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Nikon

MOTOR

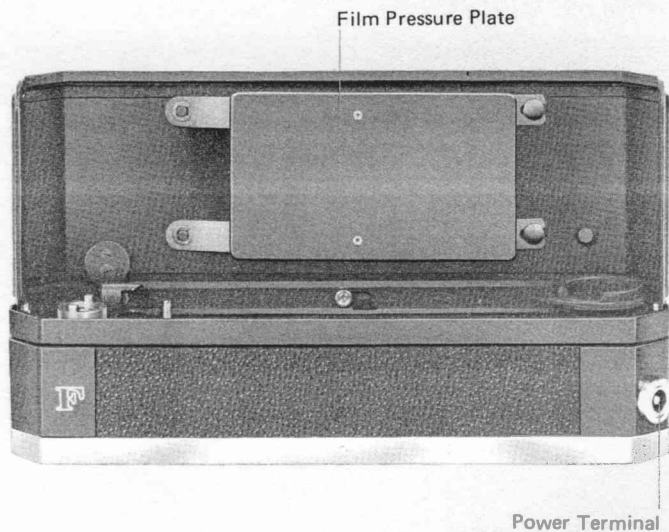
DRIVE

F-36

INSTRUCTION MANUAL

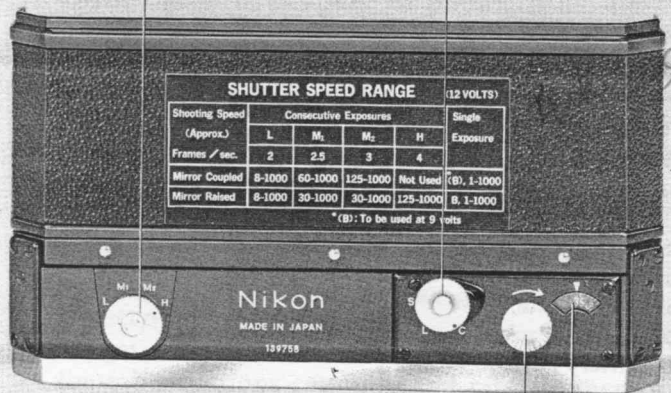
Bulky 15

NOMENCLATURE



Firing-Rate
Adjusting Knob

Release Button/S-C Ring



Exposure-Setting Ring

Frame Counter

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FOREWORD

An accessory to your Nikon F, the F-36 Motor Drive opens new vistas of photographic opportunities. Attached as a substitute for the Nikon F's standard camera back, this device advances the film and fires your camera automatically.

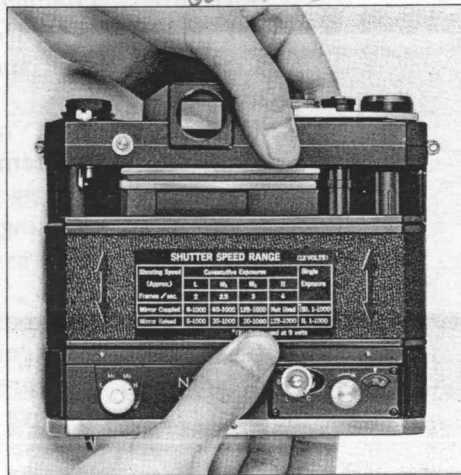
The motor drive may be operated either manually or by remote control using cables, timers or radio triggering equipment. You can adjust it to take single exposures or bursts of sequential exposures—as many as four frames per second.

To get maximum benefit from the F-36, read these instructions carefully and refer to them often until you are thoroughly acquainted with the motor drive.

ATTACHING THE MOTOR DRIVE

The motor drive is attached to your Nikon F in the same manner as the regular camera back. Remove the standard back and replace it with the motor drive. Lock the drive in place by turning the lock to the "close" position.

Note: Each Nikon F must be factory modified to accommodate the F-36 Motor Drive. Once modifications are made, the drive unit can be used interchangeably with the standard camera back. Contact your Nikon dealer, distributor or the manufacturer for details.



LOADING THE CAMERA

Your motorized Nikon F uses standard 20- or 36-exposure film loads. Loading procedures are identical to those for the regular Nikon F. Remove the camera from the motor drive and insert the cartridge. Make sure the film perforations are fully engaged by the sprockets. For loading details, see your Nikon F instruction booklet.

