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The large manuals are split only for easy download size.

Nikon

# N90

AF

INSTRUCTION MANUAL

E

# CONTENTS

# FOREWORD

Thank you for choosing the new Nikon N90 camera. It's a high-performance camera that offers today's newest and most advanced capabilities, all designed to enable you to take more exciting pictures.

Because the N90 camera has a host of new features, many of which you may not be familiar with, before actually taking pictures you should thoroughly read the instruction manuals provided, including the "PHOTOGRAPHIC SYSTEM" leaflet. These will help you understand the technical terminology used and how the various new features work.

The N90, in its standard configuration, is a powerful camera with important features such as Nikon's exclusive Advanced Matrix Meter, many autofocus features including Focus Tracking, and Nikon's latest innovation, TTL Multi-Sensor flash control. To expand the camera's performance and take full advantage of all its capabilities, you will want to consider using the N90 with accessories such as the Nikon MF-26 Multi-Control Back, the Nikon SB-25 AF Speedlight, and the Nikon Data Link System with IC Card AC-1E which works exclusively with the Sharp® Electronic Organizer.

Please read this manual thoroughly, then enjoy experimenting with all of the N90's exciting features. Good luck, and have a great time with this high-tech Nikon.

# NOMENCLATURE

Once you know the names of the parts of your new Nikon N90, as well as their functions and the camera's other controls, you will be surprised how simple and logical the N90 system's operation can be.

**LCD panel** (p. 9)

**Shutter release button:** To activate exposure meter and autofocus function, lightly press; to release shutter, depress fully; exposure meter automatically switches off after 8 sec.

**Self-timer indicator LED** (pp. 95-96)

**Depth-of-field preview button** (p. 97)

**AF-L (Auto Focus Lock) button:** Locks focus when pressed and held in.

**Minimum aperture lock:** Setting for all Programmed and Shutter-Priority auto exposure modes.

**Aperture scale**

**Accessory shoe:** For Nikon dedicated Speedlights. The rear edge of the shoe indicates film plane. Exact distance from lens mounting flange to film plane is 46.5mm.

**Sync terminal**

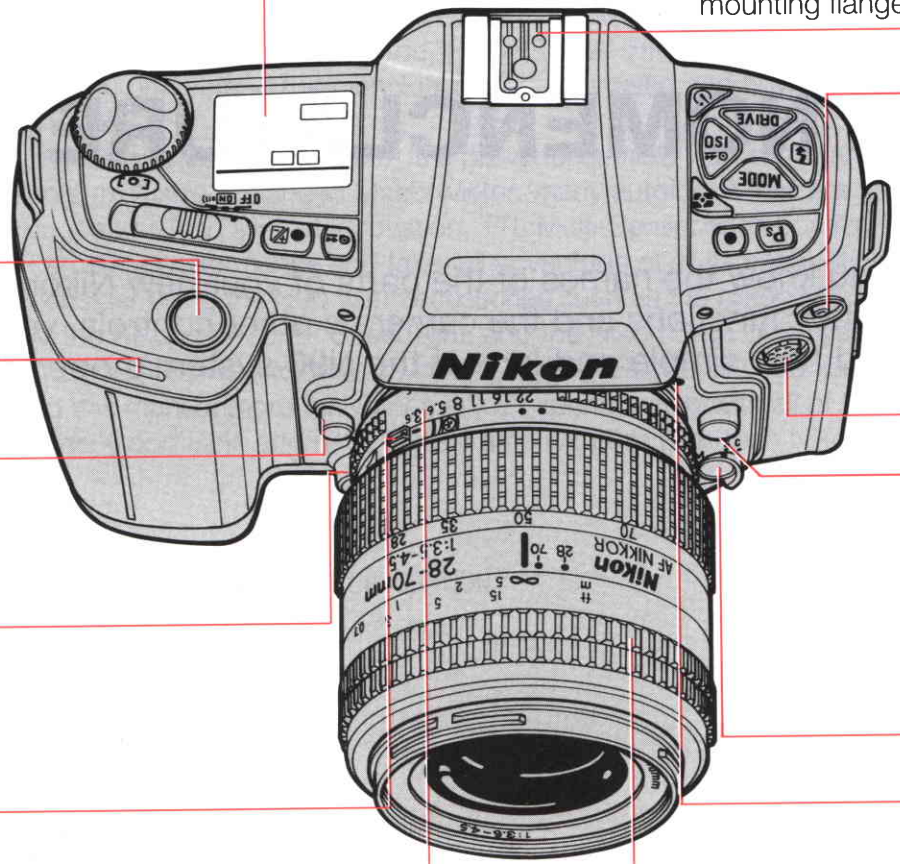
**10-pin remote terminal:** For Electronic Organizer Connecting Cord MC-27, Remote Cord MC-20, etc. (see attached PHOTOGRAPHIC SYSTEM leaflet).

**Lens release button**

**Focus mode selector:**
**S** for Single Servo AF (pp. 36-37).
**C** for Continuous Servo AF (pp. 38-39).
**M** for Manual focus (pp. 46-48).

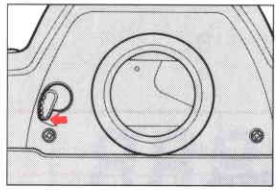
**Lens mounting index**

**Focusing ring**




**Optional lens illustrated**
**(AF Zoom-Nikkor 28-70mm f/3.5-4.5 D)**

**Eyepiece shutter lever:** Used to prevent stray light from entering viewfinder.



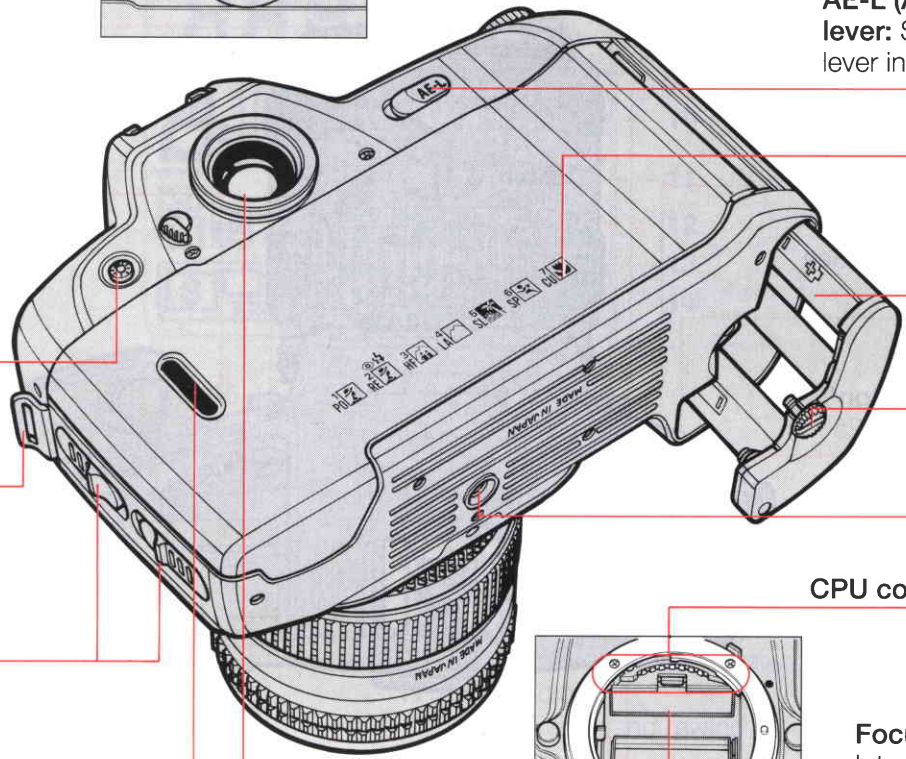
**Viewfinder/LCD panel illumination button:** Press to illuminate viewfinder and LCD panel, useful in dim light. Illumination automatically switches off 8 sec. after you remove your finger from button.

**Camera strap eyelet**

**Camera back lock releases:** To open camera back, slide camera back lock releases together.

**Film cartridge confirmation window**

**Viewfinder eyepiece**




**AE-L (Auto Exposure Lock) lever:** Sliding and holding lever in locks auto exposure.

**Vari-Program list**

**Battery holder MS-8**

**Battery holder lock screw**

**Tripod socket**

**CPU contacts:** Don't touch!



**Focusing screen type B:** Interchangeable with optional type E screen (pp. 101-102).

**Reset button:** Press and hold this button and exposure compensation/ reset button together for instant reset of basic camera settings (p. 20)

**Exposure mode (MODE) button*:** See page 54.

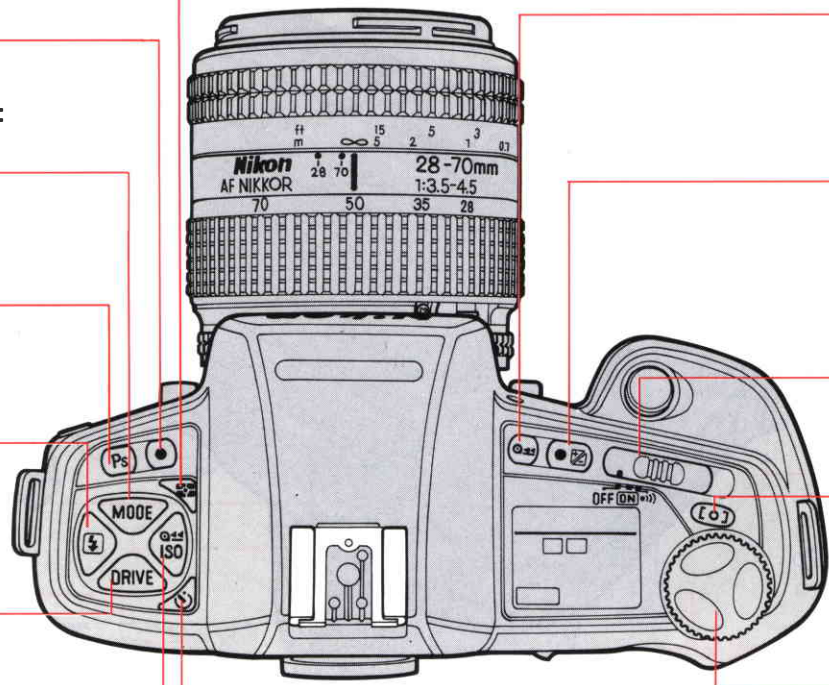
**Vari-Program (Ps) button*:** See pages 70-71.

