# Nikon F3 AF

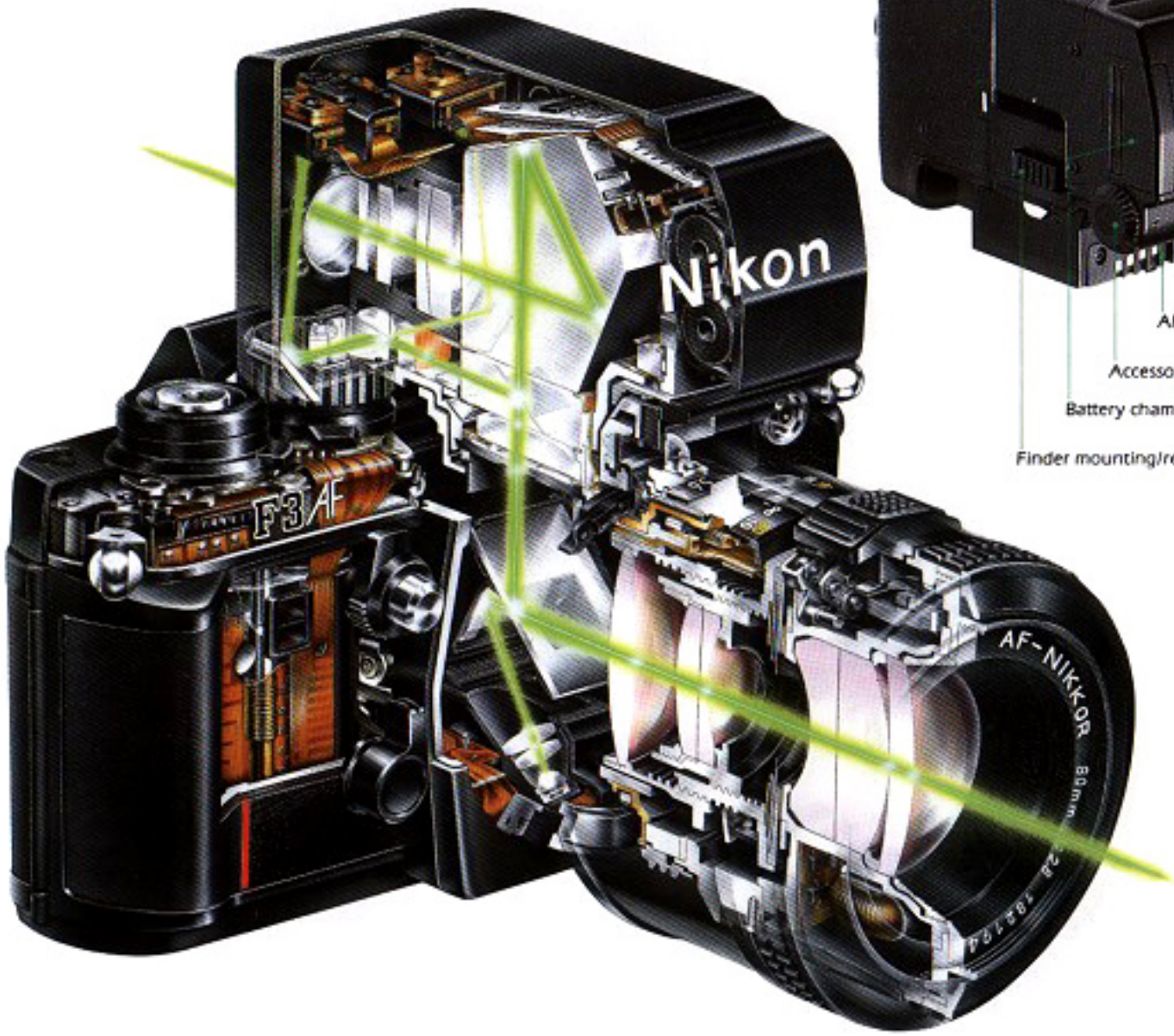
The quintessential Nikon

# A new legend from Nikon

Combining automatic focus with automatic exposure, the Nikon F3AF enables photographers accustomed to the performance of the Nikon F, Nikon F2 and Nikon F3 to keep fast-moving subjects in pinpoint focus **as they move** and to freeze them in their tracks, as well as to obtain correct exposure—a feat that had been difficult, if not impossible, even for skilled photographers. The result is certain to satisfy the most ardent sports or fast-action photographers and photojournalists: great photos automatically exposed and automatically focused. This is the type of performance that has made Nikon cameras the first choice worldwide of the vast majority of professional photographers and that has taken special editions of Nikon cameras to space and back. Nikon F. Nikon F2. Nikon F3. Apollo. Skylab. Apollo-Soyuz. America's Space Shuttles. And now the Nikon F3AF. A new legend is born.


