not sure how we would find the styling and layout of controls on the 600si in actual use. But after a few weeks it became second nature to make changes without too much of a conscious effort. We can now say it has been a refreshing change and very workable, allowing us the freedom to react to the subject without having to reach for an instruction book to check what a particular control does or where to find it.

We will also commend the design team on the way they have balanced old and new. Take for instance the large dial on the top-plate which on the 600si changes the exposure mode. On many traditional cameras there would be a shutter speed dial in a similar position. In practice, to change a shutter speed becomes a process that takes too long with action photography as the hand has to be taken from the firing position and the shutter speed changed. Sensibly, the dial on

the 600si accesses features that will not be changed too often, while the control dials allow instant adjustments to be made to aperture and shutter speeds without sacrificing the moment. In addition the command dials do not dominate the camera in keeping with the idea of a "classic" styling.

In-Line Auto

For the very easiest point and shoot facility, the camera's settings should be set so that the most automatic controls are horizontally positioned. This gives us Program exposure, single frame advance, 0 flash and exposure compensation, honeycomb metering and wide focus area.



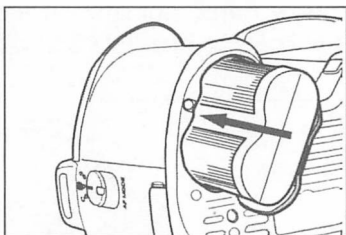
Control settings for In-Line Auto

CHAPTER TWO

Powering & Readying The 600si For Use

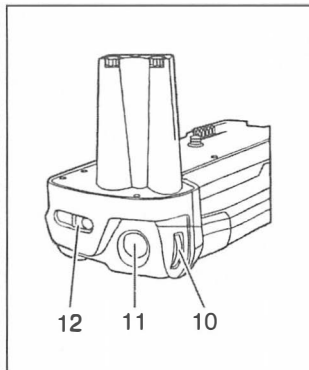
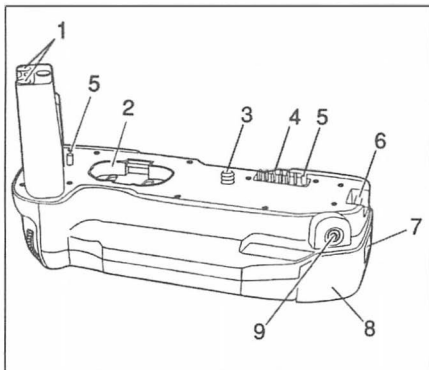
The standard 600si body is powered by a single Lithium battery of a 2CR5 designation. This was selected as it takes up a smaller space for the same power output as the traditional AA size batteries, plus it offers better storage and low temperature performance. For the alternative AA power source we need to use the VC-600 grip as discussed later.

The battery is fitted into the base of the 600si, so it rests on the inside of the comfortable hand grip. Covering the housing is a hinged and removable cover. It is important to know that it is removable, so do not panic if it comes off in your hand - it is meant to.



When loading a battery, do take your time, particularly if working in a situation where events are changing rapidly around you and you want to be shooting again as soon as possible - as it can be fitted the wrong way. No damage will be done, but we may be left looking foolish if the camera does not operate, as well as missing "the shot". The battery is positioned with the contacts pointing down and towards the outer part of the grip. The cover is removable as a portion of the VC-600 grip slips into the battery chamber when that is attached.

Once the battery compartment door is closed, we can switch the camera on by moving the ON/OFF switch to ON. This is positioned on the camera's rear left hand side next to the eyepiece. The 600si now comes to life. As we found it extremely beneficial, we shall digress slightly to talk about the VC-600 grip.

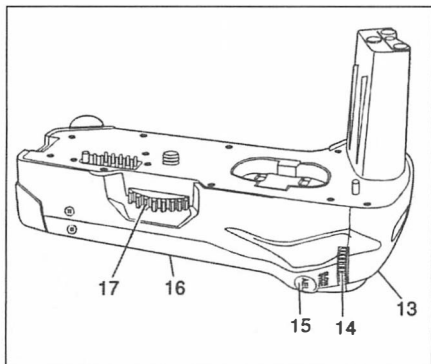


VC-600

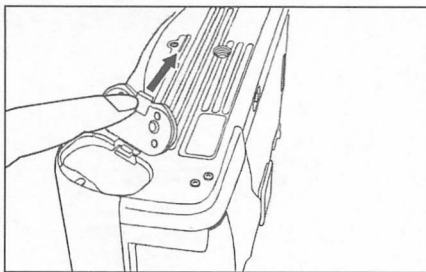
A very practical touch is to add the optional VC-600 grip. VC stands for vertical control and offers the option to use four AA size cells if preferred to the 2CR5, or maintain that as the power source if preferred. Minolta seem to have thought of everything as far as power is concerned apart from a solar powered option! If AA batteries are chosen we can use alkaline manganese or nickel cadmium (ni-cad) options.

VC-600

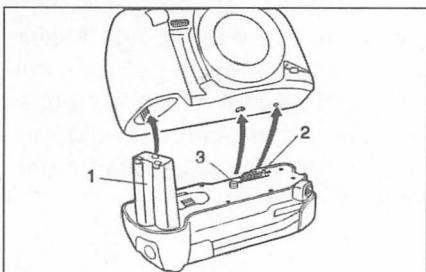
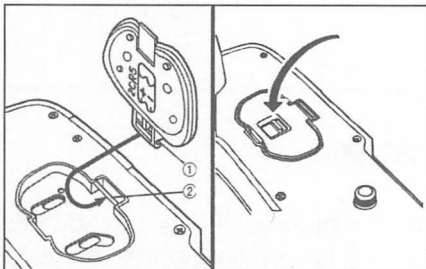
1. Battery contacts
2. Battery-cover storage
3. Attaching screw
4. Contact pins
5. Guide pin
6. Neckstrap eyelet
7. Battery case release
8. Battery case
9. PC terminal
10. Front control dial
11. Shutter-release button
12. Grip control switch
13. Holding-strap eyelet
14. Rear control dial
15. AEL button
16. Tripod socket
17. Attaching screw



The VC-600 has an attachment screw that threads into the tripod bush on the camera's base with a knurled locking ring that tightens the screw on the grip. The body and grip fit so snugly together, that they seem to have been made that way.

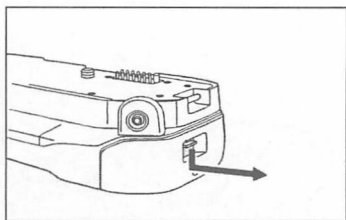


Do not forget to remove the normal battery compartment cover before attaching the grip. A gold star should be awarded to the designer who thought of putting a housing for the detached cover into the top of the VC-600, so safe storage can be offered, otherwise we would be forever losing the cover.

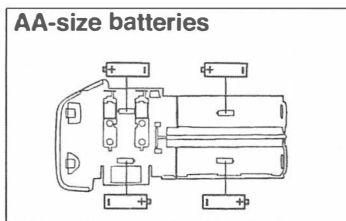
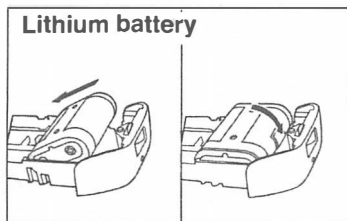


Powering The VC-600

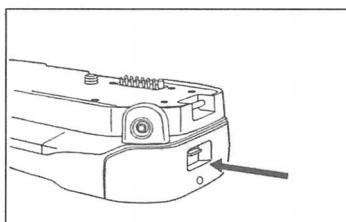
At one end of the VC-600 is a small switch with a triangle above it. Pushing down on the switch in the direction of the arrow enables the battery holder to be pulled out from within the VC-600 body.



You may be able to order this as a spare part from Minolta's service department. With it pre-loaded a battery change becomes a matter of no more than a two second operation.



**Battery installation for
the VC-600**



	Lithium		Alkaline-Manganese		Nickel-Cadmium	
	20°C (68°F)	-20°C (-4°F)	20°C (68°F)	-20°C (-4°F)	20°C (68°F)	-20°C (-4°F)
0%	60	20	70	-	35	15
50%	25	10	25	-	10	5
100%	15	5	15	-	5	3

Battery Performance - in rolls per set of batteries

Like all companies Minolta arrive at the above figures of battery life expectancy through their own test criteria. This is generally slightly different to other manufacturers' products so do not compare just the rolls of film figures quoted by each, look at the small print for the real information. For the record, a 24mm to 85mm zoom lens was used, focused automatically from infinity to its closest distance of 0.5m and back again 3 times. This was followed by the shutter release depressed partway for ten seconds before firing the camera. We do not want to try and reproduce this test as our time is better spent on other things. In use we have been pleased with the

performance of the battery. We should add that the number of films shown are in 24 exposure lengths. If 36 exposure rolls are used, decrease the stated amounts by a third.

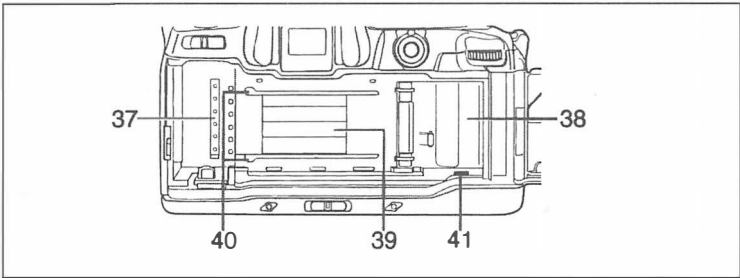
At first we did not try the VC-600 with the 600si. We liked the standard body, it felt quite comfortable, but we thought that we would have to use the grip for the purposes of this book, so attached it expecting to remove it after a short while. It would be just adding to the weight and be cumbersome would it not? How wrong we were. Unlike grips on other cameras, the "sculpturing and balance" really made this camera "fit" our hands. The comfort is outstanding, better than any other grip we have tried on other cameras.

Minolta have also thought about how to avoid those little niggly things that frustrate. For instance, the shutter release button is the same size and has the same resistance as the one on the camera body - something that is not the case with many add on grips. The balance, thanks to the ergonomics, gives confidence. We have yet to detach it!

The On/Off control is marked differently to the 600si body, using a 1 and a 0 for on and off respectively. Strange at first, but you soon get used to it. The on position will not operate the camera if the camera's main on/off control is not on. We have often forgotten to switch the grip off when using other cameras yet, when moving back to a landscape format, the VC-600 is so beautifully sculptured that it does not let the hand easily trip the VC-600's shutter release by mistake. A simple thing - but very annoying with other makes of camera at double the price which can be tripped accidentally.

In addition to the shutter release for the portrait format, the VC-600 adds a P.C. socket for using with studio flash under a removable cover marked with a thunderbolt symbol. This keeps the socket dry and free from dust. If you do lose it, a replacement can be obtained from Minolta's service department.

Loading The 600si



37. DX contact *

38. Film chamber

39. Shutter *

40. Film guide rails

41. Film-leader index

* Do not touch!

On the left of the back is the chamber into which we slip the film canister. There are twelve metal contact points for what we call the DX coding facility. Film is loaded with the small nodule facing downwards. Metal guide rails are there for the film to be pressed against by a large pressure plate on the inside of the camera's back. On the right of the camera's inside are the film advance cogs and spool. The latter rotates to pull film from its cassette. As you would expect, most components are black to stop light reflecting and bouncing around where it may become detrimental to picture quality. Around the small see-through window on the camera's back - called a Judas window as it betrays the type of film loaded - is a felt trapping for the same reason.

Using The 600si

With the 600si switched on we should always look first at the Liquid Crystal Display (LCD) panel on the camera's top-plate. Initially you may think it is a small LCD, but there is a beauty to it. By having traditional controls around the camera with easy to see details on them, the LCD information does not

have to show such a proliferation of characters like on other AF camera models and therefore confuse the user - simplicity is king!

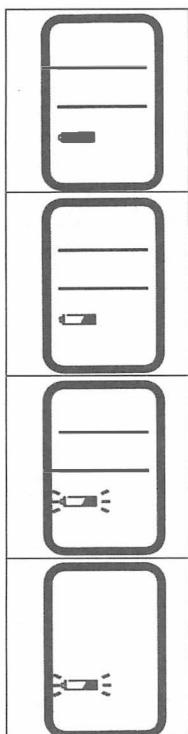
For around the first 4 to 5 seconds after switching on, a battery symbol is displayed in the bottom left of the LCD. Strangely this is in the form of an AA battery, presumably this type of battery symbol is more recognisable than that of the lithium cell.

A fully powered battery is represented by a completely black interior to the outline. If the power from the cell is not at its maximum, the symbol will be partially clear, diminishing as the battery becomes progressively more exhausted. This works in a four stage sequence from full power - a completely shaded-in display - to a blinking half battery symbol. If no other indications are on, the camera will no longer function, but if there are other indications we will still get maximum performance.

A minus point is that the information is not shown inside the 600si's viewfinder, but as Minolta have pointed out, the low battery indication appears on the body LCD panel early enough to provide plenty of warning before the camera ceases to operate.

A couple of pointers we would like to mention based on our experience. First, when the symbol recommending an exhausted battery blinks, we found that there is normally enough power to shoot another half or even a full roll of film, depending on how we use the camera. With flash, as an example, we are expecting too much, as this places a high demand on the power source. But single, non flash shots, taken with half a minute or so between them are more practical.

Sometimes, with a little rest - for the camera, not us - the battery low indication stops. We should however replace the cell(s) at the earliest opportunity.



Full-battery symbol - power is sufficient for all camera operations.

Low-battery symbol - power is sufficient for all camera operations, but is getting low. Keep a new battery handy.

Blinking low-battery symbol - power is extremely low, but all functions are operational. Flash recycling time may be slow. Battery will have to be replaced very soon.

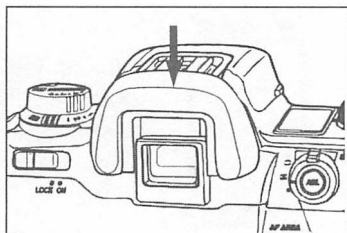
Blinking low-battery symbol appears alone and the shutter is locked - power is insufficient for camera operation. Replace the battery immediately.

CHAPTER THREE

Our Interface With The 600si - The Viewfinder

The viewfinder is the most useful interface with our camera. Before discussing the information displayed in it we should mention the "little touches" Minolta have included to make it extremely convenient for us to fine tune it to best effect.

Firstly, the 600si is supplied with a rubber eye cup. So what, you may think, but not every camera has this supplied as standard. It slips over guide rails at the side of the viewfinder eyepiece, clicking into place once we push down on it.



The eye cup helps to make it comfortable for us to place the camera to our eye. If we wear eyeglasses we will not scratch them against the body proper. It is worth mentioning here that the 600si has what is termed a "long eye relief" of 18.4mm. This actually means that we can have our eye 18.4mm away from the eyepiece and still see the entire image of the viewfinder - particularly beneficial if you do wear glasses. This is not the longest distance on the market, but to reach those at 20mm plus, a much larger prism would be necessary with the weight and cost increases to match. In use we have not had any problem with the ability to see the viewfinder image.

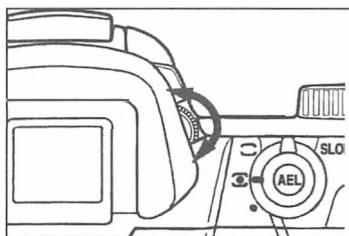
The most amazing thing we find, bearing in mind the fact that the 600si is half the price of a professional camera, is that a dioptre adjustment feature is also included. Not long ago only very expensive "top-end" cameras had this feature. It is a real benefit to those who wear glasses as in some instances it will set the strength of the viewing system to

match basic short and long sight characteristics, but also to those with near normal viewing. If you are going to use the camera over a long period at any one time, anything to make the viewfinder as clear as possible is important. Once set we can leave it where it is - safe in the knowledge that it will not be accidentally moved from the chosen position.

Adjusting The Dioptre Correction

The strength of the dioptre can be set at any strength between -2.5 to +0.5. We find it best to detach a lens and look at a bright evenly illuminated light source such as window light or the sky. Do remember though not to look directly into the sun.

When looking at the viewfinder from behind the camera, we see in the top right hand corner, outside the eye cup, a small circular dial. It is serrated to make gripping it easier as this is the dial we turn to adjust



the dioptre strength. While turning the dial look into the viewfinder at the markings on the focusing screen - we tend to use the central circle as our reference. When your chosen marking is at its sharpest that is the best setting for you. Take your time as sometimes a change from one position to another may not make any difference and remove the eye cup if this makes things easier. We would also recommend that you do this when your eyes are not too tired, so it is best in the morning rather than the evening. Finally supporting the camera on a quality tripod will also make it easier to set.

To put the advantage of a built in dioptre into perspective, imagine having to attach and detach individual strengths of dioptre to the outer part of the eyepiece until the correct one is found. We wonder how many dealers carry stocks - if any - of all strengths for you to try?

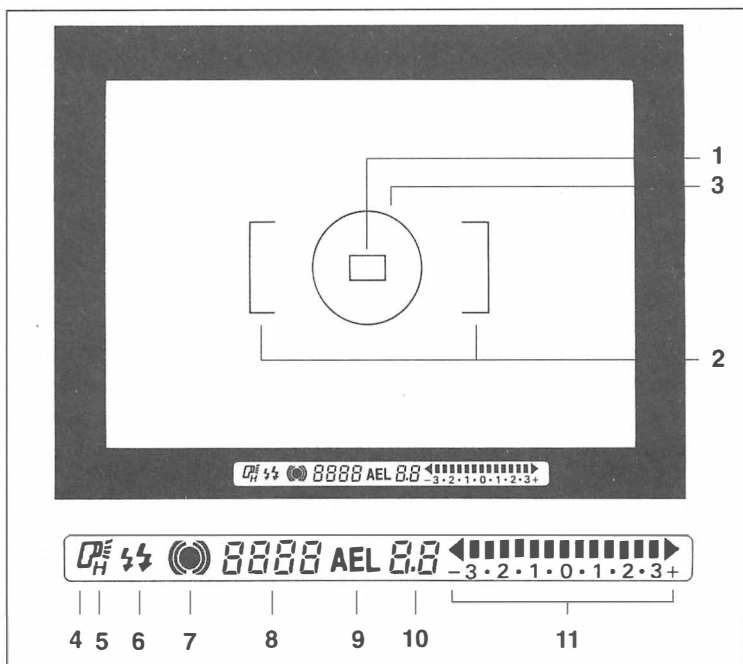
- Q)** How much of the final picture area will I see in the viewfinder?
- A)** Taken from the vertical length of the film first, we see around 92% of the area recorded in our image. On the horizontal side this becomes 94%. Let us put that into a real working point of reference. If you prefer slide film, the amount you see in the viewfinder will be close to the amount seen when the image is mounted. If negative emulsions are used, there is a small percentage of the negative cropped off with most processing and printing facilities which will not be too dissimilar to this amount.

Inside The Viewfinder

The yellow LCD characters against a black background of the viewfinder display are really clear in most situations. Although the viewfinder of the 600si may appear at first glance to be rather scant on information, this is not necessarily a bad thing. Indeed it can be a blessing as there is a tendency to overdo it in many of today's cameras.

Have you ever looked through another viewfinder and thought great - I can see the exposure info, meter pattern indication, frame count, exposure compensation amount.... The list goes on, only afterwards, when using the camera in a situation when taking pictures at anything but a leisurely pace, you find, like us, that you have become oblivious to much of the information as we concentrate solely on the image on the focusing screen?

If a camera is not familiar to us, an over informative display can be a hindrance to instinctive photography as it requires time to work out what it means. Likewise, if the camera is familiar, we are sure you know which metering mode, exposure mode, etc. you have selected. The basic information is what we really need when working rapidly and this is exactly what the standard display of the 600si provides.

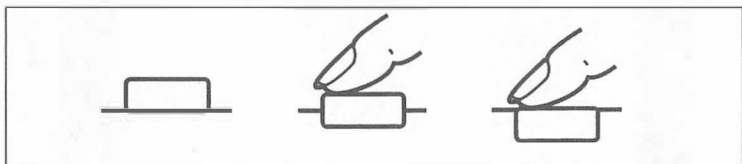


- | | |
|-------------------------|-------------------------------------|
| 1. Spot focus area | 7. Focus signals |
| 2. Wide focus area | 8. Shutter-speed/film-speed display |
| 3. Spot-metering circle | 9. AE lock indicator |
| 4. Flash-on indicator | 10. Aperture display |
| 5. HSS indicator | 11. Metering index |
| 6. Flash signals | |

The most important information is that of the shutter speed and aperture set. If you are unfamiliar with them then please read the next chapter, called Basics for Controlling Exposure, first. As the 600si is an autofocus camera, we also need to know that the camera's focusing system has, or more importantly if it happens, has not been able to find focus.

When light pressure is placed on the shutter release button, the viewfinder will show various characters for 5 to 6 seconds if we then remove the finger pressure. We did not like this

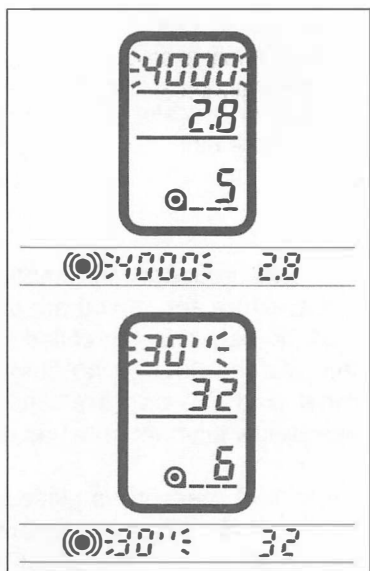
much as a longer time would be more practical. The amount of pressure applied should be mastered as there are 3 stages to allow different things to happen.



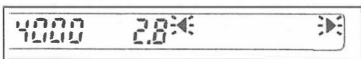
The first stage is effectively the off position as we have no pressure on the release. Part pressure will activate the displays, autofocus and exposure systems, while a third further pressure trips the shutter to expose the film.

There is no viewfinder indication of the exposure mode except when in Manual control with its distinctive display. Regardless of the mode selected, the shutter speed appears to the left of the aperture setting. Even in bright lighting we found the display commendably easy to see.

If the shutter speed pulsates, we are in danger of overexposure if the top speed of 1/4000th is displayed or underexposure when the 30 second speed blinks. We need to change the aperture and or shutter speeds depending on the exposure mode we are using, until the shutter speed value stops its movement.

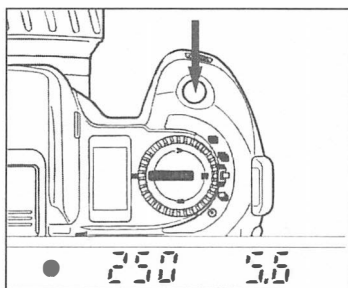


Should two small triangles to the right of the aperture flick on and off - we are outside, not the exposure, but the metering range of the camera.



If we attach and switch on an external dedicated flash, or raise the built-in flash unit, a further symbol depicting an off camera flash unit is shown in the far left of the display. This is joined by a thunderbolt to its right once the flash has charged and is ready to fire. Two thunderbolts are shown if we are using the special flash feature to reduce red effect in people and animals.

Focusing information is displayed by a small circle to the left of the shutter speed and momentarily two outer "ripple" like indications. These signify that correct focus has been achieved. If the two ripples are maintained then the camera is using continuous focus on a moving subject, while the small circle alone is a confirmation that focus has been achieved but is locked on the current position. Often the latter is due to pressure held on the shutter release half way while using the 600si in either the **S** or **A** AF modes. At this point we are locking the current focus position.



A word of warning - If the circle pulsates, it indicates that the camera's AF system cannot focus on the subject at which it is currently pointed.

There are other displays that may appear, but less often. The first are the letters AEL to show that the Auto Exposure Lock button on the camera's rear has been activated. The letters are shown between the shutter speed and aperture indications. There is then another accompanying display, but

more about this in the metering chapter. When it is shown it appears on the far right side of the display following the aperture setting.

Overall, the viewfinder information is simple but effective and should inform rather than inhibit the photographer. If you do want just a little more than the basic display, and we do occasionally, the 600si has a custom function to enhance the viewfinder a step more. It is called the metering index and is a real benefit for a number of reasons as we will discuss when we talk about metering.

The index is a display that appears along the right side of the viewfinder LCD. It appears automatically when we are in Manual Exposure mode and when we are using the AEL lock feature.

It is a scale with a central point marked as 0 and two ends with indications of -3 at one end and +3 at the other. In between at equal spacing are -1, -2 and +1 and +2. Above the numbers will be a small vertical line which changes its position depending upon the circumstances.

In Manual exposure mode we have to set the line above the 0 for correct exposure as recommended by the camera's metering systems. If we want to deliberately give more or less exposure than that, we can do so by placing the line above another number with a change to the aperture or shutter speeds.

Image Magnification

When we look at the image on the focusing screen, we are looking at it in a slightly magnified form compared to the size of the image on the actual film. With a 50mm lens focused on infinity the magnification is around 0.75 times. As we focus closer or use other lenses this will change, so a 50mm lens is commonly used in manufacturer's literature as a common reference point.

