

Understanding the EOS R

Especially written for Canon EOS users



A fast track guide to understanding how to use the EOS R's controls and functions

Contents include:

- Camera layout
- Exposure modes
- AF controls
- Key camera overrides
- Image processing options
- Menu options in-depth
- Customisations

Written by Nina Bailey

About this book

The EOS R is the first model in the new R system of full frame mirrorless cameras. Going to full frame is an aspiration of many photographers but they have been put off in the past by the size and weight of the system. With new mirrorless technology reducing both size and weight of the new models, full frame digital photography is now within everyone's reach.

I have historically produced two separate books, when covering a camera of this complexity. However, what I am finding is there is a significant amount of repetition needed to ensure that someone only getting one of the books has all the relevant information they need to operate the camera. So with smart devices now having more storage and download speeds getting faster all the time I have combined what was two volumes into a single book, which does allow me to provide better navigation around the book using hyper links.

Some of the content that I used to put in about the basic settings used in photography has been significantly reduced and will appear in a separate Essential EOS book, which will be available later in 2019 which covers all of the "photographic knowledge" that you need to understand to use an EOS camera successfully, as it is the same on all EOS, it made sense to put it in a specific separate guide.

It is designed to present the information in a much more accessible way than is found in the manual and is liberally illustrated throughout with screen images and also images to show what the features actually do to the images that you take.

There is also a companion Pocketbook available to provide a small A6 size guide that is easy to take with you when shooting, to help you remember how to set the key features on the camera. This is available from the EOS magazine shop.

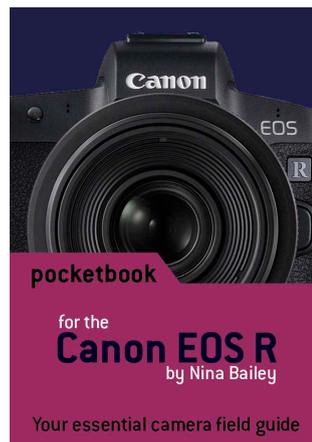
Click here to find out more about the range of Pocketbooks or go to www.eos-magazine-shop.com and click on the links for books.

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Some of the test images shot on the EOS R whilst producing the books on the EOS R showing the great images that can be achieved. These images are straight out of the camera, shot as JPEG files and have had no postproduction done to them.



Nina started her own business in 1999, concentrating on training for amateur photographers. As well as developing the online training academy and direct training of photographers, Nina is a prolific professional photographer producing images not only for the EOS Training Academy but for a variety of outside organisations. In 2014 Nina started producing her own range of ebooks (now over 50 titles) to bring photography training to an ever wider audience. In 2017 Nina also launched a range of printed compact pocket books (now over 20 titles) for the EOS range.

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Nina started taking images when she was very young and is still a very keen photographer both professionally and personally. Nina loves travel, landscape and wildlife photography and shoots to illustrate the many articles and books that she writes.

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About the EOS R system

Understanding what mirrorless is

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DSLR – looking through viewfinder

It is important to understand how Mirrorless cameras differ from the more traditional DSLR models that we are used to.

A DSLR model has a reflex mirror. When viewing, this mirror is down, allowing light to be reflected up into the camera's pentaprism and then up into the camera's optical viewfinder. This is shown on the image above. By utilising a reflex mirror we are able to see through the lens. This allows us to see the image being captured through the lens.

Of course the mirror is actually blocking where the image is going to be taken and so when the shutter is fired the mirror lifts up and the picture is then



DSLR – taking an image or using Live

taken through onto the image sensor. Although this allows us to see both framing and focusing, It does not allow us to preview exposure or white balance.

Later DSLR models were fitted with a feature called Live View. This allow the camera to be used with the mirror raised, utilising a direct feed from the imaging sensor. This allowed exposure, white balance and other image processing options to be previewed in real-time before the image was taken.

On mirrorless models both the reflex mirror and the pentaprism have been removed. On R series mirrorless the pentaprism is being replaced by an electronic viewfinder. In addition the image can also



Mirrorless - all operations

be viewed on the rear screen just like when using live view on the DSLR models.

