CAMERA CONTROLS

Amateurs set their cameras on AUTO, trusting it to do all the thinking for them. But the camera doesn't have a brain to think with — only a computer. We want you to size up a situation, decide how to interpret it photographically, then *choose the camera controls* that will produce the desired results.

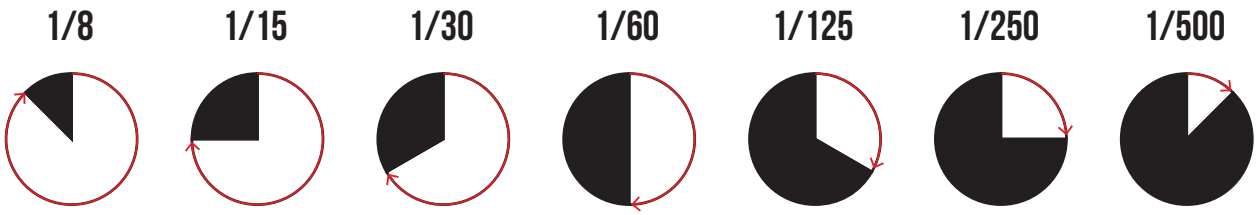
FOUR EFFECTS

Camera-control settings produce four effects. Think about two variables, each with two extremes. The first variable is **time:** how long or short the shutter remains open.

With a slow shutter speed, you can *blur motion*, which gives an impressionistic effect.

With a fast shutter speed, you can *freeze action* in mid air, something the human eye cannot do.

SLOW = Blurred motion — TV — FAST = Frozen action



NARROW = Deep depth of field — AV — WIDE = Shallow depth of field

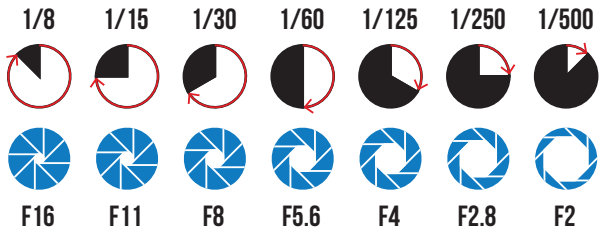
The second variable is **aperture:** how wide or narrow the lens is open. Aperture controls how deep the focus extends in your photograph.

A **narrow** opening produces a deep depth of field, making *everything sharp*. This produces clarity of detail and maximizes visual information.

A **wide** lens opening (F-stop) produces a shallow depth of field of focus. Also called *selective focus*, this effect emphasizes what's sharp by throwing it against a soft-focus background and foreground.

EQUIVALENT EXPOSURES

To get a correct exposure a certain amount of light must activate a light-sensitive computer chip inside the camera. How much light reaches the chip depends of the two variables: how wide the lens is open and how long it is left open. You can get the same amount of light by adjusting these two settings in relation to each other. For example, you could make the aperture smaller and compensate by leaving the shutter open longer. Or you could make the shutter time shorter and compensate by opening the lens aperture wider. This principle of Equivalent Exposures works because aperture and shutter speed are reciprocal. If you increase one, you can compensate by decreasing the other.



In this diagram, all the combinations of F-stops and shutter speeds let in the same amount of light.

WHAT'S THE GENERAL PROCESS?

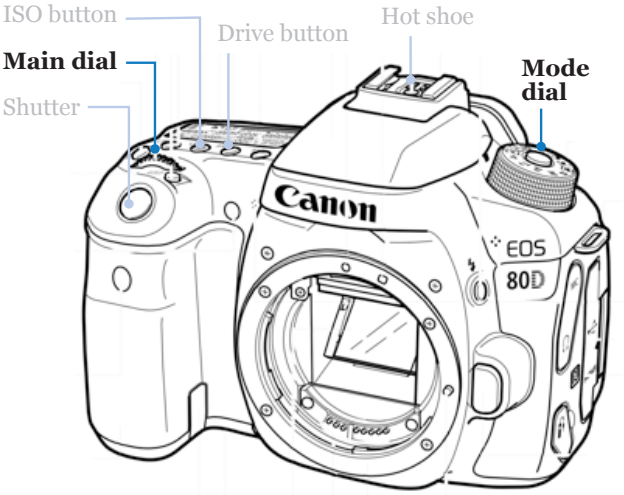
1. First you size up the situation and decide which effect you want for your subject.

2. Choose the corresponding control: if you want to freeze action or blur motion, choose **Tv** on the Mode Dial. If depth of field is more important, choose **Av**.

3. Then choose the extreme that will produce the effect:

• In **Tv**, choose a fast or slow *shutter speed*. Fast will freeze action, slow will blur motion.

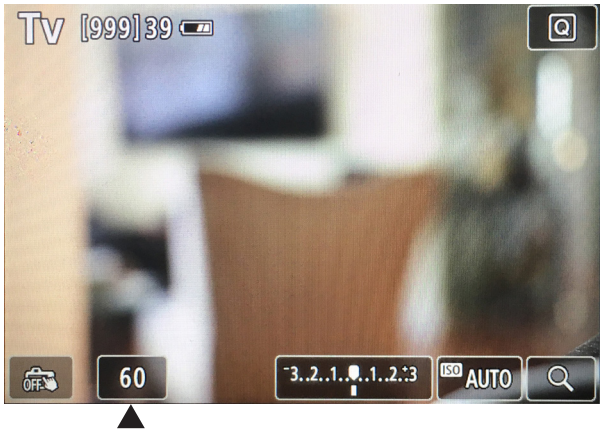
• In **Av**, choose a wide or narrow *F-stop*. A wide F-stop (like F3.5) will produce a shallow depth of field, whereas a narrow F-stop (like F16) will produce a deep depth of field.