Focusing Screen

In addition to the standard fitted screen you can have the screen changed by an authorised Minolta service facility for a grid type screen, ideal for architecture and landscape photography or one with vertical and horizontal scales making this ideal for macro and medical photography.

No matter how well you look after the camera, sooner or later dust and dirt may get into the viewfinder area, possibly on top of the screen. If you do not fancy returning the camera to your Minolta service facility, console yourself in the knowledge that no harm will come to the image recorded on film, as the obstruction is in the viewing path, not in the way of light recording onto film.

The screen itself is clearly marked and easy to see in all but the brightest of conditions. The indications are kept to a minimum with the following guide areas indicated.

First we will probably notice two large rectangular type jaws off centre to the left and right of the screen. Within this area is the sensitivity of the Wide Focus Area - hence the symbol on the camera's back represented by a similar marking.

The second but smaller Spot Focus area is the smallest complete rectangle in the middle of the screen. Do not confuse this with the circle that surrounds it as this is another Spot Area - this time for metering during Spot Metering Mode. These are the total sum of screen markings - simple but effective.

CHAPTER FOUR

Basics For Controlling Exposure

The ability to allow just the right amount of light onto film, an effective composition and sharp focusing, are generally essential starting points for any image of note. Master these and we have a firm starting point from which to produce consistently memorable work. For the experienced user, the following is a gentle reminder of the technical facts concerning exposure - the amount of light that film reacts to, while the newcomer to SLR photography will find it important and essential reading.

We are spoilt today with films of such technical quality that have never been available before. Many, particularly for colour prints, exhibit a large tolerance to incorrect exposure but getting this absolutely right is still the only way to realise the full potential of any film. By definition, we refer to correct exposure as putting onto film the right amount of light to reproduce the subject/scene as we wish it to be. This is generally accepted to be an image possessing a range of colours or tones, if working in black and white. Skin tones should look real, while different shades of the same colour should be reproduced as such. In black and white work the tones of grey along with white and black should be reproduced in a similar way. We can, for the want of a better term, call such results technically correct when a full range of tones are reproduced in ways where they are relatively natural in comparison to each other.

There are however sometimes differences between what may be a technically good result and one that has more impact artistically when these guide lines are not followed entirely. We have in the 600si an excellent machine from which to explore both types of result. The key issue is that we have control, or we can surrender it to the expertise of computer chips which are designed to offer the equivalent knowledge of professionals working in a variety of different types of photography.

There are three controlling factors to get right when putting the right amount of light onto film. They form an eternal triangle, as a change to one effects a change in one, or both, of the others.

Film Speeds

The first consideration is the speed at which our film reacts to light. This varies from slow films, which take a lot of light to reach the correctly exposed state, to those which are called fast films due to the speed of their response. In fact a film's speed is the term we use to describe this effect.

There is an internationally agreed way to rate films' reaction time, so that all brands stating a given speed will, to all intents and purposes, react to the same amount of light in the same way. The term ISO is quoted after a number and stands for the International Standards Organisation which is the set standard.

Although many films can be "rated" at other speeds (i.e. 100 to 150), the one marked on the box or cassette is the one to start with. You may find with experience that you prefer another setting, but make sure this is what you want to do and that poor technique is not the cause of disappointing images.

Traditionally we have had to set the speed we are going to use on a dial on the camera. While the 600si has this type of manual setting facility, most will prefer to use the automatic and painless DX coding feature. DX coding is a system that uses a code imprinted on the film cassette - in the form of a bar graph - to inform a suitably equipped camera of, amongst other things, the film's speed. Inside the film chamber of the 600si where the film canister rests are metal contacts that sense the code and hence the ISO rating of the film. This is installed in the metering system as the basis for exposure.

For the record, DX coding was developed by Kodak to help overcome the problem of photographers forgetting to adjust

the ISO rating of different films of alternative speeds. Now all major film manufacturers use it on all but a small number of films, many of which can be rated at different settings depending on the photographer's tastes. The 600si will be able to detect films from 25 to 5000 ISO through DX coding. All we have to do is drop the cassette into the camera and close the door. The film is then advanced to frame one, followed by the ISO rating displayed on the top-plate LCD and inside the viewfinder.

A press on the shutter release button removes the speed indication from the display. We can check at any time the DX reading by pressing the ISO button on the rear of the camera. A second press, or one on the shutter release, will remove the displayed rating again.

This sequence of displaying the film speed helped to give us, for the first time, full confidence in DX coding. We have previously encountered, on a number of occasions, a problem when either the bar graphs or DX contacts inside a camera had become damaged - reading the wrong ISO and leading to poor exposures. With the 600si however, we can see at the start of each film clearly if all is well. Until we tried this camera we did not like to use DX coding at all.

Q) Can I use film speeds beyond the DX coding range?

A) Yes, we can manually set film speeds between 6 ISO through to 6400 ISO including those speeds covered by DX coding.

For those wanting to get as near to text book ideals as possible, there is also a potential problem called reciprocity failure to be aware of. The effect is sometimes noticed when shutter speeds generally faster than a 1/10,000th of a second, or slower than 1 second are used. The effect is not to give the right amount of light to the film for it to react normally, even though the metering system recommends a certain exposure. We will not suffer from this at the faster

end as the 600si - like all but the Minolta 9xi - cannot reach such a high speed. But be aware of it at longer exposures. Again we relate this to practical use as those who work with colour print will find most results still pleasing, even with this effect.

For absolute accuracy, special filtration may be necessary for colour film, along with an increase in exposure. Guidance is given by the film manufacturers' themselves. For most occasions however, we can forget about reciprocity failure as we expose a film within a narrower shutter speed range.

Setting Film Speeds Manually

To set the ISO rating manually, we should first depress the ISO button on the camera's rear. The current speed in use is then displayed on both LCD panels. Rotating one or both control dials will change the setting. Once we have the one we want, a gentle press on the shutter release or the ISO button once more, will set the new speed into the camera's decision making process. The film speeds can be selected in 1/3rd stop increments.

For the record, we are tending to use speeds between 25 and 200 for most of our photography. The guide to selecting film is that the slower the number allocated to it, the longer it takes to react to light compared to a faster film. It is quite easy to remember that a doubling of the speed means that the film reacts in half the time, so a 50 ISO film is twice as fast in reaction as a 25 ISO. In practice we can therefore use a smaller aperture or faster shutter speed under the same conditions with the benefits of increased depth of field or action stopping shutter speeds.

What are the benefits of using a slower film then? In a word - quality. While it is not the case that a film with a rating half of another will give twice the quality, it is nearly without exception that the small components or grains that make up the film will be smaller. Therefore a larger image can be

made before these grains become apparent. Grain is often preferred by some photographers as they say it adds a grit and character to an image, particularly when a photo journalist approach is concerned. Faster film will be necessary when flash is impractical to use or would lose the intended atmosphere. If you want to start to see the grain, then start with at least a 1000 ISO rating.

If we were to shoot colour print film we would be tempted for “happy snaps” to use a 200 or possibly a 400 ISO. This would give us an excellent range of shutter speeds and apertures from which to choose, while, as we shall see, allowing flash to cover a greater distance. As it is, shooting mostly transparency film means that we stop at a 200 ISO as the faster film when projected does not quite have the low grain we are after.

Shutter Speed Control

The shutter speed controls the duration of the light reaching the film. The shutter in a camera (or in the lens in some medium and larger format cameras) has two tasks. Normally, when not in action, it covers the film's surface stopping any light coming into the camera from the front from reaching the film. When we decide to make an exposure and fully depress the shutter release, the shutter opens, exposing the film's surface to the incoming light coming through the lens.

The mirror that normally diverts this light into the viewfinder for us to view the image in a Single Lens Reflex camera (SLR) is at this point raised out of the light path. The duration of the shutter's opening and closing is the shutter speed. This can be in fractions of a second, full seconds, minutes or in extreme cases even hours.

A shutter is made up from two separate curtains or blinds. Their movement in the 600si occurs with the curtains moving vertically up and down, rather than horizontally across the film's surface, as the distance the shutter has to travel is

smaller when moving from top to bottom, rather than side to side, with the benefit that we have at our disposal faster top shutter speeds. These are useful both for daylight and flash photography, particularly with certain types of work such as sports, photo-journalism and fashion.

An exposure is made by opening the shutter curtains in the following sequence. When we press on the shutter release button, inside the camera, magnets, springs and electronic components are activated to set the aperture in the lens to the one that will be used for picture taking. Fractions of a second after the sequence starts - the first shutter curtain begins to move uncovering the film's surface. Depending on the speed selected, the second blind will then start to move at a specific interval after the first curtain recovering the film.

If we select the fastest shutter speed of a $1/4000$ th of a second, the time between the first curtain beginning the exposure and the second curtain stopping it, is very, very short. There will therefore be a small slit or gap between them for light to reach the film a small piece at a time. Different parts are therefore exposed in a slit or travelling gap between the two curtains.

When a longer speed is used, the time between the two curtains travelling is longer. At speeds of $1/200$ th of a second and slower, the first blind has uncovered the film completely before the second curtain starts to travel. With what we now call normal flash synchronisation, the burst of flash illumination from a flash gun at this time fires only when the entire film surface is exposed, otherwise part of the film that is not uncovered will be recorded as a black and blank area devoid of detail. In normal flash use, the fastest shutter speed is a $1/200$ th of a second, but slower options may also be utilised as the film is still completely uncovered at the time of the flash firing.

The longest shutter speed we can set is really unlimited due to a feature called "Bulb". This is marked as "bulb" on the

LCD panels, but is only available when we are in Manual Exposure mode. When set to "bulb", the shutter remains open for as long as we keep sufficient finger pressure on the shutter release button. An optional extra is the use of Minolta's cable release called a RC-1000S/L, which offers the same effect of locking the shutter open. In these circumstances we are in effect stopping the second curtain from travelling. The use of the RC-1000S/L also helps avoid direct contact with the camera and the possibility of introducing vibration into the image. Definitely consider one if close-up photography is your interest as any movement will cause a blurred image. Alternatively use the camera's self-timer facility to help reduce vibration to a minimum.

Apart from the "bulb" setting, we can set, during Manual or Shutter Priority Exposure modes, speeds down to 30 full seconds up to an extremely brief 1/4000th of a second.

For correct exposure we must match the selected speed with a matching size of aperture, dependent on the lighting strength and film speed in use, to ensure that the proper overall amount of light reaches the film. In Shutter Priority, once we have selected the speed we require, the camera will automatically choose the matching aperture, while in Manual Exposure we set both controls. Program and Aperture Priority modes will make the decision for us as far as the shutter speed is concerned.

The shutter speeds are in half stop settings. It used to be the case that a change from one shutter speed to the next (shorter or longer), would double or halve the amount of light reaching the film depending on whether we lengthened or shortened the speed. Until recent years it was the norm for cameras to offer only full stop increments/stops or steps (they all mean the same thing) of shutter control. A half stop means that one change to the next will only change the amount of light reaching the film by a half of the previous value. This we find much more useful.

A change from one full stop shutter speed to the next slower stop, due to dropping light levels, could be too much for example to a sports photographer wanting to freeze a subject's movement. Let us presume that a 1/250th of a second was used initially. A 1/125th would become unusable if the light reduces and the widest opening in the lens is already in use - it would not "freeze" the action. A half stop down to a 1/200th might do the job enabling a few more sharp frames to be recorded. In a sporting event the real action could take place at the end of the proceedings, so any feature that keeps the photographer shooting even for a few minutes more is worthwhile.

In Programmed or Aperture Priority Exposure Modes, the electronics inside the 600si set a shutter speed for us. In Program mode the aperture is also selected in the same way, making this a totally automatic mode.

The range of shutter speeds in a modern camera like the 600si is astounding. Think about it for a moment. We have at our disposal, exposures in the smallest fractions of a second, those lasting many minutes or even hours. This makes an incredible range which enables us to record things in our own personal way. Do experiment with markedly different speeds used for the same subject when you have a few frames to spare - you may be pleasantly surprised.

Although each setting offers a different way to record an image, sometimes a few settings have the same apparent effect on what may or may not be recorded as a blur. Do not set any speed aimlessly though, as we cannot separate a shutter speed from a matching aperture size, so when you do have speeds of similar effect, choose sensibly, based just on the possibilities available through the apertures available.

Shutter Speeds For Effect

What do you want from each shot you take? The chances are the first consideration is having a speed that allows for a sharp and recognisable image without blur. There are

occasions where a depiction of movement can be very effective, but we will leave that for the moment. We would suggest that one of the first things we should do is shoot some film to find out at what shutter speed we can comfortably hold a particular lens and camera combination steady without movement on our part affecting the image adversely.

Be strict with yourself when looking at results. We both admit we are not as good at hand-holding moderate shutter speeds around a $1/30$ th or $1/60$ th of a second as we once imagined. While we do know other photographers who can hand-hold at slower speeds than this and even with heavy lenses. We are all different! Work out what works best for you. Once this has been done, you will be aware of potential camera shake problems when our slowest hand-holdable speed is passed. We should if we are not already doing so then reach for additional support such as a tripod or monopod. Tripods and monopods can be restricting, so faster film is a positive alternative. It may even be a case of using a new position or existing support of, say, a wall or tree to wedge ourselves against.

As a guide, the slowest shutter speed most people will be able to hold a particular lens is based on a term called - "the reciprocal of the focal length". A little long winded, but a term that refers to a reasonably common fact that most people can hold a camera and lens at a shutter speed number in fractions of a second, nearest to the focal length of lens in use. For instance a 50mm lens can be held steady at a $1/60$ th of a second, a 28mm at a $1/30$ th of a second, or a 200mm around a $1/200$ th of a second. Do not take this as the absolute truth - test it for yourself.

It follows that the faster the speed the shutters travel, the greater the effect of freezing movement both in ourselves and in the subject will be. It is tempting therefore to set the fastest speed possible, but do read the information about the effects of the aperture before doing this all of the time.

We are sure that if you get your posture, breathing and state of mind right, you will, with regular practice, obtain the ability to hand-hold at speeds that at present may seem unlikely. A point for the AF enthusiasts here is that it helps to make the whole process of operation, and hence steadying the camera far easier in AF than when manually focusing.

Another very useful exercise is to try different shutter speeds with different rates of movement from the subject - do you like the blurred effect or prefer a static reproduction? What shutter speed will freeze the action of a person running, a slow moving waterfall, or blur both if required? We will not tell you as it is something that you should find out through using this excellent camera, perhaps when you have a few frames left on a film that you wish to use. Over a period of time we will, with practical experience, be able to predict with certainty the effect that we are going to get before we trip the shutter. The 600si gives ample shutter speeds to select from but unlike some cameras aimed at the professional, it does not offer one third stop increments. We find in most photographic situations that half stop settings are easier to operate and make it much easier to remember all of the shutter speed options.

Technique Tip:

For those involved in action, particularly with motor sport or athletics, the technique of panning is a useful asset to use at various times. This provides a sharp image of the subject, but records the background as a "blur". This is indisputably a way to inject the feeling of movement.

To pan, we must pick up the subject in the viewfinder as it approaches from one side of us, follow it as it moves to a central position directly in front, fire the camera at that moment, and then continue the movement during and after the exposure to follow the subject as it passes by us on our opposite side. If you have not done so before give it a try - it can be very rewarding with a wide variety of shutter speeds

offering very different effects. Our rate of movement can also play an important part in the degree of blurring on the background. Should the autofocus system have difficulty in this situation then I would suggest that we manually pre-focus the lens on a point directly in front of us. That said, Damian, who has experience with motor racing photography, confirms that this would not prove a problem for the 600si's AF system due to the Multi-Dimensional Predictive Focus Control.

Aperture Control

This is an aspect of exposure control that is, for many, the most creative. The aperture refers to the opening size in a lens and therefore controls the intensity of light reaching the film - the wider the aperture, the greater the intensity. If we think about the logic of how this refers to the choice of a shutter speed, a larger aperture allows more light through than a smaller one, therefore a faster shutter speed can be set in comparison to when a smaller aperture requires a longer shutter speed in the same circumstances.

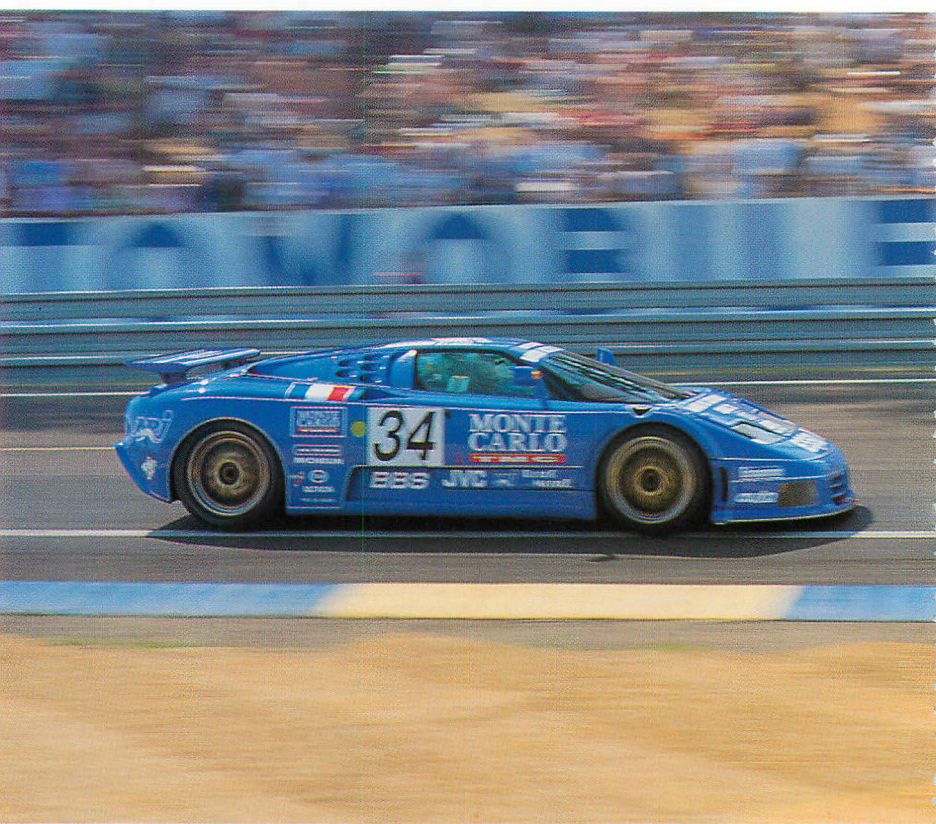
In Aperture Priority and Manual exposure modes, we have full control of the size selected, but the Programmed and Shutter Priority modes select the size for us, in the latter's case following our chosen shutter speed.

There is one aspect of the final image which the aperture governs and is to be ignored at a photographer's peril. This is called the depth of field. But before we move on to that, a quick compliment should be paid to Minolta as in many of their top lenses they use a higher than normal number of diaphragm blades that make up the aperture opening. This means that the shape becomes nearer to a circle rather than the more conventional hexagonal. The benefit to us is a better pictorial representation of the out of focus highlights when we have a shallow depth of field. We have mentioned it a few times so let us move on to an explanation.



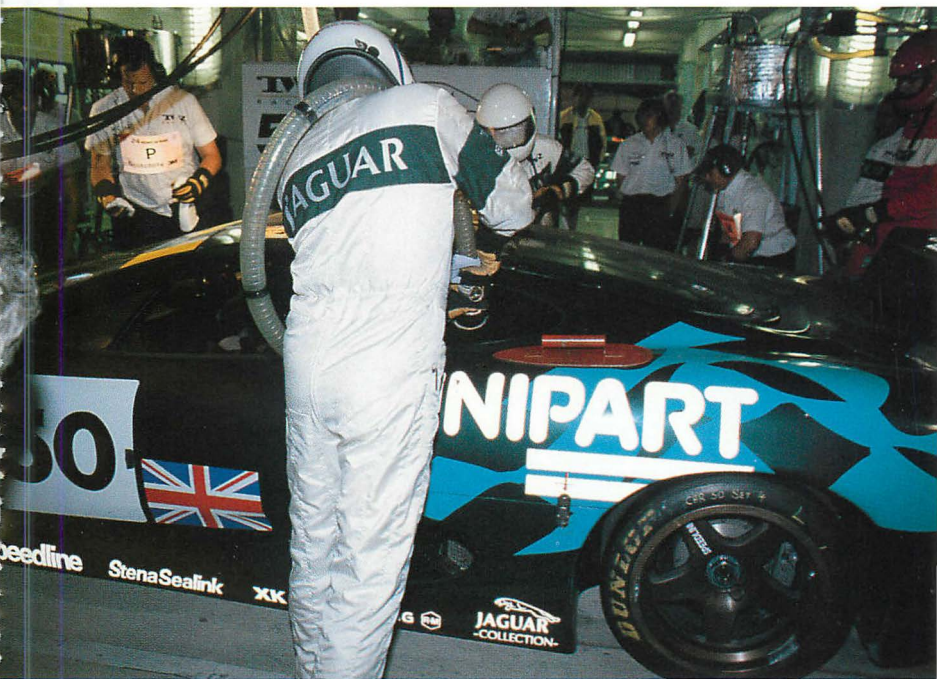
Aperture Priority allows us to control the depth of field. Here receding lines due to pointing a wide angle lens upwards are used for creative effect.

Photograph: Damian Dinning



The automated features of the Classic are very useful in action photography. Here the technique of panning was used with Honeycomb metering.

Photograph: Damian Dinning



AF and Honeycomb metering free the photographer to concentrate on composition.

Photograph: Damian Dinning



Sometimes the less obvious lens is the best. Here a 200mm was used at a wide aperture to throw out the foreground focus.

Photograph: John Clements





As good as Honeycomb metering is, predominately white subjects can benefit with a plus amount of exposure compensation. This picture has +1 compensation.

Photograph: John Clements



As good as Honeycomb metering is, predominately white subjects can benefit with a plus amount of exposure compensation. This picture has no compensation!

Photograph: John Clements



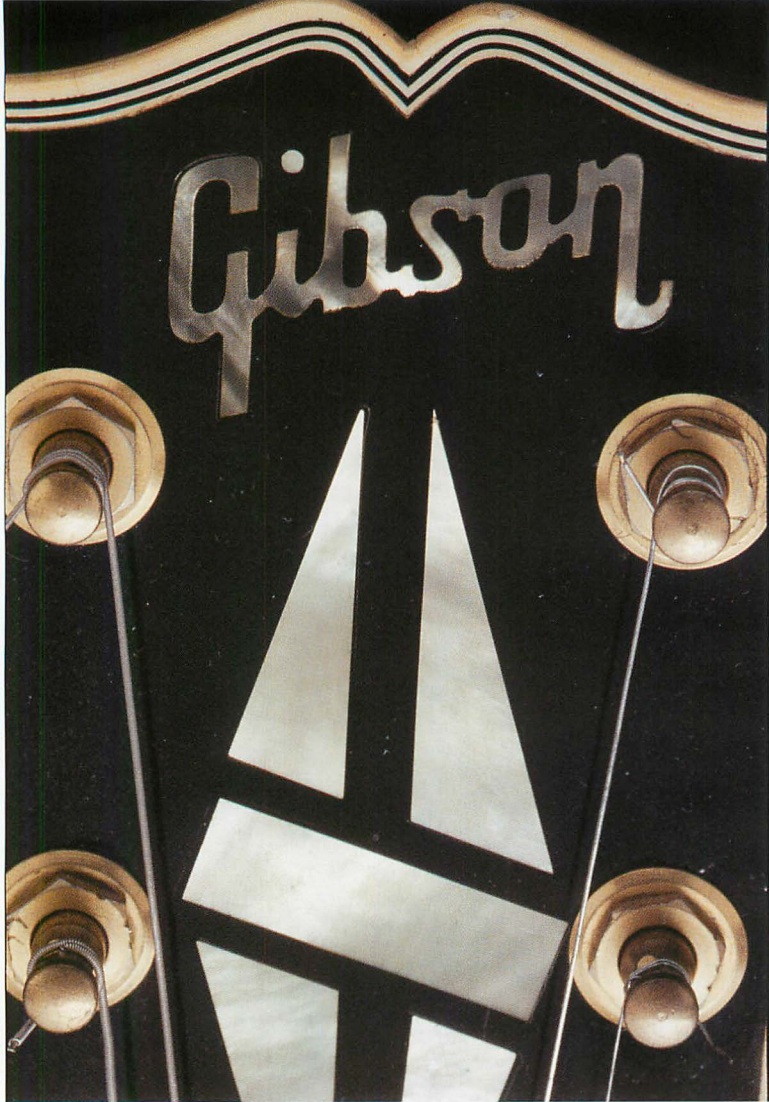
The Clever Program mode will determine the type of picture we are taking and select a shutter speed and apertures most suitable for it. Here the out of focus background helps isolate the woman in this portrait.

Photograph: Damian Dinning



A tripod and small aperture help give real sharpness throughout the image.