Nikon
AF FINDER DX-1
Nikon
F3/F

# The Nikon TTL Autofocus System





Interchangeability is the big story behind the Nikon TTL autofocus system. In consideration of the needs of photographers who have to work with different tools for different assignments, Nikon designed the three elements of its system—a new finder, new autofocus lenses and a new body—to be interchangeable. It's the first system of its kind in the world and another achievement of Nikon optoelectronics.

**New DX-1 AF Finder**

The "brain" of Nikon's automatic focus detection system is 35 mm SLR photography's first interchangeable autofocus viewfinder, the DX-1 AF Finder. In designing the Nikon F3AF's autofocus brain, Nikon created an all-new system that responds instantly to fast-moving situations, flawlessly and unfailingly. This system, the Nikon TTL autofocus system, enables you to keep your subject consistently in focus and take perfectly focused pictures in rapid sequence as the subject moves. Also, eyestrain and poor eyesight tend to affect focusing accuracy—with Nikon's autofocus system, this is no longer a

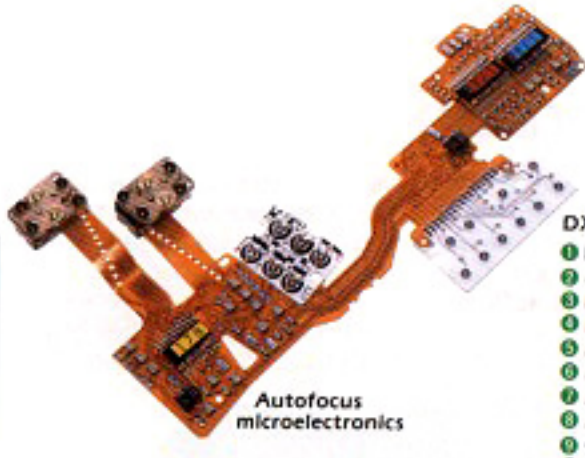
## Viewfinder Display

1. LCD exposure display
2. ADR f-number in use
3. LED flash ready-light
4. Matte field
5. Plain field
6. Inoperable focus detection indicator
7. In-focus indicator
8. Focus detecting frame
9. Beam divider area

problem because focusing is automatic. With focusing taken care of, you can take care of the creative aspects of your assignment.

As focus detecting sensors, the DX-1 uses a pair of SPD (silicon photodiode) arrays whose sensitivity and reliability have been proven in other Nikon cameras. These highly responsive sensors detect focus from the closest focusing distance to infinity. This enables the DX-1 to capture the in-focus position of a fast-moving subject instantly, consistently, automatically.

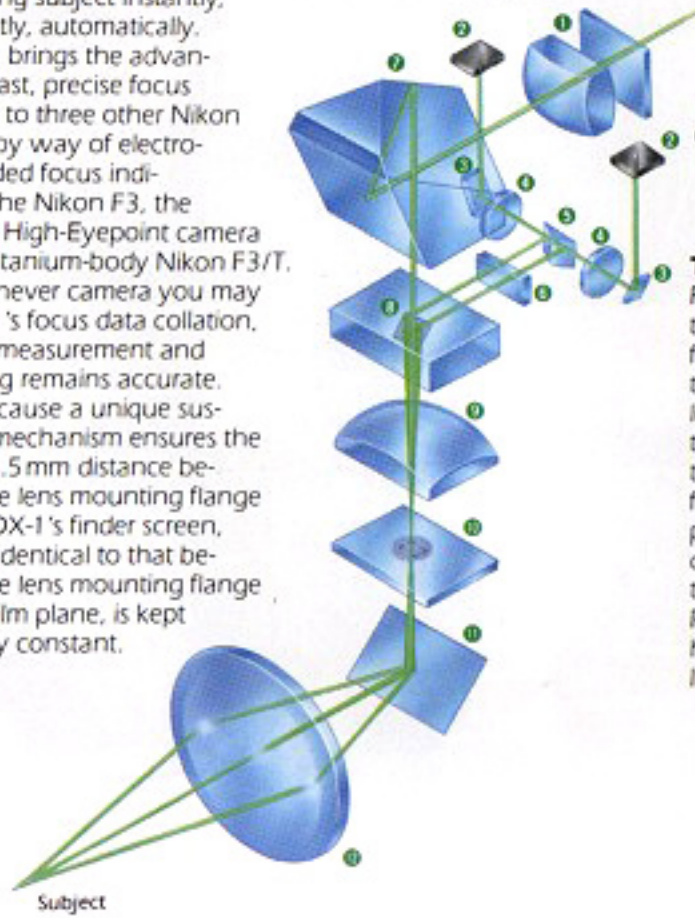
The DX-1 brings the advantages of fast, precise focus detection to three other Nikon cameras by way of electronically aided focus indication—the Nikon F3, the Nikon F3 High-Eyepoint camera and the titanium-body Nikon F3/T. But whichever camera you may use, DX-1's focus data collation, analysis, measurement and processing remains accurate. That's because a unique suspension mechanism ensures the critical 46.5 mm distance between the lens mounting flange and the DX-1's finder screen, which is identical to that between the lens mounting flange and the film plane, is kept absolutely constant.