Note: Use of Nikon reloadable film cassettes is recommended. Friction from the felt trap of commercial film cartridges slows passage of film causing strain on your motor drive and shortening battery life.

UNLOADING

Follow normal Nikon F unloading procedures described in the Nikon F instruction manual. Set the A-R ring to R, unfold the rewind crank and turn it in the direction indicated by the arrow.

CONTROLS OF THE MOTOR DRIVE

FRAME COUNTER

The frame counter on the back of the motor drive is subtractive—it indicates the number of remaining unexposed frames. When the frame counter reaches zero, the motor drive automatically stops. This enables you to set a predetermined number of exposures for bursts—or continuous firing. To set the counter to a desired number, depress and turn the milled exposure-setting ring next to the frame counter in the direction indicated by the arrow until the desired number appears opposite the white triangular index marking. During normal use, the counter is set to the number of exposures in the loaded cartridge.

Note: Your standard Nikon F frame counter on top of the camera will function normally, showing the number of exposed frames. If you use the motor-drive counter to control sequence duration, the number of remaining frames can be determined by checking the frame counter on top of the camera. **Caution:** If you overestimate the number of remaining exposures, the motor drive will continue

to operate, possibly tearing the perforations or pulling the film off the cartridge core. This makes film rewinding impossible.

S-C RING

The S-C ring, which surrounds the release button, is used to set the camera for “S” (single-shot) or “C” (continuous firing) patterns. Simply turn the milled ring until the black dot appears beside the setting you desire. To avoid accidental firing, set the S-C ring on “L” (lock) when not anticipating immediate use of the camera.

FIRING-RATE ADJUSTING KNOB

This knob controls the rate of continuous sequential firing. Its settings are “L” (low speed), “M1” (medium speed 1), “M2” (medium speed 2) and “H” (high speed).



POWER SOURCES FOR MOTOR DRIVE

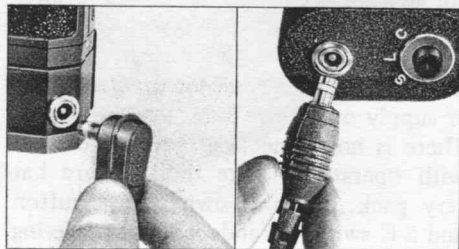
For operations under different circumstances, three power sources are available for the motor-drive unit. Depending on requirements at hand, either the standard battery pack, cordless battery pack or external power sources may be employed.

STANDARD BATTERY PACK

The battery pack is a separate unit, containing eight C-type 1.5V batteries to power your motor drive. It is supplied with a shoulder strap and a 1m connecting cord. To insert the batteries, release the securing clip and swing back the cover. Make sure the positive and negative (+ and -) terminals are lined up in the manner illustrated inside the battery pack.



To connect the battery pack to the motor drive, insert the camera-end plug of the connecting cord into the motor-drive power terminal, and insert the other plug into the socket on top of the battery pack. On its cover, the battery pack carries its own release button with the same three settings as those of the motor drive, namely, "S", "L" and "C", so that the on-pack controls may duplicate those on the motor drive. The "S", "L", "C" positions can be set by rotating the release button.



POWER SOURCES FOR THE MOTOR DRIVE (continued)

Note: While ordinary zinc-carbon batteries may be used, alkaline batteries are recommended because of their long operating life. At temperatures below 14°F (-10°C), zinc-carbon batteries cease to function. Alkaline batteries remain functional down to -4°F (-20°C). Due to various factors, it is difficult to assess battery life. However, as a rough guide and allowing for intermittent use, one set of batteries should expose about 100 cassette loads of 36-exposure films. A 20-percent voltage drop under load indicates the necessity for immediate replacement.

CORDLESS BATTERY PACK

An alternate power source is the cordless battery pack which houses eight AA-type 1.5V batteries. This unit fits the Nikon F, making the camera, motor drive and power supply one convenient, integrated unit. There is no connecting cord to interfere with operations. Like the standard battery pack, it has its own release button and S-C switch for independent triggering

and selection of firing pattern of the motor drive. Check your cordless battery-pack instruction booklet for further details.



EXTERNAL POWER SOURCES

You may also operate your motor drive with an external AC or DC power supply. The source must supply a current of 0.4A –12V DC. The power must be stable—high ripple voltages can damage the motor drive circuitry—and under no circumstances should the voltage rise above 16V. When connecting the external power source to the motor drive, be sure that the positive and negative (+ and –) terminals in the connector of the connecting cord are followed correctly.

