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**—Nikon—**

**HOW TO USE**

**NIKON MOTOR DRIVE F-36**

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no. 5

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## NIKON MOTOR DRIVE F-36

The Motor Drive attachment adapts the Nikon F or Nikon F Photomic-T camera for automatic, sequence or single-frame exposure photography.

Remote control operation is also possible. Supplied completely with a portable battery case and a 3.3 ft (1 m) long three-core cord.

The Motor Drive unit is factory-adjusted to a particular Nikon F or Nikon F Photomic-T camera and may not function when used with other cameras. Consult your dealer or the manufacturer, if you desire to use it in combination with other Nikon F cameras.



Fig. 1



Fig. 2

## BATTERY AND TESTER

- Power for the Motor Drive is supplied from eight 1.5 V C-Type batteries (e.g. “Eveready” C Cell Type M-14F, etc.). These are to be deposited in the battery case (Fig. 2) following the terminal indication.

If the markings are not correctly followed, the Motor Drive will not be operated.

- Fresh batteries should always be used. As the bat-

teries run down, the driving speed of the motor unit may be reduced or the Drive does not operate correctly. The batteries should be replaced with new fresh ones when the voltage drops to less than 10 V. (The replacement may usually be required after about 20 rolls of 36 exposure film have been used.)

- A tester (Fig. 3) is available to check the power output of new batteries and the condition of old ones in the battery pack.

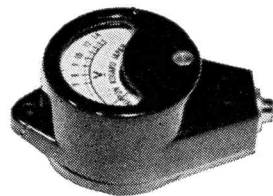


Fig. 3

It plugs into the battery case outlet terminal.

Do not leave the tester plugged into the battery case any longer than you need, to avoid unnecessary consumption of the batteries.

- In case any power source is used other than the battery assembly described above, the following data will be helpful.

Electromotive force: D.C. 12 V

Electric current: 0.4 A, approximately

D.C. rectified from A.C. can be used so far as too much ripple current is not produced, which may cause injurious effects in the inside circuit of the Motor Drive.

Voltage should by no means exceed 16 V.

- Be careful not to make a mistake in connection. Note also that any cord to be used for the Motor Drive is of three-core type, as illustrated in Fig. 4, consisting of three layers; ① for plus, ② and ③ for minus connections.

In connecting or disconnecting the cord, hold the thick molded end.

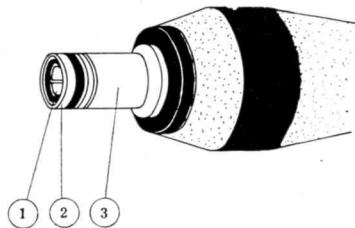


Fig. 4

## LOADING

- Attach the Nikon Motor Unit to the camera body in place of the standard camera back (Fig. 5).



Fig. 5

The Nikon F camera equipped with the Motor Unit accepts a standard film load, both 20 and 36 exposures, as the normal Nikon F camera. The film perforation, however, should be carefully attached to the notch on the winding spool and to the film drive sprocket to prevent the initial surge of the motor from pulling the sprocket drive free of the film.

- It is recommended to use the Nikon film cassette (magazine) rather than the film cartridge (patrone), since the latter causes more friction and results in a reduction of the driving speed, and also depletes the batteries more rapidly.
- With the Motor Drive attached, and film in the camera, advance the film and trip shutter until the camera exposure counter indicates 1, just as you do in manual operation.

## FILM COUNTER

- The film counter on the back of the Motor Unit (Fig. 6) indicates the number of still remaining unexposed picture frames, while the film counter on the camera top indicates that of exposed ones.
- If a predetermined number of exposure is desired, set the counter on the Motor Unit at the number of frames to be exposed by depressing and rotating the wheel (Fig. 6) with your thumb in the direction of the arrow. The Motor Drive will stop automatically at the moment the motor counter indicates "0". For example, if the entire roll of film is to be fired in one burst, set the counter at "36". If 6 frames are to be fired in one burst, set the counter at "6".
- If the counter happens to be set at 36 exposures, when the film actually loaded makes 20 exposures, take care not to depress the button after 20 exposures have been made. Otherwise the film end or its perforations may be torn and rewinding will become impossible.



Push release  
button

Selector  
wheel

Counter  
scale

Fig. 6



## SINGLE EXPOSURE

- First set the S-C ring around the push-release button on the back of the Motor Drive Unit at "S" (single frame) position.
- The firing rate adjusting knob on the back (Fig. 7) should be set at "H" position in order to reduce vibration to a minimum.
- Any shutter speed except T may be used for single exposure. However, if B (bulb) shutter is to be used, the reflex mirror in the camera should be locked in upper position beforehand, by turning the knob provided for this purpose on the camera, or the voltage of the battery should be lowered to 9 V.
- The button on the battery case may be set at any position "S", "C" or "L". (To prevent accidental firing, setting at "L" is recommendable.)
- Then, attach the connecting cord to the socket on the front of the Motor Unit and to the socket on the battery case.

