

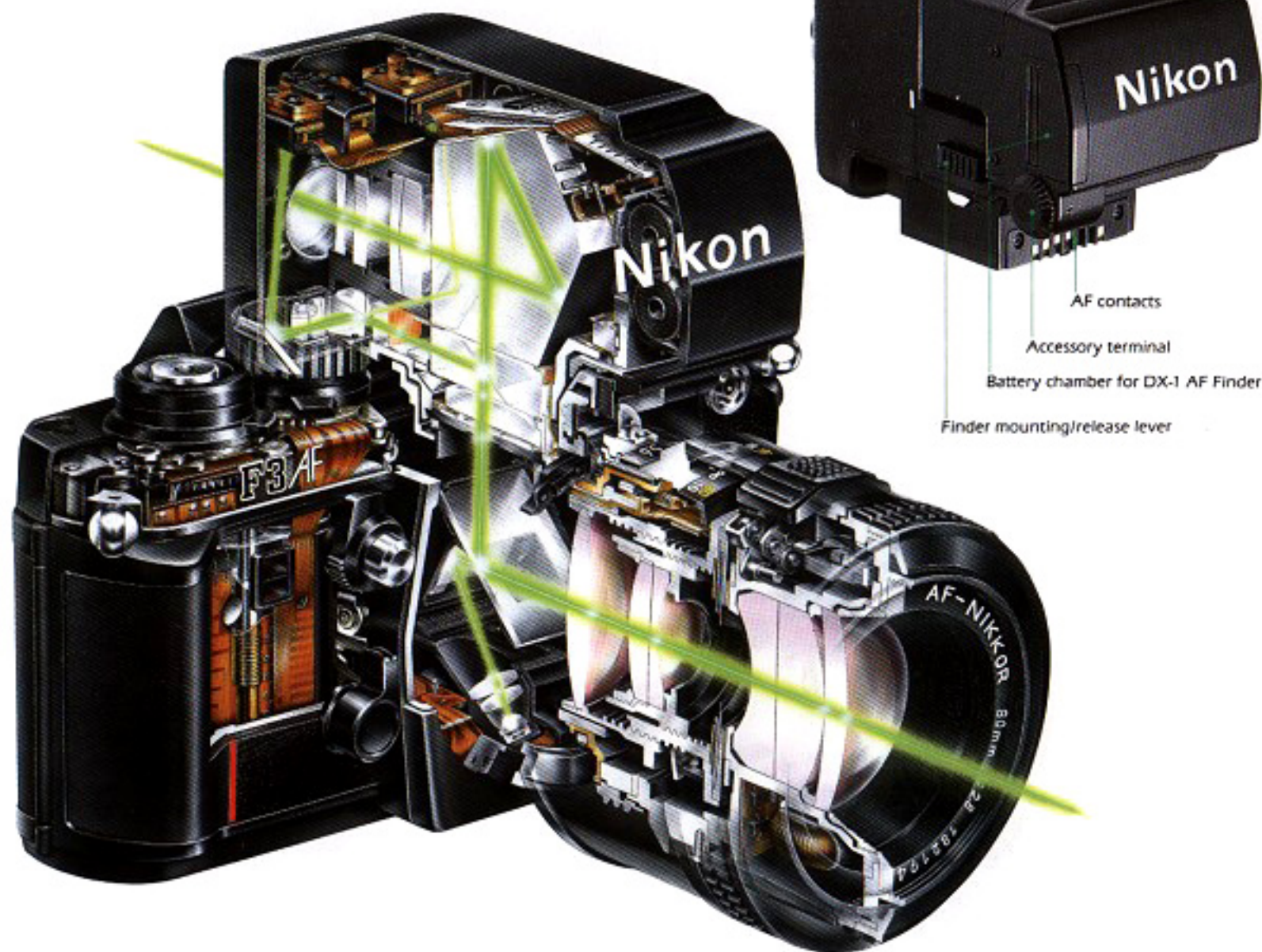
Nikon F3 AF
The quintessential Nikon

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.



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 opto-electronics.