**Flash sync mode (⚡) button*:** See pages 121, 123 and 125 .

**Film advance mode (DRIVE) button*:** See pages 28-29

**Film speed/film rewind (ISO) button:** See pages 18, 25 and 100.

* *Used with command dial*




**Metering system (▣)button*:** See page 32.

**Film rewind button**

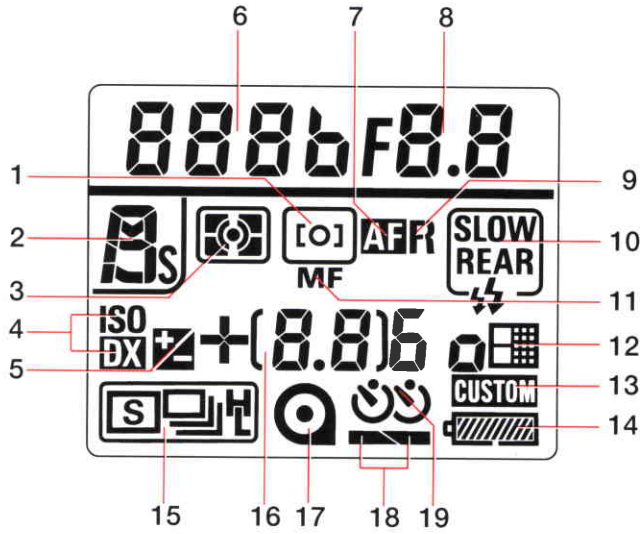
**Exposure compensation/ reset button (● ⊠)*:** See pages 20 and 92.

**Power switch:** ▪)) setting activates electronic beeper (pp. 14-15).

**Focus area button:** See page 33.

**Command input control dial (Command dial):** Rotate to set various functions.

**Self-timer button (⏲)*:** See page 95-96.

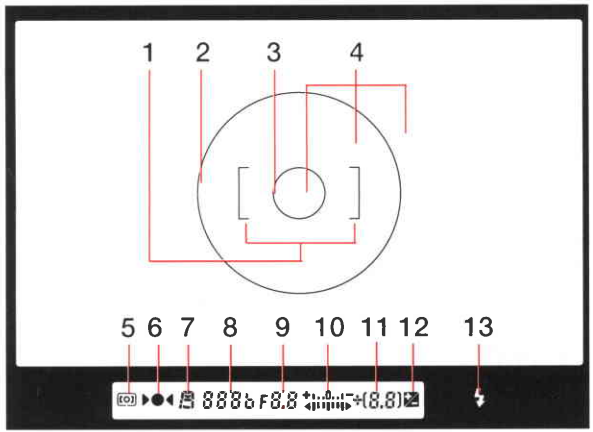



**LCD panel indications**

1. Focus area
2. Exposure mode
3. Metering system
4. Film speed setting mode
5. Exposure compensation
6. Shutter speed
7. Autofocus
8. Aperture
9. Release/Focus priority
10. Flash sync mode/Red-Eye Reduction
11. Manual focus
12. Electronic Organizer*
13. Custom*
14. Battery
15. Film advance mode
16. Frame counter/Vari-Program/ISO speed/Self-timer duration/compensation value
17. Film loading
18. Film advance and rewind
19. Self-timer

**Appears only when Data Link System is in use.*

## Viewfinder indication

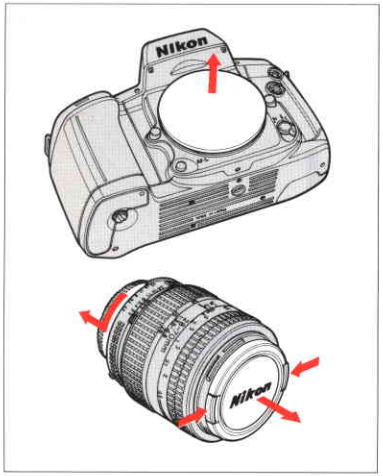



1. Wide-Area focus brackets
2. 12mm-dia. reference circle for Center-Weighted Metering
3. 3mm dia. reference circle for Spot Metering/Spot-Area focus
4. Clear matte field
5. Focus area
6. Focus indicators: ● indicates a stationary subject is in focus; ▶●◀ indicates a moving subject is in focus; ▶ ◀ shows Focus Tracking; blinking ▶ ◀ indicates autofocus is impossible; ▶ and ◀ arrows indicate front and rear focus, respectively.
7. Exposure mode
8. Shutter speed
9. Aperture
10. Electronic analog display
11. Frame counter/Vari-Program/compensation value
12. Exposure compensation
13. Flash recommend/ready light

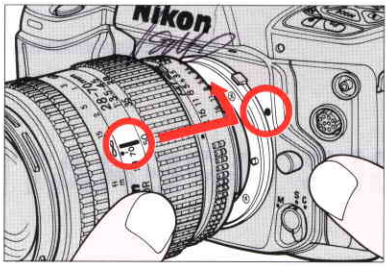
Lightly pressing the shutter release button to turn on the exposure meter switches on the viewfinder illuminator at a low light level. In dim light, when the exposure meter is on, the illuminator automatically switches on at full brightness.

# BASIC OPERATION

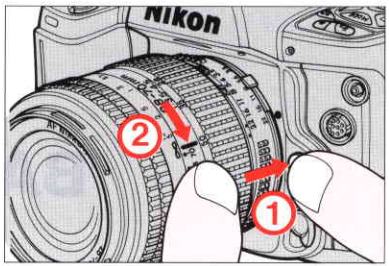
This section shows you how to prepare the camera for shooting—e.g., how to mount lens, load film, etc.—as well as how to actually take pictures. Whether you're a beginner or a seasoned photographer, you should master this section before proceeding further.




1 Remove camera body cap and front and rear lens caps.




2 Position the lens in the camera's bayonet mount so that the mounting indexes on lens and camera body are aligned. Taking care not to press the lens release button, twist lens counterclockwise until it locks into place.

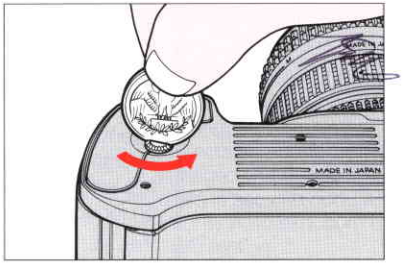



To remove
Push and hold lens release button and turn lens clockwise.

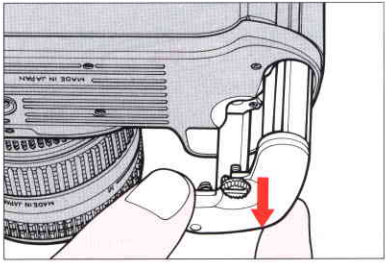
- When mounting/removing lens, make sure that the camera's power is turned off and avoid direct sunlight.
- See page 104 for Nikon lens compatibility chart.

# INSTALLING BATTERIES

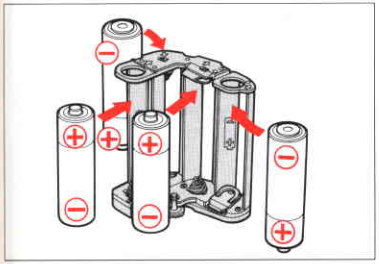
- Make sure the power switch is set at OFF position.
- NiCd batteries that have "+" terminals exceeding 6mm in diameter cannot be used.
- Manganese batteries are not recommended for use at low temperatures.
- See page 133 for "NOTES ON BATTERIES."



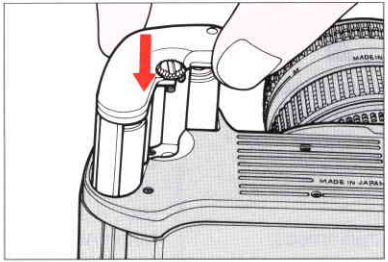
1 Loosen battery holder lock screw with a coin or similar object.



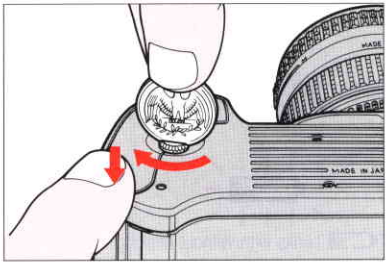
2 Remove battery holder.



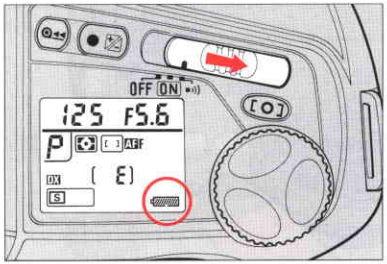
3 Install four AA-type alkaline-manganese, NiCd or high-performance manganese batteries with "+" and "–" terminals positioned as shown inside holder.



4 Return battery holder to battery chamber.



5 Press holder into place as you tighten lock screw with coin.




Slide power switch to ON or ▪)) position, and confirm that a full battery mark appears on LCD panel, indicating sufficient battery power.The battery mark and exposure indications automatically turn off after 8 sec.

Sufficient battery power.

Batteries are nearing exhaustion. Have a fresh set ready.

If ▭ blinks with/without blinking Err, batteries are just about exhausted. Slide power switch to OFF and replace batteries with a fresh set.

If no indication/mark appears, batteries are completely exhausted or imporperly installed. Replace.

## About exposure meter

You can check battery power anytime by lightly pressing the shutter release button. This action activates the exposure meter; the LCD panel and viewfinder LCD show aperture/shutter speed indications, and autofocus operation starts (unless camera is set for manual focusing). The exposure indications and battery mark stay on for approx. 8 sec. after you take your finger off the shutter release button, then automatically turn off. If the shutter is released, these LCD readouts go off approx. 2 sec. after you take your finger off the button.

