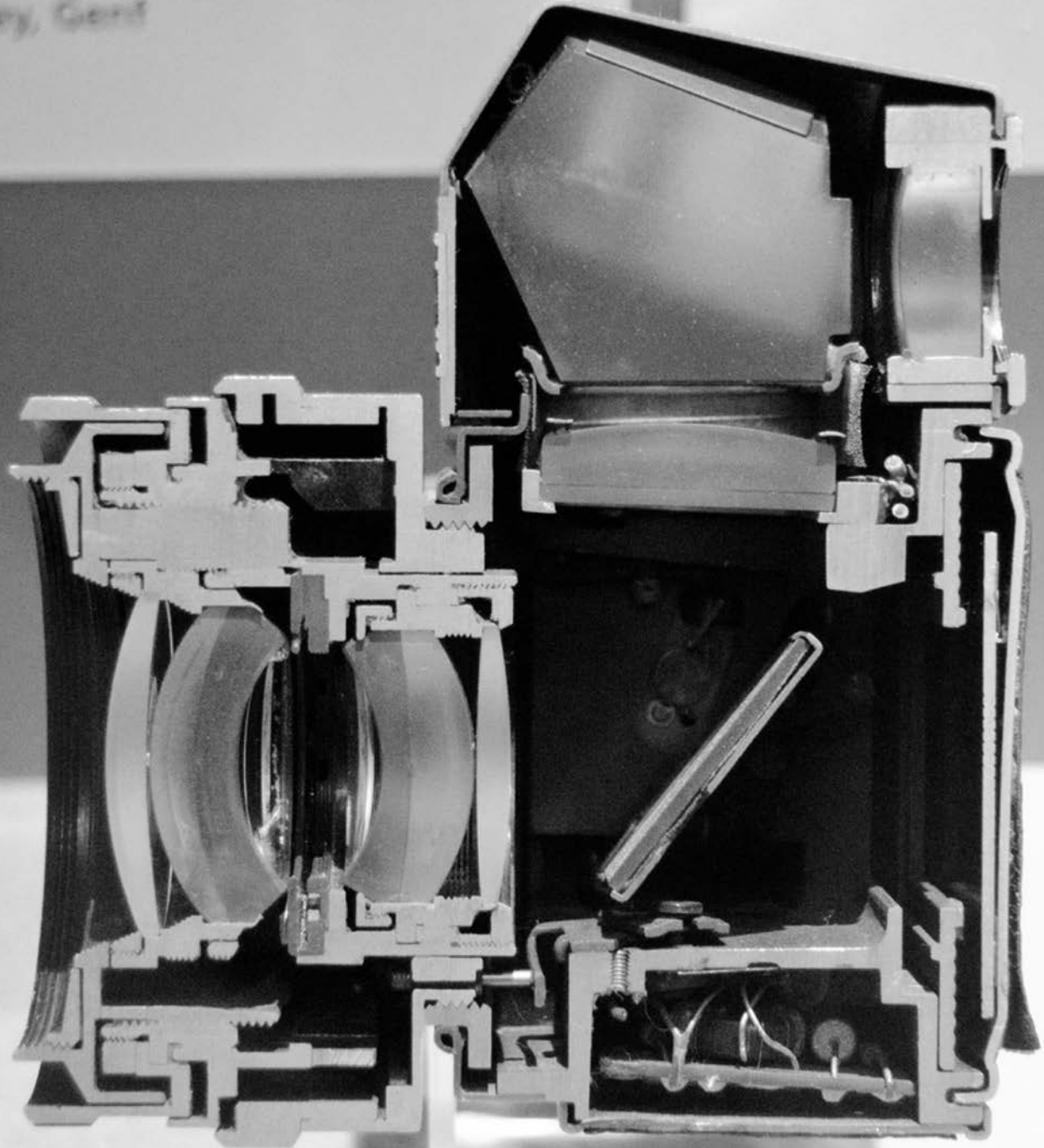
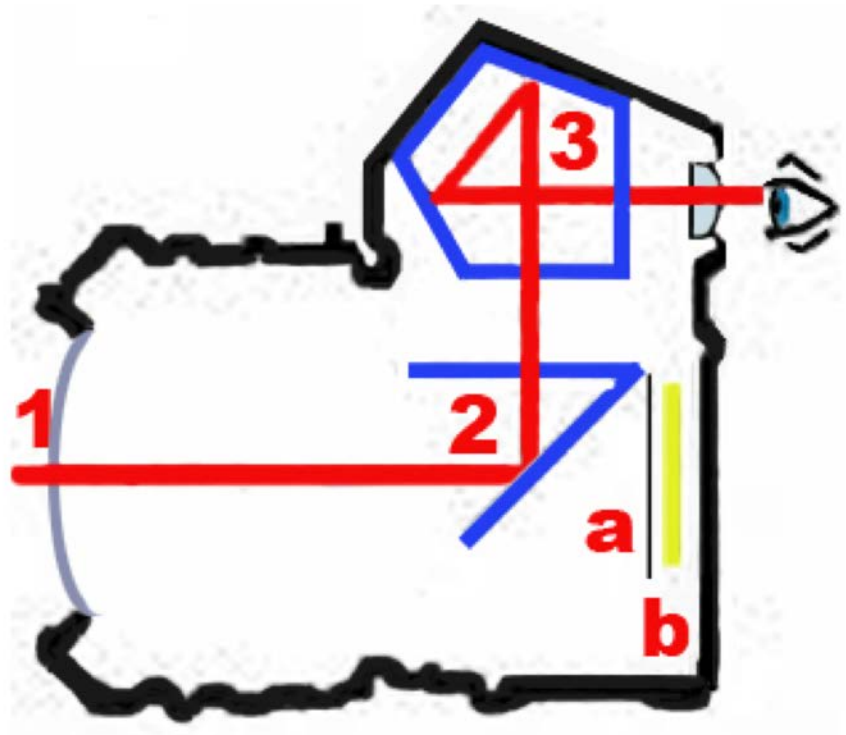