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

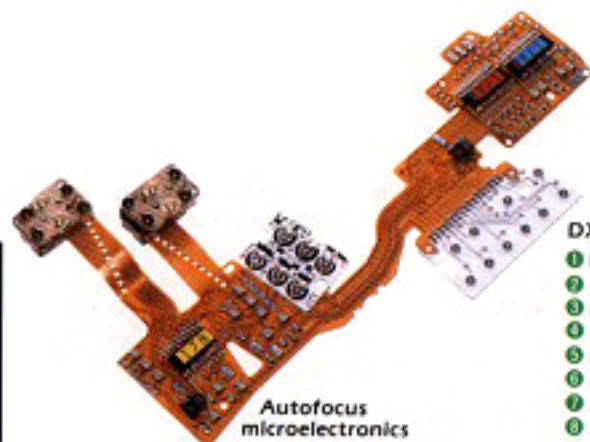
Viewfinder Display



- 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 cap-

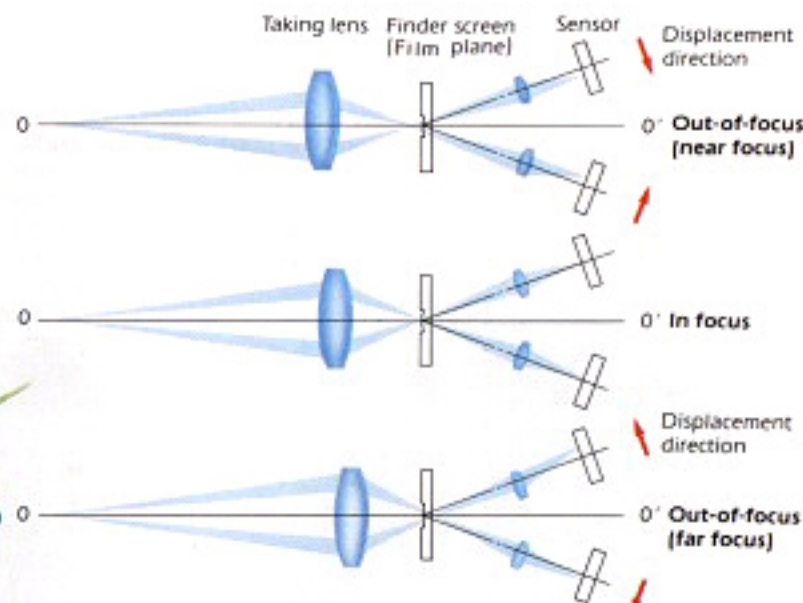
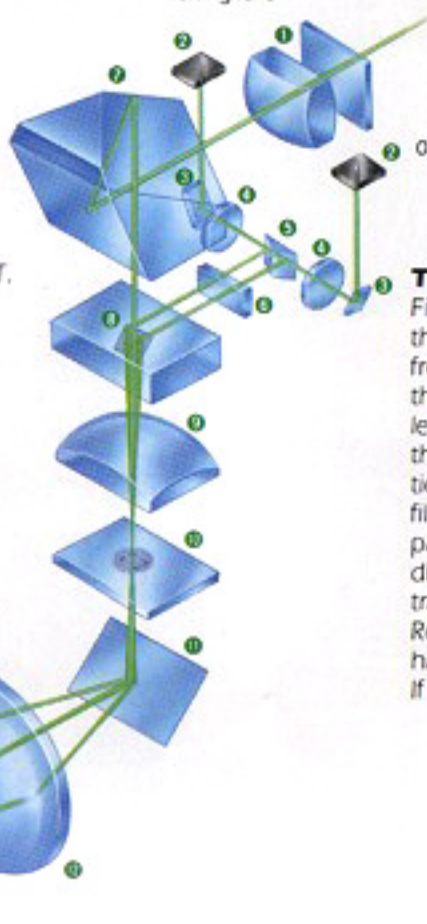


Autofocus microelectronics

ture 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.

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



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 travelling 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

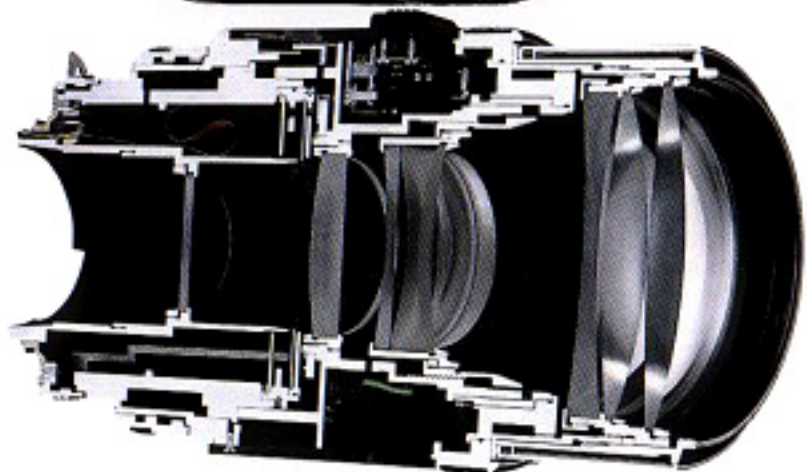
transmission, enhancing real-time response. Focus detecting speed is faster than the twinkling of an eye—0.5 milliseconds. Focusing speed? It takes the 80mm AF-Nikkor no more than 0.6 sec. and the 200mm no more than 1.7 sec. to move from the closest focusing distance to infinity and any point in-between.