HOW DO I FREEZE ACTION?

Let's say you're photographing an IU track meet, and want to freeze a pole vaulter in mid air, just as she arches over the crossbar. Time is the controlling factor. You want a *very fast shutter speed*. Set the dial at the top right of the camera to **Tv**, which makes shutter speed the priority.

Click the "Start/Stop" button in Live View mode to see readings on the LCD. When you start to turn the **Main dial**, you will see the shutter speed appear on the LCD. They range from as fast as 1/4000 second to as slow as several seconds.



Shutter speed of 1/60 of a second

To freeze action, choose a fast speed, such as 1/1000, 1/2000 or 1/4000 second. Your choice will display at the bottom of the LCD (as 1000, 2000 or 4000, respectively).

Aim your camera at the scene to get an overall light reading. In Tv, the camera *automatically* adjusts the aperture to give a correct exposure.

HOW DO I BLUR MOTION?

Let's say you're photographing a ballet rehearsal, and want to blur a dancer in mid air during his jete. Again, time is the controlling factor, but now you want a *slow speed*. Set the Mode Dial to **Tv**.

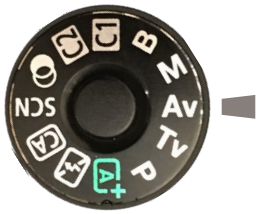
Turn the Main Dial to a slow speed, such as 1/15 or 1/30 second. Aim your camera at the scene. Again, it will read the light and automatically set the aperture for a correct exposure.

NOTE > With speeds of 1/60 or lower, use a tripod to steady the camera to avoid camera shake.

HOW DO I GET A SHALLOW DEPTH OF FIELD?

Let's say you're photographing the IU marching band. You are sighting down a row of trombone players, and you want to make just one player stand out sharp while those in front and behind her are softer. This is called **selective focus**, and it's a great technique for creating emphasis.

Set the dial at the top right of the camera on **Av**. Aim your camera at the scene you intend to photograph to get an overall light reading. Turn the dial to F3.5, the *widest* aperture.



*NOTE > Apertures are called F-stops, and their sequence is **backward**. That is, smaller numbers indicate wider openings; larger numbers, narrower openings. On our cameras, F-stops go from F3.5, the widest, to F32, the narrowest.*

In Av mode, the camera *automatically* adjusts the shutter speed to give a correct exposure.

Aperture setting of F5.0

HOW DO I GET A DEEP DEPTH OF FIELD?

Let's say you're driving across Colorado and see Pike's Peak 100 miles off in the distance. You have an Ansel Adams moment, and you want everything from the boulders in the foreground to the mountain in the background to be **tack sharp**—that is, the maximum depth of field.

Set the dial at the top right of the camera on Av. Turn the Main Dial to a *narrow* aperture, like F16. Then aim your camera at the scene to get an overall light reading.

HERE'S WHERE IT GETS TRICKY

Depending on the lighting situation, you may not be able to get the effect you want.

1. In very bright light, if you choose a wide aperture or a slow shutter speed, the setting may let in too much light. The camera may not be able compensate, making your photo *overexposed*.

An overexposed picture looks washed out, with no details in the midtones and highlights.

2. In very dim light, if you choose a narrow aperture for a deep DOF, or a fast shutter for frozen action the setting may not let in enough light. The camera may not be able compensate, making your photo *underexposed*.

An underexposed picture looks too dark, with no details in the midtones and shadows.

Overexposed: *Washed out, no details*

Underexposed: *Too dark, no details*

RULES OF THUMB

• Freezing action and deep depth of field work best in brightly lit situations. You may not be able to get the full effect in low light.

• Blurring motion and shallow depth of field work best in dimly lit situations. You may not be able to get the full effect in bright light.

LIGHT READINGS

The camera will *automatically* adjust the shutter speed or aperture to compensate for your Av or Tv settings — within reason.

1. Test your exposure by half-clicking the shutter. If your are in **Tv mode**, and you notice your F-stop setting flashing on the LCD, you will not be able to take an adequately exposed image.

Flashing F-stop means a poor exposure.

In other words, your shutter speed is either too low or too high. Adjust as needed.

2. Watch your photos closely on the LCD. If they are too light (overexposed) or too dark (underexposed), adjust your settings.

WHAT WE EXPECT

You may be worried about being judged/graded on camera controls. Our objective is to get you to try it. We want you to stretch and challenge yourself, but not to stress about this.

So ...

1. You do NOT have to use camera controls on every photograph. But we want you to practice it in lab and on your own before shooting your project. It will make your pictures better.

2. Experiment. Try a situation both ways: Shoot motion with both fast and slow shutter speeds. Shoot a scene with shallow/deep DOF.

3. Gradually work camera controls into your repertoire of shooting practices. After several tries, it will become second nature.

4. For a deeper understanding of camera controls, use the F-stop and shutter speed data in the Metadata panel in Bridge to analyze the effects of various settings on your photos.

We will help you in labs to master the camera controls so you can feel confident about using these four creative effects.