Photograph: John Clements



If you can get as close as is possible - this often leads to an interesting image.

Photograph: John Clements

make after the mirror has started to move up. We must add though that this is **extremely** unlikely and any change that may occur will, in most cases, be within the depth of field available at the time.

Below is a table showing the types of movement that the 600si can follow.

- 1) Subject approaching
- 2) Approaching and rapidly decelerating
- 3) Approaching from a standstill
- 4) Receding
- 5) Receding and rapidly decelerating
- 6) Receding from a standstill
- 7) Traversing the scene
- 8) U-turn away from the camera
- 9) U-turn towards the camera

Just to reiterate, most other AF systems, at the time of this book, can only function accurately for subjects 1 and 4.

Automatic Focus Mode Selection

Minolta's Dynax/Maxxum are the only AF SLR's that feature automatic focus mode selection in all modes of operation. When you press halfway down on the shutter release the camera selects which AF mode best suits the subject based on its speed at the film plane. The 600si has all three AF modes.

- 1) Single AF (also known as one-shot AF)
- 2) Continuous AF (also known as servo AF)
- 3) Multi-Dimensional Predictive Focus Control

This is done by continually taking subject distance readings for 3/10 of a second. If within that time the subject speed at the film plane does not exceed the standard value, focus will be locked. If it is greater than the standard value, continuous AF is selected.

V_z is the velocity along the z axis (towards/away from the camera)

T is the time measured for the two readings.

Therefore:

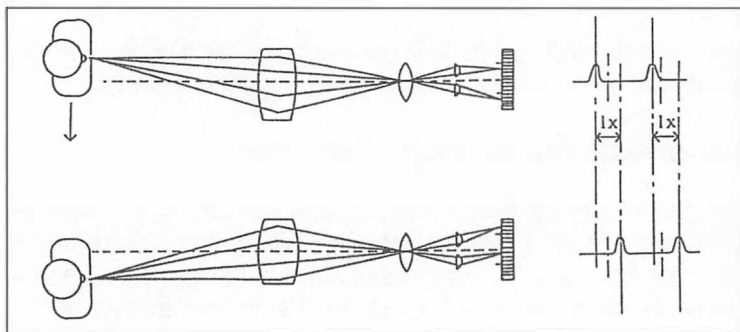
$$V_z = (D_2 - D_1) / T$$

For a subject moving parallel to the film plane the speed is calculated as follows:

This time the two reference points used for focusing move across the CCD. The deviation from their original position is x.

V_x is the velocity in the x axis, from left to right.

V_y is the velocity in the y axis, from top to bottom.



Therefore:

$$V_x = x/T$$

and

$$V_y = x/T$$

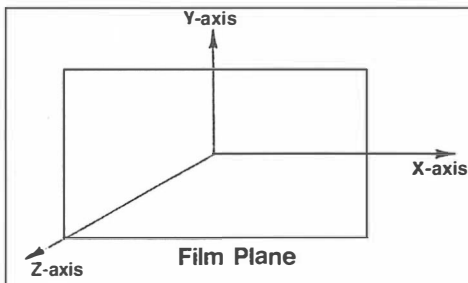
However, because the AF system can only measure the subject's movements when the mirror is down, it is unable to take into account any sudden changes that the subject may

between points 1 and 3, the 600si would have already decided what the subject's movements will be!

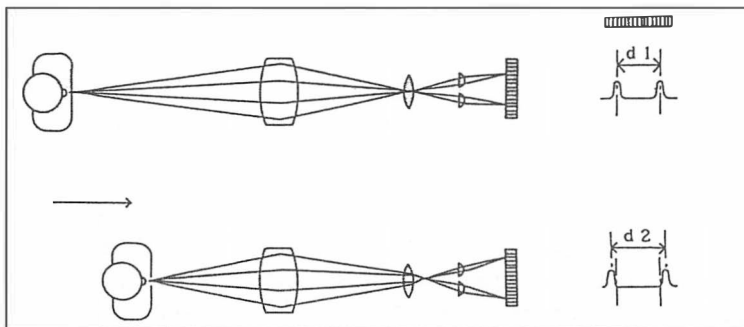
Now we know exactly what you are thinking, what if the subject's movement characteristics change? The answer to this is simple. It will immediately switch to the new algorithm that corresponds to the new movement, because it is continuously updating the algorithm by calculating the subject's movements in real time.

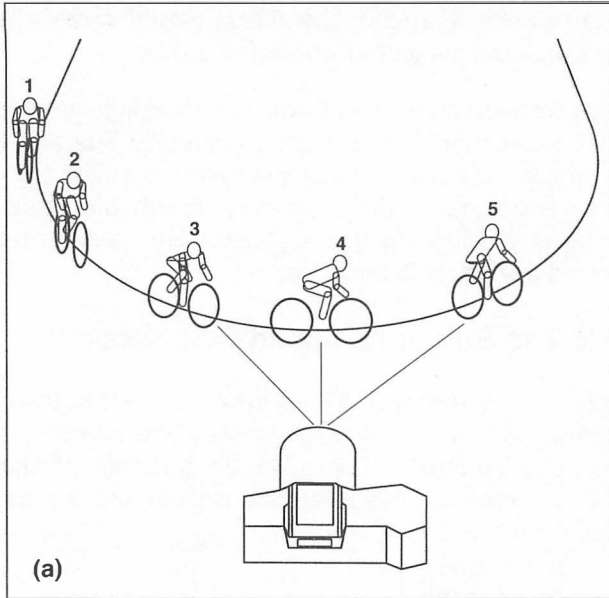
How Is The Subject's Speed Calculated?

Remember, when the AF system is calculating the adjustment for autofocus, it generates two images on the CCD (focus sensor). The distance between these two images is compared with reference signals and the camera knows how much and in which direction to move the lens. By taking two consecutive readings and comparing them, the 600si knows how fast the subject is moving.

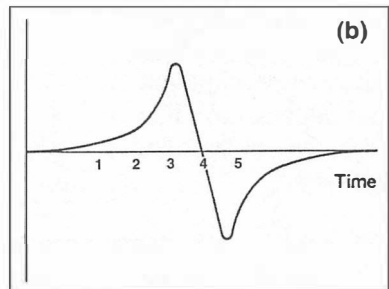


D1 is the initial distance between two points on the CCD.
D2 is the second reading's distance.





Figs. (a) and (b) illustrating Omni-Dimensional Predictive Focus Control



600si. The 600si has the ability to take almost 8 times the amount of information into account over previous systems within the time it took those systems to take just two readings.

Once the camera has detected a moving subject, it will start to form a 3 dimensional image of it. Once this has been done it will control the autofocus based on the algorithm that most closely matches that of the actual subject. If we refer to figs. (a) and (b) again, what becomes hard to believe is that

approximately 40cm of depth of field either side of the point of focus, we are sure you realise how accurate the autofocus system has to be.

Predictive focus systems normally only take into account subjects moving in the same direction and at a constant speed. If we were following a high speed moving subject that was changing both speed and direction, there will be a number of shots taken that will be out of focus. To combat this, the 600si features what is known as Multi-Dimensional Predictive Focus Control. This new system developed by Minolta allows the AF system to take into account complex subject movements.

This Is How It Works

If you were to track a subject performing a U-turn and then plot its path on a graph of image velocity at the film plane against time (see figs. (a) and (b) on the opposite page) you can see that there is a characteristic waveform. In the 600si system for every type of subject movement there is a unique waveform which is referred to as an algorithm.

This improvement has been made possible by the camera taking hundreds of readings every second. This gives the AF computer more information and allows it to take into account small changes in subject speed and types of movement and is more accurate than on earlier cameras.

Previous systems would be able to take just two consecutive readings and be able to calculate the subject speed towards or away from the camera only, but two readings are not enough to calculate whether the subject is accelerating or decelerating. The system must take three or four readings to be able to calculate this.

To calculate complex movements, even more readings must be taken. The drawback is, of course, this takes longer, so this is why a much faster computer software was used in the

This is designed to follow a moving subject for repeated frames. With normal non predictive AF, early AF SLR's calculated the subject position prior to the mirror moving up and the aperture closing to the selected setting. Unfortunately during the time that the mirror would move, the subject may also move but to an unexpected out of focus position. Predictive focus control was designed to overcome this problem by calculating not only the subject position, but also the subject's speed, either towards or away from the camera. Because the camera now knows the subject speed it is able to predict where the subject will be at the time the shutter opens and sets the focus accordingly.

To reduce the time delay even further, the system makes use of the time when the mirror is moving up. Most AF SLR's set the predicted focus setting before the mirror moves, but on the 7000i for instance, the lens continues to move right up until the shutter blades of the first curtain start to move. Now we have looked at the basics behind previous systems we can now look at the system used in the 600si.

Most AF systems with predictive control give a very high success rate on subjects up to their maximum possible tracking speed (120 mph for the 7000i). Because the 600si's system is capable of tracking subjects at much higher speeds, the focusing accuracy has to be much higher. Let us give you an example to show how critical focusing is on a high speed subject.

Subject	Formula 1 car
Speed	200 mph
Lens	300mm f/2.8
Subject Distance	25m
Shutter Speed	1/500

Believe it or not, just whilst the shutter is open the subject will have moved approximately 20cm. When you bear in mind that at f/2.8, for that subject distance, there is only

Fuzzy Logic Control For Subject Position

The 600si makes use of Fuzzy logic to determine which of the three AF sensors is covering the main subject. As mentioned previously, the first AF SLR's, and the majority of today's models, use only one AF sensor. The introduction of the Minolta Dynax/Maxxum 7000i in 1988, saw the first application of a multi sensor system. The benefits of this system have already been explained in the section "Ultra-wide AF area", and clearly shows the benefits over a single sensor system. However, there are complications. For instance, which sensor should be used for focusing? Conventional AF SLR's always try and focus on the nearest object within the AF area if there is sufficient contrast on the subject. However, your actual subject may not always be the closest object in the frame.

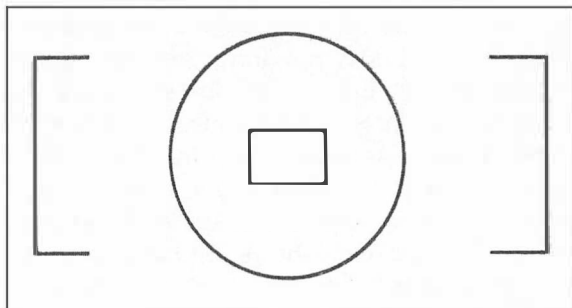
To overcome this, Minolta developed a new and unique system to help combat this problem and of course at the same time increase the success rate of correctly focused photographs. As previously explained in the section titled "Expert Intelligence", it is not always necessary to store every conceivable situation into the camera's memory so that it is able to recognise the actual current situation in question.

Although the 600si uses a far more advanced system for subject detection than many other AF SLR's, the use of Fuzzy logic makes assessing the increased information better and the camera is reliant on fewer rules for the selection of which sensor to use for focusing on the main subject. This makes the 600si's focusing faster, more accurate and reliable.

Multi-Dimensional Predictive Focus Control (Omni-Directional Predictive Focus Control, in some markets)

The Minolta 7000i was the first camera to feature Predictive focus control, now a standard feature on almost all AF SLR's.

Ultra-wide AF Area



The 600si uses one of the largest AF areas of any AF SLR available on the market today. The benefit of a large AF area is that it makes it very much easier to focus on the following subjects:

Off-centre subjects

Erratically moving subjects

Low contrast subjects

Fast moving subjects

In total, the 600si's AF area is made up of three AF sensors. Two are vertical (left and right sensors), whilst the remaining sensor is horizontal (centre sensor) running between them. The centre sensor is used for vertical contrast, whilst the left and right sensors are used for horizontal contrast. Each sensor is sensitive enough to focus on diagonals.

The total size of the AF area is 5.5 x 12 mm and is indicated on the focusing screen by two large brackets. As long as your main subject is positioned within this area the camera should be able to focus on it.

We have more options available at the other end of the scale. We could either try focusing on a subject at a similar distance and then locking focus, but there is a better solution. By using a polarising or neutral density filter we can effectively increase the range to EV 21, equivalent to 1/4000 at f/22 with the filter fitted. This will reduce the illumination falling on the CCD and allow the camera to still autofocus.

Incidentally, the AF system, according to independent tests, focuses twice as fast at EV 10 and above than it does at EV 3 and below. You can draw your own conclusions from this.

The first autofocus SLR's all used motors in the lens designs. Minolta launched the first body integral system with the launch of the 7000. Since Canon launched their EOS range which use motors in the lens there has always been the argument as to which system is the best. There are of course advantages and disadvantages for both systems. One of the claimed disadvantages of Minolta's system is that large telephoto lenses are slow in focusing due to the lens being housed in the camera body. However, this is not the case due to rear element focusing, internal focusing, double floating element lens designs, newly developed low viscosity lubricants, low friction gearing and specially selected gearing ratios. Clear? We thought so!

During the time Minolta spent developing the original 7000 system they paid particular attention to the lenses. Rather than utilising conventional lens designs, Minolta radically changed the design of all the lenses to ensure fast focusing. This was mainly achieved by reducing the mass of the focusing optics and the resistance to movement of the optics to focus the image.

Inevitably a wide-angle lens will be faster in focusing than a large telephoto lens, but even the 300 f/2.8 and 600 f/4 APO lenses are incredibly fast. In fact Damian uses these lenses with no problems at all photographing 200 mph F1 cars in action.

system is able to detect small changes in subject distance and speed within a short space of time.

EV (exposure value) Minus 1 Low Light AF Performance

Due to the use of high density CCD's, the 600si's AF sensitivity range is minus 1 EV to plus 19 EV (100 ISO). In exposure terms that is equivalent to 30" at f/4 (-1 EV), to 1/4000 at f/16 (+ 19 EV). This is for a 100 ISO film.

What Does This Mean?

The sensitivity range is quoted so that we are able to recognise the limits of the AF system in bright and dark conditions. EV 0 is roughly equivalent to the illumination given by a single candle. EV minus 1 is currently the lowest lighting level that any AF SLR will focus down to. If the lighting is darker than this the AF system will not function at all. The same will hold true if the conditions are too bright.

Why?

Remember the way the CCD works. It essentially measures the brightness in each of the pixels. Imagine a vertical bar with 21 positions labelled -1 to 19 for each pixel. At -1 the brightness is sufficient for it to start registering on the scale. At 19 the brightness is too great and goes off the scale. Therefore if the brightness in each pixel is less than -1 or greater than 19 then the waveform generated will be a straight line.

So, What Can We Do?

If the conditions are too dark but you find that there are slightly brighter areas present in the scene, locking focus on a similar distant object that has more illumination may allow you to stay in autofocus.

not know which reference point to use for its calculations. Put another way it hasn't a clue as to which subject you want to focus on. The AF system used by the 600si is unique amongst all other AF systems in the way in which it decides what to focus on and what not to focus on. We shall cover this aspect later in this section. Occasionally however it may have difficulty in situations like when there are two or more subjects within the AF area.

All of the first generation AF SLR's and the majority of those made today only use one AF sensor. With the exception of one or two Canon and Nikon AF SLR's, this sensor only works on vertical contrast. So, in our original situation where we had a half black, half white wall, if we were to turn the camera through 90 degrees the waveform would be one straight horizontal line, because the brightness in each area of the CCD is the same. Basically, the contrast is in the wrong plane.

Now you have an understanding of how autofocus in general works you will be able to start to adjust the way you use the camera to get the most out of the AF system.

High Sensitivity AF Sensors

The 600si makes use of high density AF sensors. A high density sensor is broken into even smaller elements or pixels than previous systems. This makes focusing even more accurate, especially in low light and low contrast situations. In addition, due to alterations in the algorithms used for low light and low contrast situations, focusing speed and accuracy has been even further improved over previous models.

The centre sensor comprises 276 pixels, the left and right 167 each, which gives a total of 610 pixels.

It is the use of these new sensors that make the multi-dimensional predictive focus system possible, because the

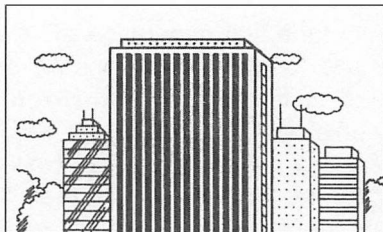
When alternating identical light and dark lines completely fill the AF area, on very bright subjects and when two or more subjects overlap in the AF area.

Before we go any further, we must stress that the first and especially the second of these three situations are extremely rare occurrences, but for the completeness of this book let us look at why they can still be a problem.

Light And Dark Lines

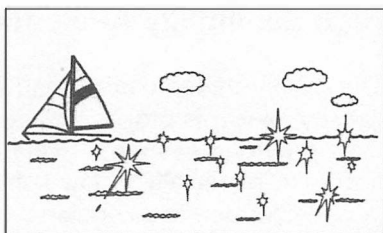
We paint a wall with identical thickness black and white vertical lines. Plenty of contrast, yes, but here is where the problem

lies. When the two duplicate images are projected onto the CCD, there are no apparent reference points. The waveform will feature many identical steps, but the AF computer does not know which peaks on the left hand side image to match up with the peaks for the right hand side image. It's a similar situation to the zero contrast example, no reference points, no autofocus.



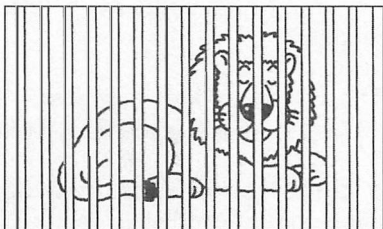
Very Bright Subjects

Refer to sub-section titled **EV minus 1 low light AF performance.**



More Than One Subject In The AF Area

The third situation is a classic problem for AF cameras. Essentially the CCD is giving conflicting signals. The camera does



Potential Problems With Autofocus

We have explained how the system works but let us now look at some situations that can fool autofocus systems and why this occurs.

Low Contrast

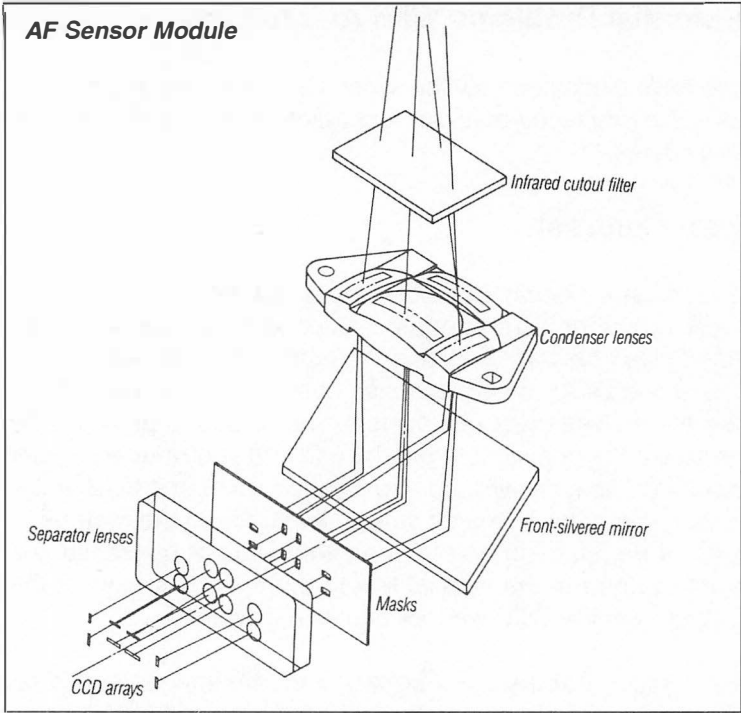
The most common situation where autofocus is unable to work is low or zero contrast. Supposing we paint the left hand side of a wall black and the right hand side white. With the camera's AF area positioned centrally on the area where the two halves meet, a waveform with a strong peak will be generated by the signal from the CCD. If you draw a straight horizontal line, this will represent the signal for the black area. If you now draw a straight vertical line up from the right hand side of the first line and then another straight horizontal line from the end of the vertical line to the right, this is what the output from the CCD will look like as a waveform.

Remember that there will be two duplicate images of this on the CCD. One image on the left hand side and the other on the right hand side. This will give the AF computer two reference points from which to work. The distance between them on the CCD is compared with a reference distance in the AF computer's memory etc.

If we were to point the AF area at a subject that had even brightness across it, let's say a plain white wall (zero contrast subject), the waveform will be a single straight horizontal line. Because there is no contrast, there are no reference points and so it makes no difference what the camera does to the lens setting, the waveform will always look the same, so the camera will not know whether the subject is in focus or out of focus.

Other situations in which the AF system may not be able to focus correctly are:

AF Sensor Module



signal in the AF CPU. If the distance is greater than that of the reference signal, then the lens is focused behind the subject. If the distance is smaller than the reference signal, then the lens is focused in front of the subject. This is how the AF CPU knows in which direction the lens must be moved.

The lens position and focal length are then supplied to the AF CPU from the ROM IC in the lens. By using this data the AF CPU is able to calculate how far the lens must be moved. The camera's micro-motor is then activated. Once the motor has shifted the lens by the required amount it is then instantly stopped and the subject is now in focus. Easy!?

The system used in the 600si is basically the same as that used in the Minolta 7000 and, as far as basic principles are concerned, it is the same principle used in all other AF SLR's.

However, although the principles are the same, no two manufacturers' systems are identical due to differences in data processing, lens drive motors and CCD's (Charged Coupled Devices) used.

The autofocus system's main components are the AF module, autofocus drive motor, AF CPU (Autofocus Central Processing Unit), and a ROM IC (Read Only Memory Integrated Circuit).

Light that passes through the lens enters the camera body. Most of it is reflected up to the pentaprism in the viewfinder where we see the image. We say most, as the main mirror is semi-silvered with lots of minute pin holes in it, to allow a high percentage to pass through, rather than be reflected upwards. This transmitted light then hits a small sub mirror, directly behind the main mirror, so the light is directed into the AF module. This is arguably the most important element of the system.

Once the image enters the AF module it passes through an infra-red cut off filter, then through a condenser lens and finally through splitter lenses which, surprise, surprise, split the image in two. There are now two duplicate images which are projected onto a pair of Charged Coupled Devices (CCD) which are in a line. This device is used to convert an optical signal into an electrical signal that can be decoded by the AF CPU.

The CCD is split up into a number of areas which are known as elements or Pixels. The brightness is measured in each area, producing a signal or wave form.

The distance between the two images varies depending upon the focus condition. This distance is compared to a reference

CHAPTER NINE

A Capable Autofocus System

Whilst the Minolta 7000, launched January 23rd, 1985, was the first body integral autofocus SLR it was not "the" first AF SLR as many people believe. What it was, was the first effective AF SLR and the camera which made a significant effect on the direction camera development would hence take. Whilst it was ground breaking in almost every department, it was the camera's focusing ability, at a time when the only other AF SLR's were laboriously slow, inaccurate and unable to focus in low lighting levels, which was to make the 7000 go down in history.

The main areas which we shall be covering in this section are as follows:

Autofocus - how it works, including its limitations

Multi-Dimensional Predictive Autofocus

AF Illuminators

Autofocus - How Does It Work?

It seems to be taken for granted these days that everyone understands how autofocus functions, or is it maybe just that most end users feel it unnecessary to understand such technical information. We are of the belief that understanding how the system is designed to work gives you an ability to operate the camera in a manner which allows it to perform at its maximum potential. In addition it is less frustrating when you understand why the camera will not focus on your subject in certain situations. With this knowledge you can either override the system appropriate to the individual situation, or we will have spotted the situation in advance and taken the opportunity to control the camera appropriately. Anyway. Enough justification, let's crack on.

Flash Tips

Do not forget, if photographing people or animals in low light, use any extra room lighting to help reduce the chances of red-eye. The 600si has an amazing range of shutter speeds from which to use flash, so do experiment.

As for lighting quality, bounce flash is nearly always more flattering to direct flash. Any shadows that appear (do not forget the pre-flash test feature to see them) can be easily filled in by reflectors - walls, cards or specially made photographic accessories, such as the Sto-Fen 'Omni-bounce'. Make sure that the reflector is white, or, if buying a specially made item, optionally gold or silver. Silver will add a slight contrast to the reflected light compared to a white surface and add to the apparent sharpness, while gold can warm Caucasian skin tones pleasingly and it's ideal for black skin.

It is beneficial if the situation is practical to let the flash charge for a couple of seconds longer after the ready light comes on, just to make sure the gun is ready to give a hundred percent output: technically, manufacturers can bring it on at around 80%.

Apart from triggering the off camera gun, the 600si will send a stop signal to quench the output of it as soon as the camera's sensor detects enough light has reached the film.

If set up as we have described, both units share the work of exposure. One of the main reasons, apart from directional adjustments, to use the remote system, is to have different units fire at differing levels of power. We have a limited facility to achieve this.

Remote/Ratio Lighting

If you would like to, a change can be made so the off camera flash becomes more powerful than the on camera one, making better use of its increased power.

We will obtain a split in the output from each gun, with the on camera one firing a third of the required amount, while the off camera unit will contribute the remaining two thirds. This is called a 1/2 ratio as the main gun is always the one connected to, or already part of, the camera and its ratio to the other units is quoted first.