## Data Link System users

You can set automatic meter switch-off as desired: 4 sec., 8 sec.,16 sec., 30 sec., 60 sec. For details, see Nikon AC-1E card instruction manual.

## About electronic beeper

With the power switch set to ▪)) ,the beeper is on. Two types of sound are emitted: a double-beep which indicates in-focus position, and continuous beeping which is either an operation signal or an alert.

**Double-beep**

A double-beep is emitted when a stationary subject becomes in-focus in the Single Servo AF mode*.

**Continuous beeping sound indicates:**

(As an operation signal)

- Film rewind is complete.
- Self-timer is activated (pp. 95-96).

(As an alert signal)

- Possible picture blur due to slow shutter speed in Programmed or Aperture-Priority Auto exposure mode.
- Possible over- or underexposure (with **H** ! or **L** ◘ indications) in auto exposure mode*.
- Lens aperture is not set to the minimum setting in Programmed or Shutter-Priority auto exposure mode*.
- Film reaches the end of the roll and requires rewinding*.
- You have loaded a non-DX film or film with a damaged or unacceptable DX code for auto DX setting.
- Camera detects an abnormality such as torn or damaged film during film advance.
- Vari-Program is set with non-CPU lenses.
- Shutter-Priority Auto exposure mode is set with Bulb setting.
- Bulb setting is selected for Automatic Exposure Bracketing function of MF-26.
- Speedlight is not set to TTL flash mode with Auto Multi-Program.

** Sounds when the shutter release button is lightly pressed.*

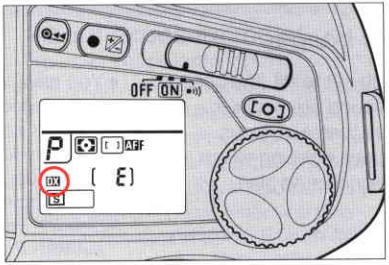
**Data Link System users**

You can use the Electronic Organizer to cancel the double-beep alert for in-focus and/or the continuous beep for picture blur alert.

The beeper also comes on when the camera's computer memory is full in the Memo Holder function.

For details, refer to Nikon AC-1E card instruction manual.

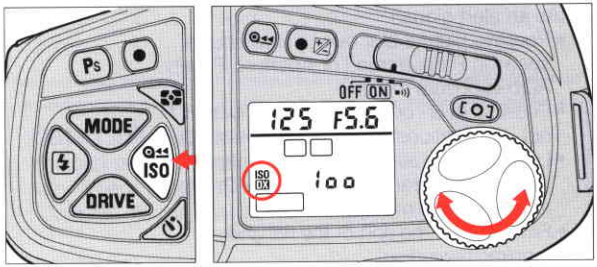
- To avoid fogging film (especially high-ISO film), do not load/unload film in direct sunlight.
- Usable film speed range for DX-coded film is ISO 25 to 5000.
- For non-DX coded film, see p. 100.



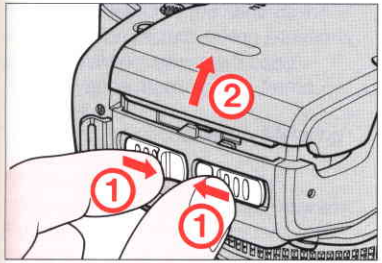

1 Confirm whether DX for DX-coded film is shown on the LCD panel.

## Data Link System users

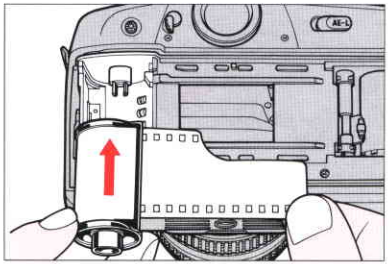
You can set the camera to DX-priority. For details, see AC-1E card instruction manual.



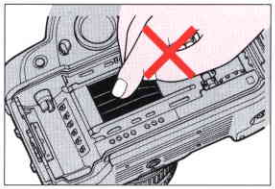

If not, press and hold ISO button in, then rotate command dial until DX appears.



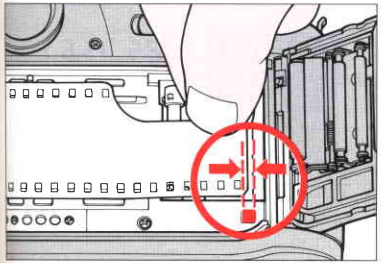

2 Slide camera back lock releases together to open camera back.



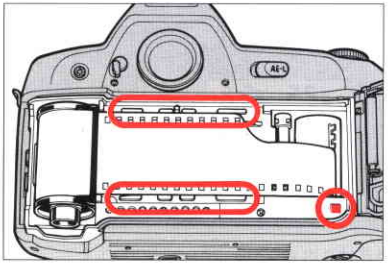

3 Insert film cartridge.



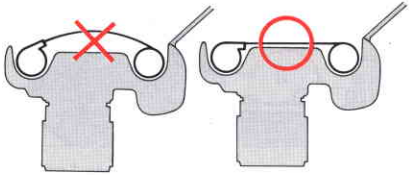
Do not touch the shutter curtains with your finger or with film leader.

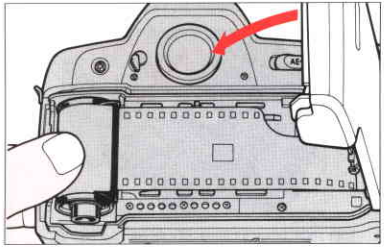


4 Pull film leader out to red index mark.

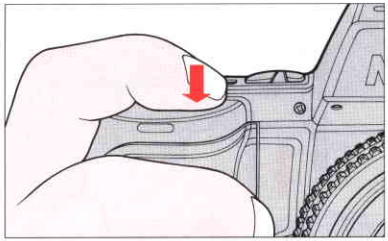



5 Check to ensure film is properly positioned with no slack (see illustration).



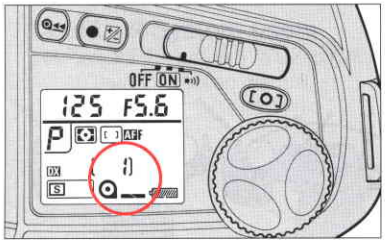


6 Gently close camera back until lock releases snap closed.

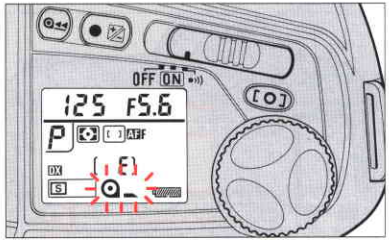


7 Fully depress shutter release button to advance film to frame #1.

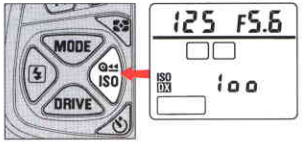
- If non-DX-coded film or film with an unacceptable DX code is loaded, the Err, ISO and DX marks in the LCD panel blink, the beeper sounds (if set), and the shutter is locked. Set ISO speed manually (see p. 100).




8 Confirm frame counter shows 1 and ⊙ symbol appears on LCD panel.




- If film is incorrectly positioned, E remains, ⊙ symbol blinks and shutter is locked. Open camera back and reload film properly.



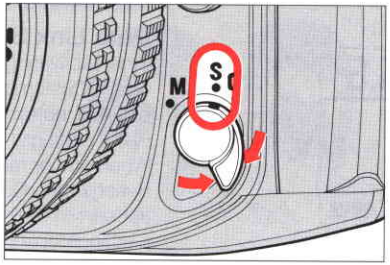

To confirm ISO number of DX-coded film, press film speed button.

*This section features the settings for most common picture-taking situations when AF Nikkor* lenses are used:*

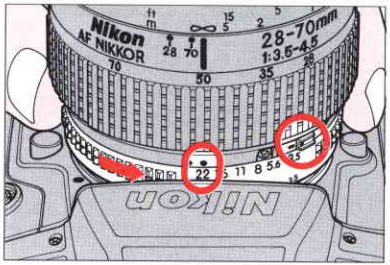
*Film advance mode: single-frame shooting*
*Metering: Advanced Matrix Metering*
*Focus Area: Wide*
*Focus mode: Single Servo AF*
*Exposure mode: Auto Multi-Program*

*(If you are using AI-P-Nikkor lens, use manual focus [see pp. 46-48]. If you are using other non-AF Nikkor lenses, use Center-Weighted or Spot Metering [see p. 32], manual focus, and Aperture-Priority Auto or Manual Exposure mode [see pp. 60-62 or 63-66]. To confirm usable mode by lens, see chart on p. 104.)*

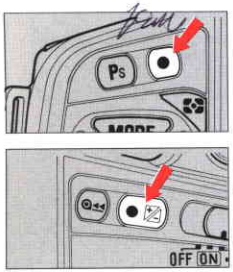
** AF Nikkor lenses includes D-type AF Nikkor lenses and AF-I Nikkor lenses.*

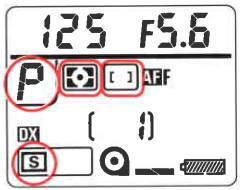



1 Set focus mode selector to **S** for Single Servo autofocus. If lens has an A-M switch, set switch to A. If you are using an AF-I Nikkor lens, set the lens focus mode ring to A or M/A.




2 Set lens to its minimum aperture (highest f-number marked in orange on AF Nikkor lenses) and lock lens aperture of AF Nikkor lens at its minimum setting (see lens instruction manual).




3 Press ● reset button and ● ⊠ button simultaneously for two seconds until ***P***, ⊡, [S] and [ ] appear in the LCD panel, indicating that the camera settings are automatically reset for basic shooting shown here:

| | |
|---|---|
| Film advance: | Single frame ([S]) |
| Metering system: | Matrix (⊡) |
| Exposure control: | Auto-Multi Program (***P***) |
| Focus area: | Wide ([ ]) |
| Flexible program setting: | Cancel |
| Exposure compensation: | ±0 |
| Flash sync mode: | Normal (If Speedlight is set at rear-curtain sync, rear-curtain sync will be performed.) |

## Data Link System users

When activating Custom Reset with the Nikon AC-1E card's Customized Settings function, press and hold the ● and ● ⊠ buttons for two seconds to retrieve the Custom Reset settings.