...ary, Gord







20mm lens
(94° angle of view)



35mm lens
(63° angle of view)



50mm lens
(46° angle of view)



135mm lens
(18° angle of view)



300mm lens
(8° angle of view)



500mm lens
(5° angle of view)



28mm lens



50mm lens



100mm lens

Whole Stop**1/2 Stop****1/3 Stop**

f/1.4

f/1.4

f/1.4

f/1.7

f/1.6

f/1.8

f/2

f/2

f/2

f/2.3

f/2.2

f/2.5

f/2.8

f/2.8

f/2.8

f/3.4

f/3.2

f/3.5

f/4.0

f/4.0

f/4.0

f/4.7

f/4.5

f/5.0

f/5.6

f/5.6

f/5.6

f/6.7

f/6.3

f/7.1

f/8.0

f/8.0

f/8.0

f/9.5

f/9.0

f/10

f/11

f/11

f/11

f/13.5

f/13

f/14

f/16

f/16

f/16

f/19

f/18

f/20

f/22

f/22

f/22

f/27

f/25.3

f/28



f/2



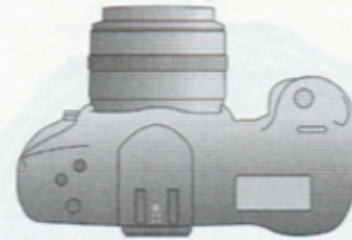
f/22

How Lens Aperture Affects Depth of Field

The wider the lens aperture, the shallower the depth of field. To make the main subject stand out sharply, set a wide f -stop (here, $f/2$) to throw the background out of focus (left). To make the overall scene as sharp as possible, set a smaller f -stop (here, $f/22$) to make both foreground and background appear sharp (right). Note that in both shots, the photographer focused on the front figure.



105mm



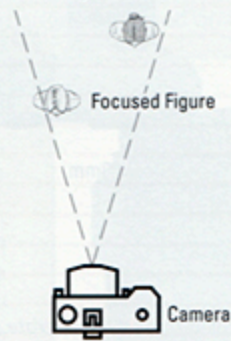
28mm

How Focal Length Affects Depth of Field

The longer your lens focal length, the shallower the depth of field. Using a moderate telephoto lens (105mm) caused the background to fall out of focus (left). Using a wide-angle lens (28mm) made the background sharp (right). Note that both photographs were taken from the same distance with the same f -stop. As with changing distance, changing focal length also changes composition, so it's usually best to change the f -stop to control depth of field.