For added convenience, a relay box is available as an accessory to connect the external power source with the motor drive. Attach the power source to the DC terminals on one side of the relay box. Then, using the 1m connecting cord supplied with the relay box, link motor drive terminal of the relay box to the power terminal of the motor drive. Be sure to

follow the positive and negative polarity markings.

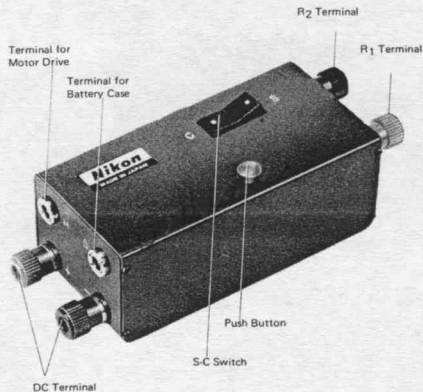




Photo: Yoshimasa Sakai



Photo: Paul de Cordon

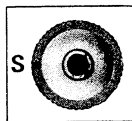




SINGLE SHOTS

For single-shot operations, turn the S-C ring until the black indicator mark clicks and stops at the "S" setting. Then turn the firing-rate adjusting knob to the "H" setting to minimize vibration. You can use any shutter speed for single shots except "T" time. However, at the "B" (bulb) setting, the mirror of the camera must be locked in the "up" position (see Nikon F instruction booklet) or the power supply voltage must be reduced to 9V.

Depress the release button on the motor drive to make your exposure. As soon as the button is released, the motor drive automatically winds the film and cocks the shutter for the next exposure. Especially when using shutter speeds slower than 1/60 sec., be sure to keep the button depressed until the shutter completes the exposure. If the button is released too quickly, your exposure is prematurely



terminated and the camera's mirror remains locked in the up position.

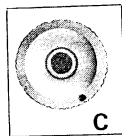
Even with the motor control in place, you retain manual control of the camera. Regardless of the motor drive or battery-pack control settings, the film-advance lever still winds the film, the shutter may be released by the shutter-release button and the self-timer works normally for single shots.

Note: The film-advance lever should not be wound **when the frame counter on the motor drive is at the "0" setting.**

CONTINUOUS SHOOTING

For continuous shooting, turn the S-C ring until the black marker dot clicks and stops at the "C" setting. As long as the release button is held down, the motor drive will continue to make exposures, up to a total of 20 or 36, depending on the length of the film, at the rate of 2, 2-1/2, 3 or 4 frames per second. Once your finger is removed from the release button, the motor will stop without an overrun. You may use any shutter speed from 1/8 to 1/1000 sec.

Select the firing rate by setting the firing-rate adjusting knob at the desired position as shown on the table on the back of the motor drive. Rotate the knob until the black dot is opposite your desired speed. For the "H" setting, lock the mirror of the camera in the up position. At slower speeds, the mirror lock may be used, if desired. When the mirror is in the locked-



up position, the range of shutter speed possible at the "M1" and "M2" settings is extended as shown on the table on the motor drive back. During operation, the firing rate may be changed to either "L", "M1" or "M2". However, at shutter speeds slower than 1/8 sec., neither correct shutter speed nor mirror motion will be obtained. T and B settings cannot be used. With your motor drive set for continuous firing, manual film winding and shutter release are retained, and the self-timer functions normally. The motor drive may be used while the self-timer is clicking off, but, when the shutter releasing of the self-timer and motor drive coincides, the result will be a loss of one

frame because the film is advanced without proper shutter synchronization.

Note: Single shots may be fired with the S-C ring at the “C” position, but the finger must be removed quickly from the release button after each exposure. This is possible only at shutter speeds in the range of 1/8 to 1/1000 sec.

ON-CAMERA AND ON-PACK CONTROL INTERACTION

The battery pack and motor drive each has its own release button and S-C ring. In order that the camera may be operated by remote control, each set of controls will override the other. For example, the “on-camera” control is set to lock. If you set the battery control for either single shot or continuous firing, that setting will override the lock setting on the camera. With the battery pack control on lock, the camera’s setting of either continuous or single shot will prevail. When both controls are set on lock, neither the camera nor the battery pack release button can trigger the motor drive.