Q) Is it not normal for the main gun to be the most powerful?

A) Yes, because the built-in flash (unless the ratio function is used) is designed to only provide the "control" signals for the off camera units.

However, all is not lost with such a split of the work load. One of the simplest lighting arrangements to use is one where a model is illuminated from the front, but has a much stronger light from behind, shining through their hair. This is back lighting which can be dramatic, but can also look tacky if not done properly, with too much power on the second unit.

If we position the off camera flash behind the subject, it will still be triggered if the light from the camera's flash reflects off of walls or other reflective areas to reach it.

Most people will probably start with just one other flash gun so we'll use the 600si's in-built flash as the trigger and front lighting source.

As soon as the flash is raised, the camera sets a sync speed of a 1/60th of a second. Yes, that is one of the drawbacks in theory, but in practice we do not think it will impinge too much on our creative abilities.

With the second flash charged, we are informed that both are ready to use. In the viewfinder of the 600si two thunderbolt symbols next to the flash indicator will pulsate on and off, while on the external unit, a red light on its front will pulsate so we can see it is ready to fire.

We can test fire the off camera flash by triggering a test flash from the camera's unit, which in turn will fire the off camera gun. To do this press the AEL button on the camera body, making sure the flash unit has been raised and is charged. A fraction of a second after it fires, so will the off camera flash. This confirms that the off camera unit is within the "control" range.

Ideally the off camera flash should not be obstructed from the view of the camera's in-built unit, otherwise it may not be triggered by a pulse of light omitted from the smaller unit before the exposure starts. In the instructions for the flash unit you are using is an indication of the distance the subject has to be from the camera and the distance from the subject of the second unit.

Q) I wish to have more off camera flash units, can this be achieved?

A) Yes. There is no limit to the number of units that can be used, apart from the thickness of your wallet of course.

A small but nice touch is that the 5400HS is supplied with a stand to position it off camera. It is this attention to detail that we like.

Using the faster shutter speeds with HSS flash is possible while maintaining a suitable depth of field.

The Drawbacks With HSS Flash

As the flash has to cycle and fire quickly and keep enough power in its capacitor to make sure it will pulse often enough, the power is severely limited compared to normal sync flash. In normal mode the 5400HS has a guide number when a 50mm lens is used at F 1.4 of 42m or 138ft. In HSS mode this becomes a guide number of 16m or 53ft. In practice, the range that HSS mode operates over is small compared to the standard TTL mode.

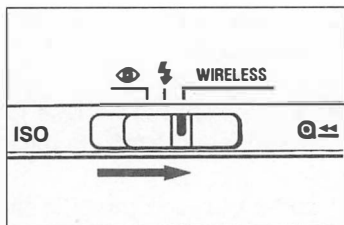
But That Is Not All.....

Another "first" for Minolta is the TTL controlled remote flash facility - without any connecting leads. We are not going to sell you a marketing line by pretending this is the best thing since "sliced bread". It has a couple of drawbacks, but once again the benefits still make it an excellent thing to have.

Wireless Controlled Remote Flash

This feature can be obtained with the 5400HS, 5400xi and 3500xi. We have occasionally set up a multiple TTL flash lighting arrangement, only to trip over or disconnect one of the leads that was connected to the flash units.

At last, a system that offers wireless control to do away with all leads and maintains TTL control as well. On the rear of the 600si we need to set the flash control selector to the wireless position on the right.



Are you ready for this?

Step 1. Attach camera and flash unit.

Step 2. Turn both on.

Step 3. Focus and take the shot.

Even we can manage all of that when the world is spinning and we want to lie down. Whenever HSS mode is in operation, a small "H" appears to the right of the flash unit outline.

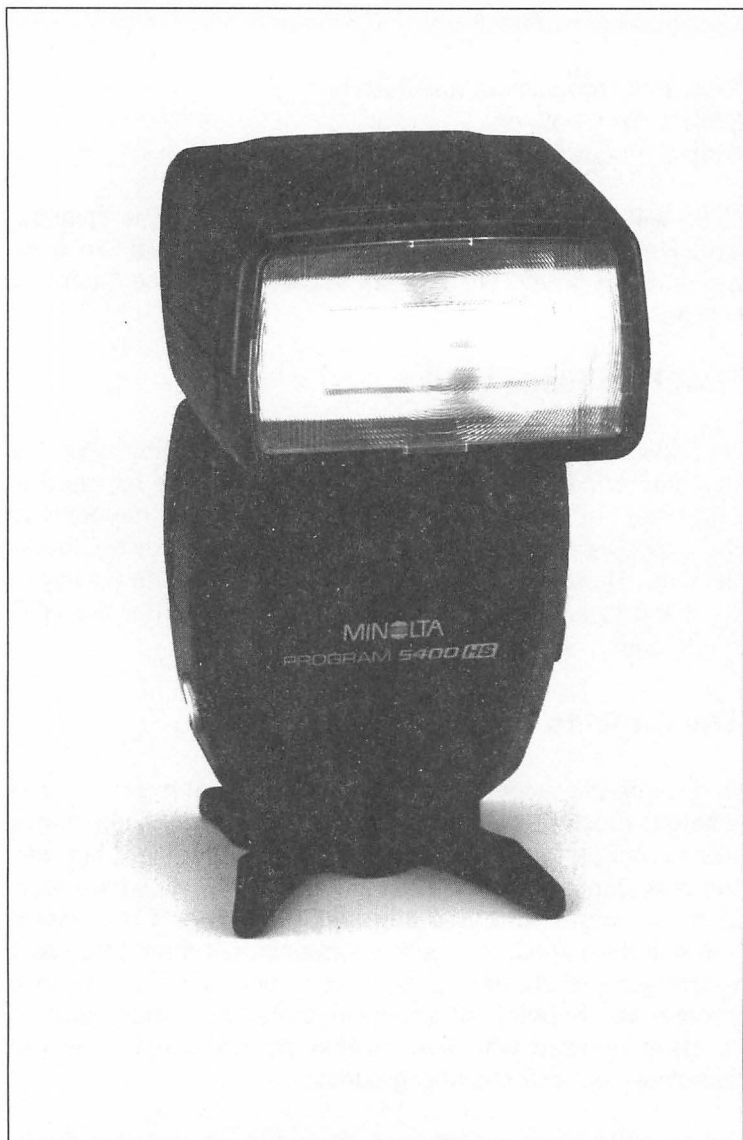
How HSS Flash Works

As previously stated, a flash unit normally fires only when the two shutter curtains allow the whole frame to be exposed at one time, but at faster shutter speeds this never happens as the exposure is made by a gap between them moving across the film. Therefore a way was needed to match the pulsing of the flash to each position of the slit. This is what the HSS mode does.

The Benefits Of HSS Flash

In daylight the amount of flash is so small that it can give the smallest touch of flash to lighten darker areas. Action is truly frozen, not just because of the short flash duration, but also the fast shutter speeds. Beautiful fill flash shots where flash is not recognisable are the result. As the TTL system controls the exposure and the sequence is brought into play whenever the shutter speed moves above a 1/200th of a second we get point and shoot simplicity. As a wide aperture is often needed with such a fast shutter speed, we get beautifully out of focus backgrounds.

An example and a suggestion. If you are interested in close-up photography of, say, wild flowers, you probably get fed up: once a suitable specimen has been found and the light is right, you have to wait for an annoying breeze to die down.



The Minolta 540HS

Imagine doing this by trial and error, with equipment totally manual in operation - that is the way photographers have traditionally had to do it. Try it some time - it can be a frustrating experience but rewarding once mastered. Even then the ease of use of the modern cameras like the 600si is still an attractive proposition, particularly for daylight portraits, small groups, children and to fill deep shadows in all subjects, and for moments where spontaneity is a prime requisite.

5400HS

This is Minolta's top flash unit and is a perfect match to the 600si. It performs the same features as already mentioned, but with a great increase in power available. Bounce and swivel adjustment of the flash head are features to help with lighting direction.

There is a nice touch offered beyond the camera's built-in unit and that is High Speed Synchronisation hence the term - HSS. Minolta are the only company which, at the time of writing, offer this feature along with TTL control. So what exactly is HSS flash and how do we get the best from it?

One advantage that medium, and some large format, users used to enjoy over those preferring 35mm was the ability to synchronise with flash at speeds up to a 1/500th of a second. This was overcome in the late 1980's when the first 35mm cameras offering this feature appeared. The 600si can, in combination with the 5400HS, synchronise not just up to 1/500th of a second, but to the camera's top shutter speed of 1/4000th of a second. This means we can use this speed all the way down to 30 seconds and have the camera control the exposure with the TTL system.

Some other manufacturers also feature HSS and are not necessarily less effective, but require slower, manual control. With the 600si and the 5400HS it really could not be simpler.

each shot. To cancel the flash we only have to push it back to its rest position.

The use then in low light is fairly clear but possibly the area where we can use this, or an additional flash, more often to our benefit is actually in good lighting for a term referred to as fill flash.

Flash With Daylight

Why would we want to use flash in daylight? After all, newspaper photographers use it all the time and that alone tells us it's for a very good reason. Take for instance a bright sunlit scene. As we look at different parts of the composition, the brighter highlights, the mid tones and the shadowed areas, the pupils in our eyes adjust in size as we look at different strengths of brightness so we see detail in all of them without the scene being too bright or dark for comfort. In reality film cannot match this adaptability as it can only record a more limited range.

To extend the range of brightness or, as we call it, contrasts in a scene, we need to find a way to extend the range of recorded detail to allow us to record the range of illumination closer to that perceived by the human eye.

We cannot increase the highlight or brightness areas - the sun cannot be matched in strength, but we can illuminate the areas that are initially in shadow, so we can see detail in them in the final image.

Fill flash is brilliantly simple with the 600si. The camera's computer chips using the Honeycomb metering system sets the correct daylight exposure, while the output from the flash unit is controlled so that it is the same, but usually just below this level of strength. Flash illumination will then lighten the darker areas and thereby bring many of them into the film's recording range. All this with point and shoot ease.

close to a smaller size from a wider setting. In low light the wider size is needed to allow as much detail to be seen as possible.

The final flash fires in synchronisation with the shutter. It travels into the eyes, through a now smaller opening which limits the chances of light striking the retina at the back of the eye and recording on the film as red-eyes.

We now make one or two suggestions and observations. First we cannot be sure that the effect will be completely eradicated - hence the term "reduction". Turning any room lighting on will also help as it will in itself increase the lighting level and the pupil will get smaller anyway. Not every person or animal suffers from the problem which is dependent on the speed at which the eye closes the pupil, but we do not know until it is too late if our subject will or will not. The use of a burst of pre-flash, as it is called, is not that common any more - a beam of light before the main flash fires is just as effective and does not run the remote chance of inducing an epileptic fit in those who suffer from epilepsy. That is why we rarely use such a feature.

Characteristics Of The Built-In Flash

This flash has a guide number of 12. A guide number enables different flash units to be compared for the strength of output they offer. The spread of light emitted from it covers enough in its width for a 28mm wide-angle lens or those longer. That is slightly misleading as the instructions do not mention that we can use, say, a 24mm lens, providing the aperture chosen is not at the wider settings as we may find that the flash illumination does not spread across the whole area which would be the case when the wider aperture sizes are used.

The recharge time is admirably short at around 2-3 seconds depending on how much power needs to be built up after

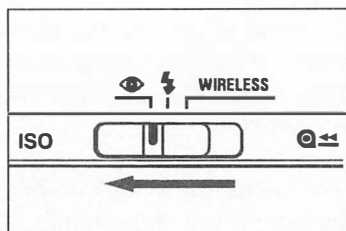
the person due to the flash, with the following continued exposure detailing the buildings behind. If our subject moves, this will add an interesting effect as there will still be a frozen image of them recorded by the burst of flash, but also a blurred image of them recorded afterwards.

If it is photographs of people that you want without this “ghosting” effect, warn them to stand still until you say otherwise after the flash has fired. We can also move the camera to induce a feeling of movement after the flash has fired, but remember the brief burst of the flash will freeze a subject it covers at that moment. It is highly advisable to use a tripod or other support to normally get the best from slow sync. When travelling light without one, brace yourself against a wall or a tree (not in a thunderstorm) and keep the elbows against the body to ensure as sharp as possible a result. Do not forget the other option of the greatly underestimated monopod as part of your travel gear.

We have preferred for many years to have a small flash built into a camera body. Sure it looks less macho than a pro camera without one, but we do not have to use it if we do not want to. To travel without a flash unit is to ignore the real benefits that exist when using one. In fact, we think that in the next generation of pro cameras we will see built in flash more often, but then again my cynical nature makes me feel that the omission of a built in unit does swell the coffers of each manufacturer through the sale of external flash units, or am I just paranoid or just aware of a real product need?

Red-Eye Reduction

This feature is set by the control on the camera's rear. Each time it fires, a burst of flashes are emitted prior to the start of the exposure. The idea behind it is to make the opening in our subject's pupil



Aperture Priority

If a flash is activated it will always fire when the camera does. We still select the control we wish as for daylight photography, with the camera adjusting the other. If there is a chance of the flash over-exposing, the shutter speed value pulsates on the LCD panels. We should select a smaller aperture until this stops before taking the shot.

Shutter Priority

The flash will again always fire when activated. The aperture indication will pulsate on both display panels if over exposure might be a problem, so we should change the shutter speed until it goes steady once more.

Manual Exposure

The same principles apply as for the semi-automatic exposure modes, but the over-exposure warning follows that as for daylight with a pulsating triangle at one end of the metering index display.

Slow Sync Flash

The use of slower than normal synchronisation speeds is referred to as "slow sync" flash. The advantage of slow sync is that it enables us to record detail in areas beyond the flash unit's range, particularly useful if we are using the built in flash or another low power version.

After the flash has fired the exposure continues to record more detail in the shadow areas of the scene - providing there is some natural light on it. The longer the shutter speed the greater will be the rendition in these areas, so in effect, we can use exposures of many seconds for slow sync work.

As an example, a person in a foreground position with a background of a street lit scene will have a frozen image of

- Q)** Is any particular exposure mode better than the others?
- A)** No, but there are some differences to be aware of regarding the way flash works in each mode.

Program Mode Flash

When the built-in or add on TTL flash is operative, the camera's metering system makes a judgment about the scene in front of it. If the main subject is determined, along with information from the AF system, as poorly illuminated, such as when it has a much brighter light behind it called back lighting, the flash will charge ready for use when we fire the camera.

If however the detection determines that the subject/scene is not adverse to a purely daylight exposure that is what it gives. It is therefore important to note the LCD to know what the camera will do.

A simple test will show that the system is making the right decisions. Point the camera with the flash and Programmed mode active at a bright light such as that coming into a room through a window. You will find that no flash symbol appears. Now point the camera at a dark area inside a room or equivalent if outside. The flash symbol appears and the charging cycle starts. Pointing the camera once more to a brighter lighting level will remove the flash symbol from the display and stop the charge.

All is not lost however, as the flash control button on the camera's front will enable the flash to be fired every time if it is held down to provide a fill flash. This is easy to reach with the thumb of the left hand, regardless of the 600si being held in the horizontal or vertical format. The flash symbols will appear while we hold the button down.

In reality, unlike common belief, no film absorbs all of the light striking it. Some is reflected off of its surface and can therefore be measured by the sensor. As soon as enough light (as determined by the computer software to which it passes its information) is received, the output from the flash is quenched. This happens in milliseconds or, as we call it in technical terms, real time. The written description of it is by comparison, decidedly pedestrian.

The sensor covers the central area of the film and can be considered to be centre-weighted. The built-in flash, or an externally fitting one with TTL communication with the camera will also use the TTL method.

Basic Operation For Everyday Use

This is simplicity itself. No matter the exposure mode, lifting the built-in unit by the lugs at the side of the pentaprism will activate a charging of the unit. Inside the viewfinder a symbol of a flash will show in the left corner of the display. When it is charged and ready to use, a flash ready symbol (a thunderbolt) will show to its right. If red-eye reduction is set, then two thunderbolts appear, one smaller than the other, while wireless TTL control has two alternate pulsating thunderbolts active. Regardless of control method, fire the camera - that is all we have to do.

Q) How do I know that the exposure was correct?

A) After an exposure, the flash thunderbolt will pulsate momentarily as confirmation of correct exposure.

Q) How do I know that the flash exposure was insufficient?

A) The thunderbolt symbols will disappear without blinking. But do not forget that the film's exposure latitude may still allow for a result that pleases.

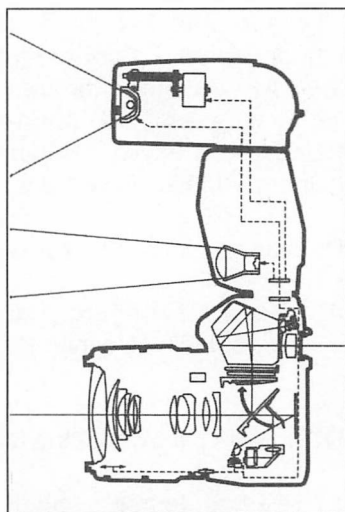
go back to HSS - High Speed Sync mode - let's digress to bring those new to the world of SLR photography up to date about the method of TTL flash control and what it means.

TTL - Through The Lens

TTL stands for "through the lens" and was first used for measuring daylight or other constant light sources. The name is derived from the fact that the light is measured by a metering cell in the camera after it has travelled through the lens - TTL.

The advantage compared to a measurement taken on the outside of a camera or with a separate hand held light meter, is that any light absorbing accessories in the path of the light are taken into account, so the measured amount of light is more accurate than any alternative system. Therefore a filter, extension tube, or camera bellows will not adversely affect an exposure.

The 600si, as we have mentioned in the metering chapter, also uses the TTL method for ambient light measurement as well. The two meters are separate units. The daylight metering cell is placed inside the prism, but the information from this is correlated together when required by the camera's computer software. The TTL sensor for flash is positioned to face the film's surface under the mirror section of the camera. It measures light simultaneously to an exposure taking place.



The TTL Flash System

A flash unit with a bounce head facility is a must for creative flash and most useful in use. If taking photographs of people with direct flash, a less than flattering result will be obtained. The only advantage with direct flash however is in recording colours strongly, something we call colour saturation. When bouncing or reflecting the light off a stable white surface, a ceiling for example, will not only give a softer light, but keep the colours natural. The ideal 'soft light' is provided by a simple, inexpensive accessory called the Sto-Fen 'Omni-bounce'.

If time is at hand during a portrait shoot, a white card below a person's face will throw a nice touch of light back into the area under the chin when flash illumination is bounced off of a pure white ceiling. This ensures no disturbing shadows.

Synchronisation

The normal sync speed is considered as a 1/200th of a second as this is the fastest speed that allows a flash to fire when the whole of the film's surface is uncovered completely at one time. Certainly shutter speeds down to around a 1/60th of a second would be considered quite standard and allow us to hand hold the shot. The slower the sync speed used, the greater will be the effect of continuous light on a background beyond the range of the flash. Conversely, the faster the speed used, the darker a background will become when it is out of the flash unit's range. One of the simplest things we can do is think about this before taking a shot. Combined with a shallow depth of field, a fast shutter speed will help "lose" a distracting background.

An ace in the 600si armoury is the ability to use speeds faster than a 1/200th of a second. With a 5400HS flash we can synchronise up to an amazing 1/4000 of a second. This is not unique to Minolta, but having tried the other systems, we can reassure you it is the most practical system to use. This is due to the ability to use the TTL control method. Before we

glass and metal surfaces. Do look out if you have the time for reflective surfaces as these will not necessarily appear prominent to our eye with just one short flash burst. A nice touch on the top of the range flash unit made for the 600si, the 5400HS, is a series of rapid pre-exposure flashes to help solve this problem.

Lighting Direction

An improvement can be made just by taking the flash off of the camera and lighting from a slightly more acute angle. To maintain full dedication - a term describing how a camera and flash work as if they were connected through the hotshoe in an automatic way - requires an OC1100 lead and OS1100 off camera shoe for flash guns other than the 5400HS/xi/5200i (or do they? More of that later). We can use an older style P.C. lead if we are using the VC-600 grip with a suitable flash gun, as the grip has the necessary receptor P.C. socket for it to fit into. However, with this approach we lose much of the dedication. If studio flash photography is within your interests this is the way to fire an appropriate flash set-up from the camera.

Beware, a flash too much to one side of the subject might produce a lighting arrangement with a deep shadow on the opposite side. Experiment, you may find you like the contrast caused by having one side of the subject brightly lit. This can be used to great effect, particularly in male portraits when the flash is fired from the extreme side of a subject, and at the same time level with the subject. This records the side nearest to the flash as brightly lit, with the opposite side in deep shadow.

If bringing out small surface detail of a subject is most important, this type of side lighting is the most effective as the relief and texture will be brought out to the full. If a second flash is not available to have light from the opposite side, if you require it, a white card or reflector will throw much of the light where it is wanted if placed on the opposite side of the subject.

case that daylight can still be used alone, particularly when a faster than normal film is used. This may mean we need anything from 800 ISO upwards, but the resulting image may have a naturalness to it that flash would destroy.

If photographing, say, a church interior, flash can still be used, but most people will prefer to maintain the character of the natural lighting by using a tripod mounted camera or fast film. Do not forget - we are not just after a correct exposure that flash would provide, but one that is most pleasing to the eye of the viewer, with full atmosphere and possibly mystery.

Many dark scenes are appealing because they have deep mysterious shadows and will often look nice on a grainy film. To use a flash with the type of unit within the scope of this book in the same situation as a church interior, requires the technique of "painting with light", and this is not that easy! This would involve setting the camera to its "Bulb" setting and firing the flash in the different areas we wish to illuminate at different times within the exposure. To make this practical, the photographer or, if you are lucky, your assistant, should be dressed in black so that any movement is not recorded on film during the exposure. Also, don't forget to get permission to do all this.

Whenever flash is used remember that it will bring the illumination on film to a character similar to bright daylight in all areas the flash coverage reaches. A background beyond this range may remain dark depending on the amount of daylight or other continuous light sources such as from a household lamp reaching it. There is a way to record more detail in a dark background and that is by using a feature called Slow Sync Flash - more on that in a while.

The other point to remember about flash illumination is that direct or slightly off centre flash will often be noticeably reflected strongly from shiny surfaces. Such reflections are called specular highlights and can be seen just as much on slightly hot skin (particularly the forehead in a portrait) as on

CHAPTER EIGHT

Creating Images With Flash Illumination

We count ourselves fortunate that after many years of practice we feel very comfortable with the use of flash illumination, and fully appreciate its contribution to good photography.

Let's start with the good news: modern technology has short-cut the time needed in order to start producing fine images using flash as the main, or as a complementary, light source. It has become so automated that even the beginner need not be daunted as, a few minutes after loading batteries and film, they can use flash in a point and shoot way.

The 600si is, as we will discuss, a very capable machine in many ways, better in the features for flash photography which it offers than many more expensive cameras. If you are not making blatant mistakes in operation you will find it a pleasure rather than a pain to use.

Flash illumination is a form of lighting that is still underrated by many, possibly through a concern about not being in control of events and hence results. Already in this book we have mentioned on numerous occasions some of the features of the 600si that can be used for flash photography.

But before the "how" we need to look at the "why" and think about when and where to use flash illumination, as sometimes the need for it, and hence the benefits, are not immediately obvious.

Low Light

Its use in low light levels is most apparent, but each time before reaching for the flash unit, it is worth sparing a moment for contemplating what might be the result as its use can sometimes be counter-productive. It may well be the

at the bottom of the viewfinder). Now position the spot metering area shown on the focusing screen on each area that is of interest in terms of exposure. If the pointer is around the 0 position it indicates that that area is close to the exposure calculated by the camera, therefore confirming that this area will be correctly exposed. A word of warning though, and that is white or black areas could well be +/-2.5 stops different from the original locked exposure value.

Here's a typical example of how best to use this feature. Suppose we are photographing someone in front of a brightly lit window. Compose the shot and then press the AEL button. Now position the spot metering area on the subject's face. Ideally the pointer position should be around 0. If the pointer shows a large minus reading this indicates to us that the metering system has not detected the subject in the foreground and therefore will be underexposed. To correct this we need to use exposure compensation or to switch to spot metering and meter off the subject's face.

Without this feature we would not have a clear idea of what the metering system is reading in the scene and would therefore have to trust that the metering system has done its job.

Spot Metering

Selecting spot metering allows us to lock a reading into the memory and to then compare this area with that of other areas which are of interest. For example, this allows us to measure the brightness range in the scene (the difference between the highlights and shadows). As we explained earlier, this should be less than 5 stops for slide film and less than 7 stops for print film. If the range is greater than this the highlights will be washed out whilst the shadows will be blocked out, therefore rendering no detail in either area.

metering system may have already taken into account the difficult lighting and compensated accordingly. Hence why centre-weighted average metering is available. The camera takes 80% of its exposure reading within the three centre honeycomb segments and the remaining 20% from the surrounding 10 segments.