When one or more functions/options (including Custom Reset) of the Customized Settings have been set, CUSTOM appears in the camera's LCD panel*. To cancel the functions/options of the Customized Settings and reset your camera to the default setting (which will make CUSTOM disappear from the LCD), press and hold the ● and ● ⊠ buttons for more than four seconds until CUSTOM starts blinking; then remove your fingers from the reset buttons and press them again within two seconds. (CUSTOM stops blinking when the reset buttons are left untouched for two seconds.)

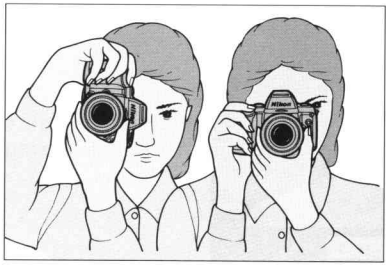
CUSTOM also appears when "Store shooting data" is selected and/or "Download stored data" is likewise selected in the Memo Holder function. In this case, you also can make CUSTOM disappear from the LCD by following the instuctions given above.

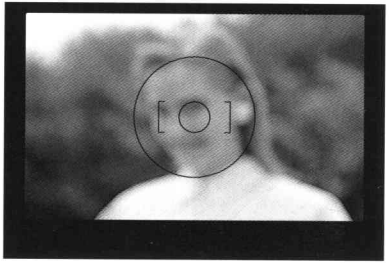
* *When Custom Reset and/or "Simultaneous Lock of AF and AE" of User Custom Option is set with the MF-26 attached to the camera,* CUSTOM *does not appear. To cancel Custom Reset or "Simultaneous Lock of AF and AE" with the MF-26, use the MF-26's* (SET/RESET) *button and the camera's command dial. (For details, see the MF-26's instruction manual.)*

## MF-26 users

Pressing the reset buttons also cancels the MF-26's following functions:

- Auto Exposure Bracketing
- Multiple Exposure Operation
- Auto Sequence Shooting
- Long Time Exposure
- Interval Timer
- Flash Exposure Bracketing
- Flash output level compensation
- Focus Priority



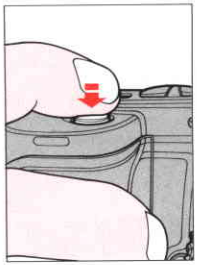


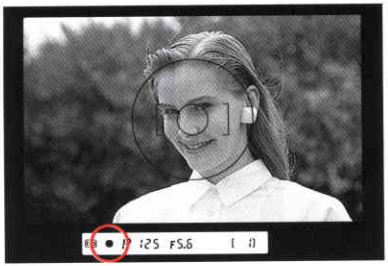
4 Hold camera, look through viewfinder and position focus brackets on main subject.

## With Nikon Autofocus Speedlight SB-25

Pressing the reset buttons also resets the Speedlight's flash output compensation to 0.

Although the viewfinder covers approx. 92% of the image area of the actual photograph, a negative film will show you an image larger than what you see through the viewfinder.
Note: The image in a slide film may be partially cropped by the mount. Also, the edges of negative film are partially cropped by most labs.

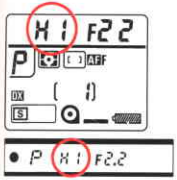




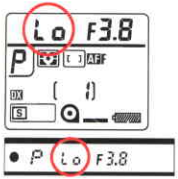

5 Lightly press shutter release button to start autofocus operation and switch exposure meter on.
Confirm that the in-focus indicator ● for a *stationary* subject or ▶●◀ for a *moving* subject appears on the viewfinder's LCD readout. Confirm, too, that the shutter speed and aperture indications are shown. Exposure readouts also appear in the camera's external LCD panel.
In the Single Servo autofocus mode with Focus-Priority, the shutter cannot be released until ● or ▶●◀ appears, indicating that the subject is in focus; the focus is then subsequently locked. If the distance between you and the subject changes, remove your finger from the shutter release button, then lightly press it again to refocus.

| | |
|---|---|
| ● | In-focus indication for stationary subject |
| ▶ ◀ | Focus Tracking (automatically activates) |
| ▶●◀ | In-focus indication for moving subject |
| ◀ | Subject is located closer than the lens' closest focusing distance. Move away from the subject and refocus. |
| ▶ | Appears when TC-16A is used, alerting that the lens focusing ring is not set at infinity (∞). See p. 36. |
| ▶ ◀ | If ▶ ◀ blinks in the viewfinder: Autofocus is not possible (p. 44). |

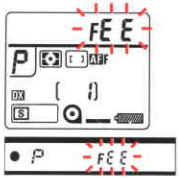
*If shutter speed indicated is 1/(lens focal length) sec. or slower, the picture may come out blurred. To avoid this, hold camera firmly or use a tripod.*




**If H 1 appears in the shutter speed position—Overexposure alert:** Use Nikon ND or similar filter.

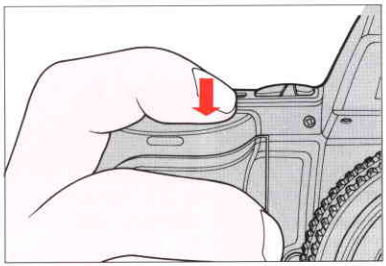



**If Lo appears in the shutter speed position—Underexposure alert:** Use a Nikon Speedlight, higher ISO film or lens with faster aperture, whichever is suitable.




**If FE E blinks in the aperture position—Lens setting error alert:** Lens is not set to smallest aperture setting, so shutter is locked. Set lens to smallest aperture.

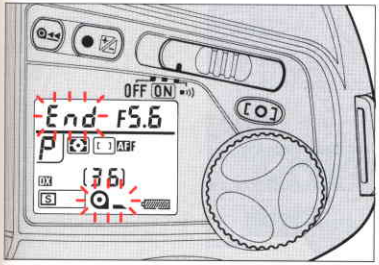
**If ϟ mark in green appears—Flash-photography recommended:** If available light is insufficient, ϟ mark appears. Use Nikon TTL-type Speedlight.



6 To take picture, fully depress shutter release button. Camera automatically advances film by one frame, and LCD frame counter increases by one.

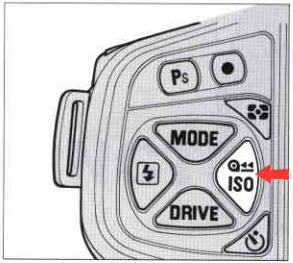
Shutter speed/aperture indications in LCD panel and inside viewfinder turn off approx. 2 sec. after you release shutter and take your finger off shutter release button.

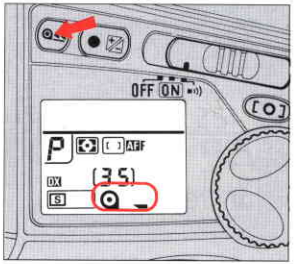
# REWINDING FILM




1 Film advance stops automatically at end of roll with **End** and ⊙_ symbol in LCD panel blinking. (Audible beeper sounds if set.)

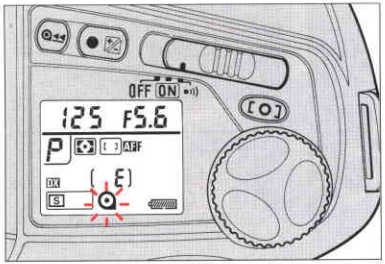
At the end of film roll, each time you press shutter release button, **End** and ⊙_ blink and audible beeper sounds (if set), reminding you to rewind film.



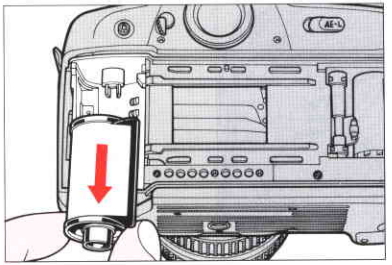




2 Press ⊙◂◂ button and ISO button to start film rewind. During film rewind, ⊙_ appears on LCD panel, and frame counter counts backwards until rewind is complete.

- You can rewind film, before it reaches end of roll, in the same manner.
- If film does not start rewind or if film rewind has stopped at mid-roll, check battery power. If battery power is insufficient, turn power switch off, replace batteries with a fresh set, turn power on, then press the film rewind and film speed setting/film rewind buttons again to restart film rewind.
- Do not open the camera back during film rewind. If the camera back is opened, film rewind will stop at mid-roll; to restart film rewind, press the ⊙◂◂ and ISO buttons again.




3 After rewind automatically stops, confirm frame counter shows **E**, and film installation symbol ⊙ blinks for a few seconds.



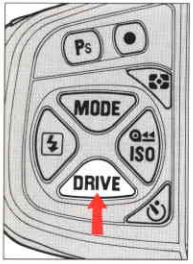
4 Open camera back and remove film cartridge.

To conserve battery power, turn off the power switch when you are not using the camera. Always remove batteries before storing a camera to prevent damage due to leaking batteries.

# GENERAL FUNCTIONS

This chapter explains the various modes of the N90 camera's operation. Please review it thoroughly.

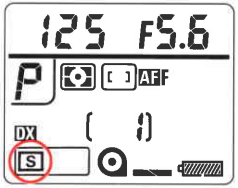
# FILM ADVANCE MODE





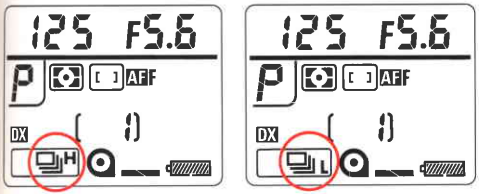
There are three automatic film advance modes. To choose a mode, press and hold the film advance mode button and rotate the command dial. Set S for single-frame shooting, CL for continuous low-speed shooting or CH for continuous high-speed shooting, and so on.

## SINGLE-FRAME SHOOTING




With the film advance mode at S, fully depressing the shutter release button takes one picture and automatically advances the film by one frame. Film is advanced immediately after the shutter closes whether you remove your finger from the shutter release button or keep the button depressed. To take the next shot, lift your finger from the button, then fully depress it again.