REMOTE CONTROL OF THE MOTOR DRIVE

WITH STANDARD BATTERY PACK

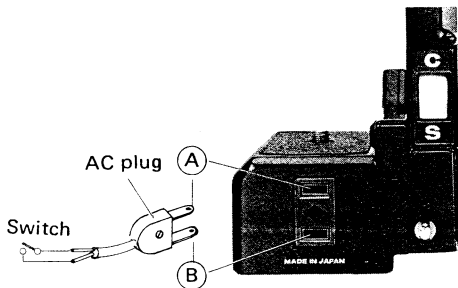
From a distance, your motor drive may be triggered by either a cable link or a timer or by radio control. The simplest method is the extension of the connecting cord between the motor drive and battery pack. To supplement the 1m connecting cord, a 33-foot (10m) extension cord is available. Using the controls on the battery pack, the motor drive may then be operated from distances of up to 33 feet. If you desire remote-control operation at a greater distance, supplement the extension cord by splicing a three-core cable of any desired length into the original cord. For satisfactory operation, however, the resistance of the total length of each conductor must not exceed 3 ohms.

Note: When increasing the length of cable connections, match the colors of the conductors with those of the original cord.

Caution: To prevent accidental firing when the on-pack control is used, set the on-camera release control for locking.

WITH CORDLESS BATTERY PACK

The cordless battery pack may be used in conjunction with a variety of remote-control devices, including a remote switch, a timer or a wireless receiver. Use a length of readily available two-core cable and a plug, attach the remote-control socket located on the battery-pack side to the remote switch. This establishes a trigger circuit. For details, see Using Relay Box.



USING RELAY BOX

In the following cases, we recommend you use the relay box with your motor drive:

- (1) For long-distance remote-control requirements
- (2) For electric timer or intervalometer shots
- (3) For wireless control
- (4) For firing two or more cameras simultaneously
- (5) For any other automatic coupling of shutter fire

You may control your motor drive from the relay box, which has its own release button and S-C switch. At one end of the relay box are the motor drive, battery-pack and DC power supply terminals; all are for wiring the motor drive to the power sources. At the other end are the R1 and R2 terminals for use in establishing trigger circuits in conjunction with

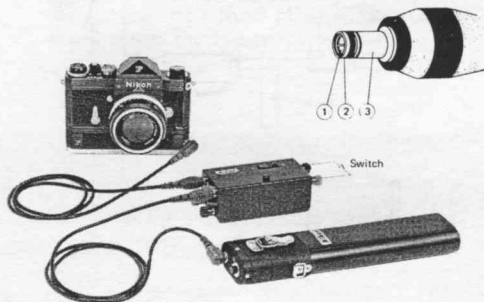
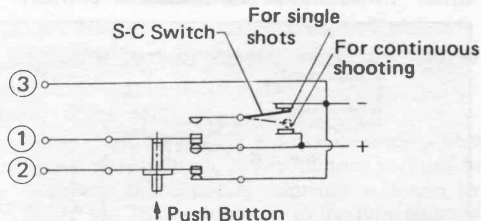
a remote switch, timer or wireless receiver. To set up a remote-control circuit, wire the relay box to the motor drive using the 1m cords supplied with the relay box and battery pack (see illustration). Then establish a trigger circuit running from the R1 and R2 terminals using a length of two-core cable and a simple press-action contact switch. Closing the trigger circuit with the switch has the same effect as pressing the release button.

Since the resistance of ordinary two-core cable (unless its diameter is exceptionally small) does not usually exceed 100 ohms, remote-control operation is possible for distances as great as two miles.

As a matter of convenience, however, for long-distance operations, radio control is recommended with the radio set to operate the relay trigger circuit. You may use the motor drive to make time-lapse exposures by inserting an electric timer or

intervalometer in the trigger circuit in place of the on-off switch.

