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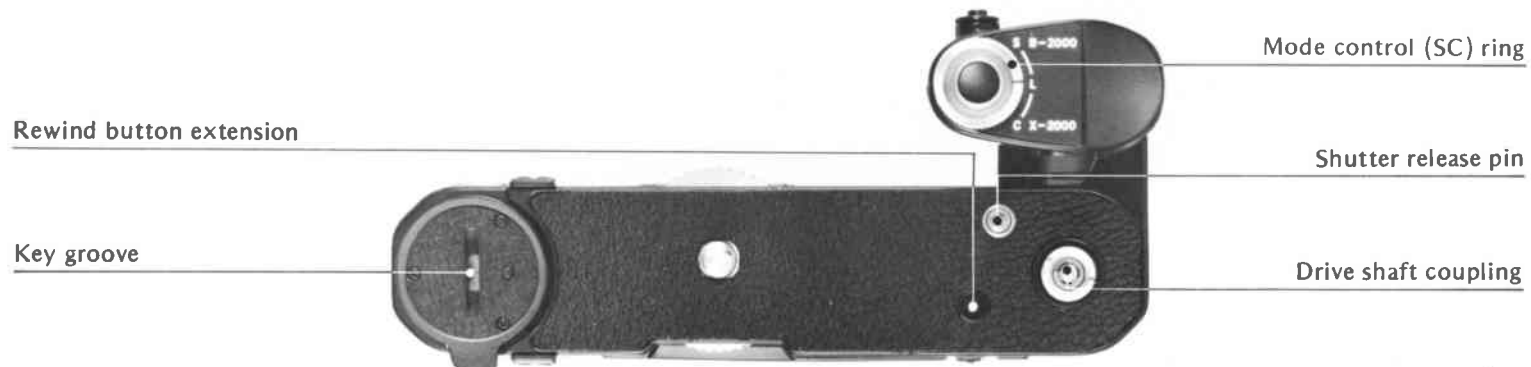
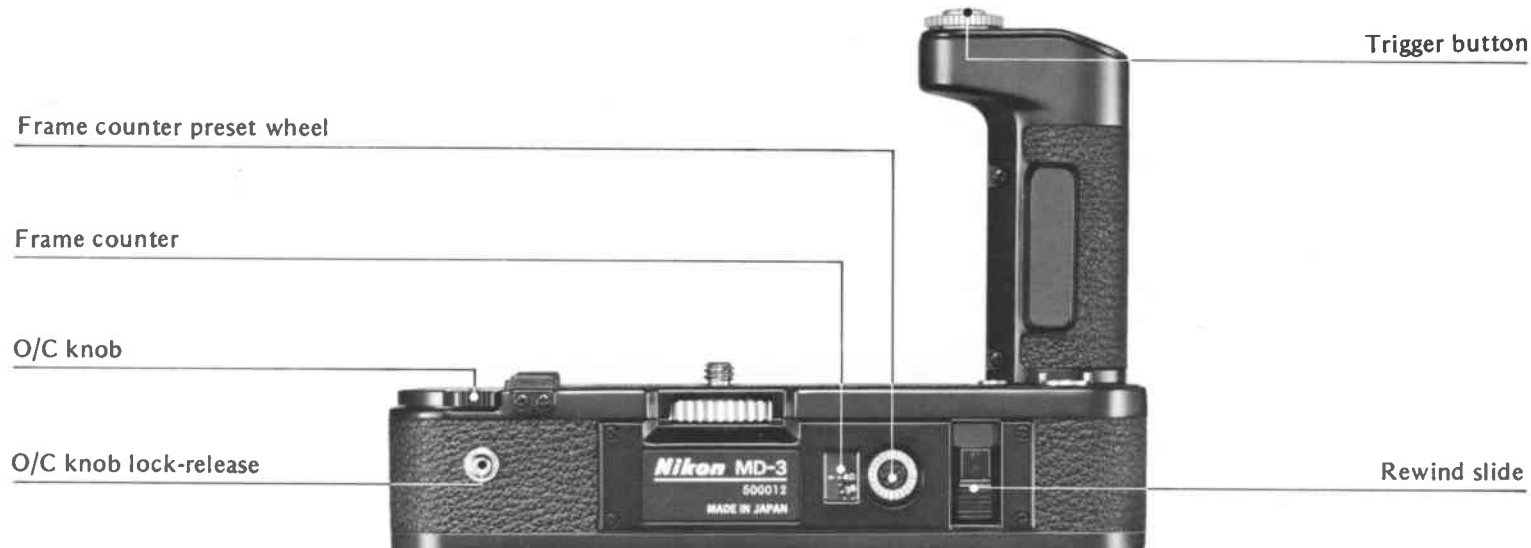
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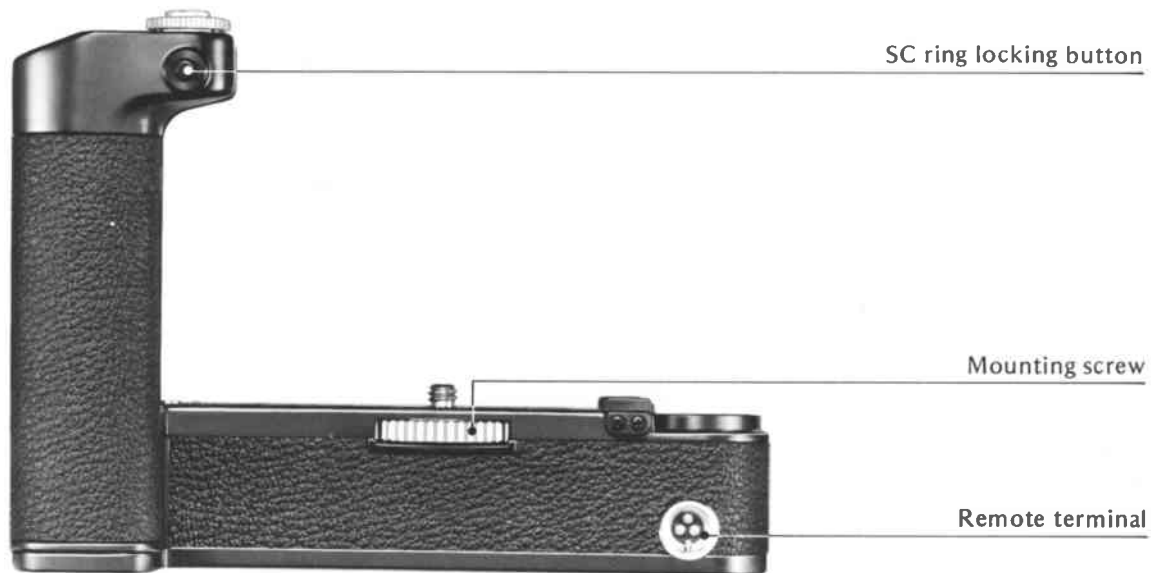
***Nikon* Motor Drive**