- The moment the connections are made, windings of the film and the shutter will be automatically accomplished if not previously done, and the push button on the Motor back can then be depressed for the first exposure.
- When your finger is released from the button, automatic windings of the film and the shutter are taken place for the next exposure.  
Consequently, there is no need for manual lever winding as long as the Unit is connected to the battery case.
- Neither release your finger from the release button as long as the camera shutter timing mechanism is operating (at speeds lower than 1/60 sec.), nor push the button while Motor is running.
- If desired, the camera with the Motor Drive may be operated manually using the single stroke lever and the shutter release button on the camera, as in the ordinary way, the cord being connected or not.

- Be sure to detach the battery connection when automatic motor winding has been completed. If the cord is detached while the shutter button is being depressed, the lever will be locked. Attach the cord again and finish the automatic winding.

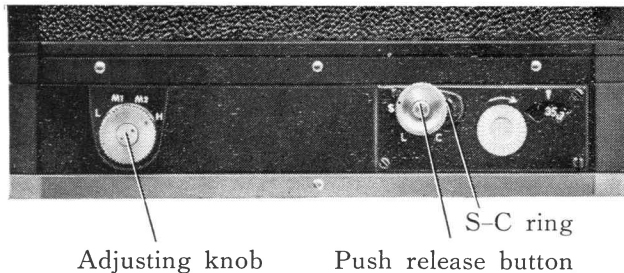


Fig. 7

## SEQUENCE PHOTOGRAPHY

- The Motor Unit also enables any number of sequence photographs to be taken at the rate up to approximately 4 exposures per second.
- For sequence photography, set the S-C ring on the back at "C" (consecutive), and the Motor Drive will run consecutively as long as the button is held depressed by your finger.
- The button on the battery case may be set at any position "S", "C" or "L". (To prevent accidental firing, setting at "L" is recommended).
- The desired firing rate may be obtained by setting the firing rate adjusting knob as shown in the following table.

Setting at	Exposures per second (approx.)	Range of shutter speed used (sec.)	
		Reflex mirror coupled	Reflex mirror raised
L	2	1/1000—1/8	1/1000—1/8
M <sub>1</sub>	2.5	1/1000—1/60	1/1000—1/30
M <sub>2</sub>	3	1/1000—1/125	1/1000—1/30
H	4	Can not be used	1/1000—1/125

- As shown in the above table, when sequence photography is made, the available range of shutter speed is somewhat widened if the mirror in the camera is not flipped but held in the locked-up position (thus the view finder image is not visible each time the exposure is made) for all firing speeds except the highest (with the knob set at H) where the mirror is to be fixed at whichever speed the shutter is released within the range shown above.

At lower shutter speeds than the range de-

scribed in the table, neither correct shutter speed nor correct motion of the mirror will be obtained.

- The firing rate may be changed during operation by change-over of the adjusting knob within the range of L to M.
- Single exposure may also be made with the S-C ring set at "C" for sequence photography, by removing your finger from the button each time the shutter is released for one picture frame. However, this manipulation is applicable only to shutter speeds within the range indicated in the previous table.
- The use of the speed light with the Motor Drive is possible so far as the shutter speed 1/60 sec. or the lower is applied. However, a speed light generally available on the market cannot be employed on account of too long a time required for recharging.

## PISTOL GRIP WITH MICROSWITCH

The Pistol Grip with Microswitch is available for more convenient and secure hold of the motorized camera, especially when a long focus lens such as Auto Nikkor Tele-

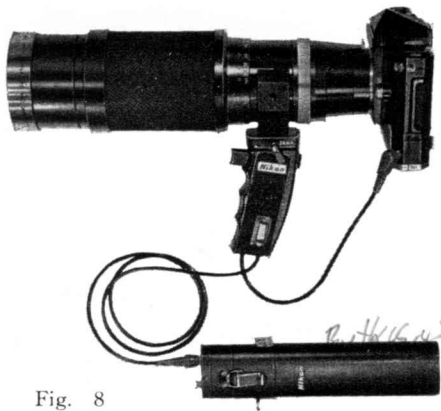


Fig. 8

photo Zoom, Reflex-Nikkor 500mm f/5 or the like is attached to the camera.

Connect the longer cord to the battery case and the shorter one to the Motor Drive. For those who have the Pistol Grip without Microswitch, the additional use of the connecting switch is necessary which is available as a Nikon accessory.

## REMOTE CONTROL

Remote operation of the Motor Drive can be accomplished the same as described before by manipulating push button on the battery case located at a certain distance from the Motor Drive.