# CONTINUOUS SHOOTING

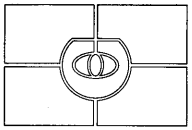



Shots are taken continuously as long as you keep the shutter release button fully depressed. You have a choice of shooting speeds: approx. 3.6 fps (frames per second) in the $\square^{H}$ mode, and approx. 2.0 fps in the $\square_{L}$ mode—with fresh alkaline AA-type batteries at normal temperature and at shutter speeds higher than 1/250 sec. in the Manual exposure and Manual focus modes. With shutter speeds slower than 1/250 sec., the framing rate becomes progressively slower in proportion to the shutter speed in use. If Focus Tracking is on, the maximum shooting speed is approx. 3.0 frames per second in the $\square^{H}$ mode.

# EXPOSURE METERING SYSTEM

The Nikon N90 has three type of exposure metering systems— Matrix Metering, Center-Weighted Metering and Spot Metering.

## MATRIX METERING

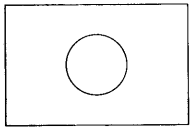


This system is ideal for quick operation in any exposure mode (pp. 49-66). With D-type AF Nikkor lenses including AF-I Nikkor, 3D Matrix Metering is automatically activated. 3D Matrix Metering uses three types of data: (1) scene brightness, (2) scene contrast and (3) focused subject's distance (Distance Information). Data on scene brightness and contrast are detected by the camera's 8-segment Advanced Matrix Sensor, while data on the focused subject's distance is detected and relayed by the D-type AF Nikkor lens in use. In addition, the information sent by the camera's autofocus system indicating whether the main subject is centered is also considered in the computation. By analyzing these data, the N90's built-in microcomputer is able to provide correct exposure even in extremely complex lighting situations.

If a non-D-type lens is used, Advanced Matrix Metering is performed. Although lens' Distance Information is not given, 8-segment Matrix sensor provides the correct exposure in most lighting situations.

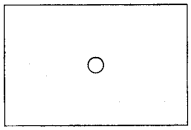
Note that Matrix Metering system can be used only with lenses that have a built-in CPU (such as AF Nikkor and AI-P lenses.)

## CENTER-WEIGHTED METERING



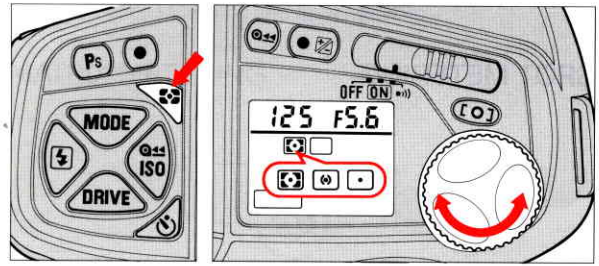
With 75% of the meter's sensitivity concentrated on the 12mm-dia. circle in the viewfinder and 25% outside this circle, this meter becomes useful in situations where you want to base exposure on a specific area in the scene. In the auto exposure mode, to measure the brightness of the picture's off-center portion, use the camera's AE-L lever (pp. 88-89).

## SPOT METERING

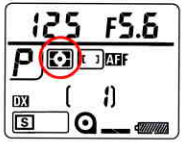


Nearly 100% of the meter's sensitivity is concentrated on the 3mm circle in the center of the viewfinder. Use this meter for really selective exposure control—achieving the best results requires experience.

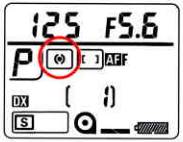
## SETTING METERING SYSTEM



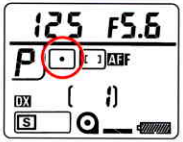

While pressing the metering system (⊡)button, rotate command dial until the desired symbol—⊡ for Matrix Metering, ⊡ for Center-Weighted Metering or ⊡ for Spot Metering—appears in the LCD panel.



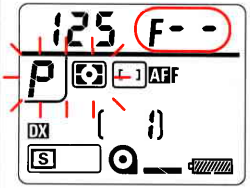

Matrix Metering




Center-Weighted Metering



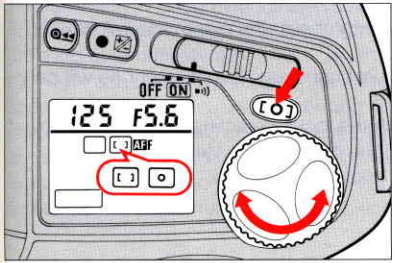

Spot Metering



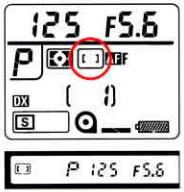

### If you are using a lens without CPU, or accessories such as bellows or extension rings

8-segment Matrix Metering automatically switches off and Center-Weighted Metering switches on while the ⊡ symbol blinks. (If Auto Multi-Program or Shutter-Priority Auto is set on the camera, the exposure mode also switches automatically to Aperture-Priority Auto with **F- -** and blinking exposure mode indicator.) In this case, use Center-Weighted Metering or Spot Metering.

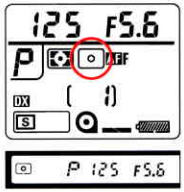
## FOCUS AREA




The N90's autofocus system offers a choice of two focus areas: Wide and Spot.
While pressing focus area button, rotate command dial until the desired symbol—[ ] for Wide Area or [ ] for Spot Area—appears in the LCD panel.




Wide-Area Autofocus



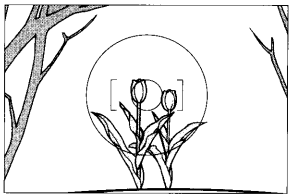

Spot-Area Autofocus

**When using Nikon dedicated Speedlight**
When a Nikon dedicated Speedlight connected to the camera is turned on, Wide Area is automatically switched over to Spot Area focus. In this case, [ ] blinks in the LCD panel and [ ] appears inside the viewfinder.

The Wide-Area focus brackets delineate the focus detecting area in the viewfinder. Subjects of sufficient brightness and detail can be detected within these brackets. In addition to general photography, autofocus using Wide-Area focus brackets is suited to action photography in which the moving subject requires a wide-range focus detection area.
However, focus detection may not be possible if the subject is too small to fully cover the Wide-Area focus brackets. If various subjects, each at a different distance, fall within the focus detection area, focus will be confirmed for a single subject as follows:

- For subjects of equal brightness: the closer one will be focused.
- For subjects of unequal brightness: the brighter one will be focused.

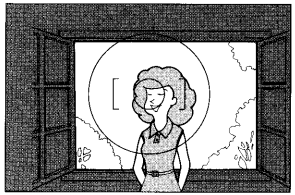
Spot Area AF, in which the focus detecting area is shown by the 3mm-dia. circle at the center of the viewfinder, is recommended in the following situations:



**a.** Subject considerably smaller than the Wide-Area focus brackets*

**b.** Subject obscured by an object, such as a fence, in the foreground

**c.** A particular portion of the subject must be in focus, such as the eyes in a portrait



**d.** Strongly backlit subject, such as someone standing beside bright window**

** Use focus lock. See "AUTOFOCUS WITH MAIN SUBJECT OFF CENTER" on pages 40 to 43.*

*** To give correct exposure on your subject, see "AE-L LEVER" on pages 88 to 89 or "TO OBTAIN METER READING FOR A PARTICULAR SUBJECT IN MANUAL EXPOSURE MODE" on pages 90 to 91.*

The Nikon N90 has two autofocus modes, Single Servo AF with Focus-Priority and Continuous Servo AF with Release-Priority. In either autofocus mode and in any film advance mode, Focus Tracking automatically activates when the subject starts moving. Focus Tracking enables the camera to analyze the speed of the moving subject according to the focus data detected, and to obtain correct focus by anticipating the subject's position—and driving the lens to that position—at the exact moment of exposure. You can thus obtain correctly focused pictures for many moving subjects.

## Data Link System users

You can give Focus-Priority to Continuous Servo AF and/or Release-Priority to Single Servo AF.
For Single Servo AF in continuous shooting, you can also cancel focus detection and lens driving for the next shot after the first shot is taken so that the subject focus remains locked.
For details, see the Nikon AC-1E card's instruction manual.

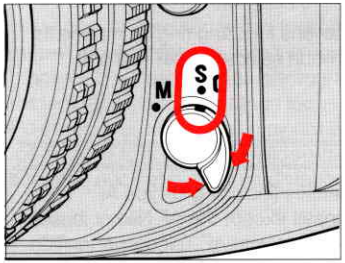
## Caution

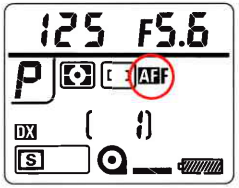
Do *not* attempt to turn the lens focusing ring or impede its rotation when the focus mode selector is set to **S** or **C**.

In addition to AF Nikkor lenses (including D-type AF Nikkor and AF-I Nikkor lenses except the AF Nikkor lenses for F3AF), autofocus is possible with AF Teleconverter TC-16A attached to non-AF AI-Nikkor lenses with a maximum aperture of f/3.5 or brighter. AI-Nikkor lenses that cannot be used with the TC-16A are:

- AI-S type 20mm f/2.8
- AI-S type ED 400mm f/2.8 IF
- AI-S type ED 400mm f/3.5 IF
- 28mm f/2 (with factory serial No. 540020 or smaller)
- 28mm f/2.8 (No. 500000 or smaller)
- 35mm f/1.4
- 35mm f/2 (No. 931000 or smaller)
- 35mm f/2.8 (No. 880000 or smaller)
- 50mm f/1.4 (No. 398000 or smaller)
- 50mm f/2 (No. 364000 or smaller)
- ED 400mm f/3.5 IF
- Micro 55mm f/3.5
- All modified-AI-Nikkor and PC-Nikkkor lenses

*For details, see the TC-16A's instruction manual.*

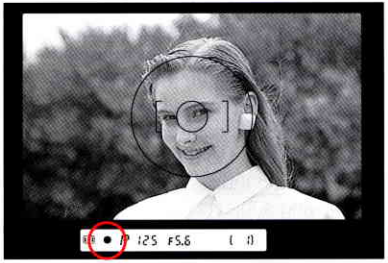



## Single Servo AF with Focus-Priority

For Single Servo AF with Focus-Priority, set the focus mode to **S**.