7 feet



Camera-to-subject
distance 7 feet

20 feet



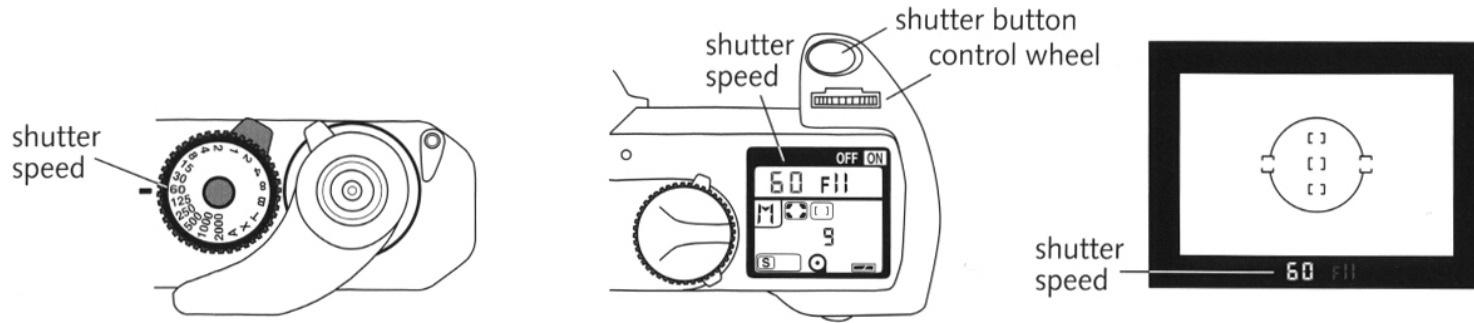
Camera-to-subject
distance 20 feet

How Distance Affects Depth of Field

The closer you are to your subject, the shallower the depth of field. At seven feet away from the subject, the background is unsharp (left). But at a distance of 20 feet, the depth of field increased, making both foreground and background sharp (right). Both pictures were taken with the same focal length lens at the same f-stop setting. Note that it's usually best to change f-stop to control depth of field, since changing distance also changes composition.

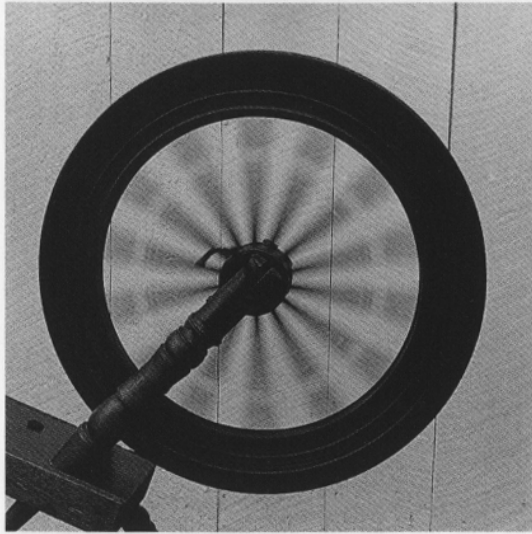
Setting Shutter Speed

1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000

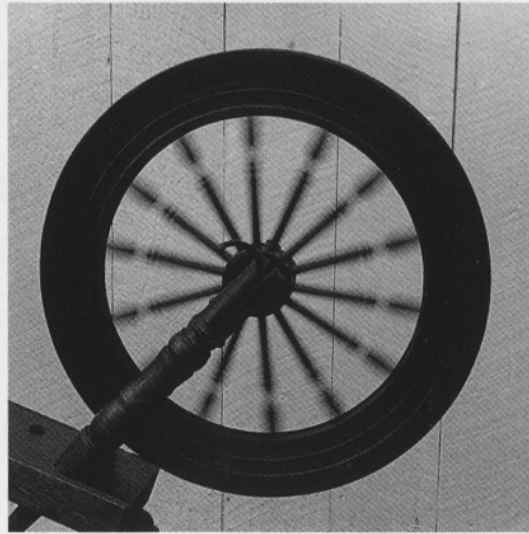


On most manual or older model cameras, the shutter speed is indicated on a dial located on top of the camera body (left). To set it, you turn the dial until the desired speed is indicated next to a marker. With many modern cameras, the shutter speed setting is displayed on an LCD screen; you change it by turning a control wheel (center). Many camera models show the selected shutter speed in the camera's viewfinder (right).