Metering Index

This feature is, we believe, so incredibly useful we cannot understand why other manufacturers have not decided to add this feature to any of their models.

The basic concept of the metering index is to allow us to visualise before taking the photograph how the image will be exposed on film by monitoring the brightness difference between the original metered value of the scene and the area covered by the spot metering circle on the focusing screen. This can be done in three combinations depending on the metering mode selected.

Honeycomb/Centre-Weighted Metering

With either honeycomb or centre-weighted metering selected, compose the picture as you wish it to be and then press the AEL button. You may find, as we recommended earlier, it best to customise the function of this button to make the use of this feature a little easier. Let's do that first. This is done by pressing the AEL button at the same time as pressing the ISO button. This should then result in ON appearing in the camera's top LCD panel as confirmation. With this now set it allows us to lock the function of the AEL button (either exposure lock or slow sync flash) with a single press without having to hold the button in. Another press cancels the setting.

So going back to where we had composed the picture, press the AEL button (the metering index will automatically appear

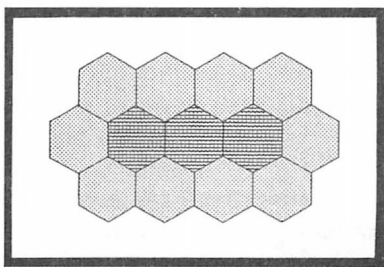
metering systems rely on the camera being programmed to recognise every conceivable situation. The camera's metering system will then analyse the scene or situation in question and then try to match this with a pre-programmed example. If, however, that particular situation does not precisely match one of its examples the camera will be incapable of giving a good result.

Many manufacturers talk about the number of situations that they have been programmed to recognise or the number of algorithms that are available. If we assume that there are an infinite number of photographic situations, a system programmed for 84,000 of them equates to a very small percentage. For every day use that's fine, but not every one takes every day type pictures. The 600si will first determine the type of scene and then choose settings based on its programmed experience. It is this that gives the 600si the flexibility to react to almost any scene.

Centre-Weighted Average Metering

- Q)** If honeycomb metering is so good why use centre-weighted?
- A)** Many experienced and professional photographers have built up their experience with cameras that employed only centre-weighted metering systems. It is easy to predict when the metering system will give an erroneous reading and to then apply the necessary degree of exposure compensation to the situation in hand.

As good as modern metering systems such as 14-segment Honeycomb are, it is almost impossible to apply a degree of exposure compensation to them as the camera's

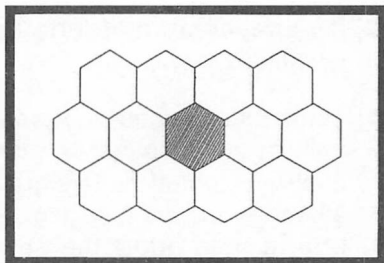


area will be switched off. For example, when taking sunsets or scenic photographs where there is direct sunlight, taking any account of the sun will dramatically affect the overall exposure reading. If, for example, a centre-weighted metering system was used to expose an evening sunset, the exposure from this system could be up to 6-7 stops difference, depending upon the time of day and the position of the sun in the frame, leading to a silhouetted image if the sun's reading is exposed for.

Sports Photography

Sports photographs can normally be handled easily by a centre-weighted meter reading. But the metering system will be tailored to the actual environment that the camera is being used in, for example the subject's distance, its size, and position will all be taken into account for the final exposure.

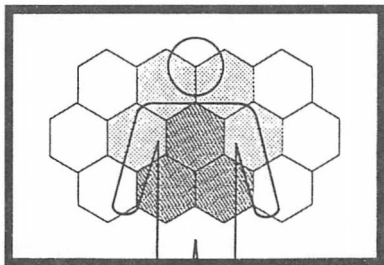
In general then, if all the segments read nearly the same brightness, an average reading of all areas is used. If the metering of all areas indicates that the areas around the subject are brighter, a more subject-weighted pattern is selected. As the degree of back lighting increases the camera may use a tighter, nearly spot, reading.



When shooting scenes or subjects that are spot-lit, and which by their nature have very high contrast, the metering system may favour a reading for the brighter areas producing a dramatic silhouette effect. Reading for the darker areas would only wash out the brighter areas.

What has to be realised is that the above are just initial metering patterns which are then adjusted and fine tuned depending on the actual situation in question. All other

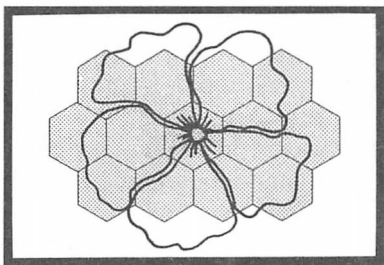
segments that surround it as determined by the AF sensor. It then evaluates the brightness in more detail within each segment to determine the most likely position of the subject. The weighting of the segments are then adjusted further to



favour as small an area as possible. As the degree of backlighting increases, the weighting of the segments becomes more and more spot orientated i.e. only one segment is selected. If the camera is set to Program and a Minolta i/xi/HS series flash is fitted the flash will fire automatically to provide fill-in, to balance the background exposure with the subject.

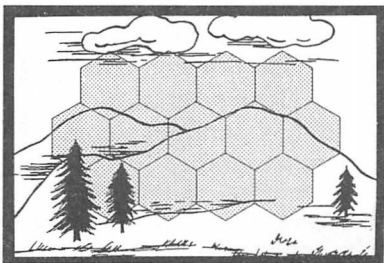
Close-Up Photography

For close-ups, the 600si will read the light in all of the metering segments and adjust the weighting of those segments to avoid very light and dark areas that would adversely affect the exposure reading.



Landscapes

All of the metering segments are also employed when taking landscapes. However, should there be a small, extremely bright area, such as the sun in the frame, the segment that covers that



flexible response to changing conditions which therefore are not reliant on hard and fast rules. It works, for the want of a better term, in the shades of grey.

There are three metering options available to us: Honeycomb, Centre-Weighted and Spot.

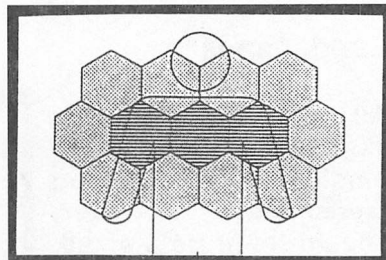
Honeycomb Multi-Pattern Metering

The entire picture area is measured for the light coming from it by small, honeycomb-shaped sections of the metering cell. There are 13 of these, plus the surrounding area, therefore giving a total of 14 segments as used in the name Minolta have given it. Each segment can work independently of the others or, if the computer software so wishes, in conjunction with them.

By using the information gained from the AF system, the camera will clarify the scene in front of it into a metering pattern, made up from combinations of segments that will change as a subject adjusts its position or as the strength of lighting changes. Each pattern will also be compared to the remaining parts of the picture so the whole scene is evaluated before exposure. Some example metering patterns and their characteristics which the 600si may use for certain situations are:

Portrait

If the subject is judged to fall on or near the portrait area and the background brightness is evaluated as being close to that of the subject, a centre-weighted pattern is selected.



If, however, our subject is judged to be back-lit, the camera will concentrate its exposure reading within the seven

CHAPTER SEVEN

Metering For Best Effect

Now that we have explained the practical aspects of exposure, let us go on to explain the more technical aspects. For those of you who like this bit, we suggest you get yourself a cup of coffee before going further. For those that don't like this bit, go and take some photographs while we are explaining this to the others.

Areas which we will cover in this section include - Fuzzy Logic, Autofocus Integrated 14 Segment Honeycomb Multi-Pattern Metering (it's probably going to take a page just to explain the title), Centre-Weighted Average Metering, Spot Metering and the excellent Metering Index facility we have already referred to.

Fuzzy Logic

Let us start with the top of the pile with Fuzzy Logic as this is used by both the metering and autofocus systems. Fuzzy Logic is the type of processor used in the 600si. It is used in the following ways:

- 1) The selection of the most appropriate metering segments for reading the quantity of light.
- 2) The weighting of the selected metering segments for exposure of the subject.
- 3) The selection of aperture/shutter speed combinations in Program mode.

How does Fuzzy Logic work and why is it used?

A conventional computer's functioning is based on hard and fast rules, black and white if you like. Fuzzy Logic uses a level of pre-programmed experience to provide a smooth,

Exposure Compensation

If we know that we will only want to either over or under expose, then exposure bracketing is wasteful. We may also want adjustments in more than half stops - this is where exposure compensation comes in. We can set up to three stops over or under exposure, or any half stop value in between. When exposure compensation is active, no indication is shown normally on the display panels. This is potentially dangerous so be careful. We find that setting one of the built-in custom functions to permanently display the Metering Index Scale as we describe later in the metering chapter is a must, as it will show the compensated amount clearly in the viewfinder at all times.

So what does exposure compensation actually do. It adjusts the amount of light reaching a particular frame of film by deliberately changing the aperture size or shutter speed duration compared to that which would have been used if compensation had not been employed.

If we are using Aperture Priority the shutter speed is changed so we can still get our depth of field as we envisage. In Shutter Priority the aperture changes, while in Program both apertures and shutter speeds will change.

If we use flash at the same time as exposure compensation, then the total exposure output will be adjusted.

We have obtained better results more often by using this feature than relying solely on a single shot or a series with the same exposure. Sometimes you will prefer the over or underexposed shots, but certainly you will be able to recognise the best result from an aesthetic point of view. How can you do that with just one basic exposure?

Auto Flash Bracketing

Carrying on the concept of an easy to use camera that encourages the creative photographer is Auto Exposure Flash Bracketing. If we leave the selector at the AEB position, the basic daylight exposure remains the same but this time the amount of flash illumination is changed as soon as we use the internal or external flash unit.

This is achieved by the flash output being adjusted, the aperture and shutter speed are fixed for the three frame sequence. To differentiate between bracketing for ambient light and flash, Fbr1, Fbr2 and Fbr3 are displayed before each of the flash bracketed pictures.

Q) Is there a way to adjust the bracketing amount for just over or under exposure?

A) Yes, in either of the above modes we can pre-set the exposure compensation dial to take the amount bracketed each time to amounts other than a half stop. For instance, if we set plus 1 on the compensation dial, the exposure sequence when bracketed will become +0.5, +1 and +1.5 stops. In effect we just have a sequence of over exposed results. We can do the opposite by setting a minus value with exposure compensation. (Don't forget if you wish to do this with flash that you use the flash compensation dial instead.)

CHAPTER SIX

Features To Assist The Creative Photographer

There are a number of ways that we can enhance the basic exposure characteristics so far described. These will not always play a role, but you should become aware of the possibilities offered.

Auto Exposure Bracketing

Above the single frame advance symbol on the camera's top-plate is the Auto Exposure Bracketing symbol. This is a feature that we have started to use as standard, with the camera always left at this setting. It works brilliantly!

So what do we get with Auto Exposure Bracketing? It operates in a sequence by taking three shots, one correctly exposed as far as the camera is concerned, along with one under and one over exposed. This is always in a half stop compression. Because of this we see that Minolta have erred on the side of transparency users like ourselves. In essence we will notice a half stop adjustment from one frame to the next, but colour print users will probably not, due to the latter type of film masking what, to it, is a small change in exposure. If a full stop sequence was possible it would suggest that the camera was set for print film users and, with respect, the greater accuracy required by transparency film shows clearly that this is a serious photographer's camera.

In the viewfinder we see the aperture or shutter speeds changed to allow for the bracketing sequence. Not to mislead you, AEB, as it is abbreviated, has been on cameras since the mid 1980's. On the 600si however it is so simple to set in motion or cancel, that we are really encouraged to activate it often. All we need to do is keep the setting at the AEB setting on the top-plate.

- Q)** The rewind is still too slow, is there a way to increase its speed?
- A)** Yes there is. A press on the mid roll rewind button once the sequence has started, will increase the speed dramatically to around 11 seconds for a 36 exposure film. It is however accompanied by a rise in the noise of the procedure, but even so, this is still not unreasonable. Do not forget that this will add to the drain on the power source if used regularly.

As a guide, Minolta state approximately 15 (7) seconds to rewind a 24 exposure cassette or 23 (11) seconds for a 36 exposure version. This is under Minolta's test conditions - a little more on these later. Figures in brackets are for high speed rewind mode.

A Little More About Film

Those of you who project correctly exposed transparencies with a good projection system under the right viewing conditions will know that for impact this cannot be beaten. There is no longer a monopoly of transparency film used for work to be reproduced in book or magazine formats, but this is still the way most publishers work - hence I shoot transparency film.

If you normally want prints and to a large size - above 11 x 14 inches - then we would suggest a print film speed of 100 ISO or slower. But if most shots are to be standard size or occasional enlargements, we feel a 200 or 400 ISO film can be used quite happily. In turn its extra speed of reaction will enable faster shutter speeds and smaller apertures to be used in conditions where we would otherwise be limited with slower speeds.

Film Rewind

In tune with common practice, the 600si will automatically rewind the film when it senses that the film has reached the end of the number of exposures possible. The decision to start the sequence is based upon the number of frames shot. However, if the film has no DX coding the film is rewound when the tension suddenly increases as the film pulls against a spindle on the inside of the cassette.

A wonderful touch that is a standard feature is the noise, or lack of it, of the rewind sequence. Minolta have used non metal gears and shock absorbers to achieve this effect. They claim that the noise has been reduced by a massive 60% over previous models. Not to question that, it is a beautiful system, taking around 23 seconds to complete a 36 exposure film rewind sequence. We can instigate the procedure at any time by pressing a pen tip or similar object into the mid roll rewind button on the camera's rear.

shake problems. Knowing what you can hand hold gives the ability to switch into this mode as and when required, but if you have not done your homework you cannot do so with certainty. We can select any of the 600si shutter speeds in half stop increments.

This is also a useful mode to use with flash photography, but not to affect the flash exposure itself but that of the way that a background is reproduced. The longer the speed the more detail in the area beyond the flash illumination range, as ambient light records on the film after the burst of flash has fired. Try a film with flash indoors but only vary the shutter speed. After a point in the range of speeds selected you will see what we mean. This knowledge will give a clear indication of what speeds are required to maintain a dark background or illuminate it pleasantly. Do not be happy with point and shoot - paint with light.

John - What exposure modes do you prefer and why Damian?

Damian - Personally I prefer Shutter priority. Mainly because when I am shooting in low light and I require as much depth of field as possible, I set the shutter speed to the slowest value that I can hand hold the camera, thus hopefully resulting in the smallest possible aperture. However, you need to keep an eye on the aperture, if it's flashing your shutter speed is too fast for the available light, in which case you're either going to need a tripod or to use flash.

John - For the record, Damian, I now use Agfa Scala film for black and white work and either Kodachrome 64 or Agfa RSX 200 for colour transparency - what do you use?

Damian - I personally prefer Fuji Transparency film. I tend to use Fuji Provia 100 or 400. However, if there will be enough available light I do like to use Fuji Velvia, the colours and sharpness are excellent. I don't shoot print film due to the photographs never being processed as I would like them.

A shutter speed is automatically matched to our chosen setting. If the excellent Auto Exposure Bracketing system is used, this will change the shutter speed in order to give an adjustment to the exposure on the appropriate frames. The same applies when Exposure Compensation is activated.

If undertaking flash photography using the TTL system, Aperture Priority makes it easy to allow more light through with a minimum of fuss. As we mention in a later chapter - a change in the shutter speed will not affect the amount of flash illumination reaching the film, just the exposure of the film to daylight, but a changed aperture allows more or less flash illumination to reach the film compared to the previous setting.

Shutter Priority

Shutter Priority is the least popular of the auto modes. This is not to suggest it is less capable, but, due to the comments already raised about the way the aperture has a more pronounced effect in many people's work, it has less of a following. The strength of Shutter Priority is in allowing a particular shutter speed to be maintained while the aperture is adjusting in changing light conditions. Action work such as a sport may require a 1/500th of a second to eliminate noticeable movement, so a controlled and adjustable shutter speed is most welcome; this is when this mode is the easiest one to work with.

The 600si will maintain our selected speed providing it can still open up the aperture size as the light level drops, to maintain the correct exposure. This is limited by the widest setting possible and, should this be reached, the aperture display blinks in the LCD panels to warn of this.

We now use this mode more often than before, but still far less than Aperture Priority. We like being able to maintain a constant speed that we know we can hand hold, particularly useful with longer or lighter lenses as we find fewer camera

needing a total of $f/8$ at a $1/60$ th of a second, would have each shot made at $f/11$ and a $1/60$ th of a second, or any other combination that allowed this amount of light to reach the film.

If we wish, we can still use the manual display to measure the scene's contrast. The way to do this is quite straight forward. We look for a mid grey tone or similar strength of colour in the scene and meter for this area with the spot meter. The scale then reads at the zero setting. We then look for the brightest area where we want detail to be recorded and point the spot meter at this, followed by a similar measurement but for the shadow or darkest area where we want information to be shown. By noting the amount away from the zero point of both readings we can see the contrast difference between the two extremes and arrive at our contrast range.

As a guide, slide film users, if in doubt, should always expose for the highlights rather than the shadows. This will retain detail in the former but clog up the shadows which has a better overall effect.

Aperture Priority

This is the most widely used automatic exposure mode because the need to control the depth of field is of paramount importance in most people's photography. Unlike Shutter Priority, where a range of speeds may still guarantee a frozen image and therefore the selection of which can be made without too much thought, Aperture Priority requires more attention as each change in the selected size will have a noticeable effect on the final image due to the depth of field.

Those photographing close-up, landscapes and fashion (where an isolated and blurred backdrop is useful) are often found using Aperture Priority. In fact, any subject where the camera is solidly supported on a tripod will probably find this the best auto mode to use where subject movement is not excessive.

range of lighting contrast that can be reproduced in a book such as this. By contrast we mean the difference between the brightest and darkest parts of the image that still show some recognisable detail. The metering index we describe is a useful feature to measure such a contrast range when in other exposure modes.

The reality in making all the decisions towards an exposure is that a photographer takes full control and therefore ends up with an image that they conceived in their mind, rather than one that an electronic chip, pre-programmed by an unknown technician offers. This presumes of course that the skills and techniques of photography such as lighting or processing and printing have been learnt and developed, alongside an artistic vision. We are careful to suggest that everyone working manually is an expert, but if we were gamblers we would bet that those working in this way were often more likely to produce better work than someone normally using, say, the Programmed mode. We must stress that if time is against us, then we would be fools to fiddle with controls and miss the shot, so by all means utilise the other modes in these circumstances.

The metering system in Manual mode can be any of the three options available to you, centre-weighted, spot or honeycomb. However, we would recommend that you select centre-weighted as we imagine that this is the metering mode that you are most used to.

Technique Tip:

We must use Manual exposure for multiple exposures images. No automatic system will be able to determine which of the multiple images are lighter or darker than others and therefore how to adjust each exposure. As a guide when starting such work, divide the exposure that is needed in total, by the number of times we are going to multiple expose. This will help us to arrive at the aperture and shutter speed for each shot. As an example, a two shot multiple exposure

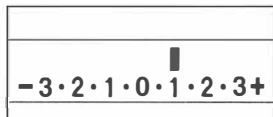
somewhere else in the world? A good reason therefore for mastering this mode is that luck will not come in to it - even if for simplicity automation is still your preferred choice, at least you will know when and how to override it.

Once switched to the M position on the control dial, an aperture and shutter speed are displayed on the top plate and viewfinder LCD's. The front dial changes the shutter speeds, while the rear one adjusts the aperture. The viewfinder display is very important in this mode as it also displays a bar graph - the same as the Metering Index graph. But in this mode it is our means to confirm the correct exposure has been set based on the metering system reading.



The graph shows -3.2.1.0.1.2.3+ readings from left to right, with correct exposure indicated when a solid vertical yellow line is displayed above the central 0.

If the line is above another number, or one of the intermediate half stop positions, we are that much away from the correct result. Bear in mind that this is only the correct technical result as far as the camera's metering system is concerned - you may wish to under or over expose by having the line appear above another number for creative reasons.



The maximum indication is for up to three stops under or over exposure. If the amount of discrepancy is beyond this a triangle pulsates above the + or -. Quite sensibly the bar graph line moves a half stop at a time to coincide with the increments of shutter speed and aperture we can set. While we like this feature very much, we would have liked a four stop variation to have been possible as this is the typical

Landscapes

Surely we are all attracted to beautiful scenic images. A wide-angle lens is often selected for landscape work as it encompasses a wide vista. It has the added effect of increasing the apparent depth of field compared to normal and telephoto lenses - something that is the prime target in selecting the aperture size of this mode for this type of subject.

Damian - You do not seem to be much of a Program mode fan John - why?

John - In one word - control. I am not keen on encouraging people with all of the potential of an SLR like the 600si, to use it like a glorified compact. It seems such a waste. If there was a Program Shift facility - that would be different.

Damian - You had better explain what Program Shift is?

John - It is the means by which a program mode can be adjusted to other combinations of shutter speed and apertures while still maintaining the same final amount of exposure.

Manual Exposure

When we started to learn about photography we were taught using cameras that only had Manual control as most cameras were so designed in those not-so-long-ago days. Most photographers we know who do not have to respond quickly to changing circumstance as it unfolds in front of them, still prefer this method of operation for one reason - total control. We do wonder if the overall standard of creativity is helped or hindered by multi mode cameras and new technology? Sure, you may be lucky as a beginner on a few occasions using all the automation you can, but where was the resulting image created? In your mind or in the work of the design team

use the camera beyond the metering range with which it can cope, two triangles will pulsate to the right of the aperture indication.

John - Damian, is there a camera shake warning?

Damian - No. This is because we, at Minolta, received a large number of requests from users not to put this feature on high end models, because they find it to be distracting.

Close-Up Photography

This is the term for recording images of small subjects or minute detail in a larger one. Do not confuse it with telephoto photography of a distant subject. As mentioned earlier, the closer we focus, the less the depth of field becomes so it is no surprise that the Expert Program tries to gain an aperture for a reasonable depth of field, although we still found it occasionally insufficient except in the brightest of lighting conditions. A shutter speed suitable for hand holding is used if the light is strong enough, but when you consider that this limits the smallest aperture sizes that can be chosen, you realise that this can be a problem. Here we would suggest the use of Aperture Priority as a workable alternative, and strongly recommend a tripod.

Action

No surprises here that the prime concern is to choose a fast shutter speed. In bright lighting this can mean that speeds up to the camera's maximum of 1/4000th of a second may be utilised. A limited depth of field is another characteristic - unless the overall lighting is very high. Just to add an additional note to that, the 600si will set the shutter speed in accordance with the speed, magnification and direction of the subject. E.g: as the subject increases in speed or the magnification changes the shutter speed will therefore increase to freeze the action. You can probably see this working as the subject approaches the camera.

shoulders shot tightly cropped, an unsightly or untidy background can take the attention elsewhere in half and full length images. By selecting a relatively wide aperture, the Expert Program will try to throw the background out of focus for this reason, limiting the depth of field. If you have lenses that offer different maximum apertures, but still offer the focal length you wish to use, select the one with the greatest light gathering capability to enhance this mode's "out of focus" background capabilities at the wider aperture size.

John - Damian, is the aperture limited to say f/3.5 as on most other Portrait modes used by other manufacturers?

Damian - Because the 600si knows the subject distance and lens focal length, it therefore knows the subject's magnification. This is then used so that the aperture selected matches that of the subject. For example, if you use a high magnification lens and shoot close to the subject the chances are that with a very wide aperture only the nose or the eyes may be in focus, all of the other details therefore being rendered out of focus. So, in this case, the 600si selects an aperture that will render all of the subject's facial features in focus whilst still blurring the background.

There is however another side to this story. We also like "environmental" portraits - where the subject is situated in a place that has some meaning or association for them - at work or at home for instance. If that type of image is what you are after, then depth of field will probably be needed to a larger degree. Aperture Priority would be preferable but this is where the really clever bit is. In this type of situation where the subject is smaller in the frame, i.e. the image magnification is so small, the 600si will recognise this as a "snapshot" type photograph, therefore overriding the normal portrait program and using slightly smaller apertures.

A standard aspect of the Expert Program is to provide a hand holdable shutter speed except in low light. If we are trying to

adjustments before use - unlike other systems which in some instances still require us to manually set the aperture on the lens to its smallest size for modes such as Program and Shutter Priority.

Program Mode

Minolta refer to the Program mode of the 600si as Expert Program Selection. The flexibility of the camera's electronic control system is far more advanced than those Program modes employed even just a few years ago. Total point and shoot is the way to work with a program mode as it sets both the aperture and shutter speeds - always!

The clever part is that the 600si is pre-programmed to recognise, for the want of a better term, the "type" of picture we are taking. Using the honeycomb metering system, which we will talk about later, the 600si determines the whereabouts of the subject, its shape and, with the AF system, its motion status and magnification. With a sufficient store of information already installed to match the detected data, the camera will now decide whether we are photographing a person, landscape or a soccer match or other type of subject. In effect take the equipment out of the box, load it with batteries and film and enjoy in theory the expertise and resulting images that would normally take years to accumulate.