You lightly press the shutter release button, the lens starts adjusting for focus. Because the priority is on correct focus, the shutter cannot be released until the subject is in focus. After focus is achieved, the focus remains locked for as long as the shutter release button is lightly pressed. This feature is useful, especially when recomposing the picture with the mains subject off center. However, if the camera-to-subject distance changes, you have to refocus.




Stationary subject is in focus

**With a stationary subject:** Lightly press the shutter release button. When the subject is in focus, the lens stops moving, the in-focus indication ● appears in the viewfinder, and focus is locked. If the subject moves, remove your finger from the shutter release button, then lightly press it again to re-start autofocus.

When a stationary subject comes into focus, a double beep sounds (if set).

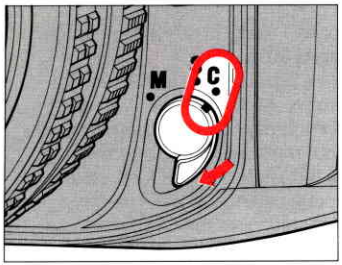
- ◀ Subject is located closer than the closest focusing distance of the lens. Move away from subject and refocus.
- ▶ Appears when TC-16A is used, alerting that the lens focusing ring is not set at infinity (∞). Set focus mode selector to M, set lens focusing ring to ∞, set focus mode selector to S again, then refocus.

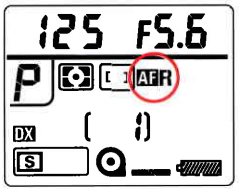

Moving subject is expected to be in focus

**With a moving subject:** Lightly press the shutter release button. Focus Tracking is automatically activated with ▶ ◀ indication in the viewfinder. As soon as the subject is expected to be in focus, ▶●◀ appears, indicating that you can release shutter. If subject stops and ● appears without ▶ ◀, focus is locked. If subject moves again, remove your finger from the shutter release button and lightly press it again to start autofocus with Focus Tracking.

If ▶ ◀ blinks in the viewfinder: Autofocus is not possible (p. 44).

- Single Servo AF with Focus-Priority is convenient for off-center subjects. See pages 40 to 41.
- After shooting with the film advance mode selector set at [S], you do not have to remove your finger from the shutter release button for the next shot. Slightly lift your finger from the button (but maintaining the button in the half-depressed position) then fully depress it to release the shutter again. The focus setting will have remained unchanged from the prior setting. In the Single Servo AF with Focus-Priority mode, focus remains locked even after the shutter is released, unless you remove your finger from the shutter release button.
  With film advance mode set at [H] or [L], camera detects focus every time the shutter is released.
- With a moving subject, depending on subject status and lens in use, slightly out-of-focus pictures may result.

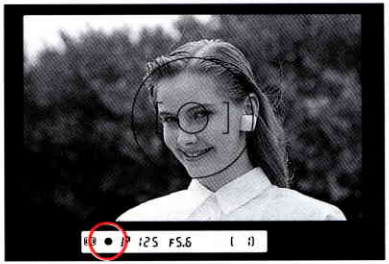



## Continuous Servo AF with Release-Priority

Under some conditions, such as very fast action situations, you may want to take a picture even if focus has not been successfully accomplished. In such cases, use this mode. Set focus mode to **C** to use Continuous Servo AF with Release-Priority.

In Continuous Servo autofocus mode, as you lightly press the shutter release button, focus detection begins and the lens focuses for as long as you keep the shutter release button lightly pressed. Since the priority is on shutter release, you can fully depress the shutter release button regardless of focus status.




Stationary subject is in focus

**With a stationary subject:** Lightly press the shutter release button to start autofocus operation. When the subject is in focus, the camera's autofocus motor (or the built-in motor of an AF-I Nikkor lens) stops driving the autofocus lens and ● lights up. Unless you remove your finger from the shutter release button, the motor will start driving the lens again to obtain an in-focus picture if the focus distance changes.

◀ Subject is located closer than the closest focusing distance of the lens. Move away from subject and refocus.

▶ Appears when TC-16A is used, alerting that the lens focusing ring is not set at infinity (∞). Set focus mode


Moving suject is expected to be in focus

**With a moving subject:** Lightly press the shutter release button and Focus Tracking is automatically activated with ▶ ◀ indication. As soon as the subject is expected to be in focus, viewfinder shows ▶●◀. Focus Tracking remains on as long as you keep lightly pressing the shutter release button. When the subject stops, the viewfinder shows ● without ▶ ◀.

- As focus is not locked in Continuous Servo AF, to take an off-center subject, use AF-L button. See pages 42 to 43.
- With a moving subject, depending on subject status and lens in use, slightly out-of-focus pictures may result.

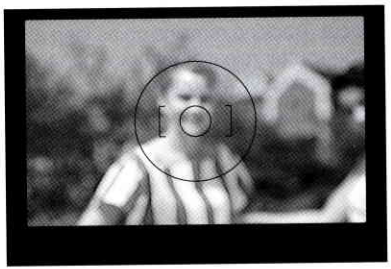
selector to M, set lens focusing ring to ∞, set focus mode selector to C again, then refocus.

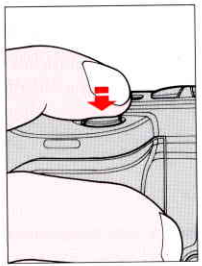
If ▶ ◀ blinks in the viewfinder: Autofocus is not possible (p. 44).

# AUTOFOCUS WITH MAIN SUBJECT OFF CENTER

## In Single Servo AF mode

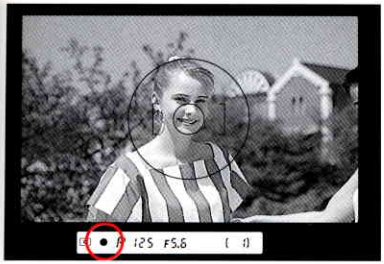
As previously noted, in Single Servo autofocus, focus is locked as long as the shutter release button is kept lightly pressed. Use this feature for off-center subjects. In the following procedure, Spot-Area AF demonstration photos are used.



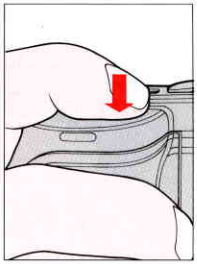


**1.** Position focus brackets on subject and lightly press shutter release button to start autofocus operation.

- If there is substantial difference of brightness between subject and background, switch to Center-Weighted or Spot Metering and use AE-L lever. See pages 88 to 89.
- With a moving subject, focus cannot be locked.



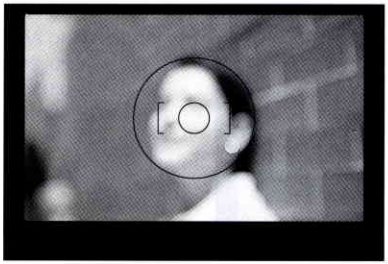

**2.** Confirm in-focus indicator ● appears (and In-Focus Signal beeps if set) in viewfinder.

**3.** Keeping the shutter release button lightly pressed, recompose, then fully depress shutter release button to take picture.

## In Continuous Servo AF mode

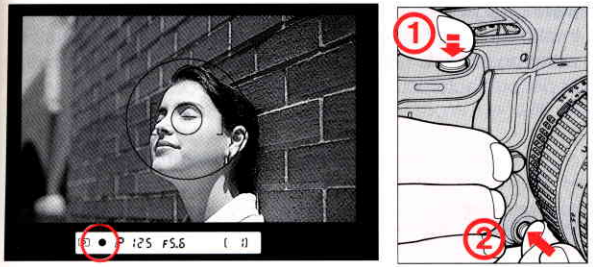
With an off-center subject, use AF-L button. In the following procedures, Spot-Area AF demonstration photos are used.



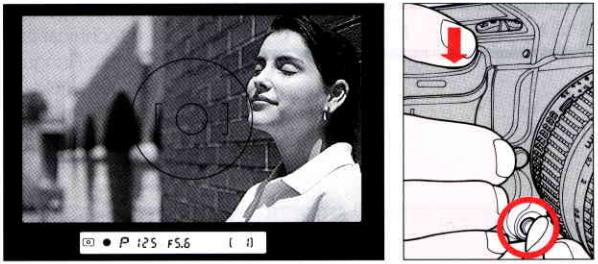
**1.** Position focus brackets on subject and lightly press shutter release button to start autofocus operation.

## MF-26 or Data Link System users

The MF-26 enables you to set simultaneous lock of autofocus and auto exposure. For details, see MF-26's instruction manual.



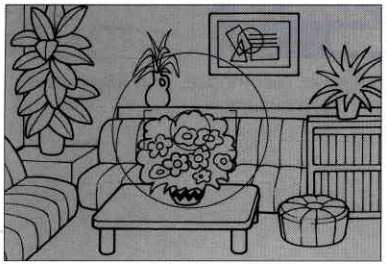

**2.** Keeping shutter release button lightly pressed, confirm in-focus indicator ● appears in viewfinder. Then press and hold AF-L button to lock focus. Keep holding AF-L button until next step is completed.



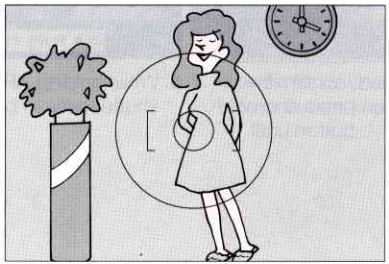

**3.** While holding AF-L button in, recompose, then fully depress shutter release button to take picture.

## SPECIAL FOCUSING SITUATIONS

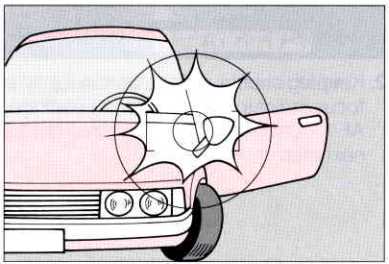

Autofocus operation depends on general lighting, subject contrast and detail, and other technical factors. In rare situations where autofocus (and manual focus with Electronic Rangefinder) is not possible, ▶ ◀ blinks telling you to focus manually with clear matte field (p. 48) or perform autofocus on another subject located at same distance.