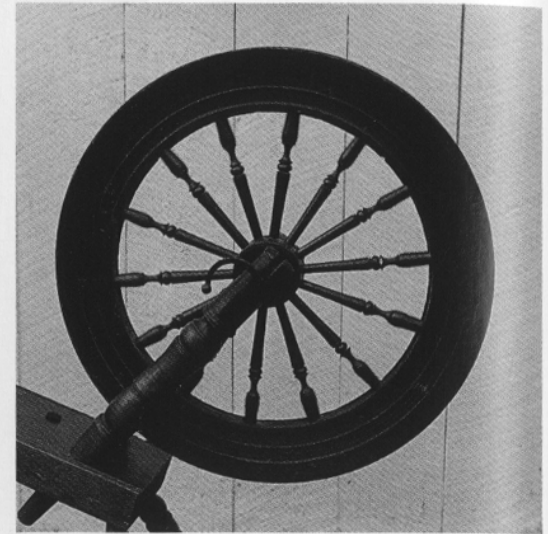
Controlling Movement



1/4



1/30



1/250

In each of these photographs the spinning wheel is turning at the same rate. Photographing with a slow shutter speed of 1/4 (left) causes the wheel to appear blurred. At 1/30, the blur is less evident (center); a relatively fast shutter speed of 1/250 (right) freezes the wheel's motion entirely.