A suitable shutter speed is chosen for a moving subject, while a landscape will benefit primarily from an aperture utilising a good depth of field. The chosen settings are displayed on the LCD panels with the decision to select them based on the basic characteristics for each type of subject as follows:-

Portraits

It is generally accepted that a portrait wants to bring the viewer's attention to the subject at the expense of their surroundings. While this can be achieved with a head and

is the one that has precedence once we have set our choice of it over the other control. The letters A and S indicate each mode on the exposure mode dial.

After we select the control that has a priority, the 600si adjusts the other to allow for correct exposure as per the meter reading. Even though beginners might think that semi-automatic control is not really that much under our control it is a fact that these are the most popular modes with enthusiast users and many professionals who still need the speed of automation. They are quick to operate and allow us the control of making the first decision and hence establish some parameters regarding the effect of the aperture or shutter speed on the image.

Finally we have Manual exposure. It is something everyone should master as it is the only way to really learn about or ideally, should we say, master exposure. This is the mode which gives us complete freedom, but it needs time to operate so would not be the best choice for action work.

We found by accident that even when set at in-between settings, the exposure will still operate correctly. A small word of caution based on this experience - if you do carry the camera in a gadget bag with other items, check that the dials have not been knocked off position in transit. Logically the change from one mode to another does not seem to appear until the dial has been turned just over halfway towards the next indicated setting. The only real problem with a knocked out of position dial is that a slip into Manual mode is potentially dangerous as the set aperture and shutter speed will not be adjusted by the camera if that is needed to ensure a correct exposure. It is a drastic solution but if you do use just one mode, blue tack - an incredibly useful accessory - can be used to hold the dial in that position more securely, although understand that the camera's good looks will suffer.

A nice feature of the Minolta system is that once set on the top plate, the mode we have chosen requires no more

CHAPTER FIVE

Exposure Mode Options

So now we know what the three stages to correct exposure are, let's look at the options available in getting the best from them. Once the ISO has been set, we are offered four different methods of exposure control each called an exposure mode. A letter or word represents each of them on the large rotatable dial next to the top-plate LCD. Strangely there are no indications of which mode we are in on either of the LCD panels.

The letter or word is placed next to a small white line half way down the side of the LCD panel to activate that mode. At each setting a click can be felt as we turn the dial into place.

The most automatic mode is the Program mode, or Expert Program as Minolta have titled it. Along with most other program SLR's the camera uses ISO metering information and lens focal length for the selection of apertures and shutter speeds. In addition to this, the 600si also uses subject distance and subject movement to select an aperture and shutter speed which is suitable for the type of subject or scene. For example, when photographing landscapes, the camera selects smaller apertures for greater depth of field and when photographing action the 600si automatically selects faster shutter speeds to help freeze the moment.

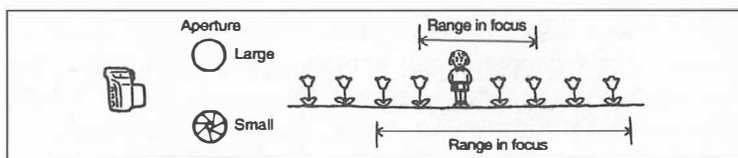
Before you think this is Utopia in action - a word of warning. We have absolutely no control over the settings, so forfeit any decision making process and hence control for pictorial effect through aperture and shutter speeds. This may not worry you, but to a working photographer, this lack of control has always been of concern.

For more control there are two semi-automatic exposure modes called Aperture Priority and Shutter Priority. The word "priority" refers to the fact that the setting described in the title

progressively by using smaller apertures. At wider settings there are lots of light rays from places in the image that we have not focused upon, recording them on film as out of focus.

In effect a given area of film is exposed to many individual rays of light, a large number of which in this scenario are from out of focus areas, appearing less sharp than those from the actual place we have focused. As we open up the aperture size there are more and more light rays falling onto the film as out of focus detail, so the rate of blur increases. At smaller apertures, the ratio between those out of focus and those in focus changes to exclude more of the out of focus effect and emphasise the remaining sharper detail.

The effect is dependent upon our eyes and brain that accept not only the truly sharp points as being just that, but also those near to the same level of resolution as we cannot detect with the naked eye any difference. As smaller apertures have less out of focus light rays passing through, a greater depth of sharpness either side of our focused position is perceived.



When shooting at wider apertures the depth of field or range of sharpness is less than when the aperture is stopped down to a smaller size.

When we press the depth of field button a trained eye will notice that small details do get sharper on the focusing screen. Try it at a wide, moderate and small aperture. There will be a stage when the overall screen gets too dark to see and this is something that puts many people off.

thirds behind where we have focused and a third in front, while at close-up distances where the image is at what we call a one to one magnification this becomes equal on both sides of the focused on position. As a guide we can use the depth of field preview facility on the camera.

We do suggest that the use of a tripod could well double the effectiveness of an image where the subject is not moving as it frees us to use small apertures and therefore longer shutter speeds without risking camera shake. Apart from the stability it gives, it is a real benefit in aiding the adjustments of composition in small stages. The use by Minolta of a diaphragm in lenses that reproduces the opening as a circular rather than hexagonal shape, will also help the "feel" to the out of focus areas in a background. It makes them smoother and more subtle than on many alternative makes of lens. All credit to Minolta for that.

Using The Depth Of Field Preview

Between the camera's grip and the lens mount, is the depth of field preview button. It is nearly square in shape with a slight resistance when pressed inwards towards the lens mount. By activating it we change the opening size in the lens from being wide open to the size that the next picture will be taken at if this is a different size.

As a consequence of this, you will find that the viewfinder image goes dark until we release our finger pressure. A lot of people have trouble with this control - some never use it. By stopping the lens down we are restricting the light rays from many parts of the image that do not come from the focused on position and in consequence can see a sharpening up of components in the image due to depth of field.

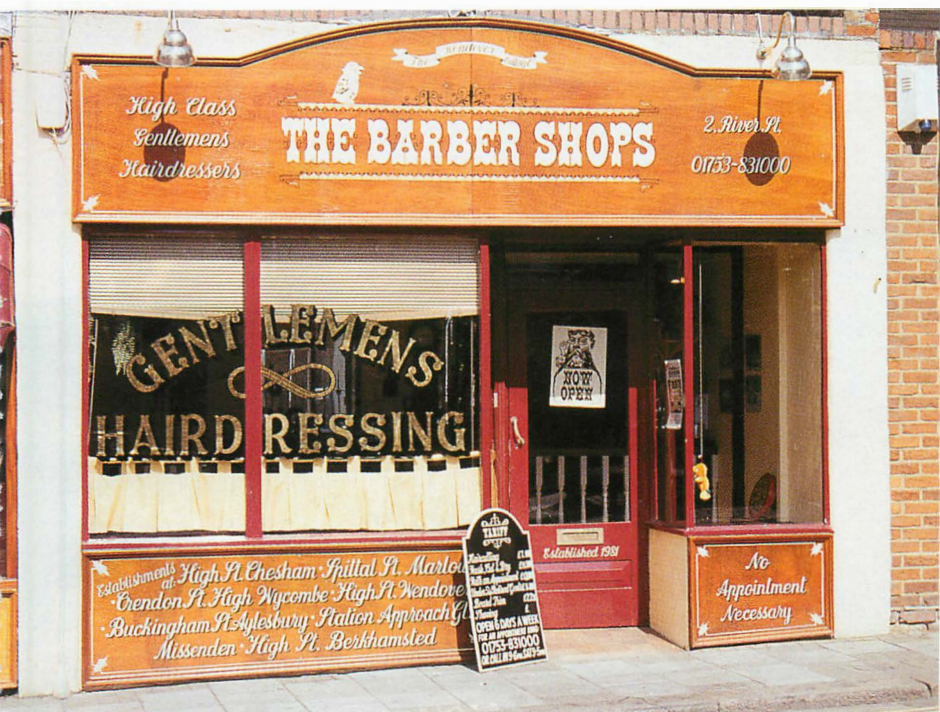
Depth Of Field is a strange term to describe the range of sharpness from near to far in the image, but that is all it is. We should remember that image sharpness increases

Depth Of Field

The choice of aperture size will have a profound effect on the way the image will look due to depth of field. This is a lovely term that in layman's language means the range or depth of the sharpness in the image, from near to far. We always focus on a specific position that will obviously be sharp providing there is not too much camera shake. The sharpness will be maintained however on distances in front of and behind this point to varying degrees depending on the aperture size selected and the distance we have focused upon.

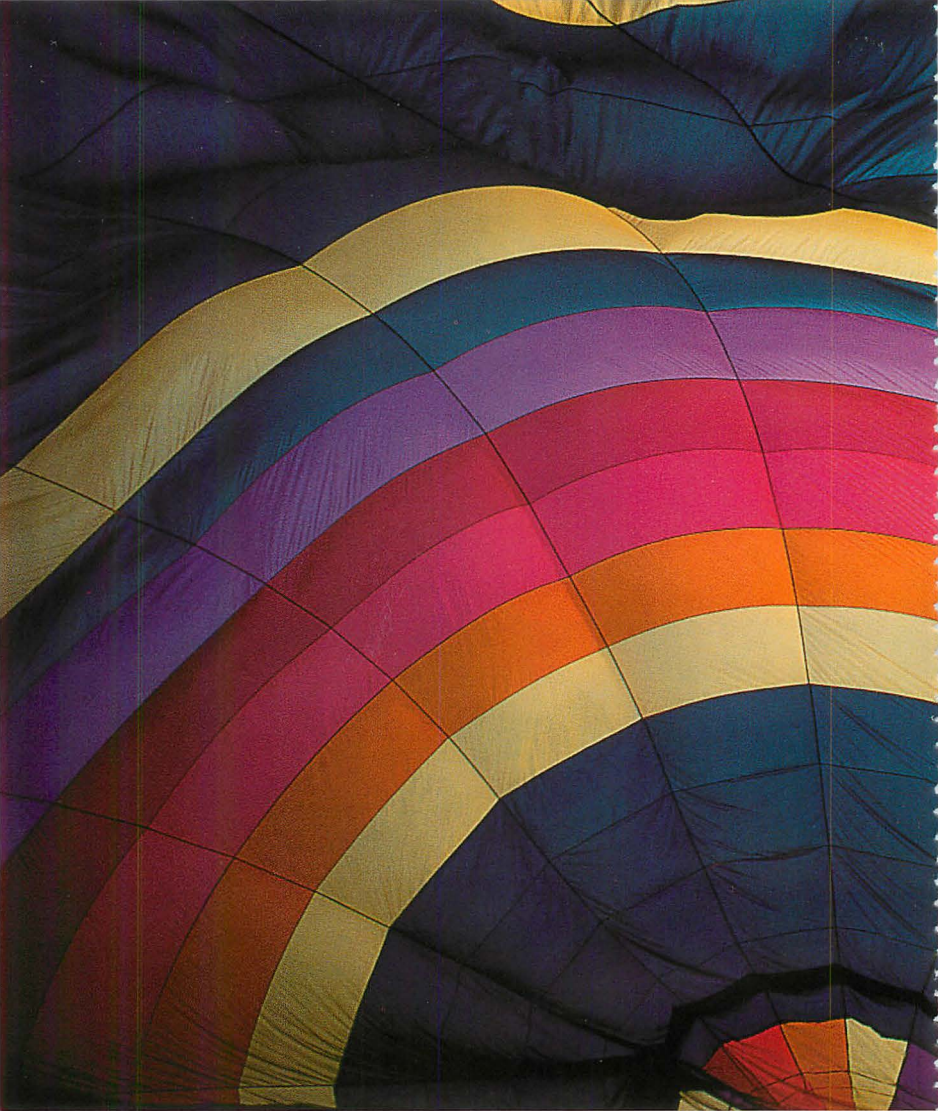
A small aperture will result in a greater depth of field than when any size larger than it is used and vice versa. The aperture is available to us in half stop settings. The reason the depth of field increases as the aperture gets smaller is because the rays of light from the extremes of the picture area are less in number than at smaller ones. As many more at a wider aperture setting are from an out of focus position their greater number is recorded as such on most parts of the image. At smaller apertures though, those rays of light coming from in front or behind the one we have focused upon, are not strictly in focus, but can remain acceptably sharp due to our eyes' inability to distinguish very small discrepancies between absolute sharpness and something very similar to it. Fewer rays of light from extreme angles that come from an out of focus position do not destroy the perceived increase in the sharpness range.

Both can be to our benefit. For instance, an unsightly or disturbing background that cannot be placed out of the frame can be rendered out of focus when a large aperture is used due to the restricted depth of field. Alternatively, a landscape will often benefit from a large depth of field through the use of a smaller aperture setting. One final point to be aware of - the closer we are to the subject the smaller the depth of field is for a given aperture. So $f/8$ at 3m will not have as much depth of field as at 30m. At infinity the depth of field falls two



The 24mm/85mm zoom lens is an excellent travelling companion for portraits or places.

Photograph: John Clements



If in doubt get in close - here a Minolta zoom lens has let me stay a reasonable distance from the subject but still get a full frame image.

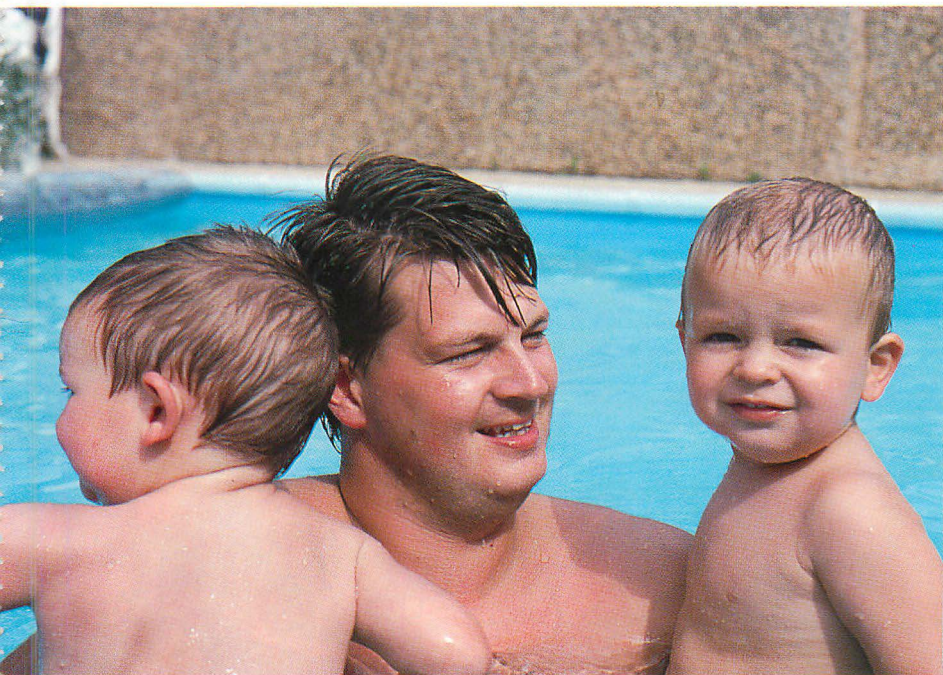
Photograph: Damian Dinning





Reflections always make for an interesting image within the main one. This was taken with a zoom lens.

Photograph: Damian Dinning



The AF system locks on quickly to most subjects – a standard lens was used here.

Photograph: John Clements



The AF system locks on quickly to most subjects – a standard lens was used here.

Photograph: John Clements



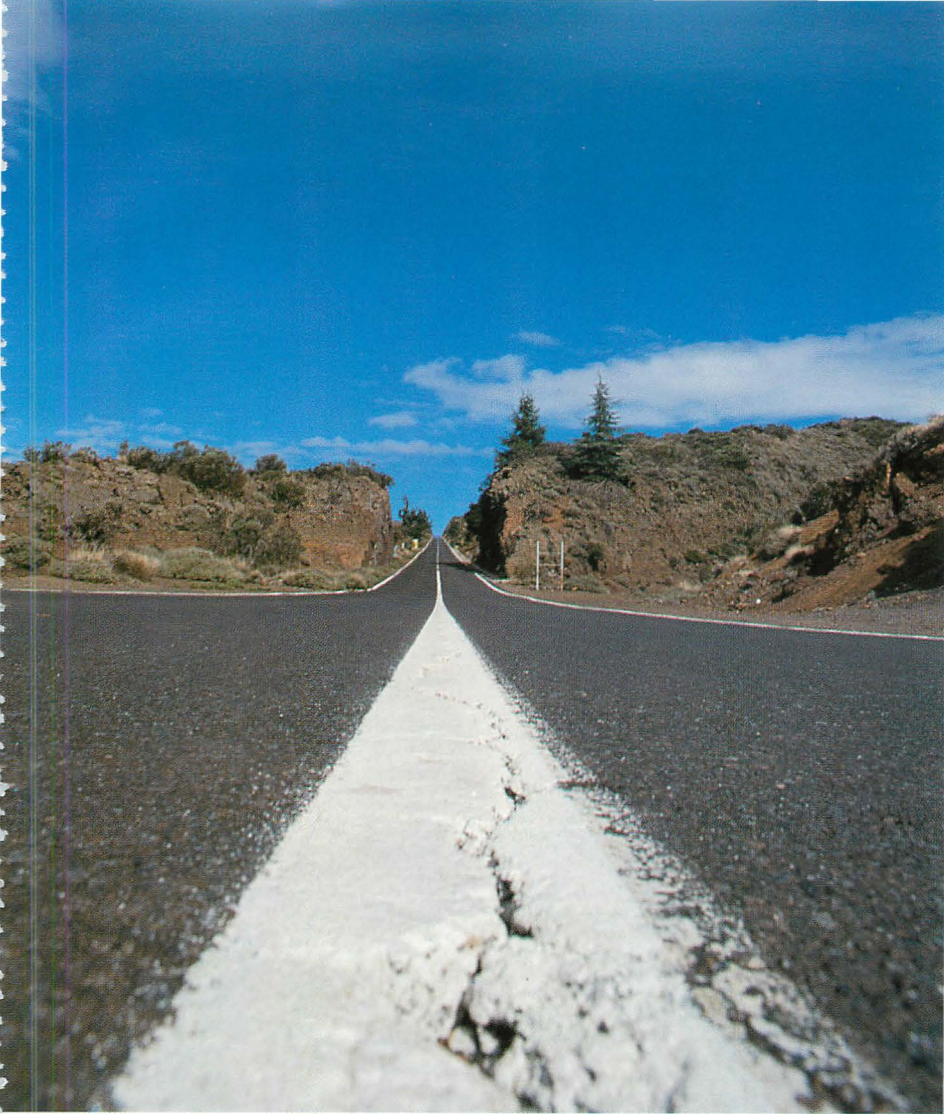
The TTL flash control works well either with the built in unit or the 5400HS. A torch was used as a pre flash red eye reduction control.

Photograph: John Clements



The focus tracking works well, even in less than ideal lighting.

Photograph: Damian Dinning



A low angle, and a wide angle lens helped to give this image great depth.

Photograph: Damian Dinning



A higher than the normal $1/200$ th of a second flash sync speed was used for this shot. A perfect example of high speed sync.

Photograph: John Clements

Speed at the film plane is different to actual subject speed. Image magnification is relative to speed at the film plane. Here's an example. Imagine you are tracking a high speed subject moving at over 200 mph approaching from over a mile away. The lens will more than likely be focused on infinity. The subject could move over half a mile and yet the lens will probably still be on the infinity setting. In this situation the camera will infer the subject as either stationary or slow moving.

Now imagine you are photographing an Olympic runner approaching the camera from only 20m away. In one second the subject will move 10m, and obviously, to take into account the change in subject distance, the lens will have to move at very high speed to be able to keep the subject in focus. In this example the camera will judge the subject as a very high speed subject, although its actual speed is very much less than in the previous example.

So, summing up. If the subject is inferred as being stationary, focus will be locked with half pressure on the shutter release. If the subject is inferred as being a high speed subject, continuous AF is selected and the focus cannot be locked with half pressure on the shutter release. Occasionally the camera may not select continuous AF for a moving subject but it will make use of predictive focus control so that any movement is taken into account and hence the subject will not be out of focus.

What a large number of users tend to do in this situation is to press half way on the shutter release and hold it there for a brief time. This then causes the focus to be locked and predictive focus is therefore effectively switched off. To overcome this potential problem, use the camera in the following way:

First point the camera at a distance similar to where you intend to trip the camera. Press half way down on the shutter release to activate the AF system. This gets the initial focus

setting close to the one that will be used for the photograph. Therefore the camera has less of an adjustment to make when the picture is taken.

When you see the subject in the frame at the position that you would like to take it, press all of the way down on the shutter release in one smooth action. This also will ensure that predictive focus works regardless of autofocus mode selected when in the automatic focus mode selection mode.

Summing Up

- Stationary subjects - Focus locked with half pressure
- Slow moving subjects - Predictive Focus - focusing carried out whilst mirror swings up.
- Fast moving subjects - Continuous and Predictive AF selected. Most of the focus adjustment made prior to the mirror swinging up. Focusing continues until the shutter opens.
- Very fast subjects - Continuous and Predictive AF selected. In addition, just prior to mirror swinging up, subject's movements double checked. Most of the focus adjustment is made prior to the mirror swinging up. Focusing continues until the shutter opens.

Extra Information

When the shutter release is pressed part way and the camera selects continuous AF rather than locking focus, the AF system will remain in continuous AF until the shutter is released, even if a moving subject comes to a halt. If this

occurs and you wish to focus lock once the subject has stopped, release the shutter release and then press part way again.

The standard value referred to at the beginning of this subsection was set at the development stage of the autofocus system. It is set in a way to give the most reliable selection of focus mode for the given situation. The value has been set so that continuous and predictive focus are used only if the subject's speed is so great that if the shutter release was pressed in one action, predictive focus would not be able to capture the subject "on its own". In this case continuous and predictive AF are used to ensure that the subject can be focused upon.

Manual Selection Of AF Modes

In addition to automatic focus mode selection, the 600si also allows you to select the focusing mode manually. This is simply done by moving the switch on the side of the main handgrip from the normal upright position labelled A to either S(Single) or C(Continuous). With Single focus mode selected, focus (and exposure when in honeycomb metering mode only) is locked. To refocus, release pressure on the shutter release and then reapply pressure. In Continuous mode, focus and exposure is adjusted right up to the moment of exposure. Predictive focus may also be used for fast moving subjects when in this second mode.

- Q)** In which situations is it recommended to select single or continuous focus modes rather than leaving the camera in the auto mode?
- A)** When photographing distant moving subjects or slow moving subjects we would recommend the manual selection of the continuous mode as the camera may not detect this small amount of movement and end up locking focus. On the other hand with telephoto lenses which

have small amounts of depth of field, you may find that the slightest movement of your subject, or even of yourself, may cause the 600si to select continuous focus, therefore not allowing you to lock focus.

AF Illuminators

With the built-in flash raised, the 600si will fire a series of high frequency bursts when the lighting levels drop to such a level that the camera is unable to focus on the subject unaided. These bursts of light from the built-in flash illuminate the subject up to a range of approximately 5m therefore allowing the 600si to focus in total darkness if necessary. However, the illuminator can only function if the built-in flash is raised, and therefore it is likely that the flash will be used as well. This of course may not be desirable as you may not wish to use flash photography in some low light situations. In this case you can attach a Minolta i/xi/HS series flash unit which features its own built-in AF illuminator. To make use of the illuminator in the flash without having the flash firing, perform the following operation:

- 1) Attach the flash to the camera's hotshoe and switch both camera and flashgun on.
- 2) Once the flash has charged, switch the flash off.

Now when the AF system needs assistance in low lighting or low contrast situations, the illuminator in the flash will fire a near infra-red beam of patterned light on to the subject.

- Q)** Is it possible to disable the 600si's built-in illuminator as I find it distracting in some situations?
- A)** Yes. Press the ISO and manual fill-in flash buttons together. The camera's LCD panel will now display OFF to confirm the setting.

Damian - You have some specific observations on the AF system, don't you John?

John - Yes, I do. I occasionally found, to my irritation, that the Wide Area system was not focusing on the point I wanted. After about two months I changed this from being my first choice to second as I found it easier to use the Spot area and then recompose if required. Overall I would say that the AF system is more than capable in most situations, but most of my work was with stationary subjects or slow movement

CHAPTER TEN

Minolta AF Lenses

This section briefly describes the range of Minolta lenses currently available for use with your 600si and hopefully answers those questions to which you have always wanted to know the answer.

Choosing The Right Lens

Too many people, once they have purchased their camera, sometimes skimp on lenses. They spend so much time in deciding which camera body to buy, that they end up paying less attention to the lens. OK, so we accept it is important to get the right camera body, but at the end of the day, it is the lens that has the ultimate effect on picture quality and general characteristics.

The APO lenses are by far the most expensive in the range, but our advice, if you are serious about your photography and you can possibly afford one of these lenses, is - **GO FOR IT!** You will not believe the difference in the resolution, contrast and colour rendition of the image.