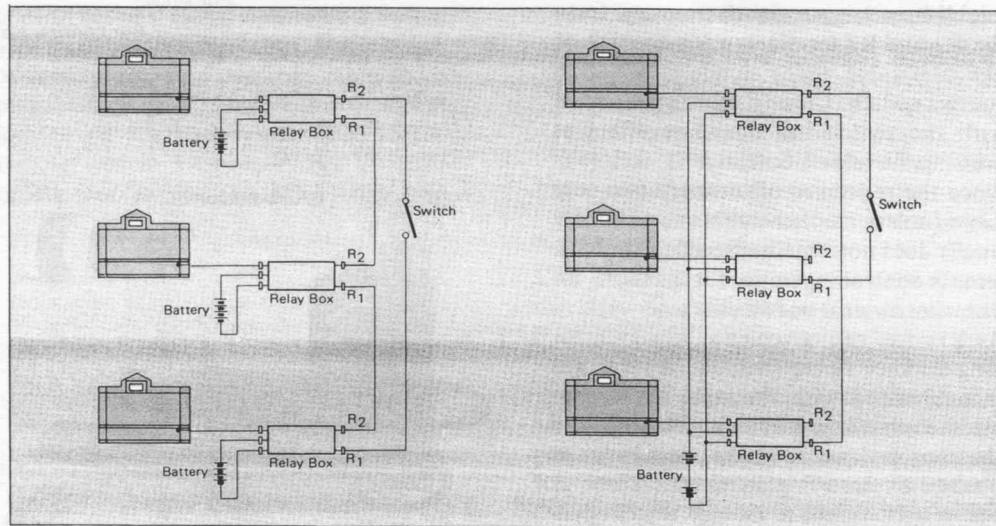
Note: The accompanying circuit diagram may be useful in establishing a remote control circuit without the relay box.



SIMULTANEOUS FIRING OF MORE THAN ONE CAMERA

For simultaneous firing of several cameras, connect each camera with a motor drive, power source and relay box. Then, in order to establish simultaneous contact

among the switches, connect the R1 and R2 terminals of the relay boxes with a single switch as shown in the illustrations.



TIME DELAY

Here are the time delays you will encounter in using various equipment arrangements with your motor drive:

- (1) Shutter-release time delay after closing circuit connected to R1 and R2 terminals

When the camera mirror is locked in the up position: 0.04 ± 0.01 sec.

When the camera mirror is coupled to the shutter: 0.07 ± 0.01 sec.

- (2) Synchronization error in simultaneous firing of a number of cameras:
Within 0.02 sec.

- (3) Minimum interval obtainable using intervalometer or similar device with camera mirror locked in the up position: Over 0.3 sec.

With camera mirror operative:

Over 0.4 sec.

For maximum interval error, add to intervalometer error: ± 0.02

Note: Even when the shutter is released at a speed of 1/1000 sec., the total time required to complete the exposure sequence is longer by 0.014 sec. This corresponds to the time required for the camera's focal plane shutter curtain to travel across the full frame aperture.

ACCESSORIES

COMPARTMENT CASE FB-7

This case accommodates the camera, motor drive, cordless battery pack and any lens of focal length up to 135mm f/3.5. There is also space for an additional camera with or without motor drive, two additional lenses up to 200mm f/4, spare batteries and filters. An accessory pouch holds six filters.



Compartment
Case FB-7

PISTOL GRIP WITH MICROSWITCH

This pistol grip especially designed for the motor drive unit and battery-pack combination, provides comfortable support for fingertip operation, even with long lenses. This grip features a built-in micro-switch trigger and S-C switch for single or sequence shots. It clamps onto the camera or extra-length lens tripod sockets. The pistol grip comes equipped with a cord for easy connection to the motor drive.



Pistol Grip with
Microswitch

PISTOL GRIP MODEL 2

This grip also permits trigger-release operation for the motorized Nikon F and cordless battery-pack combination through an accessory coiled connecting cord. Attaches to the tripod socket on the camera or on long lenses.

REPEATING ELECTRONIC SPEEDLIGHT UNIT

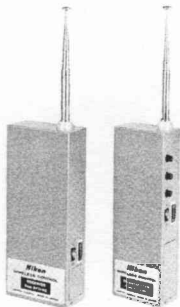
For shutter speeds below 1/60 sec., this specially designed Nikon repeating speedlight unit provides continuous firing synchronization, making possible as many as three sequential flash exposures per second.



Repeating Electronic
Speedlight Unit

WIRELESS CONTROL

With this unit, control of the camera by radio, from distances of up to 1000 ft (300m), is possible. The unit consists of a transmitter and a receiver, and is fully transistorized. It is powered by eight penlight batteries, providing an operating life of more than 20 hours in continuous operation.



Wireless Control