However, not all mirrorless models have electronic viewfinders, relying instead on the rear screen LCD screen for viewing the image.

Regardless of viewing in an electronic viewfinder or on the rear screen, mirrorless models allow you to preview exactly how the image is going to look when taken, when shooting with ambient light. If shooting with flash then the ambient light is previewed rather than flashlight.

Understanding the EOS R system

Photographers are buying the EOS R for many different reasons. For some its about the benefits of mirrorless shooting, some its just to have the latest tech whilst for others it's about size and weight.

They are all good reasons for opting for this great new camera, however, there is another reason that's very important, but at the moment it's getting overlooked. It's actually all about the lens mount.

Back in 1987 Canon introduced the EOS System and I was actually there for the launch of the product and remember the controversy that changing the lens mount caused. However, within months the reason for the change became very obvious, as it allowed Canon at the time to produce unparalleled focusing speed from their lenses, and utilise the new USM motor technology to the full. That decision laid the way for the next 30 years with the EF mount, which took Canon from film cameras into the digital age and even to the forefront of movie creation with the cinema EOS range.

The handful of lenses at launch has grown into a range of over 70 lenses fulfilling all sorts of photographers' requirements. You may then think it strange that after all this time Canon has decided that we need a new lens mount, the RF mount. However, it is this lens mount that will provide the strength to the EOS R system for years to come.

The most important things are how close the sensor is to the front of the camera (A) and how far from the mount to the back of the lens (B). This is currently most pronounced on the RF 35mm f1.8 macro IS STM lens, where a larger rear element actually



protrudes quite a long way on to the camera body allowing it to virtually touch the sensor. Technically this protruding of the rear element is referred to as a short back focus design, which in essence all the RF lenses are.

This is not actually new, we have already seen it on some of the EF-S lenses which are designed for the bodies with the APS-C sensors. The new design on the EOS R in the RF mount has reduced the distance needed on a lens from the 44mm from the flange to

the sensor that Canon are working with on the EF lenses, down to just 20mm on the new EOS R.

This can be further reduced by the incorporation of short back focus lenses that actually protrude inside the body. This was difficult to achieve on any reflex mirror as the protruding elements obstructed the mirror operation. This was overcome to a degree on the models that utilised the EF-S lenses by the use of a retracting mirror.

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Understanding the EOS R system

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One of the things that became increasingly clear over the last few years to the Canon design people, is that the EF lenses were holding back lens design. The distance from the back of the optics to the sensor produces some aberrations that are due to the distance that the light is travelling and the angle that the light is hitting the sensor.

Shortening the distance from the rear element to the image sensor allows the rear element of the lens to be much larger, in fact on the RF35mm f1.8 MACRO IS STM the rear element is significantly larger than the one at the front. This results in the light rays travelling less distance and at a far less acute angle than on conventional lenses such as the EF35mm f2 IS USM lens to the right. This shallower angle and shorter distance makes lens design easier and makes it easier to push the boundaries of lens design with new and exciting options whilst producing higher optical quality than we have seen before.

It is not just higher quality that this change is producing. Lenses can have wider apertures, yet still be the same or smaller sizes than the EF counterparts.

The balance of the lenses, something that is sadly not often talked about, is also improved, as having the weight at the rear of the lens has a big effect on how manageable it is on the camera body. Quite often when people say they cannot manage the weight of a lens it's because its being put on a small light body that makes the handling much more awkward than on a larger



and heavier model.

A case in point is to compare the EF24-105mm f4L IS II USM lens fitted using the lens adaptor compared to the dedicated RF24-105mm f4L IS USM lens. Images above show the R with its dedicated version of the lens left and the EF version fitted with the mount adaptor to the right. (Before any one emails me, I know the lens on the R is showing the wrong way but it's the only image I could get the make the example work, it's showing the extra bulk caused by the lens adaptor rather than how to mount the lens). I first bought the EOS R as a body. I had only changed my EF24-105mm f4L IS USM lens for the newer version a

few months earlier and so decided to use that with the adaptor to save some money. It took me all of 3 weeks after handling the body with the dedicated version to decide that I had to get the dedicated lens. Ironically that cost me quite a lot extra as the lens is discounted when bought with the body. I will undoubtedly switch over some of my other lenses as and when equivalents come out, though there are some which I will always use with the adaptor. My 8-15mm f4L Fisheye USM lens will be one of those. I really don't use it enough to even justify having it, let alone replacing it. But it works fine on the adaptor and it's most often used when shooting interiors on a tripod when the handling is far less important.