If we could afford it, we would go out and buy the 200mm f/2.8 and both converters without any hesitation whatsoever. Admittedly we would find the 300mm f/2.8 and 600mm a little more difficult to justify for our photography, but we can dream.

There are currently over 40 lenses available, ranging from 16mm fisheye to 600mm telephoto. Minolta are one of the very few manufacturers who produce their own lenses, from the raw materials right through to the final marketed product. They have at their disposal over 150 different types of optical glass, many of which are unique to Minolta. This is backed up by over fifty years of experience in lens making.

Minolta are at the forefront of innovations in optics and have introduced many new lens designs to reduce the size and weight of lenses. There has, in recent years, been an increased demand for wider and wider ranging zoom lenses, including new optical designs to increase focusing speed with autofocus lenses. However, Minolta never introduce a new lens that compromises picture quality.

The famous Minolta Achromatic lens coatings were introduced in 1956 as the world's first multi-layer lens coatings. Lens coatings are designed to reduce internal reflections, and therefore light loss, as well as flare, and to increase image contrast. A multi-coated lens can increase light transmission by up to 20%.

Aspherical Lenses

Minolta have made extensive use of aspheric lenses since the introduction of the AF 35-70mm f/4 lens (the world's first mass produced lens with an aspherical element) in 1985 by utilising these special lenses into not only most of their interchangeable lens range, but also into their zoom compact cameras.

Q) What is an Aspheric Lens?

A) A conventional spherical lens' surface is of even curvature. An aspherical lens' surface however, changes curvature across its surface.

Lenses can be made using only one or two elements, but this results in various lens aberrations, such as distortion, low contrast, soft image, poor colour rendition, etc. The lens designer then introduces extra lens elements to correct these faults or, as they are called in photo-speak, aberrations. Aspherical lenses perform the same job of two or three lens elements, with the advantage of using less glass, increasing light transmission and image contrast, while maintaining high

image resolution. Of course less glass also results in lighter and more compact lenses.

Apochromatic Lenses

All of Minolta's APO (Apochromatic) lenses and converters use AD (Anomalous Dispersion) glass, designed, manufactured and tested for Minolta by Minolta.

This special low-refraction, low dispersion glass minimises lateral and longitudinal chromatic aberrations which tend to occur with telephoto lenses. Chromatic aberration is a lens fault where only one or two of the three primary colours are focused sharply at the film plane. The term Apochromatic is the cure for this lens aberration. All three primary colours are focused sharply at the film plane, resulting in higher contrast, resolution and improved colour rendition.

Focusing Range Limiters

The 200mm f/2.8, 300mm f/2.8, 300mm f/4, 400mm f/4.5, 600mm f/4, 50mm f/2.8 macro and 100mm f/2.8 macro lenses feature focus range limiters.

With the above lenses, owing to the wide focus range and large apertures, and the resulting small depth of field, there is a potential problem where the 600si may be unable to focus.

If your subject is close to, or at one end of, the focusing range, while the current lens focus position is at the other end of the range, the image appears so far out of focus that the signal generated by the CCD (focusing sensor), replicates that of a low or zero contrast subject. The 600si cannot focus because it believes that focusing is impossible from this position. In such situations the use of the focus limiter can be set so that the subject never falls far enough out of focus for this to occur.

Lens Hoods

All Minolta lenses, with the exception of the 35-70mm f/3.5-4.5 and 35-80mm f/4-5.6 Power zoom, are supplied either with a lens hood or have a hood built-in. The lens hood is specially designed to reduce lens flare as much as possible by shielding the lens from stray light outside of the picture area and without causing vignetting in the corner of the photograph.

G-Series Lenses

The G-Series lenses are as follows:

35mm f/1.4

85mm f/1.4

200mm f/2.8

300mm f/2.8 300mm f/4

400mm f/4.5

600mm f/4

28-70mm f/2.8

80-200mm f/2.8

The G-Series lenses represent the highest possible optical performance available. By purchasing one of these lenses you can be assured that you will obtain the highest possible performance available for your Minolta camera. They all feature large apertures which are made up with a higher than normal number of diaphragm blades in a circular design to produce a more natural background.

Dynax/Maxxum Specification Lenses

In 1988 when the 7000i was introduced, Minolta launched a range of new zoom lenses which were known as Dynax/Maxxum lenses. Not only were new optical lens

designs used to make the lenses smaller and lighter, but the AF speed on these lenses was upgraded considerably by incorporating the latest developments.

Since the early 1990's Minolta have been updating some of the original prime (fixed focal length) lenses to Dynax/Maxxum specification, so that almost all lenses have now been upgraded to level.

Upgrading an original lens is achieved by:

- 1) New appearance, easily noticeable by the improved rubber focusing ring rather than the original serrated ring.
- 2) High Speed processing ROM IC in each lens. This is so the lens communicates faster with the camera body.
- 3) The rotation distance between infinity and close focus settings reduced, therefore the lens has less distance to travel to bring the image into focus.
- 4) Reduced friction gearing etc, therefore less torque is required to turn the lens.
- 5) On some lenses, the addition of a focus lock button on the lens barrel, which can be re-programmed to allow selection of continuous AF or centre focus area.

The Types To Choose From

Wide-Angle Lenses

One of the strengths of the Minolta range of lenses is undoubtedly the range of wide-angle lenses available. Wide-angle lenses are normally associated with landscape photography, but are also ideal for indoor photography: to take in a large area from a short distance, and where large

apertures are needed due to low lighting levels and where large depth of field is also required.

Many professional photographers use wide-angle lenses for grab shots and when shooting in tight, crowded conditions. They are also suitable for group shots and architecture.

16mm f/2.8 Fish eye

This lens covers a full 180 degrees diagonal field of view.

Four filters (normal, O56, FLW, B12) are built-in and selected by turning a ring at the front of the lens. Incidentally, it does not require much focusing beyond approximately 2m as at maximum aperture with the lens set to infinity, the depth of field extends down to 2.87m!

20mm f/2.8

One of our favourite lenses in the entire range. It offers extremely high image resolution whilst offering the perspective control of a super wide-angle lens without the distortion normally associated with lenses as wide as this.



20mm f/2.8

The use of a floating element lens design virtually eliminates close focus aberrations, while a rear focusing design also allows for very fast and precise autofocusing. In addition, the use of a seven bladed aperture produces a circular opening to provide more natural background highlights.

This lens was recently updated to Dynax/Maxxum specification, but still uses the same optical design as the original.

24mm f/2.8

A lightweight and compact super wide-angle lens employing a similar optical design to the 20mm including rear element focusing with a floating element. This lens again uses a seven bladed aperture which produces a circular opening to provide more natural background highlights. It is now a *D y n a x / M a x x u m* specification lens, but using the same optical design as the original.



24mm f/2.8

28mm f/2

A fast aperture wide-angle lens suitable for working in dark conditions.



28mm f/2

28mm f/2.8

An excellent cost performance lens which is lightweight and compact, ideal when travelling. Features a built-in lens hood.

35mm f/1.4 G

A unique lens. The large aperture produces an extremely bright viewfinder image and makes the lens ideal for very dark lighting conditions. An aspheric element and rear focusing system contribute to the superb sharpness and extremely high contrast.



35mm f/1.4

35mm f/2

35mm focal length lenses tend not to be that popular these days. However, a number of photographers prefer this to the 50mm lenses as their standard lens and this is still a relatively fast aperture optic.

35mm f/2



Standard Lenses (50mm f/1.4 and 50mm f/1.7)

Standard lenses offer a natural angle of view close to that of the human eye. The f/1.7 offers extremely good cost performance and is ideal to keep in the bag as a cheap fast aperture lens for low lighting conditions. Both lenses feature a built-in lens hood. The f/1.7 lens has been updated to Dynax/Maxxum specification.

Telephoto Lenses

85mm f/1.4 G

Words cannot express the optical performance of this lens. It is an excellent choice for anyone specialising in portraiture. Its very fast maximum aperture allows precise control of depth of field. In addition, the use of a circular diaphragm produces natural background highlights. It has been updated to Dynax/Maxxum specification and given a large manual focusing ring and focus lock button.



100mm f/2

The 100mm focal length has always been regarded as the perfect focal length for portraiture due to its natural perspective and depth of field control. The large aperture also makes it suitable for indoor sports photography.

- Q)** Why are the APO lenses painted white rather than the usual black?
- A)** Due to the size of the lens barrel, when used in high temperatures the lens barrel expands affecting the focus. The white paint is used to help reflect the heat and therefore minimise expansion. If you look at the infinity setting on the distance scale you will notice that it is represented as a line rather than a specific point. This is because at varying temperatures the infinity focus point will change slightly. Depending on the lens in use this can be as much as a 7 degree rotational shift.

Reflex 500mm f/8

Another unique lens to Minolta. This is the world's first and at the time of writing **still the ONLY** autofocus mirror lens.

Originally when autofocus was introduced, other manufacturers said that this type of lens was impossible to produce due to the characteristically very small working aperture of around f/8 for this focal length.

f/5.6 is normally the smallest aperture that will enable autofocus to still function. However Minolta autofocus systems are sensitive enough to focus accurately with apertures of f/6.7.

- Q)** But, isn't the 500mm mirror lens still only an f/8 lens?
- A)** Quite right! In exposure terms this lens has an effective aperture of f/8 but, as far as the focusing system is

concerned the aperture is f/6.7, therefore AF still functions.

By utilising two mirrors, one at each end of the lens, the light is folded so that the lens is one third of the length of a conventional lens of the same quoted focal length. Because of this the weight is considerably less as well. The short, "chubby" design improves handling considerably and allows it to be used hand held at much slower shutter speeds than with a conventional 500mm lens.

Autofocusing is amazingly fast for a lens of this type. A focus hold button is provided on the lens barrel.

The large rubber covered lens hood also acts as an extension of the manual focusing ring. The front filter thread is 82mm, but drop-in filters can be used. The lens is supplied with a normal and a ND4x neutral density filter.

Due to the reflex optical design, there is no aperture control - it is effectively fixed. Due to this, in aperture priority and manual exposure modes the aperture is always f/8 and therefore cannot be changed. The use of a neutral density filter can be used to reduce the amount of light entering the camera and therefore reduce the shutter speed in bright conditions.

Note: Due to the optical design of this lens only the centre AF sensor can be used. Therefore switching between wide and spot focusing areas has no effect. Because of this, metering will be from the central seven honeycomb segments only.

Multi-dimensional Predictive focus will not function. However, the 600si will use conventional predictive focus control.

200mm f/2.8 G,
400mm f/4.5 G,

300mm f/2.8 G,
600mm f/4 G

300mm f/4 G,

These are five lenses offering the highest possible optical performance available for applications requiring telephoto lenses. In addition to their focal length, the large apertures make them particularly suitable for sports and wildlife photography.

The 200mm f/2.8 is Damian's personal favourite. This is due to its outstanding optical performance, compact dimensions and light weight, which make it ideal for panning and hand holding for long periods. Also, extensive use of the 1.4 and 2x converters to give 280mm and 400mm focal lengths respectively.

We do not enjoy using the 300mm f/2.8 or the 600mm f/4 due to their size and weight; you really do need a tripod for these lenses. Having said that, they are approximately 2/3 to 1/2 the size and weight of their counterparts from other manufacturers!

Due to the size and weight of the two 300mm, the 400mm and 600mm lenses, a tripod mount is provided on the lens barrel. Ensure that you use this when using these lenses on a tripod or monopod, unless you want to see what the camera looks like without a lens mount!

The 200mm f/2.8, 300 f/2.8 and 600mm f/4 lenses feature built-in lens hoods, whilst the other two have supplied detachable metal lens hoods. The front of these is rubber armoured to protect the front of the lens so that it can be stood upright on the ground when the hood is extended and locked in to position or attached. They also feature focus lock buttons (2 on the 300mm and 600mm for vertical or horizontal framing).

The filter thread on the front of the 200mm is 72mm, the 300mm f/4 is 82mm, the 300mm f/2.8 is 114mm, the 400mm

f/4.5 is 95mm and the 600mm is a whopping 154.5mm! They are supplied with a clear filter to protect the large, and very costly to replace, front element. To replace the protective filter on the 600mm will cost approximately the same as the 600si body itself!

Because of the large diameter filter threads on the 300mm lenses upwards, 42mm diameter filters may be dropped in at the rear of the lens.

Slow autofocus performance is normally associated with lenses of this type, but not in these superb optics. Due to an internal rear focusing optical design, only the rear and lighter lens elements are moved for focusing, therefore allowing very fast autofocus to be maintained without the need for lens integral autofocus motors. To further reduce focusing times, the focusing range can be limited from either the closest distance to a preset distance, or from infinity to a preset distance.

When in autofocus, a metal sheath is slid over the large focusing ring to prevent this from being obstructed during focusing as the lens is normally held in this region.

Teleconverters

Minolta produce two converters exclusively for the 200mm f/2.8, 300mm f/2.8, 300mm f/4, 400mm f/4.5 and 600mm f/4 lenses. They **CANNOT** be used on any other lens as they will not physically fit.



Minolta AF 1.4x Teleconverter APO

It is normally accepted that teleconverters significantly reduce the optical performance. Although there is inevitably a slight

performance loss when using these converters, the quality is still extremely high: many users may never notice the optical fall-off with these lenses. The use of Minolta's achromatic lens coating and AD glass helps maintain optimum image quality even at maximum aperture.



Minolta AF 2x Teleconverter APO

The 1.4x converter extends the focal length by 1.4 times. There is a loss of one f-stop in light transmission, therefore the 200mm f/2.8 becomes 280mm f/4, the 300 f/2.8 becomes 420mm f/4, the 300mm f/4 becomes 420mm f/5.6, the 400mm f/4.5 becomes 560mm f/6.7, and the 600mm f/4 becomes 840mm f/5.6.

The 2x converter extends the focal length by 2 times. There is a reduction in light transmission of two f-stops. Therefore the 200mm f/2.8 becomes 400mm f/5.6, the 300mm f/2.8 becomes 600mm f/5.6, the 300mm f/4 becomes 600mm f/8, the 400mm f/4.5 becomes 800mm f/9.5, and the 600mm f/4 becomes 1200mm f/8.

Both converters feature a built-in ROM IC to provide the 600si with the necessary compensation data so that the effective aperture is displayed at all times.

Autofocus cannot be used with the 300mm f/4, 400mm f/4.5, and 600mm lenses when the 2x converter is used, due to the effective aperture being beyond the sensitivity range of the 600si's focusing system.

Macro Lenses

Another strong point of the Minolta lens range, are the macro lenses. There are four macro lenses available.

The 50mm f/3.5 Macro is the newest addition to the macro range. It offers 1:2 (1/2 life size) reproduction. A “floating element” optical lens design is used to virtually eliminate close focus aberrations.

The 50mm f/2.8 and 100mm f/2.8 lenses allow 1:1(life size) reproduction. Both of these lenses employ a “double-floating element” optical design to virtually eliminate close-focus aberrations and to allow for faster autofocusing. Both lenses also feature a circular diaphragm to produce a softer more natural background, plus each lens features a wide rubberised manual focusing ring to aid manual control.

The 50mm f/2.8 and 100mm f/2.8 feature a focus limiter to reduce focusing times when working at one end of the focusing range. In addition they also feature a focus lock button on the lens barrel.



50mm f/3.5 Macro

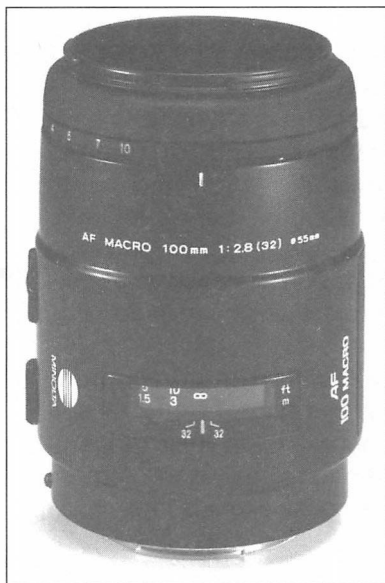


50mm f/2.8 Macro

When using the 50mm f/2.8 macro lens at close to 1:1 magnification it is recommended that you use the 1200AF

macro flash. This is because shooting at this magnification results in you becoming so close to the subject that you end up blocking most of the available light, which then leads to slow shutter speeds. When using the 100mm f/2.8 macro lens, because the shooting distance is very much greater, the above problem is not normally encountered.

The 100mm f/2.8 macro can also be used very successively as a portraiture lens.



100mm f/2.8 Macro

Macro Zoom 3x-1x f/1.7-2.8

This is the world's first and only AF lens to operate in the 3x-1x magnification range.

It is exclusively for macro photography as its operating range is limited to 25.1 - 40.1mm from the subject to the front of the lens. The zoom is motorised as well as the lens barrel, which can be rotated through 90 degrees when fitted to its supplied table top stand. Full autofocus and auto exposure are maintained.

It is almost essential that the 1200AF macro flash be used to allow autofocusing to take place. There is no manual focusing option.

As with the other macro lenses this lens features a floating element optical design to reduce both spherical and chromatic aberrations.

The 100mm f/2.8 SOFT FOCUS Lens

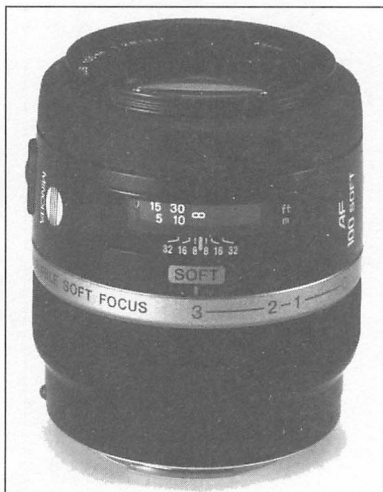
Not the sort of lens that gets the shutter release finger twitching with excitement, but we are sure the lens designers received a pat on the back when this project was completed.

All of the major camera manufacturers offer a soft focus lens in their range of lenses, but none of them are quite like this one.

Firstly, the soft focus effect can be dialled out completely, enabling you to produce the same image sharpness as a normal 100mm lens. Secondly, the entire aperture range can be used, however, the larger the aperture the greater the degree of image softening.

Thirdly, the entire image is softened and not just the objects at the focused distance. Fourthly, due to the softening being created by controlled spherical aberration the image retains a sharp central image core, which not only retains detail in the image, but also allows the autofocus system to still be utilised.

All of the above contribute to this being, without a doubt, the best all round soft focus lens available. If you do a lot of portraits or weddings it will prove invaluable.



100mm f/2.8 Soft Focus Lens

Zoom Lenses

xi Zoom Lenses:

xi 28-80mm f/4-5.6

xi 35-200mm f/4.5-5.6

xi 100-300mm f/4.5-5.6

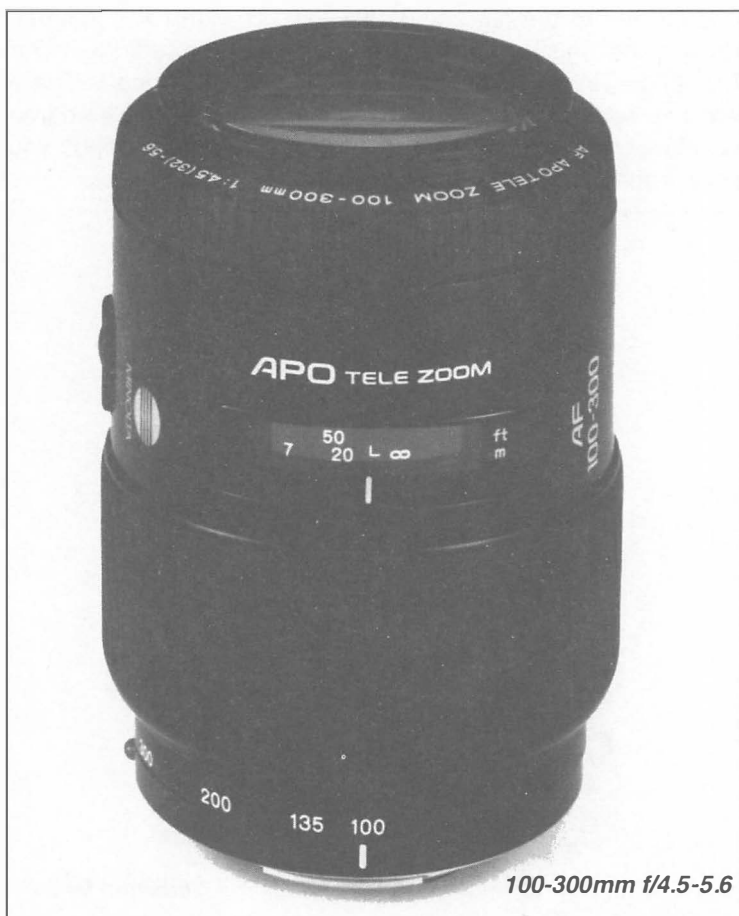
xi 28-105mm f/3.5-4.5,

xi 80-200mm f/4.5-5.6,

There are five xi zoom lenses. They allow powered zoom operation as well as powered manual focus. Turning the lens control ring to the left zooms the lens to wide focal lengths; turning the ring to the right selects telephoto settings. The further the ring is turned the faster the zooming speed. There are five speeds. Once you have acclimatised to the degree of rotation required to select the various zooming speeds you soon appreciate the control available.



The main benefit is stable comfortable zoom control, especially when operating the camera in low lighting conditions whilst still trying to maintain a sturdy support for the camera. Many people are not open to the benefits of the power zoom lenses. We must admit that we did not like the operation initially, but given the choice now, we would have no hesitation in choosing either the xi 28-105mm or the excellent xi 35-200mm, which are the smoothest of all the xi zooms.



Incidentally, using the fastest zoom speed causes the lens to change from one end of the range to the other in only 7/10 of a second (35-200mm - 1.0 second).

Pulling the ring back and turning in either direction selects powered manual focus. Once again the further the ring is turned the faster the speed. There are three focusing speeds. This we do find a little too fiddly, but fortunately the AF system is so good now that we do not have to rely too heavily on this operation.

All of the xi lenses feature a switch on the lens barrel (except the 28-80mm, due to its "U-turn" optical zoom design), labelled **AZ/MZ**. In the **AZ** position zooming is powered. In the **MZ** position zooming is performed as on conventional zoom lenses, either by twisting the ring at the end of the lens or pushing and pulling, depending on the lens in use.

Electronic Compensation

In all zoom lenses, one or more elements move together to keep the image in focus as the focal length changes. Most lenses accomplish this by moving several elements either together, or the same amount individually with the use of a special cam. The first method results in a large and bulky lens design, whilst the second, although more compact, requires extremely precise design and manufacture.

The 28-105 f/3.5-4.5 and 35-200mm f/4.5-5.6 feature a very compact vari-focal design and a method called electronic compensation, which requires no cam or any other mechanical method to keep the image in focus as the lens is zoomed. Basically the shape of the cam is programmed into the lens' CPU. As the focal length changes the lens microprocessor passes the focus compensation information to the 600si's autofocus system which then automatically adjusts focus as the lens is zoomed.

The 28-80mm, 28-105mm and the 35-200mm all feature an aspheric lens element which contributes to the compact dimensions whilst still maintaining optimum lens performance.

Manual Zoom Lenses

Over the last couple of years Minolta have added a number of new zoom lenses and upgraded some of the original lenses. All Minolta zoom lenses are extremely compact and therefore lightweight in comparison with their rivals.

The current range is as follows:

24-50mm f/4
24-85mm f/3.5-4.5
28-70mm f/2.8 G
28-80mm f/4-5.6
28-85mm f/3.5-4.5
28-105mm f/3.5-4.5 (new)
35-70mm f/3.5-4.5
70-210mm f/4.5-5.6
80-200mm f/2.8 APO G
75-300mm f/4.5-5.6 (new)
100-300mm f/4.5-5.6 APO
100-400mm f/4.5-6.7 APO

Damian is frequently asked which lenses in the range he would buy. Below we have listed three suitable combinations. These lenses complement each other in optical performance.

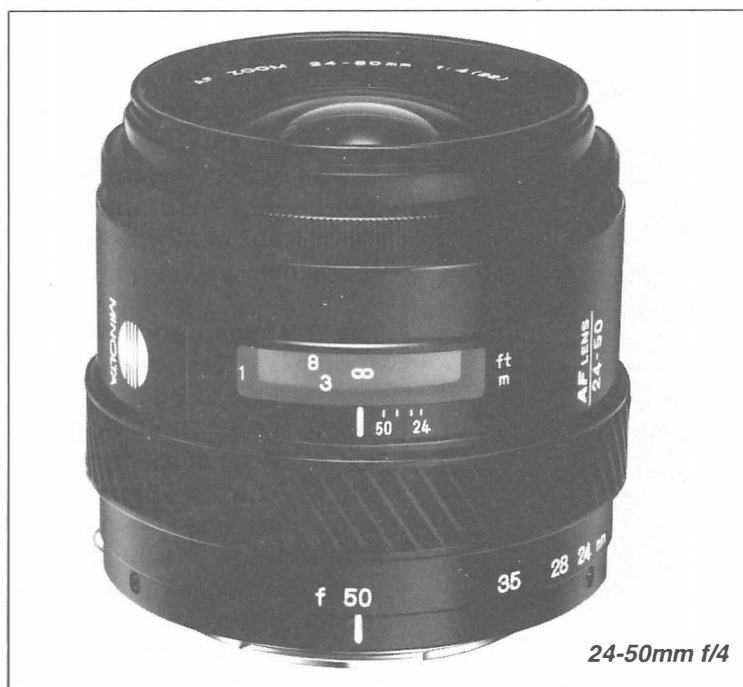
- 1) 28-70mm f/2.8 G and 80-200mm f/2.8 APO G.
- 2) 24-85mm f/3.5-4.5, 28-85mm f/3.5-4.5 or 28-105mm f/3.5-4.5 and 100-300mm f/4.5-5.6 APO or the more desirable and expensive 100-400mm f/4.5-6.7 APO.