**A. Very dark subject**
Focus manually with clear matte field, or for autofocus, focus on another brighter subject located at same distance, then use focus lock (pp. 38-43). Or, use a Nikon autofocus Speedlight to perform autofocus with Speedlight's AF illuminator.



**B. Low contrast subject**
Focus manually with clear matte field, or for autofocus, focus on another subject at same distance but with more contrast, then use focus lock (pp. 38-43).

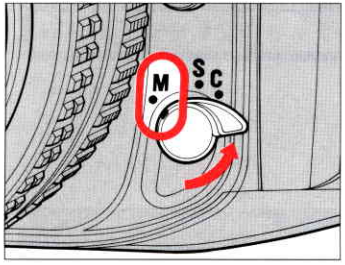


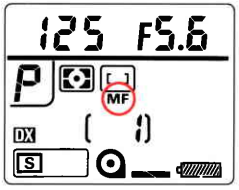
**C. Strongly backlit subject or bright subject with shiny surface such as silver or aluminum, or scene in which there is a pronounced difference in brightness, such as the light patterns created by blinds.**
Focus manually with clear matte field.

In the following situations, ignore in-focus indicator ● or ▶●◀.

- **Scene with subject located at different distances. (For example, when shooting a person over a fence or when shooting animals inside a cage)**
  Use Spot Area for autofocus (page 34) or focus manually with clear matte field.
- **With an extremely bright object near your subject**
  Use Spot Area for autofocus (page 34) or focus manually with clear matte field.
- **When using a linear polarizing filter*, or other special filter such as a soft-focus filter.**
  Focus manually with clear matte field.

* *Circular polarizing filter can be used in connection with autofocus operation.*

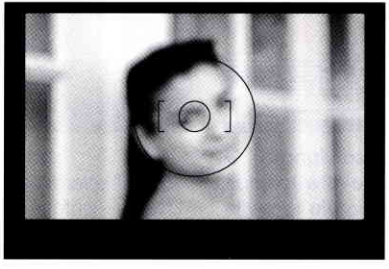


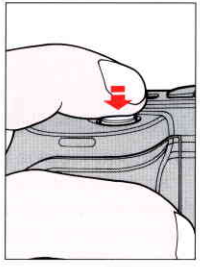




To focus manually, set the focus mode selector to **M**. (If the lens has an A-M switch, set it to M. If you are using an AF-I Nikkor lens, set the focus mode ring to M or M/A.)
There are two ways of assuring precise manual focus: with the Electronic Rangefinder or with the viewfinder's clear matte field.

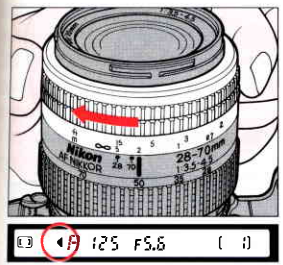
## Manual focus with Electronic Rangefinder

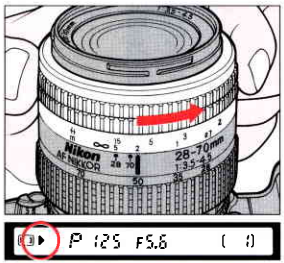
The Electronic Rangefinder enables you to see focus status with the viewfinder indications while you are manually focusing. It works with most Nikon lenses (including AF Nikkor when operated manually) which have a maximum aperture of f/5.6 or faster. (For a complete list of usable lenses, see LENS COMPATIBILITY CHART on p. 104).



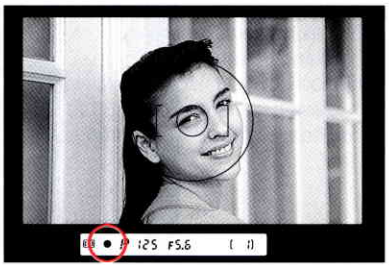


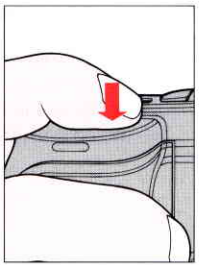
**1.** Look through viewfinder and position focus brackets on main subject. Then lightly press shutter release button.




**2.** Keeping shutter release button lightly pressed, rotate lens focusing ring in direction indicated by focus-to-left arrow (◀) or focus-to-right arrow (▶), until arrow disappears and in-focus indicator ● appears.
If focus-to-left arrow (◀) does not disappear when you turn focus ring counterclockwise to the limit, subject is closer than the distance at which the lens is able to focus. Move back from subject.

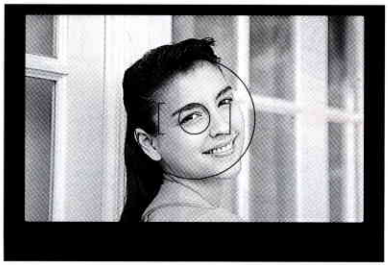


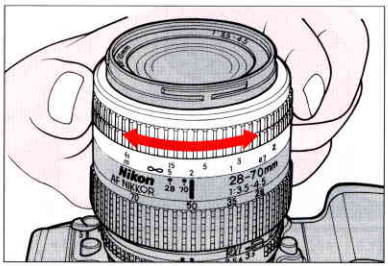



**3.** Confirm in-focus indicator ● appears, then fully depress shutter release button to take picture.

For special focusing situations shown on page 44, ▶ ◀ blinks to indicate that the Electronic Rangefinder does not correctly work. Focus with clear matte field (p. 48).

## Manual focus using clear matte field



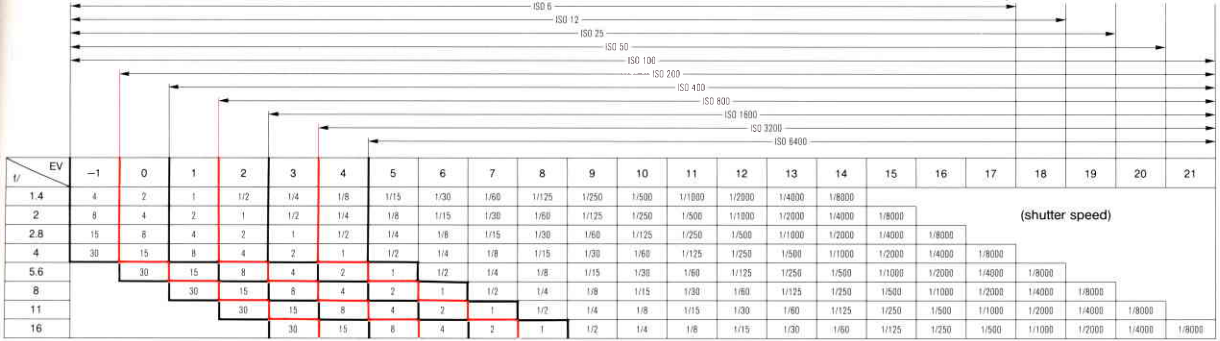



Look through viewfinder and rotate lens focusing ring until image on clear matte field appears sharp.

# EXPOSURE MODE

Light reaching the film is controlled by shutter speed and lens aperture. The proper combination results in a correct exposure. Shutter speed and lens aperture settings are based on the ISO speed set for the film in use and the operation of the camera's exposure control system.
The relationship between aperture and shutter speed is as follows: One change in shutter speed either doubles or halves the amount of light transmitted. For example, a shutter speed of 1/500 sec. passes half the light of 1/250 and double the light of 1/1000 sec. The aperture f/8 passes half the light of f/5.6 and double the light of f/11. If the correct exposure for a scene is 1/500 at f/8, then we can also select 1/250 at f/11 or 1/1000 at f/5.6 and achieve the same exposure results, and so on.

**Metering range**
**(for Matrix and Center-Weighted Metering with AF Nikkor 50mm f/1.4 lens)**




| f/ \ EV | −1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | | | | | | |
| 2 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | | (shutter speed) | | | |
| 2.8 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | | | | |
| 4 | 30 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | | | |
| 5.6 | | 30 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | | |
| 8 | | | 30 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | | |
| 11 | | | | 30 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 | |
| 16 | | | | | 30 | 15 | 8 | 4 | 2 | 1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/8000 |

*Metering range depends on the lens in use. With a lens having aperture from f/2.8 to f/32, metering range at ISO 100 will be from EV1 to EV23.*

# SELECTING EXPOSURE MODE

Selecting the exposure control mode means deciding if you want the shutter speed and/or lens aperture to be set automatically or manually.

The Nikon N90 camera offers two types of programmed auto exposure modes, Auto Multi-Program (**P**) and Vari-Program (**P**$_S$), as well as Shutter-Priority Auto (**S**), Aperture-Priority Auto (**A**), and Manual (**M**) exposure modes.

## Programmed auto exposure modes (P/P$_S$)

With the N90's microcomputer choosing the combination of shutter speed and aperture automatically, you can concentrate on picture composition, without worrying about exposure.

*Note that programmed auto exposure modes operate only with Nikon lenses that have a built-in CPU (AF Nikkor and AI-P Nikkor lenses).*

When **P**$_S$ for Vari-Program is selected, you have a choice of seven options: (1) Portrait Program, (2) Portrait Program with Red-Eye Reduction, (3) Hyperfocal Program, (4) Landscape Program, (5) Silhouette Program, (6) Sport Program and (7) Close-Up Program.

For details about Vari-Program, see pp. 67-85.

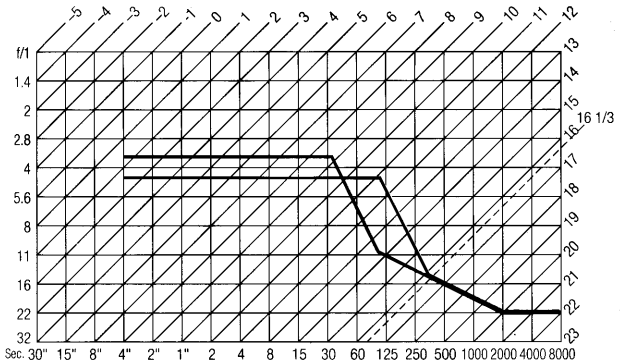
Auto Multi-Program (**P**) is used for most common picture-taking situations. The chart at right shows the shutter speed/aperture combinations for Auto Multi-Program that are selected at each EV (exposure value) brightness level.