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Basic camera layout

About the EOS R's main controls

It is important to understand the controls on any camera, as this will help you set the controls quickly and efficiently. The controls being shown here is as the camera comes out of its box. Nearly every button and dial on this model can be customised which I will look at later in this book. This model is very different to any other EOS models and so it will be important for all users to be familiar with the basic controls.

I rarely customise controls on my EOS cameras, as I find that as they come out of the box they are very usable and normally the customisations I use are to speed up the basic operation of the camera. A case in point is to enable quick scrolling between the different autofocus areas without the need to press the button to activate the AF area selection first.

What I am finding with this model is that some of the controls do need to be customised to make the camera easier to use for some types of photography. The problems I am finding is how it works for general travel and landscape photography, is far from ideal if shooting wildlife and portraits which often require a different set up to these other two options.

So this is a camera that can be made to work better if customised. However, what works for one person is not going to work for another. So my suggestion is to persevere initially with the default layout of the controls and get used to the main operation of the camera, then start to look at how the camera can be made better for the subjects you shoot and the way that you work.



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RF LENS MOUNT INDEX This is where you line up an RF mount lens and then turn clockwise until it clicks to mount it. Notice the different shape from EF mount index (round red circle) and EF-S mount index (white square) which are only found on the front of the mount adaptor as shown to the right. At the back of the mount adaptor is the RF index to align with the mount on the body.



About the EOS R's lens compatibility

The EOS R is designed to take the new RF series lenses. At the time that the R system was launched this is a very limited range (4 lenses in 2018 and 10 by the end of 2019) though it is quickly expanding to include a wide range of different types of lenses.

Most photographers who buy the EOS R at the moment will probably already own an EOS camera and some EF or EF-S lenses. So it was logical for Canon to make a mount adaptor to allow the EF and EF-S lenses to be fitted. In fact there are three different mount adaptors.

The standard RF mount adaptor is at time of writing (March 2019) supplied with the camera, though this may change as more RF lenses become available.

There is then an optional mount adaptor with a control ring that enables the function that the control ring provides on a RF lens to be added onto EF and EF-S lenses when they are used on the camera. However, on the RF lenses the control ring is found at the front of the lenses, whereas this by necessity places it at the rear by the camera's body mount. Which if mixing EF and RF lenses may be confusing to use.

The final adaptor is the one that features a drop in filter holder. This can be bought with either a polarising filter or a ND filter fitted and a optional Clear filter can be purchased to be fitted when either of the other two options are not required. This allows these filters to be used on some lenses that are not suitable for front fitted filters. The variable ND is ND3 to ND500 or about 1.5-stops to 9-stops of adjustment.



Standard RF mount adaptor, supplied with camera at launch



RF mount adaptor with control ring allowing control ring options with EF/EF-S lenses



RF mount adaptor with drop in filter holder allowing a PL, ND or protect filter to be inserted

Lens compatibility

EF Lenses

EF lenses can be fitted onto the mount adaptors by aligning with the red dot and will work fully on the adaptor. The way they work is the same as when using the RF lenses with just a couple of camera features that need specific RF lenses to work not being available. The main one of these is the high speed display option which needs RF lenses to work.

EF-S lenses

These can be fitted onto the mount adaptors by aligning them with the White square and will give all of their normal options when used on the EOS R. Once again there are one or two camera features that will not function unless there is an RF lens fitted.

However, something that is not so obvious by reading

the Canon material is that when an EF-S lens is in use the camera automatically switches to its crop setting, which then gives the right area for using the EF-S frame area. When this is in use, the camera will only capture 11.6 million pixels as opposed to the full 30.1 million pixels that it captures when used with the EF series lenses. Obviously that does drop the available quality of the image a significant amount. This is in the manual but you do have to persevere to past page 600 to find it! There is no way around this as the image circle given by the lens is too small to cover the full frame area without vignetting and so the crop mode has to be used.