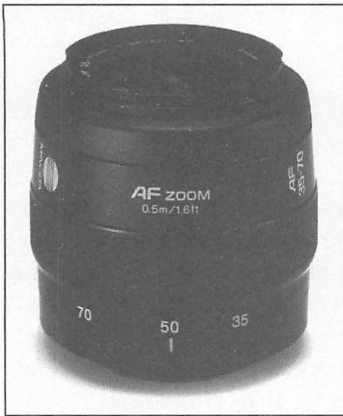
3) 28-80mm f/4-5.6 and 70-210mm f/4.5-5.6 or 75-300mm f/4.5-5.6.

The first combination we would describe as superb, the second excellent and the third very good.

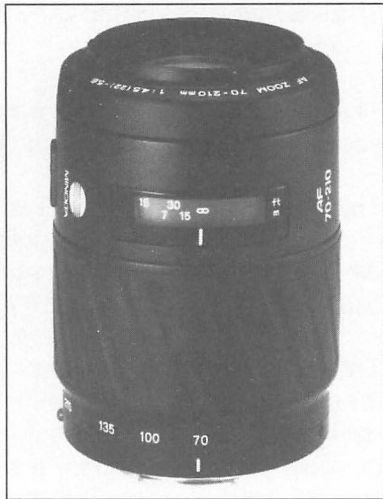
The 80-200mm f/2.8 APO G is one of the best zoom lenses available. Many users of this lens state that they find it difficult, if not impossible, to differentiate this lens from the fixed focal length 200mm f/2.8 APO.

The 28-70mm f/2.8 G was developed to be used with this lens as it offers very similar optical performance. The designers have gone to great lengths to produce the highest possible performance from these lenses. Firstly, they have incorporated a more circular aperture diaphragm in both

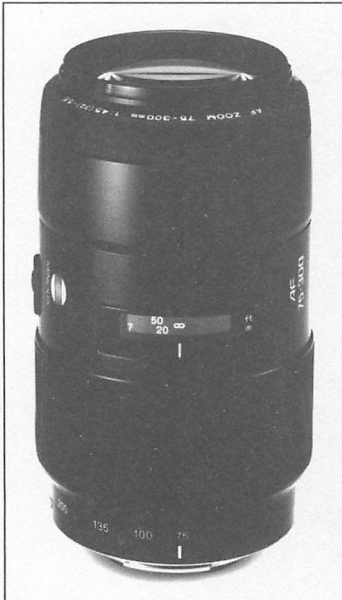




35-70mm f/3.5-4.5



70-210mm f/4.5-5.6



75-300mm f/4.5-5.6

lenses, and in the 28-70mm they have built-in an internal lens flare reduction mask. This moves up and down the lens axis as well as increasing and decreasing in diameter to reduce lens flare to an absolute minimum.

The 24-85mm and the 100-300mm APO lenses were recently introduced to be used together as their optical performance complement each other. The 24-85mm is the world's first lens to feature this zoom range. It uses two aspherical lenses primarily to reduce distortion at the wide focal length settings. The use of an internal focusing

mechanism ensures fast and quiet autofocus as well as providing a minimum focusing distance of 0.5m at all focal lengths, which enables a maximum magnification ratio of 1:5.9. The internal focusing mechanism also results in the front of the lens remaining fixed during focusing and zooming, therefore making it far more convenient when using filters such as the polarising and graduated filters.

The 100-300mm APO employs a similar optical design to that of the normal 100-300mm. However, the front two elements are made from AD glass which gives improved resolution and colour rendition as well as higher contrast. It should be noted that this lens is extremely compact and lightweight for the zoom range and quality that it delivers. This is due to Minolta's unique "double-telephoto" optical design.

It also offers a maximum magnification of almost 1/4 life size.

This same optical design also contributes to the new 100-400mm f/4.5-6.7 APO being so compact and lightweight for what it is. This is the world's smallest 400mm focal length lens, quite an achievement when you also bear in mind that it zooms down to 100mm as well! It is also the only 100-400mm zoom lens in the world, so don't bother trying to find an equivalent from an independent lens manufacturer. Sorry!

This new lens would be ideal for those of you who photograph sports or wildlife. Its wide zoom range means that you have less to carry - always a good thing.

Did You Know?

Ever wondered why Minolta rear lens caps open the aperture when fitted to the lens? This is to protect the lens diaphragm when in transit. By opening the diaphragm the aperture blades cannot be damaged due to any extreme vibrations. Therefore if you lose one of these caps, be sure to replace it with the real thing, as independent caps tend not to do this.



Minolta AF Zoom 28mm-70mm f/2.8



Minolta AF Zoom 80mm-200mm f/2.8 APO

What To Do When Using Non-Dedicated Lenses

If a lens or accessory with no electrical contacts in the mount (such as some independent lenses, microscope adapter, bellows, extension tube or slide copier) is fitted to the 600si, the shutter will not fire with a film loaded in the camera.

This is a safety feature designed to reduce the chance of wasting film due to the camera not being able to communicate with the lens. Other reasons for this occurring other than when using a non compatible lens are: grease or dirt on the camera/lens contacts; the lens not fitted correctly; or the contacts being damaged. Should the camera not be able to communicate with the lens, this will be displayed where the aperture is normally shown.

To override this feature, perform the following operation:

Firstly remove the lens from the camera. Now press and hold the **ISO** and lens release buttons whilst switching the camera from **LOCK** to **ON**. The body LCD panel will display **OFF** for a few seconds to confirm the setting.

To reactivate the safety feature, perform the same operation. The display will indicate **On** to confirm the new setting.

Note: Switching the camera off and back on again or removing the battery will not reset the feature.

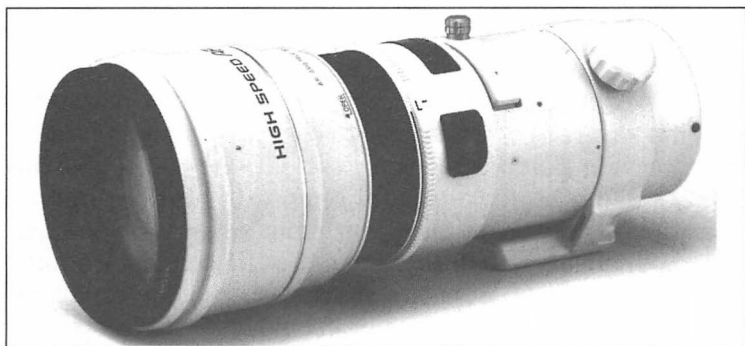
Damian - What are the optics that have impressed you John?

John - Over the years I have built up systems containing many optics. I have been keen therefore to look at the zooms that might make a lighter outfit to carry with my medium format equipment. Bearing in mind that I prefer to use a tripod mounted camera, overall lens speed was not a prime requisite.

The 24mm/85mm impressed me as part of an excellent two zoom system, and although it does not quite equal fixed lenses for, say, architectural work at the wider setting, overall I was more than pleased. Also the 28mm/105mm as an alternative to squeeze that little extra at the longer end for portrait work impressed me too. The balance with both lenses is very good and, like all of the Minolta lenses I have tried, the handling is first class.

I have long held the view that macro lenses are good all round lenses and I have been fortunate enough to have tried them all. The 100mm is as good as I have ever used before and doubles up as a good portrait lens.

If I could add a third lens to make a three lens outfit, it would be nice to look at the 100mm/400mm. (I took one of these with me to America recently. Not only was the performance excellent but the handling makes this lens a real joy to use. It is by far the smallest 400mm lens available on the market today! - DD) Although Damian has quite rightly noted the excellent performance with the "G" series lenses, do not worry, the others are not going to let you down. What I would say, is handle any lens to get a feel for it before parting with your cash, as what is right for me may not be for you.



Minolta APO Lens

CHAPTER ELEVEN

Techniques Of Photography

We briefly describe here some of the most important points to consider for the most popular types of photography. It is generally better to decide what you want to photograph and then set about buying the appropriate accessories, rather than buying the latter and then wondering what to do with them.

Photography literally means - drawing (graphic), with light (photo), or light drawing, and opens up to all of us a means of expressing our ideas and feelings along with recording those important moments in our lives. It is all too easy to take countless shots year in, year out, and end up with the majority in the dark recesses of a box in the attic, or throwing them away. But do not become disillusioned if this sounds familiar, as even the best professionals shoot far more than they actually keep. The difference is often that those images kept meet a particular need or requirement often established before the shot was taken rather than shooting from the hip. That is an important thing to remember in order to produce quality on a consistent basis - plan ahead before reaching for a camera, even if the initial concept was modified during the shoot.

So, how do we go about creating images that will be shown with pride? Notice we said creating images and not taking pictures. Here lies a subtle but important difference and a good place to start before even picking up the 600 si. We are really talking about one very important starting point - motivation. We enjoy things far more when we approach them with a want and desire rather than feeling that we must do them. Creating beautiful images is no different, all we need at first is a reason to achieve something worthwhile. Do you enter competitions, display framed prints in your home, shoot for stock or belong to a club or society? All of these can be important in terms of motivation.

Other photographers and their work are also excellent sources of inspiration, be they ordinary folk with no greater abilities than our own, or at the top of the professional tree. Look at the images that you like - what can we tell about how they were taken? There is always something to be learned. What type of lens was it, a wide-angle that took in a large area or a telephoto that drew the photographer close in to the subject? Is the lighting natural or man made or both? Have they shot the image in a vertical (portrait) format or in a horizontal (landscape) one? Where is the position of the light source? What components of the image made you look twice? Are the colours muted and pastel or are they strong and dynamic? Is the subject filling the picture or not? By looking at the work of others we can start to make some assessment or guesstimates about how and why those pictures succeed.

We should use the same decision making process when it comes to our own work. Do we want a portrait or landscape format, to fill the frame with the subject, or include more of the background? This works a treat when you know there is something to capture on film, but cannot quite see how to do it for the best effect. If you keep the following thought in mind it should prove to be very useful, time and time again. What am I trying to say in the image I am about to create? What part of the picture emphasises that to best effect and how can I enhance it through different techniques? Then take a good look at the image you see through the camera and take out of the composition anything that does not add to what you want to highlight - this will help the image to be stronger and to better convey your meaning.

It is also worth cultivating the ability to look around you in quiet moments and notice how natural light can affect a subject, its shape and character. Is the light strong and direct from the sun, or is it an overcast day with a softer feel to its quality.

One of my biggest observations about us photographers is how many seem to be oblivious to the infinite ways natural light works, only becoming aware of it on the brightest of days. We look but we don't see! In itself natural light can be a motivation in trying to capture the feel of it on film or in trying to recreate as best we can, the effect with man-made lighting. Subject matter is often a stumbling block of getting started but the following are popular subjects with a few pointers to help out.

Close-Up Photography

Close-up photography is an exciting area where even with bad weather, indoor or outdoor limitations, most subjects are fair game to be photographed. We look but we don't see is a term that we would use to describe the world in miniature all around us. We are as guilty as the next person of overlooking many opportunities.

We have at our disposal a camera and supporting system to match any other. Indeed we have used the 600si and all of the macro lenses in the range and do not think they could be bettered. Add to the list the close-up flash unit with TTL control, a few personal accessories, and really we can produce first class results.

We will not talk about very high magnification work as this is beyond the goal posts of this book. We will however explain the how and why to better general close-up work. So let us start with a basic fact. Without the camera held steadily you will not achieve either a sharp result or one with an adequate depth of field

The slightest movement when focused on very close distances is magnified in its effect of reducing sharpness compared to the same lens and camera combination focused at a distance. A tripod is a must. This can be a table top model, if appropriate, or a full size one with the flexibility to

get close to a subject at a low angle. Please don't try without one - you will only learn the hard way.

The next thing to be aware of is that the AF system, although good, will probably struggle on some subjects lacking contrast. We would recommend using manual focus. Do not trip the shutter release by hand as this can introduce some movement, but instead use the RC-1000S/L release cable or, as we prefer, the self-timer capability of the 600si.

Any lens can be used but we should explain that some are better suited than others. If flat copy work - document or painting studies for instance - are the major subject matter, a macro lens is a must. It is designed for maximum sharpness spread evenly across the picture areas and is corrected for a lens aberration called Curvature of field. This shows up as an uneven sharpness between the central parts of the image and the outer parts. If focused upon the former is clear, this becomes less sharp at the edges, the problem can be eased by stopping down, but not eradicated. In real use however pictures of plants and insects may not need this edge to edge resolution and other lenses are perfectly acceptable therefore.

Macro lenses (which we described earlier) are also made to give a high magnification at reasonable lens to subject distances. The magnification is the way we compare the size of the image on the film to the one in real life and one image to another. A 1:1 magnification reproduction to use the correct term is an equal size of subject compared to the image of that subject on our film. If the first number changes to become greater than the second, we are now talking about a size of image on film that is larger than the actual subject in real life.

So a 2:1 magnification ratio means that the subject on film is twice the size as that of the subject. If the second number changes to become bigger, the image on film is smaller than the subject. So a 1:10 ratio means that the size of subject on

the film is only a 1/10th that of the subject in real life. Do not think that the higher the ratio the better as this does not necessarily follow.

As a guide, close-up photography is between the ratios of 1/10 and 1/1. If we go beyond the latter we enter the world of micro photography. The macro lenses, apart from the 50mm f/3.5, all reach a 1/1 ratio while the 3x to 1x zoom covers from this up to three times life size.

Another way to increase the magnification, by getting the lens to focus closer, is to use a screw-in close-up lens. These can be used with any lens, are small and go anywhere, also are not as expensive as a macro lens, but they will not eradicate a lens's curvature of field or perform as well.

As we referred to earlier, the HSS mode with the 5400HS should be considered as this will be a useful feature.

Portraits

To capture a person's likeness is a popular subject matter. There are snaps and then there are photographs. In essence a portrait should show the person as you envisage them and can be a tightly cropped image with little but the person in the frame, or an environmental portrait depicting the person in a familiar surrounding.

Many volumes can be filled with tips and advice, but we mention a few here to keep in mind. First, do not get too close with a wide-angle or standard focal length lens as this can distort the person's features when used in such a way. While environmental images may use this type of optic, a telephoto lens is far better as it keeps a natural perspective and a little more distance between ourselves and the subject.

Always focus on the eyes, as they convey the person's emotions and are the place we tend to look when viewing an image. If the hands are in the picture it is useful to have the person holding something, while hands shown above the

waist look better pointing upwards, those below are better pointing down. In colour the choice of clothing can ruin an image if too gaudy as the viewer is directed to that. A vertical format is ideal.

Landscapes

In comparison with close-up photography, landscapes are without a doubt the cheapest of specialist photographic subjects to shoot. Having said that, if this is your subject of interest and you take our advice and purchase a 20mm lens it will soon cost you! This lens as we described earlier, is without any doubt our ideal lens for this photography. The reason for this is not purely based on the extreme wide-angle coverage but the effect that it has on the perspective, in particular what it does to the areas with the close-up foreground. It allows, for example, to feature an area in the foreground, such as a particular point of interest and yet still feature an extensive amount of the background.

Moving away from our ideal, any wide-angle lens is suited to landscapes and in some instances even telephoto lenses can be used.

Another benefit of using wide-angle lenses is the large amount of depth of field available and this is essential for photographing landscapes.

Rule Of Thirds

One of the biggest failures in landscape photographs is the positioning of the horizon. Most people tend to place the sky exactly in the centre of the frame. Imagine two equally spaced vertical and two equally spaced horizontal lines in the viewfinder. Where they cross produces four intersection points, these would be just above and just below the corners of the brackets that represent the AF area.

By positioning the horizon on one of the horizontal lines rather than in the centre produces a more balanced composition. Although this does not mean to say that the horizon has to be in the picture at all. We have seen some stunning landscapes where a distant object such as a house has been carefully placed at one of the four intersection points and yet there has been no sky in the shot at all.

You can also use this rule for portraits, by positioning the subject's head at one of the upper intersection points. The one that we choose depends on the direction that the subject is looking. E.g. if the subject is looking towards the right, position the head on the upper left intersection point. Here the subject will now be looking towards the open portion of the photograph which provides a point of interest.

As long as there is no direct sunlight in the frame, exposure can be dealt with easily by using centre-weighted metering. If you use honeycomb metering the camera will automatically switch to a centre-weighted metering pattern. If any of the areas cover the sun they will automatically be disabled, so as not to affect the overall exposure reading.

Sports

This we find the most challenging of subjects to photograph and for that reason the most enjoyable. Problems that exist which we should be aware of are accurate focusing (bit obvious, that one); sufficient depth of field to prevent only a small area appearing in focus; and suitable shutter speed to show movement/action in the result, yet not too slow as to not have sufficient detail.

The 600si's autofocus system and multi-dimensional predictive focus allow us to achieve a high success rate of in focus images. We would recommend that you select continuous autofocus rather than leaving the camera in auto selection mode. This eliminates the possibility of the camera

locking focus for a low magnification subject. We would also recommend the use of the wide focus area as this will make it very much easier to follow the subject as it moves rapidly, especially if its movement is also erratic.

The real art here though is panning. The aim is to keep the subject in the same position in relation to the viewfinder during the time the shutter is open. This means that we need to continue to move the camera with the subject. This of course takes practice and experimentation. We suggest starting with speeds of around 1/500 first and then gradually try speeds down to around 1/30. A word of warning though, as the speeds drop so does the success rate, having said that, the results can be staggering when you get the panning just right.

As far as equipment goes, telephoto lenses are going to be essential, but as to which one depends upon your budget. Zooms offer the most flexible answer. The 100-300 APO and the 100-400 APO both offer excellent performance. The 80-200 f/2.8 APO is the ultimate zoom. We would select the 200 f/2.8 APO and use this with the 1.4x and 2.0x converters if money were no problem.

The only negative comment that we have regarding the 600si for this type of photography is the motor-drive speed of 2 FPS. We would prefer an available speed of around 3-4 FPS. However, this does not mean to say that the 600si is unsuitable for this type of photography, it just means that we have to be a bit more accurate with our timing of the shutter release.

Conclusions

JC - I must confess that when I learned the basics of photography, there were only traditional cameras, complete with manual focusing, and controlling apertures and shutter speeds by hand. Old habits die hard. But in reality the progression of automation has, through the passing of time, appealed for its speed primarily, or when I have just felt lazy. In more recent years I have had to keep fully up to date as to the why's and wherefore's of how it actually worked and have therefore a great admiration for much that has been attempted to make our lives easier.

But the reality, in quieter moments of contemplation, has been to ask myself questions like - is the use of high tech making us better photographers? I think the answer to that must be no. It is making us more prolific, but by the time the full realisation about the benefits and limitations of things like multi-pattern metering are worked out, a detailed grounding in the traditional methods and ways of the medium could also have been mastered. In effect I am saying that both old and new has a role to play, but do not skip on a little hard work just because automation is at hand - you will not develop as a photographer.

The pleasure for me in writing this book is that, at last, there is a camera that balances both approaches beautifully. The 600si is not for the pretentious or the poser - it is a properly thought out machine that can hold its head against others of the AF generation, or work with the photographer in full control. All this without its instruction book on hand to meet out the answers to a confusing display or operational characteristic. You may not like the way all of its features operate but there are plenty of options to take control.

As an observation - I do think the body feels a little plastic. I can't help wondering that if Minolta had put the same camera onto the market, with a metal outer and an improved motor-

drive rate, they could have passed this off as a pro camera - its performance and sensible features are that good! That is my bottom line.

John Clements - October 1995.

DD - John has touched on some extremely valid points in his conclusion, most of which I agree with. Modern camera technology is not able to produce instant professional photographers out of us, but it is able to allow a far greater number of people to enjoy photography and the end result, which for me is capturing a moment or memory that can never be reproduced again. The 600si should be applauded for its immediate intuitive operation. I'm obviously used to push button AF SLR's but I am still always able to just pick up the 600si and start "creating" as John puts it. And this is where we've hit the nail on the head as the 600si allows you to use all of your experience gained with manual SLR's but allows you to take advantage of the automatics in those situations that require greater speed.

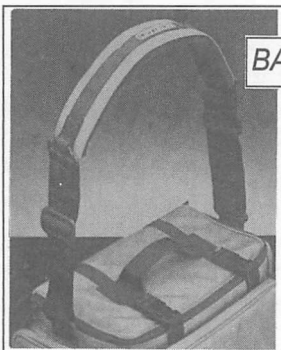
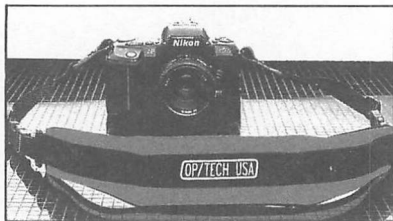
Damian Dinning - October 1995

We hope this book will short cut your route to getting the most from the 600si and thank you for reading our thoughts and findings - may we now wish you successful photography!

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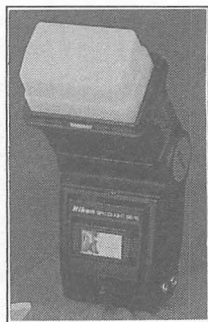


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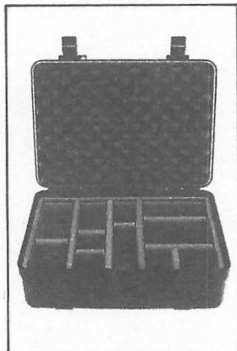
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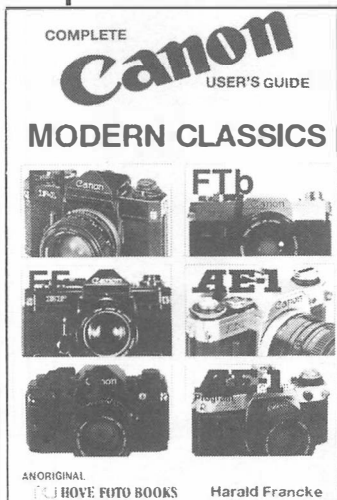
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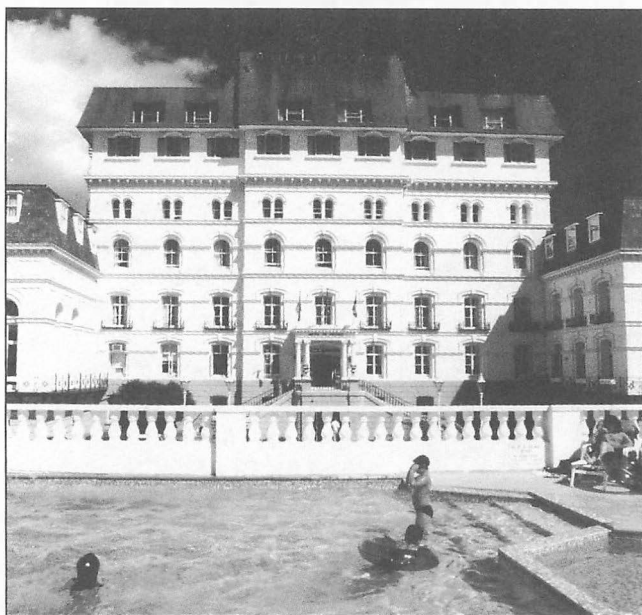
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ABOUT THE AUTHORS - DAMIAN DINNING AND JOHN CLEMENTS

It's hard to find a more "dynamic duo" writing technical books in the photo industry today. Both are young, enthusiastic about modern technology and have a deep passion for both the technique and art of photography.

Writing a book on the new, state-of-the-art Minolta 600si has been an interesting proposition for both parties. Clements background is Olympus and of course Nikon, where he is world-famous for the five Nikon books he has already written for Hove Foto Books, with Dinning being the technical product Manager for Minolta UK and with his highly successful '**Minolta 700si**' currently in print with Hove Foto Books, has Minolta running through every vein in his body.

So what a strange combination to have to write a new book on the superb Minolta 600si. Yes and no! With Damian Dinnings extensive Minolta technical knowledge and with John Clements appreciation of quality cameras, it was felt that an exciting book could be produced with more than one viewpoint that in turn will give the reader a greater evaluation of the product in question. It is our belief that the new Hove Foto Books '**Minolta 600si**' achieves that goal very well indeed. Jam-packed with clearly explained technical information from Damian and everything looked at with a critical eye from John.

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