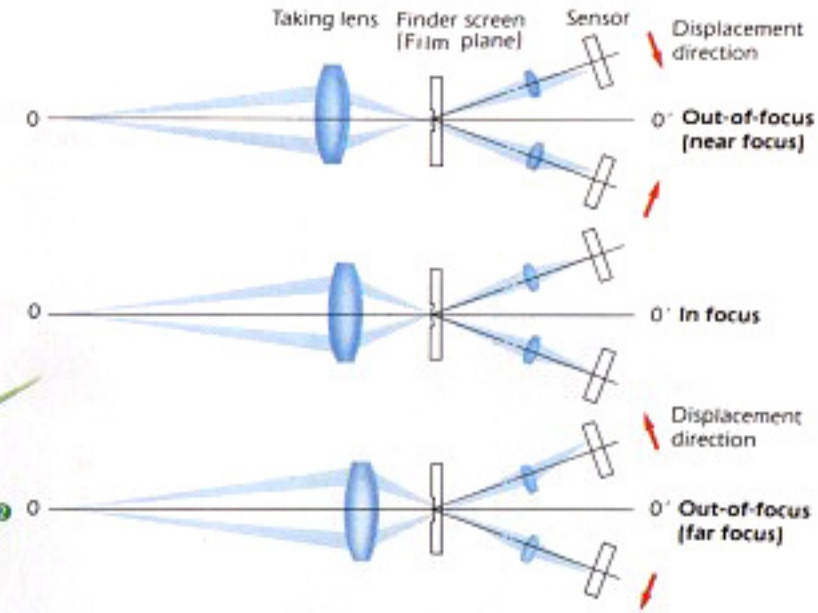
Autofocus microelectronics

**DX-1 optical diagram**

1. Finder eyepiece lens
2. Focus detecting sensor
3. Refocusing mirror
4. Relay lens
5. Beam splitter
6. Infrared beam filter
7. Pentaprism
8. Beam divider
9. Condenser lens
10. Finder screen
11. Reflex mirror
12. Taking lens



Subject




## TTL Autofocus Principle

First, the right and left halves of the image-forming light rays from the subject pass through the right and left sides of the lens, thereafter converging at the finder screen whose position is equivalent to that of the film plane. As the two halves pass through the screen, the directions in which they are traveling become reversed. Relay lenses then redirect each half to its respective sensor. If the image is in focus, the image refocused at its own sensor will be positioned **exactly** at the optical axis of each of the two relay lenses. If the focus is to the rear, each half of the refocused image will be displaced **outside** the optical axis; if it is to the front, each half of the refocused image will be displaced **inside** the optical axis. To detect focus status, the focus detecting sensor simply analyzes the degree of subject displacement and direction from the optical axis.

# The AF-Nikkors: A New Generation of Lenses

From lens barrel to optical system, this is an altogether new Nikkor breed. Designed for fully automatic focusing with the DX-1 AF Finder and the Nikon F3AF, the AF-Nikkor 80mm f/2.8 and 200mm f/3.5 IF-ED are the first of Nikon's new generation of autofocus lenses.

Nikon's new AF-Nikkor lenses offer two of the most useful and popular telephoto lengths among sports and action photographers.

The efficient layout of their gear trains makes for smooth power transmission, enhancing real-time response. Focus detecting speed is faster than the twinkling of an eye—0.5 milliseconds. Focusing speed? It takes the 80mm AF-Nikkor no more than 0.6 sec. and the 200mm no more than 1.7 sec. to move from the closest focusing distance to infinity and any point in-between.