EF-M lenses

There is no compatibility at all with or without the mount adaptors with the EF-M lenses used on the APS-C mirrorless range.

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Rear camera controls

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DIOPTRIC ADJUSTMENT A dial found to the left of the viewfinder used to adjust the viewfinder sharpness to suit your eyesight.

MENU BUTTON Press to access the camera's menu system where many options are set.

VIEWFINDER SENSOR Senses eye to viewfinder and turns on the electronic viewfinder display.

REAR SCREEN Image can be viewed on here, screen can be flipped out for use at high and low angles. Can also be rotated to store against camera for better protection.



PLAYBACK BUTTON Will show the most recently taken image.



M-FN MULTI FUNCTION BAR by default can be customised with a number of options

AF-ON BUTTON When pressed activates the focusing and metering (the shutter button). The use of this for focusing when shooting in AI Servo AF is often referred to as back button focusing.

AE LOCK BUTTON Press to lock the exposure. In Evaluative metering with One Shot AF the exposure locks automatically at the same time as the focusing on half pressure of shutter button. This can separate out their operation. Use to lock Spot or Partial metering onto correct area.

AF FRAME SELECTOR BUTTON This allows selection of your chosen focusing method. Prompts are shown at the bottom of the screen. If the area is not centred, pressing and holding this button will return it to the centre.

ERASE BUTTON Deletes image in playback.

INFO BUTTON Toggles between displays when the camera is active. Five displays available, fifth one is the black Q screen which can be left displaying on the back whilst the electronic viewfinder is used for shooting, making the camera operation much more akin to the DSLR models.

Also acts as a jump option when in the menus to jump between the main menu tabs along the top row.



CROSS KEYS <▲><▼><◀><▶>

Used for navigation within menus – goes up, down, left and right. By default left and up buttons change the selected option in FV mode back to auto. The right and down buttons reset all options back to Auto in FV mode.

Q BUTTON Pressing this will activate the Quick Set menu where the main settings are made. This can be done directly from the shooting screen or via Q screen.

SET BUTTON This is used within the menu system to apply settings. Within the Q screen, it allows you to see a more detailed screen.

TOUCH CONTROLS

The best way to set most options on menus and displays is using the touch control system that the camera offers. All the normal smart device gestures are supported and often it cuts out a lot of extra steps compared to manual navigation.

Top camera controls

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ON/OFF SWITCH Can be left on during a shoot as the camera goes onto standby after 1 minute (wake up with the shutter button).

FOCAL PLANE MARK Shows the position of the image sensor.

TOP SCREEN top information display, The mode can be selected here if the mode button is pressed and the settings on the M-Fn button can also be set on here

SHUTTER BUTTON Half pressure activates exposure metering. Also half pressure will escape from menu mode and from within menus.

M-FN BUTTON A multi-functional button (Dial function button) which brings up functions selected by the quick control dial and the settings can then be changed with the main dial. Functions are ISO, Drive, AF mode, White balance and flash compensation.

MAIN DIAL Turn to adjust shutter speed or aperture within relevant shooting mode. Can also change settings on Q screen.

MOVIE SHOOTING BUTTON Starts and stops the movie recording if in a specific movie mode. If in any of the still image modes this automatically shoots movies with the settings programmed into the C3 movie mode. This allows an instant way to shoot a few short clips if required. This is a quick way to shoot movies.

HOTSHOE Any of the Canon EX or RT series flash units can be used on the EOS R. There is also an EL-100 flash that is designed especially for the EOS R

LCD PANEL INFO SWITCHING/ILLUMINATION BUTTON A short press switches the display on the top screen, a long press will illuminate the top screen so it can be seen in lowlight conditions.



QUICK CONTROL DIAL

This is used with the Dial function button (M-FN) to select items to set. In playback it allows you to zoom in or to bring up the index display.

MODE BUTTON Where you choose the shooting mode. Press lock-release in centre to turn dial.