With Auto Multi-Program, you can use the Flexible Program function to temporarily shift an automatically selected shutter speed/ aperture combination and obtain the desired shutter speed/aperture (p. 55).

## Program chart of Auto Multi-Program

To check shutter speed and aperture values, follow either the black or red line to where it intersects the diagonal line.

**Auto Multi-Program chart (ISO 100)**




With AF Zoom 28-70mm f/3.5-f/4.5 at 28mm setting
With AF Zoom 28-70mm f/3.5-f/4.5 at 70mm setting

## Shutter-Priority Auto exposure mode

You manually set the shutter speed you want. To freeze the action, use a high shutter speed; to create motion effects, choose a slower shutter speed. The N90's microcomputer automatically sets the proper aperture to match the manually selected shutter speed for correct exposure. See pp. 56-59 for Shutter-Priority Auto operation.

*Note that Shutter-Priority Auto exposure mode operates only with Nikon lenses that have a built-in CPU (AF Nikkor and AI-P Nikkor lenses).*

## Aperture-Priority Auto exposure mode

You can control depth of field by varying the aperture. Smaller apertures make the background and foreground sharper (recommended for landscape pictures) while larger apertures tend to blur the background (recommended for portraits). Your selected aperture will determine the shutter speed that is automatically set by the camera's microcomputer. When using smaller apertures with correspondingly slower shutter speeds, remember that, generally, any speed below 1/(focal length in use) second, requires the use of a tripod to prevent picture blur due to camera shake. The higher the corresponding shutter speed to the aperture you set, the easier it is to stop action. Adjust the selected aperture if the speed is not appropriate for conditions or the specific effect you want.

For Aperture-Priority Auto operation, see pp. 60-62.

## Manual exposure mode

Manual exposure control allows you to make both aperture and shutter speed settings. For a technically correct exposure, follow the recommendation of the camera's light meter, as indicated by LCD readout. To achieve a specific creative effect (e.g., intentional blur, intentional under- or over-exposure), disregard the LCD and modify the recommended exposure settings.

For Manual exposure operation, see pp. 63-66.

**Pictures taken at different shutter speeds**

High shutter speed

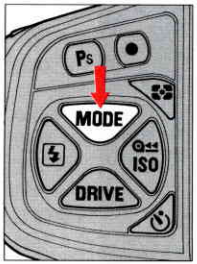
Slow shutter speed

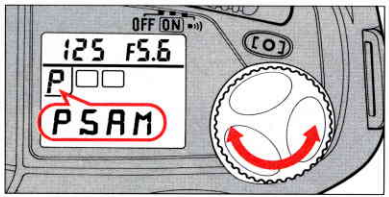
**Pictures taken at different apertures**

Wide aperture

Narrow aperture

## SETTING EXPOSURE MODE





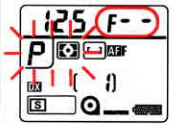
While pressing **MODE** button, rotate command dial. The exposure mode changes as in the following sequence:

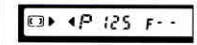
**P** Auto Multi-Program → **S** Shutter-Priority Auto
↑ ↓
**M** Manual ← **A** Aperture-Priority Auto

*To activate Vari-Program, use* **Ps** *button. For details, see pp. 67-85.*

### Data Link System users

If you have already created an original program line as your own Custom Program and downloaded it from the Electronic Organizer to the camera, **P** with **[ P** will appear in the LCD between **M** and **P** . For details, see the AC-1E card instruction manual.



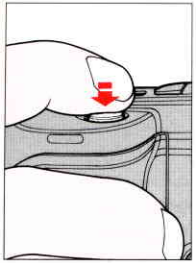



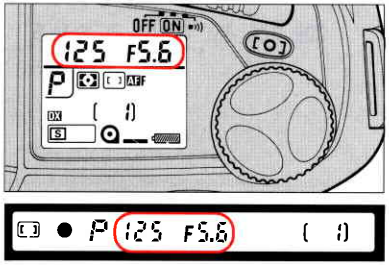

### For users of lenses that have no CPU, or accessories such as bellows attachment or extension rings

Use Aperture-Priority Auto or Manual exposure mode. Auto Multi-Program or Shutter-Priority Auto exposure mode automatically shifts to Aperture-Priority Auto exposure mode with F- - and blinking exposure mode indicator. (If Matrix Metering is set on the camera, metering system is also automatically shifted to Center-Weighted and ⊡ blinks). Vari-Program cannot be used for these lenses or accessories.

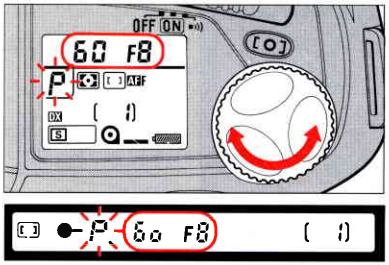
## FLEXIBLE PROGRAM

If you want to change the shutter speed/aperture combination of Auto Multi-Program, use the Flexible Program function. Flexible Program enables you to temporarily change an automatically set shutter speed/aperture combination in 1 EV steps, while maintaining the correct exposure.





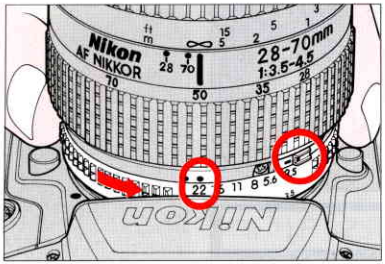

**1.** Lightly press shutter release button.



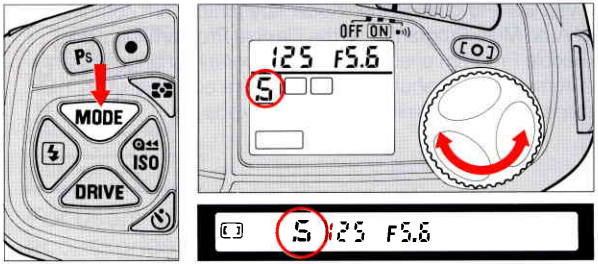

**2.** Turn command dial until desired shutter speed or aperture value appears in viewfinder and in LCD panel. The exposure mode indicator (***P***) blinks to indicate the program has been shifted or changed.

- The shifted program is maintained as long as the exposure meter stays on, unless you turn the command dial to the previous shutter speed/aperture. As soon as the meter switches off (i.e., the viewfinder and LCD panel displays disappear), Flexible Program is cancelled.
  Flexible Program is also cancelled when you switch the exposure mode to another mode, readjust the camera settings or turn off the power switch.
- Flexible Program cannot be used with Vari-Program. When $P_S$ is selected, the procedure just explained does not shift the shutter speed/aperture combination.

## OPERATION IN SHUTTER-PRIORITY AUTO EXPOSURE MODE

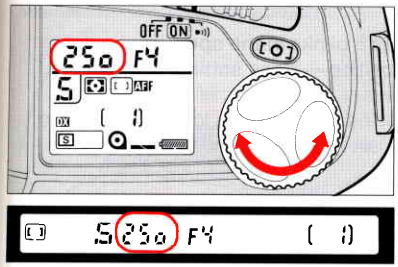



**1.** Set lens to its minimum aperture setting (highest f-number). With AF Nikkor and AI-P Nikkor lenses, lock lens aperture at minimum setting (refer to lens instruction manual).

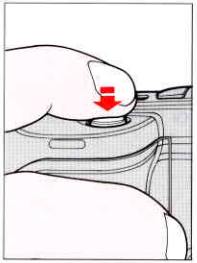



**2.** While pressing **MODE** button, rotate command dial until "**S**" appears on LCD panel and viewfinder.

If "bulb" is set on the camera, selecting the Shutter-Priority (S) Auto exposure mode will cause **buLb** to blink—a warning that the "bulb" setting cannot be used in in the S mode.

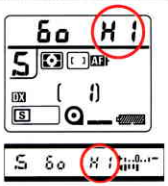



3. Remove finger from **MODE** button, and rotate command dial to select desired shutter speed.
Shutter speed indication changes one step at a time in the following sequence:
30'' 15'' 8'' 4'' 2'' 1'' 2 4 8 15 30 60 125 250 500 1000 2000 4000 8000



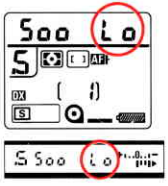

4. Look inside viewfinder, compose and lightly press shutter release button. Confirm the automatically set aperture value.

If meter has automatically turned off, along with LCD indications, turn on meter—and LCD readout—again by lightly pressing shutter release button.




**If H 1 appears in the aperture position with electronic analog display*—Overexposure alert**:** Select higher shutter speed or use Nikon ND filter.

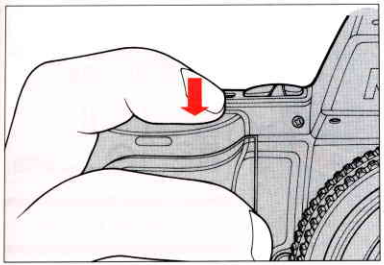

**If FE E blinks in the aperture position—Lens setting error alert**:** Lens is not set to smallest aperture setting and shutter is locked. Set lens to smallest aperture, and lock setting.




**If L o appears in the aperture position with electronic analog display*—Underexposure alert**:** Select slower shutter speed, or use accessory Nikon Speedlight.

**If ϟ mark in green appears—Flash photography is recommended:** If subject brightness is insufficient, ϟ mark lights up in green. Use Nikon Speedlight.

** Shows value difference from correct exposure. If difference is beyond ±1 EV, ▶ for underexposure or ◀ for overexposure appears.*
*** For overexposure alert, underexposure alert and lens setting error alert, electronic beeper sounds, if set.*



**5.** To take the picture, fully depress shutter release button.