The lenses move about silently, too, to minimize distraction to the photographer and to cope with picture-taking situations that require absolute quiet. During focusing, only the absolute minimum of lens elements of the 80mm move, greatly contributing to real-time response.

In the 200mm, which utilizes Nikon's performance-proven IF (internal focusing) system, the use of Nikon's special, ED (Extra low Dispersion) glass ensures superior color correction. Stunning sharpness and contrast is obtained even at large maximum apertures. For even faster response, there's a variable autofocus range setting mode. Both lenses have a focus locking device. When your subject is in focus, simply press the button and you can recompose your picture with the main subject off-center or anywhere else you want it to indulge your creative flair.

AF-Nikkor 80mm f/2.8

AF-Nikkor 200mm f/3.5 IF-ED

# A body Built for Professionals

...Plus an accessory that gives regular Nikkor and Series E lenses autofocus operation capability.

**AF TELECONVERTER TC-16**

Attach the TC-16 between a regular Nikkor or Nikon Series E lens and the F3AF camera body with DX-1 AF finder installed—and your prime lens is instantly transformed into an autofocus lens, complete with a 1.6× increase in focal length. A built-in micromotor moves the TC-16's lens elements, assuring virtually instantaneous focus detection and pinpoint subject focus. Also, thanks to the application of Nikon Integrated Coating (NIC) on all lens surfaces, there is no deterioration in image quality even with the increase in focal length. Note that the TC-16 does not provide focus-aid operation capability.


**Usable lenses for autofocus operation with TC-16**

**Nikkors:**

| Wideangle | Telephoto |
|---|---|
| 24mm f/2 | 85mm f/1.4 |
| 28mm f/2 | 85mm f/2 |
| 35mm f/1.4 | 105mm f/1.8 |
| 35mm f/2 | 135mm f/2 |
| Normal | 200mm f/2 IF-ED |
| 50mm f/1.2 | 300mm f/2 IF-ED |
| 50mm f/1.4 | Noct |
| 50mm f/1.8 | 58mm f/1.2 |

**Series E:**

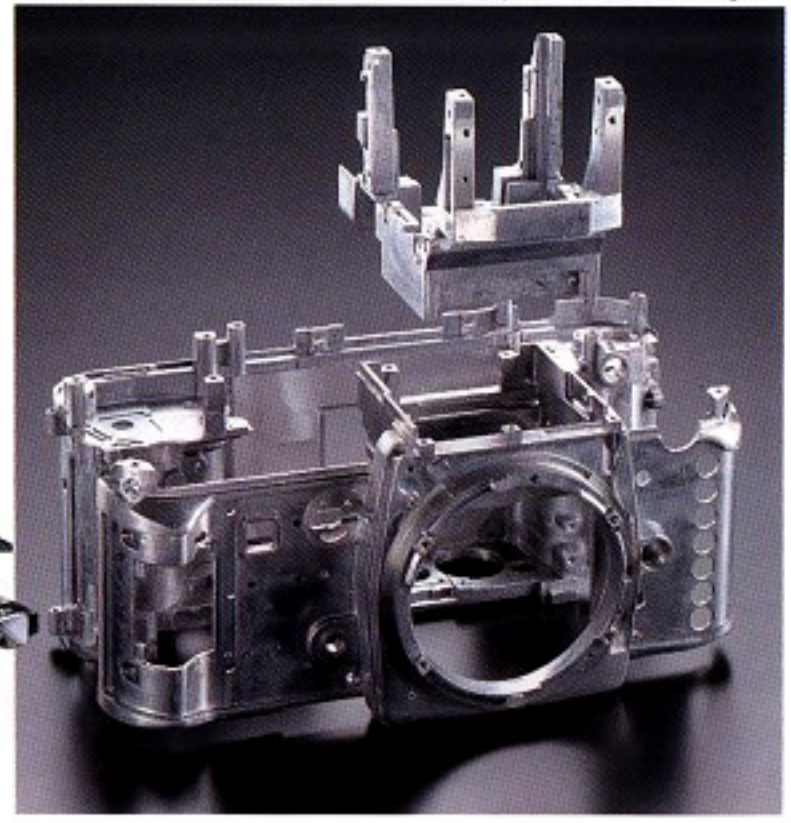
E 50mm f/1.8

This new body is based on the established professional's choice, the Nikon F3. It inherits the performance-proven features of the F3. Newly added are built-in autofocus contacts specially plated to enhance durability and reliability.