The following two methods are applicable :

### 1. Direct connection with the battery case

Remote control is possible by connecting the Motor Drive directly to the battery case without using the Relay Box. This proceeds as follows :

Set the S-C ring on the Motor Drive at "L" to prevent accidental firing at that position. For single-frame exposure at a distance, set the arrow on the button on the battery case to "S". If sequence photography is desired, set the button at "C". Then, connect the cord and depress the button on the battery case. The camera will operate automatically.

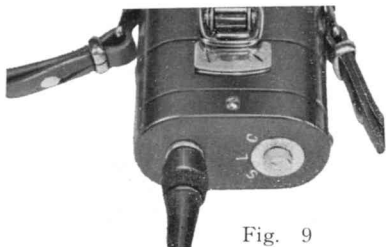


Fig. 9

A 33 ft (10 m) cord is available in addition to 3.3 ft (1 m) cord.

When remote control is desired over 33 ft, extend the length of the cord by adding a three-core cord of any length between the

cut ends of the original cord. However, for proper operation, the resistance of the total length of each conductor must not exceed 3 ohms (use quite thick cord). Take caution in this case of the correct connection of three differently colored (red, blue and white) wires.

## 2. Using relay box

The use of the Relay Box with the Motor Drive is recommended in the following cases :

- 1) When remote control is to be made at a long distance.
- 2) When an electric timer or intervalometer is used.
- 3) For wireless control.
- 4) When more than one camera are fired simultaneously.
- 5) When any other automatic coupling of shutter firing is desired.

The Relay Box is available with a three-core connecting cord the same as the one for the Motor Drive.

## RELAY BOX

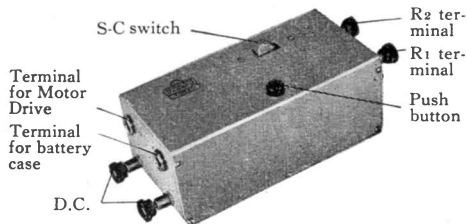


Fig. 10

The Relay Box is equipped not only with sockets to be connected to the Motor Drive and to the battery case, but also with two terminals to be connected to a D.C. power source (12 V) when not using the battery case. In this case, the plus and the minus indications must be followed.

The switch on the Relay Box should be set to "S" (single frame) or "C" (consecutive) as desired.

### 1. Shooting

Connect the Relay Box to the battery case and the Motor Drive as shown in Fig. 11.

For shooting, depress the push button on the Relay Box in the same way as that on the battery case. (Depressing the button on the Motor Drive also operates the Motor, in which case setting the S-C ring on the Drive to "S" or "C" will choose single or continuous shooting.)

However, as a short circuit between the terminals  $R_1$  and  $R_2$  gives the same result as pressing the button, remote control can be further accomplished by connecting the terminals  $R_1$  and  $R_2$  with an extension (two-wire) cord using a simple on-off switch, such as a pear type or push button.

As the resistance of an ordinary two-wire cord does not usually exceed 100 ohms, unless the cord is of exceptionally small diameter, remote control of as far as several kilometers is possible by using it. However, wireless control is recommended for the use over quite a long distance.

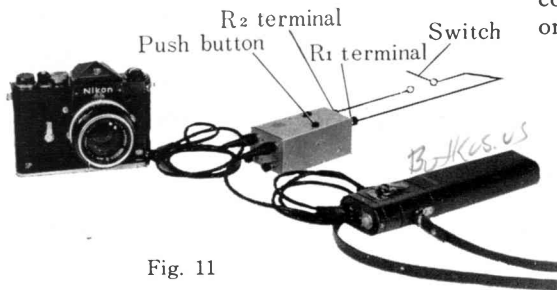


Fig. 11

## 2. Electric timer or intervalometer

A timer, intervalometer or wireless receiver, etc. can be used on a switch or relay connected to the terminals  $R_1$  and  $R_2$ .

## 3. Simultaneous shooting of more than one camera

Use a number of sets consisting of camera, Motor Drive, electric power source and Relay Box so as to establish simultaneous contacts between the terminals  $R_1$  and  $R_2$  on each Relay Box (See Fig. 12).

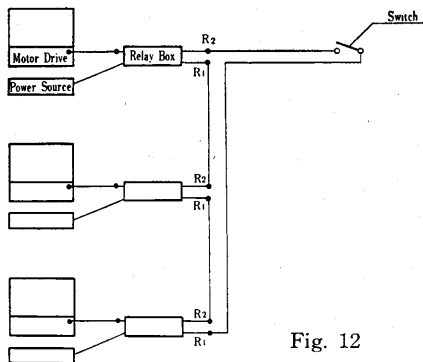


Fig. 12

#### 4. Time delay

Time delay taking place in the above procedures will be as follows :

- (1) Time delay of shutter releasing after closing the  $R_1$  and  $R_2$  terminals :  
When the mirror of the camera is locked

in upper position .....  $0.04 \pm 0.01$  sec.  
When the mirror operation is coupled to the shutter.....  $0.07 \pm 0.01$  sec.