Lens controls

MANUAL FOCUS RING turn to manually focus once switched to MF

ZOOM RING turn to zoom the lens once zoom is unlocked

LOCK BUTTON Locks the zoom in place to prevent the lens zooming when being carried. Must be unlocked to shoot. Not on all lenses

LENS ALIGNMENT MARK Line up with same mark on body to mount the lens.

AF/MF SWITCH on all RF lenses allows the lens to be set to AF for autofocus or MF for manual focus

CONTROL RING Can be programmed to change specific features. Default is to change aperture but can be programmed with a number of other options.



Changing lenses on the EOS R

When lenses are changed on the EOS R the body should be turned off, otherwise the sensor is exposed to dust/rain spots as there is no protection in front of it as there is on a DSLR, as can be seen in the top image where the sensor is clearly visible. Also note how close the sensor is to the lens opening compared to a normal DSLR model.



When it is switched off the shutter closes and protects it as shown in the image to the right.



It only took me 3 weeks to discover this and get a significant mark (caused by a rain spot) on the sensor. The image to the right is a section of the full image enlarged big enough to fill this page, so a significant size spot which had to be removed for me by Canon's service department.



If using the mount adapter it should be fitted to the EF or EF-S lens first and then the combination mounted onto the EOS R body. To remove the lens you take the lens complete with the mount adapter off and then disconnect the lens from the adaptor. If using an extender on an EF lens the extender is fitted to the lens first, then the adaptor is added and then the combination is fitted onto the body.

It was when using the mount adaptor that the body was left unprotected when mounted to a tripod and the spot of rain got in. You quickly run out of hands when trying to change a lens and mount adaptor and handle all the caps.

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Where things are set

The EOS R can have its options set in a number of different places. The viewfinder has slightly different displays to the rear screen but essentially all the same information is available.

The menu (top) is the same as found on most other recent EOS models and will be very familiar to many users. The order of the options is fairly similar to that found on the DSLR models. An addition that will be new to some photographers is the addition of the AF menu, grouping all the commonly found AF settings into a single menu. The easiest way to set menu items is to use the camera's touch controls.

If the Q button is pressed on the camera, when the camera is showing the image on the rear the camera, it will bring up the controls superimposed over the image (shown centre). If you using the camera's viewfinder then the same display will appear in the viewfinder. If utilising the rear screen, the controls are easiest selected using the touch controls. If you are using the viewfinder then you will need to use the manual controls.

To move up and down use the up-and-down keys on the rear of the camera. To select the items along the bottom simply use the left and right navigation keys. There is no need to use the set button as whatever is highlighted is the currently applied setting.

The superimposed controls will allow you to set most of the options that you will need to set when you're out shooting. This minimises the need to go into the more complex Menu System.

If you view through the viewfinder most of the time, it is possible to change the rear display to the more familiar black Q shooting screen (shown bottom). This is done by repeatedly pressing the info button on the rear camera, until you see the black Q screen display

From here the options are selected by initially pressing the Q button to bring up the highlighted box, then by using touch controls to select the required options.

If you press the set button when the box is highlighted it will take you into a more detailed screen when you can actually see the names of items you're going to set.

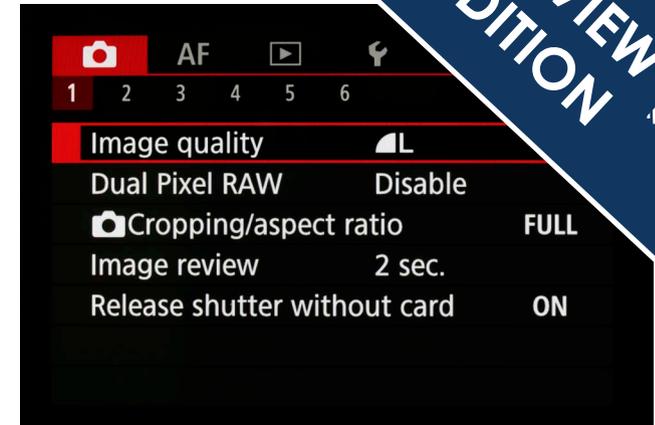
Get familiar with touch controls

This model has been specifically designed to be controlled by touch controls. Therefore it is important to spend some time getting familiar with touch control system and learning how to use it.