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

...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 1.6x 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

24mm f/2

28mm f/2

35mm f/1.4

35mm f/2

Normal

50mm f/1.2

50mm f/1.4

50mm f/1.8

Telephoto

85mm f/1.4

85mm f/2

105mm f/1.8

135mm f/2

200mm f/2 IF-ED

300mm f/2 IF-ED

Noct

58mm f/1.2

Series E:

E 50mm f/1.8



A body Built for Professionals

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

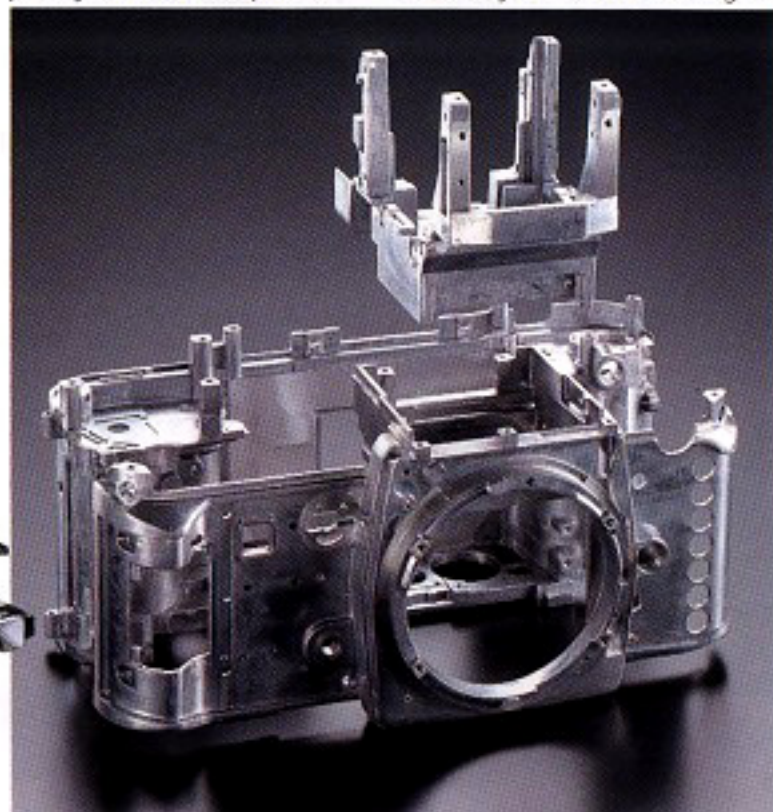
Nikon F3, which has won wide acceptance among professional photographers, as the basis of the F3AF body. Thus, not only perfect exposure is assured; with the DX-1, perfect focus is also a certainty.

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.

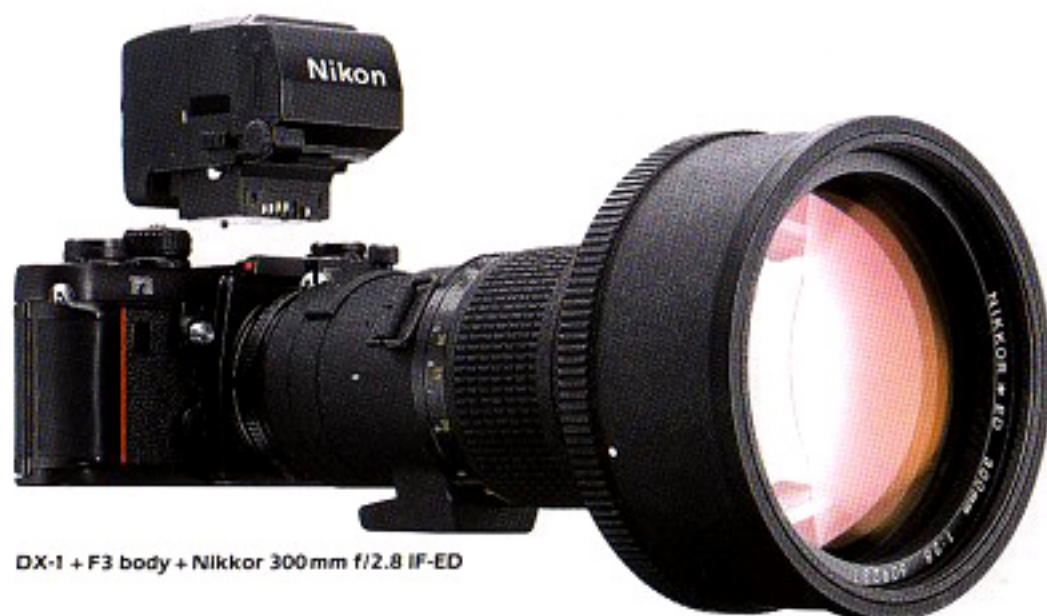
This alloy has a tensile strength

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



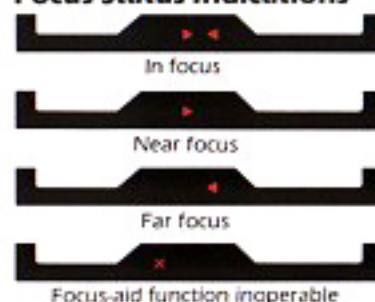
DX-1 + F3/T body + Nikkor 400mm f/3.5 IF-ED