To realize truly automatic operation, Nikon chose the performance-proven aperture-priority, automatic-exposure Nikon F3, which has won wide acceptance among professional photographers, as the basis of the F3AF body. Thus, not only perfect exposure is assured; with the DX-1, perfect focus is also a certainty.

For the casting of the camera and its finder, Nikon selected an alloy known for its outstanding rigidity and resistance to both metal fatigue and corrosion. This alloy has a tensile strength of approximately 33.5 kilograms per square millimeter and is the same alloy used in the casting of the Nikon F3 body: copper silumin aluminum. Thus, the F3AF's two-piece aluminum die-cast body and that of the DX-1 are both impervious to temperature, humidity and ambient changes.

Both the F3AF body and the DX-1 AF Finder have been precision-engineered to ensure they match perfectly with various interchangeable viewfinders and lenses, which is absolutely essential for consistent and constant picture sharpness, as well as performance stability and reliability.



# Versatile, Precise, Focus-Aid Operation


DX-1 + F3 body + Nikkor 300mm f/2.8 IF-ED


DX-1 + F3/T body + Nikkor 400mm f/3.5 IF-ED

One other outstanding merit of the DX-1 AF Finder is its ability to work not just with the F3AF or with AF-Nikkor lenses but with other components of the Nikon System. This is in the area of focus-aid operation.

No matter how used you are to calculating the correct focus, there comes a time when you wish you could manually focus the lens faster and more accurately. There comes a time, too, when eyestrain or bad eyesight makes it unlikely for you to obtain the correct focus. With the DX-1 AF Finder, a Nikon F3, Nikon F3 High-Eyepoint or titanium-body Nikon F3/T camera body and one of some 40 Nikkor and Nikon Series E lenses f/3.5 and faster, you can relax. Red arrow-shaped LED's tell you how to manipulate the focusing ring to pinpoint your subject. This focus-aid feature assures quick manual focusing because now you know instantly where to turn the lens focusing ring in order to get your subject in the sharpest possible focus.

And since you have a great many lenses to choose from, your choice of applications is considerably enhanced.

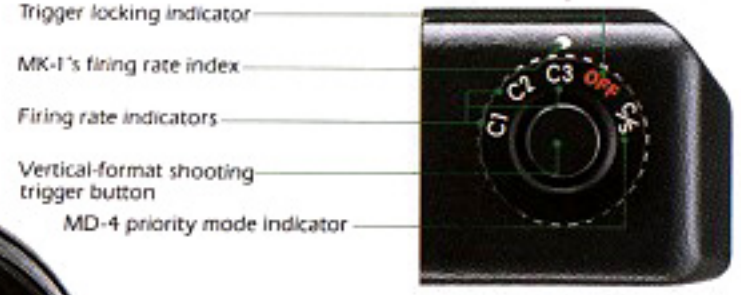
**Focus Status Indications**


**Usable lenses for focus-aid operation**

**Nikkors:**

| | |
|---|---|
| Fisheye | Zoom |
| 6mm f/2.8 | 35-70mm f/3.5 |
| 8mm f/2.8 | 43-86mm f/3.5 |
| 16mm f/2.8 | 50-135mm f/3.5 |
| Wideangle | 80-200mm f/2.8 ED |
| 15mm f/3.5 | Noct |
| 18mm f/3.5 | 58mm f/1.2 |
| 24mm f/2 | **Series E's:** |
| 24mm f/2.8 | E 28mm f/2.8 |
| 28mm f/2 | E 35mm f/2.5 |
| 28mm f/2.8 | E 50mm f/1.8 |
| 35mm f/1.4 | E 100mm f/2.8 |
| 35mm f/2 | E 135mm f/2.8 |
| 35mm f/2.8 | E 36-72mm f/3.5 Zoom |
| Normal | E 75-150mm f/3.5 Zoom |
| 50mm f/1.2 | **AF-Nikkors:** |
| 50mm f/1.4 | 80mm f/2.8 |
| 50mm f/1.8 | 200mm f/3.5 IF-ED |
| Telephoto | |
| 85mm f/1.4 | |
| 85mm f/2 | |
| 105mm f/1.8 | |
| 105mm f/2.5 | |
| 135mm f/2 | |
| 135mm f/2.8 | |
| 180mm f/2.8 | |
| 180mm f/2.8 ED | |
| 200mm f/2 IF-ED | |
| 300mm f/2.8 IF-ED | |
| 400mm f/3.5 IF-ED | |