Although manual navigation is available, it can be slow and laborious to use, compared to existing EOS DSLR models.

All of the normal gestures that are found on smart devices will be supported within this model.

Remember that the touch controls also extend to playback options.



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The shutter button - an essential control

The shutter button on the EOS R and indeed all EOS models features a two-stage operation. The first half pressure wakes the camera up and turns on both the focusing and the metering on the camera.

If the camera is set to one-shot AF and the metering is on its default evaluative mode, then the camera will focus, meter the subject and then lock both the focusing and metering. This allows you to use a control called focus lock which puts you firmly in control of where the camera focuses and exposes.

Understanding Focus Lock

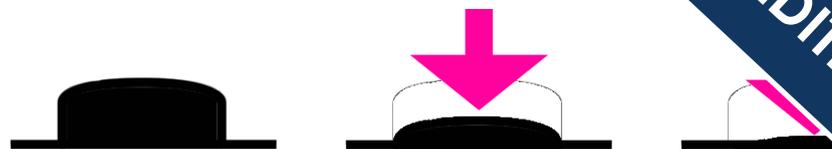
Focus Lock is simply pressing the shutter button onto its first stage. This enables you to point the central focusing point at the subject you want to focus on and focus it there.

The first illustration to the top left is the shutter button at rest, when there is no pressure on it.

Focus lock can be used with all the different ways that the focusing can be set up, however, it is most commonly used in conjunction with a single focusing point, which is most commonly located in the centre of the frame. Once the focusing is locked, which happens automatically in the default One Shot AF mode when you take the shutter button onto its half pressure, illustrated by the centre illustration top, you then keep the shutter button on its first stage, until you have moved the camera, to now give you the composition you want in the view finder.

This is the normal way to get the camera to focus where you want. You then continue to press the shutter button fully down until the image is taken as in the final illustration to the top right. There will be very little movement from the half pressure to taking the image, so there is less chance of camera shake occurring.

Focus lock also allows you to focus on a part of the scene that will give the best exposure for the image or to avoid subjects that are giving a large exposure error in the image. For this to work to lock exposure, the subjects need to be at the same distance from the camera.



In the image above the most reliable way to focus is to use the centre focusing point and position on the cathedral and lock the focus. The image can then be reframed to its final composition and the shot taken, this ensures that the cathedral is sharp. If using more than 1 AF point this can be difficult as the camera will always try and focus on whatever is closest to the camera and in the example above it would be almost impossible to focus on the cathedral without using the focus lock.

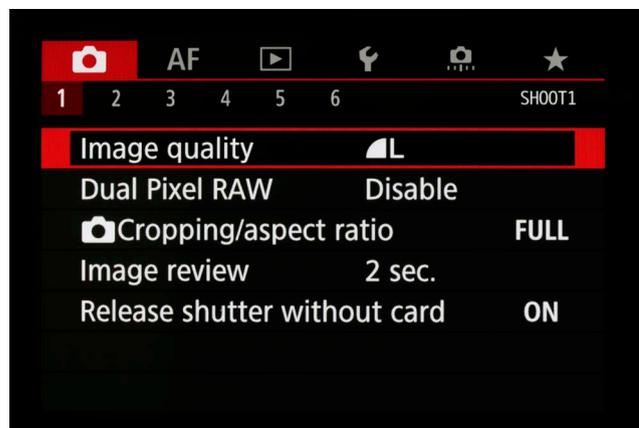
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Display options

Menu navigation



Most of the display options are set from within the menu on the camera. Therefore it is essential to be able to navigate the menu to explore these options. So below is the basic operation of the menu. It's easiest to work with touch controls though the manual navigation is also given below for those that need it.

To access the menu simply press the menu button on the rear of the camera. The easiest way to select anything within the menu is to use the touch controls once you have activated the menu. If you want the manual controls then the main dial goes through the tabs one at a time and the control dial navigates up and down the menu. The set button enters the menu and set applies items within the menu. To move quickly between main tabs simply press the INFO button on the rear of the camera and this will jump by 1 main tab at a time.