- (2) Synchronization error in simultaneous shooting of more than one camera will be within 0.02 sec.

- (3) Minimum interval obtainable by using an intervalometer or the like :

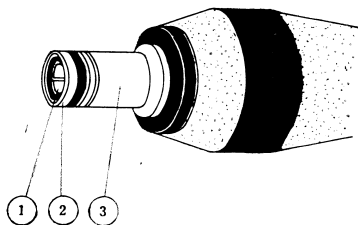
When the mirror of the camera is locked in upper-position..... over 0.3 sec.  
When the mirror operation is coupled to the shutter ..... over 0.4 sec.  
For a maximum interval error, 0.02 sec. should be added to the error of the intervalometer itself.

**Note :** Even when the shutter is released at a speed of  $1/1000$  sec. a difference of exposure time of 0.014 sec. at both ends of the picture frame is unavoidable, which corresponds to the time required for running of the focal plane shutter curtain of the camera.



The circuit diagram below may be useful in designing your specific equipment using the Motor Drive.

Be sure to connect rightly the three-core cord at all times.



The use of a Relay instead of the manual switch as shown in the diagram below is more convenient.

If you have a specific problem, please write to us for more technical assistance.

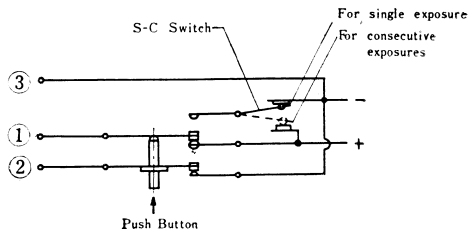


Fig. 13

## LIST OF NIKON MOTOR DRIVES AND ACCESSORIES



### Nikon Motor Drive Model F-36

Attached to the Nikon F or Nikon F Photomic-T camera in place of the regular camera back, the Motor Drive permits automatic single and sequence exposures on the 35 mm film up to 36 picture frames at firing rate up to 4 frames per second.

As a power pack two types are available : cordless, direct-connected type and separately carried type with 3.3ft. long cord.



### Nikon Motor Drive Model F-250

Permits loading of a 33 ft. (10 m) long film for automatic single and consecutive shooting of 250 pictures at firing rate up to 4 picture frames per second.

Suitable for general photography, especially copying of literature as well as for scientific use.



### Cordless Battery Power Pack

Accepts eight 1.5 V AA-type dry cells. The release push button located on the front top permits convenient manipulation. The built-in relay enables remote control of Motor Drive without additional use of relay box.



### Battery Case

Portable case for depositing eight C-type batteries as a power source for the Motor Drive.

Provided with S-C ring for remote operation of the Motor Drive.



#### Battery Tester

Rocket-type voltmeter for checking the power output of the batteries.



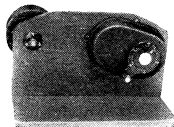
#### Relay Box

Connected between the Nikon Motor Drive and the battery case, the Relay Box is used conveniently for long distance remote control, with a timer or intervalometer, wireless operation and simultaneous use of several cameras.



#### Film Cassette for the Motor Drive F-250

Needed for loading the Motor Drive F-250 with a film as long as 33 ft (10 m). Two cassettes are used for a unit of Motor Drive F-250. Available with leather case.



#### Film Loader for 250 Picture Frame Cassette

Permits rapid and easy 250-frame-cassette loading from a stock of 100 ft (30 m) film in the dark room.

Winding stops automatically at the pre-set number of the picture frames.

#### Three-Core Cord

Connects the battery case to the Motor Drive.

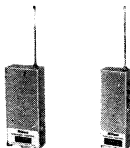
Two lengths, 3.3 ft (1 m) and 33 ft (10 m), are available.



#### Pistol Grip with Microswitch

Specifically designed for secure and convenient hold of the motorized camera especially with a long focus lens. Pulling the trigger operates the Motor Drive.

Connecting Switch is available which enables the use of the Pistol Grip without Microswitch in the same way as above.



#### Wireless Control for Nikon Motor Drive

Permits wireless control of the Motor Drive at a distance up to about 1000 ft. from the operator. Use of the Relay Box is needed. Consists of a transmitting and a receiving units, both of transistor type.

Each unit is powered by 8 penlite batteries for continuous use longer than 20 hours.

Simultaneous transmitting and receiving operations (two channels) are possible.



#### Compartment Case Model FB4

Made of genuine cowhide, for holding:

Nikon F or Nikon F Photomic-T camera with normal lens and the Motor Drive back F-36 attached,  
regular camera back, removed from the camera,  
1 interchangeable lens with front cap,  
exposure meter with booster,  
7 Filters, Battery Case, Battery Tester, etc.



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