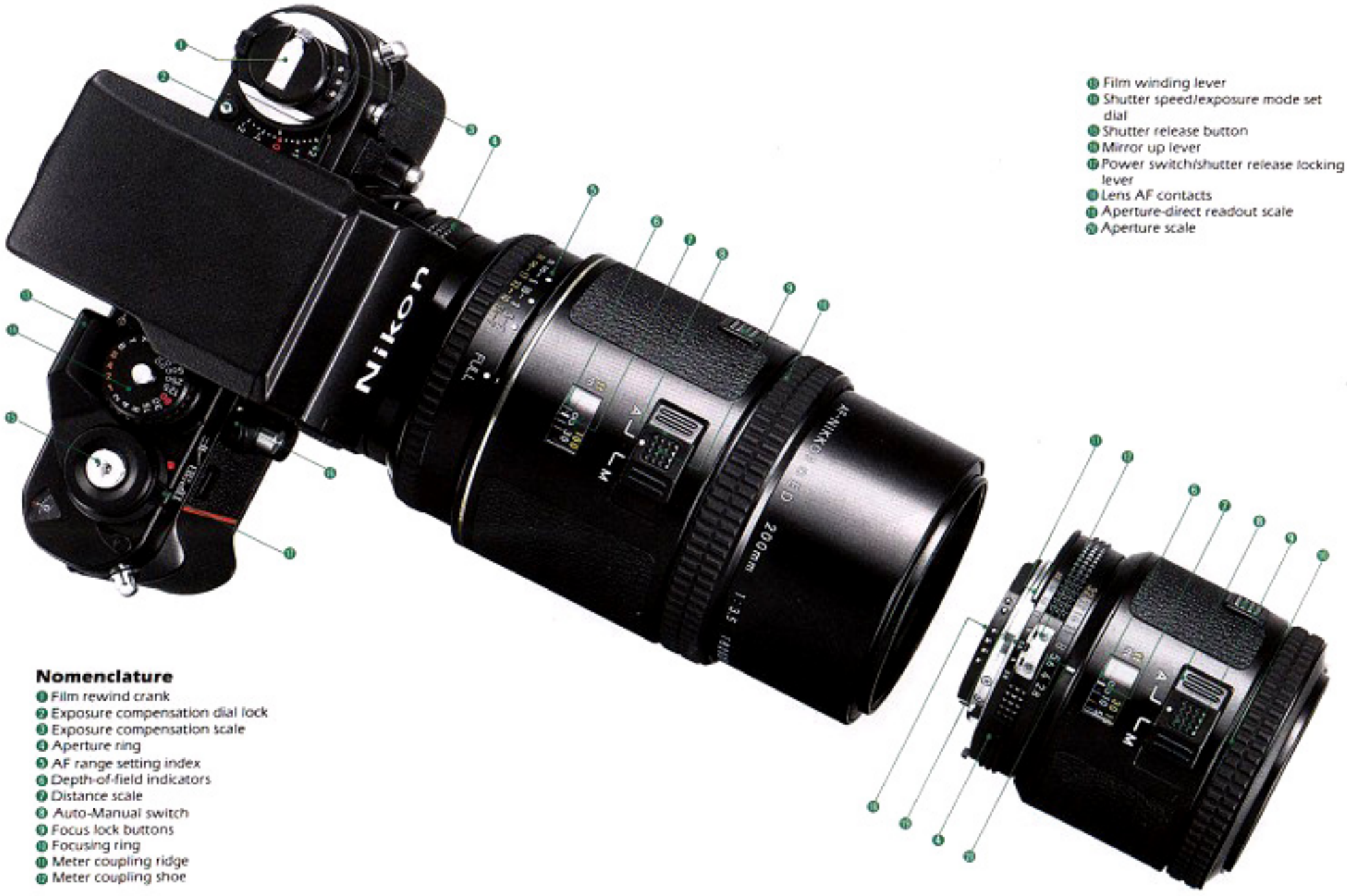
# Motorized Autofocus Shooting


**When it comes to capturing all the excitement of sports and other types of fast-action photography, you know there's nothing like a motor drive. And one of the most dependable motor drives around is the MD-4.**

Naturally, Nikon made sure you can use the speedy MD-4 accessory, as well as the new MK-1 Firing Rate Converter, with the Nikon F3AF. The MK-1, in particular, enables you to take precisely focused pictures at a pre-selected firing rate of 3 frames per second (fps), 2fps and 1 fps.