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

Series E's:

E 28mm f/2.8	
E 35mm f/2.5	
E 50mm f/1.8	
E 100mm f/2.8	
E 135mm f/2.8	
E 36-72mm f/3.5 Zoom	
E 75-150mm f/3.5 Zoom	

AF-Nikkors:

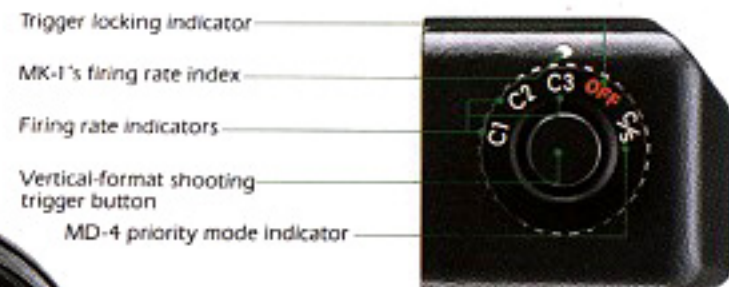
80mm f/2.8	
200mm f/3.5 IF-ED	
400mm f/3.5 IF-ED	

Motorized Autofocus Shooting



MD-4 Motor Drive

MK-1 Firing Rate Converter
(New accessory for MD-4)



Trigger locking indicator

MK-1's firing rate index

Firing rate indicators

Vertical-format shooting
trigger button

MD-4 priority mode indicator

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), 2 fps 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.



- ① Film winding lever
- ② Shutter speed/exposure mode set dial
- ③ Shutter release button
- ④ Mirror up lever
- ⑤ Power switch/shutter release locking lever
- ⑥ Lens AF contacts
- ⑦ Aperture-direct readout scale
- ⑧ Aperture scale

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



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 listed 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 require 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: Backup mechanical release and T
Shutter speed	On Auto/Manual: 8 sec. ~ 1/2000 sec. and B On Mechanical: Backup mechanical release (approx. 1/60 sec.) and T
Metering	TTL center-weighted full-aperture metering; Stop-down metering possible
Metering range	EV 1 ~ 18 (f/1.4 at 1 sec. to f/11 at 1/2000 sec. with 50mm f/1.4 lens at ASA/ISO 100)
* Viewfinder	Eyepiece type DX-1 AF Finder as standard; interchangeable with other F3 finders
* Viewfinder information	Focus information: in-focus status indicated by two arrow-shaped LEDs; 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 Exposure information: shutter speed, Manual operation, over- and underexposure indications via LCD, LED flash ready light, ADR number in use
Power source	Three types usable: 2.55 V silver oxide battery (SR46 or SR44 type) x 2 3 V lithium battery (CR14N type) x 1 1.5 V 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 Meter and focus detection capability then remains on for 16 sec. after finger is taken off button
* Dimensions (with DX-1)	148.5 mm x 115.5 mm x 90 mm (W x H x D)
* Weight (with DX-1)	950g (including batteries)
* Camera cases	CF-6 for F3AF with DX-1 and AF-Nikkor 200mm f/3.5 IF-ED CF-24 for F3AF with DX-1 and AF-Nikkor 80mm f/2.8

DX-1 AF Finder

Type	Interchangeable eyepiece 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; 1.5 V AAA-type alkaline-manganese battery x 2 1.5 V 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)	55.5 mm x 62.5 mm x 90.0 mm
Weight	Approx. 355g (including batteries)

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 (including a rear dust proof filter)
Picture angle	30°20'	12°20'
Distance scale	Graduated in meters and feet from 1 m (3.3 ft) to infinity (∞)	Graduated in meters and feet from 2 m (7 ft) 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 edge for AI cameras and meter coupling shoe for non-AI camera provided	Via full-aperture method; meter coupling edge for AI cameras and meter coupling shoe for non-AI camera provided
Auto/Manual focus mode setting	Via slide switch	Via slide 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 (33ft) 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 (IP = 0.75mm)	62mm (IP = 0.75mm)
Filters	52mm screw-in	62mm screw-in
Lens hood	HS-7	Built-in
Lens case	CL-32S or CL-35S	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.



Built for NASA's Space Shuttle.

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.



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