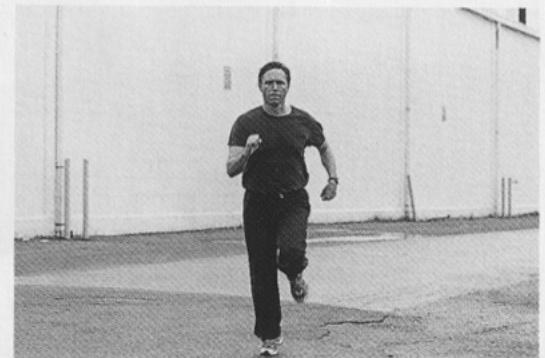
Direction of Movement



1/60

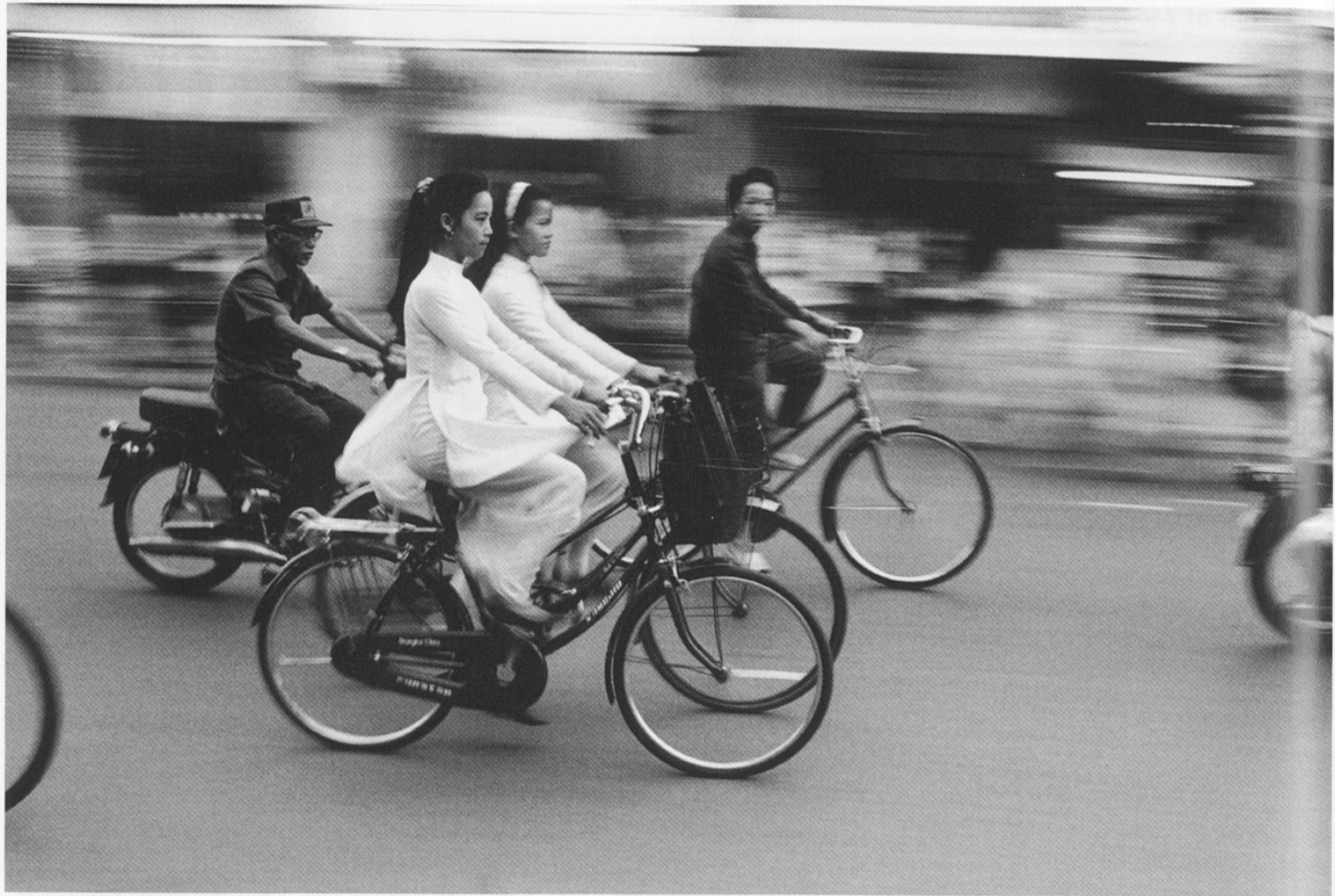


1/500



1/60

A subject moving left to right across the viewfinder requires a faster shutter speed to freeze its motion than one moving directly toward or away from the camera.



Ed Kashi, *Saigon on Wheels, Vietnam, 1994*

To recreate the hectic atmosphere of the streets of Saigon, Kashi moves his camera during exposure, following the bicycles as they move left to right, a technique called panning. Using a slow shutter speed, such as 1/8 or 1/15, the cyclists appear sharp and the background blurs. © Ed Kashi; courtesy of the artist.