The first thing I am going to take a look at is the menu tab navigation. The menu is split into 6 main sections or categories which each have their own main tab, providing you are in one of the creative modes or just 4

menus if you are in Auto+ modes. The first is the Shoot menu (it has an icon of a camera on it). It's the red tab and you know which of the shoot menus you are in by the position of the square under the tab which has a number on it. The active one will be highlighted in the same colour as the main tab above.

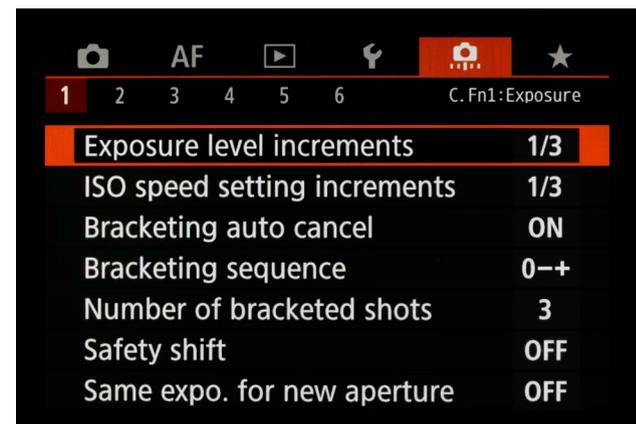
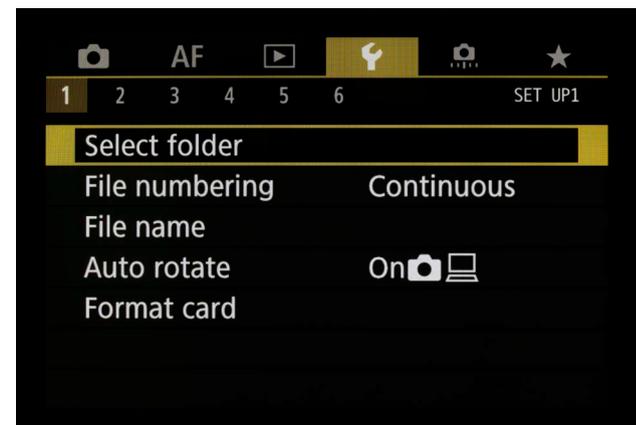
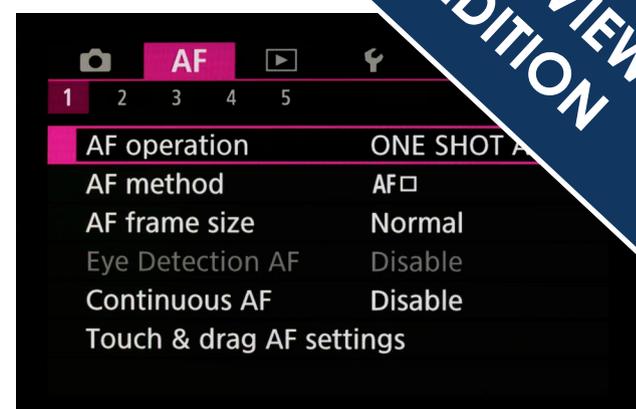
Then there's the mauve (pink) AF menu, blue Playback menu, yellow Set up menu, the orange Custom function menu and the green My Menu.

The menu stays set on the last item you used in case you need to go in and change it again. Most things that you change will remain changed unless you clear all the settings on the camera.

It is worth spending some time practising and becoming familiar with moving around and also where things are found within the menu system.

So many of the great features that are found on the EOS R need to be set from within the menu system, so it is something that you just have to get used to. I cannot stress enough how important it is on this model that you gain confidence in using this menu system. The more confident you are moving around the menu and understanding what is set by the various commands, the easier it becomes to use and reset the options on the camera.

There is a My Menu options on this camera, where you can add up to 5 menu tabs and put the functions that you want into each menu. I will look at setting this up later within the main menu sections.



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