You can thus follow a relatively fast-moving subject—from football to equestrian events—and bring all of the highlights to life in your pictures. And to enable the adventurous, ever enterprising photographer to shoot creative vertical-format photos with nary a fumble, the MK-1 has a conveniently positioned trigger button that can be used in addition to the MD-4's own trigger button.




## Nomenclature

1. Film rewind crank
2. Exposure compensation dial lock
3. Exposure compensation scale
4. Aperture ring
5. AF range setting index
6. Depth-of-field indicators
7. Distance scale
8. Auto-Manual switch
9. Focus lock buttons
10. Focusing ring
11. Meter coupling ridge
12. Meter coupling shoe
13. Film winding lever
14. Shutter speed/exposure mode set dial
15. Shutter release button
16. Mirror up lever
17. Power switch/shutter release locking lever
18. Lens AF contacts
19. Aperture-direct readout scale
20. Aperture scale

# Specifications
## Nikon F3AF

(The Nikon F3AF body and Nikon F3 body have the same specifications except for items indicated by an asterisk (*).
Please note that only major specifications are tabled here.)

| | |
|---|---|
| *** Type of camera** | 35mm SLR with autofocus contacts |
| *** Autofocus contacts** | Inside lens bayonet mount |
| *** Autofocus operation** | With DX-1 AF Finder and AF-Nikkor lens in Auto mode |
| *** Focus-aid operation** | With DX-1 AF Finder, AF-Nikkor in Manual mode and regular Nikkor f/3.5 or faster |
| **Lens mount** | Nikon bayonet mount |
| **Exposure control** | Aperture-priority automatic; Manual operation also possible |
| **Shutter control** | On Auto: Electronic; On Manual: Quartz-timed; On Mechanical: Back-up mechanical release and T |
| **Shutter speed** | On Auto/Manual: 8sec. ~ 1/2000sec. and B<br>On Mechanical: Back-up mechanical release (approx. 1/60sec.) and T |
| **Metering** | TTL center-weighted full-aperture metering; Stop-down metering possible |
| **Metering range** | EV 1 ~ 18 (f/1.4 at 3 sec. to f/11 at 1/2000sec. with 50mm f/1.4 lens at ASA/ISO 100) |
| *** Viewfinder** | Eyelevel type DX-1 AF Finder as standard, interchangeable with other F3 finders |
| *** Viewfinder information** | Focus information: in-focus status indicated by two arrow-shaped LED's; out of focus (near or far focus) by one arrow-shaped LED to the right or left; red X-shaped LED mark indicates contrast or brightness is insufficient for focus detection<br>Exposure information: shutter speed, Manual operation, over- and underexposure indications via LCD; LED flash ready-light, AD&I-number in use |
| **Power source** | Three types usable:<br>1.55V silver oxide battery (S 76 or SR44 type) x 2<br>3V lithium battery (CR-1/3N type) x 1<br>1.5V alkaline-manganese battery (LR44 type) x 2 |
| *** Battery check** | Via LCD display inside DX-1 AF Finder |
| *** Power switch** | Meter and focus detection capability turned on when shutter release button is depressed halfway after unlocking power switch/shutter release locking lever.<br>Meter and focus detection capability then remains on for 16 sec. after finger is taken off button |
| *** Dimensions (with DX-1)** | 148.5mm x 135.5mm x 90mm (W x H x D) |
| *** Weight (with DX-1)** | 980g (including batteries) |
| *** Camera cases** | CF-6 for F3AF with DX-1 and AF-Nikkor 200mm f/3.5 IF-ED<br>CF-24 for F3AF with DX-1 and AF Nikkor 80mm f/2.8 |

## DX-1 AF Finder

| | |
|---|---|
| **Type** | Interchangeable eyelevel pentaprism autofocus viewfinder |
| **Focus detection system** | TTL image displacement detection system by SPDs built into DX-1 AF Finder |
| **Focusing screen** | Built-in, fixed matte/Fresnel field type with half mirror beam divider and central focus detecting frame |
| **Autofocus operation** | Operable with F3AF body and AF-Nikkor lens in Auto mode |
| **Focus-aid operation** | Operable with F3 bodies, AF-Nikkors in Manual mode and some 40 Nikkor and Nikon Series E lenses f/3.5 or faster |
| **Visual image magnification** | 0.8X (with 50mm f/1.4 lens at infinity) |
| **Frame coverage** | Approx. 92% of image recorded on film |
| **Brightness for focus-detection operation** | Approx. EV 4 ~ EV 20 (f/1.4 at 1/8 sec. to f/22 at 1/2000 sec. with 50mm lens at ASA/ISO 100) |
| **Power source** | Two types usable: 1.5V AAA-type alkaline-manganese battery x 2<br>1.5V AAA-type zinc-carbon battery x 2 |
| **Focus detection switch** | Turned on when camera body's shutter release button is depressed halfway after unlocking power switch/shutter release locking lever; focus detection capability then remains on for 16 sec. after finger is taken off button |
| **Battery check** | Via red LED focus indicators inside DX-1 AF Finder |
| **Dimensions (W x H x D)** | 55.5mm x 62.5mm x 90.0mm |
| **Weight** | Approx. 365g (including batteries) |