Depth of Field Guide





1.2

1.5

2

3

5

10

15

30

∞

ft

m

22

16

11

8

4

4

8

11

16

22

1.8

2.8

4

5.6

8

11

16

22

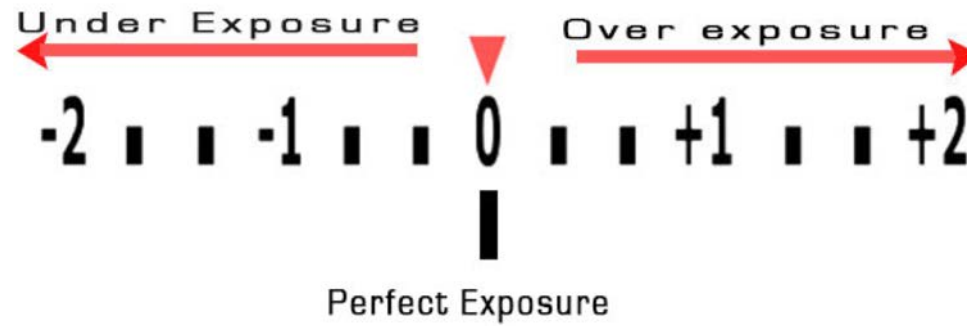
A



35 4 5 7 10 15 30 ft
1 1.2 1.5 2 3 5 10 ∞ m

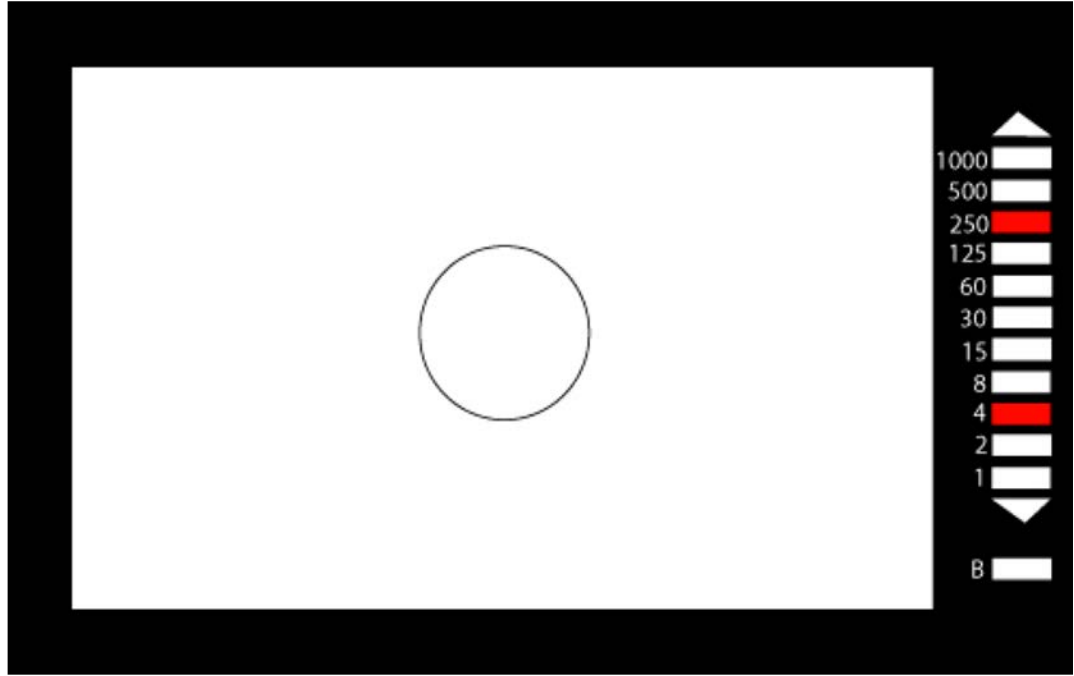
22 16 11 8 4 | 4 8 11 16 22

1.8 2.8 4 5.6 8 11 16 22 A









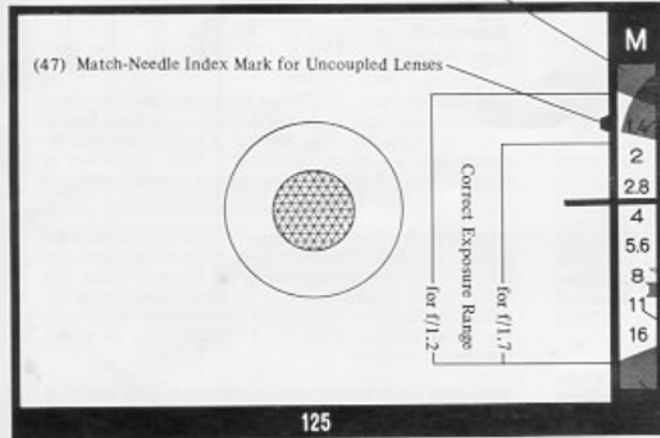
KONICA T3
AUTOCHEFLIX

(46) Underexposure Indicator for f/1.2 Lens

(49) "M" (Manual)
Exposure Indicator

(47) Match-Needle Index Mark for Uncoupled Lenses

(50) Automatic
Maximum-Aperture/
Underexposure
Indicator



(51) Meter Needle

(52) Battery Test Indicator

(53) Aperture Scale

(48) Shutter Speed in Use

(54) Overexposure Indicator