## AF-Nikkor

| AF-Nikkor | AF-Nikkor 80mm f/2.8 | AF-Nikkor 200mm f/3.5 IF-ED |
|---|---|---|
| **Focal length** | 80mm | 200mm |
| **Maximum aperture** | f/2.8 | f/3.5 |
| **Lens construction** | 6 elements in 4 groups | 8 elements in 6 groups (excluding a rear dust proof filter) |
| **Picture angle** | 30°20' | 12°20' |
| **Distance scale** | Graduated in meters and feet from 1m (3.5ft) to infinity (∞) | Graduated in meters and feet from 2m (7ft) to infinity (∞) |
| **Aperture scale** | f/2.8 ~ f/32 on both standard and ADR (aperture-direct readout) scales | f/3.5 ~ f/32 on both standard and ADR (aperture-direct readout) scales |
| **Diaphragm** | Fully automatic | Fully automatic |
| **Exposure measurement** | Via full-aperture method; meter coupling ridge for AI cameras and meter coupling shoe for non-AI camera provided | Via full-aperture method; meter coupling ridge for AI cameras and meter coupling shoe for non-AI camera provided |
| **Auto/Manual focus mode setting** | Via side switch | Via side switch |
| **Autofocus operation** | In Auto mode with DX-1 AF Finder and F3AF camera body | In Auto mode with DX-1 AF Finder and F3AF camera body |
| **Manual-focus operation** | In Manual mode | In Manual mode |
| **Auto-focus range setting mode** | — | Via click stops (four provided): Full: 2m (7ft) to infinity (∞) Far: 5m (17ft) to infinity (∞) Medium: 3m (10ft) to 10m (32ft) Near: 2m (7ft) to 5m (16ft) |
| **Focus lock** | Via button; two provided | Via button; two provided |
| **Power source** | Supplied from the AF Finder DX-1's penlight batteries | Supplied from the AF Finder DX-1's penlight batteries |
| **Power switch** | Via mode setting selector, activated by unlocking camera's power switch/shutter release locking lever, depressing the shutter release button and setting to A; turns off by setting to M | Via mode setting selector, activated by unlocking camera's power switch/shutter release locking lever, depressing the shutter release button and setting to A; turns off by setting to M |
| **Mount** | Nikon bayonet mount with AF contacts | Nikon bayonet mount with AF contacts |
| **Attachment size** | 52mm (P = 0.75mm) | 62mm (P = 0.75mm) |
| **Filters** | 52mm screw-in | 62mm screw-in |
| **Lens hood** | HS-7 | Built-in |
| **Lens case** | CL-325 or CL-255 | CL-35A |
| **Dimensions** | 69mm dia. x 78mm long (overall); 70mm extension from flange | 80mm dia. x 157mm long (overall); 149mm extension from flange |
| **Weight** | Approx. 390g | Approx. 870g |
| **Others** | Not usable with PK-1, PK-11, K1 ring or BR-4 | Not usable with PK-1, PK-11, K1 ring or BR-4 |

## AF Teleconverter TC-16

| | |
|---|---|
| **Focal length** | 1.6 x that of lens in use (with in-focus at infinity) |
| **Lens construction** | 5 elements in 5 groups |
| **Diaphragm** | Fully automatic |
| **Exposure measurement** | Via full aperture method |
| **Focus lock** | Via button; one provided |
| **Power source** | Supplied from batteries powering AF Finder DX-1 |
| **Mount** | Nikon bayonet mount with AF contacts |
| **Dimensions** | 88mm dia. x 43.8mm long (overall); 21mm extension from flange |
| **Weight** | 285g |

Specifications and designs shown herein are subject to change without notice.


Nikon cameras have flown in space as part of NASA's manned spacecraft program. This program includes APOLLO, SKYLAB, the joint-venture APOLLO-SOYUZ and now, the Space Shuttles.

Nikon

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