**MD3**

INSTRUCTION MANUAL

# NOMENCLATURE





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## FOREWORD

*The Motor Drive MD-3 is designed for use with any F2 Nikon camera. It winds the film and cocks the shutter automatically each time you press the trigger button. You can also set it for completely automatic sequence shooting at speeds of up to four frames per second. Smooth remote control operation is easy with accessories such as the Modulite Remote Control Set ML-1 or the Intervalometer MT-1. To obtain the best results, read the instructions in this manual carefully before attempting to use the unit. Keep the manual handy for reference until you have thoroughly familiarized yourself with your MD-3. A few minutes of preparation will help you avoid costly mistakes.*

## ATTACHING THE MOTOR DRIVE

With the camera's back closed and locked, fold down the camera's O/C key. Check that the O/C knob on the MD-3 is in the normal position with the thumb lever pointing to the rear of the motor drive; it should be locked in this position. Place the camera on the motor drive, inserting the key on the camera into the groove on the motor drive's O/C knob.

Turn the mounting screw in the direction of the arrow shown in the photo until the camera and the motor drive fit together with the shutter release coupling of the camera and the shutter release pin of the motor drive properly aligned. Tighten the attachment screw firmly.

Next, attach the cordless battery pack. Place the motor drive on top of the pack and carefully tighten the mounting screw on the bottom of the pack until the two units are seated snugly together. Note that the cordless battery pack can be attached to the motor drive before mounting it to the camera body.



## LOADING THE CAMERA

Depress the O/C knob lock-release on the motor drive and turn the O/C knob to the left as far as it will go. The camera back will then spring open. Before loading the film, set the frame counter to 40 and trigger the motor drive a few times to check that it is operating correctly. If it isn't, it is probably mounted incorrectly. Remount and try again. You should load the film into the camera in the normal way. Consult your camera's instruction book for details.

Then close the camera back and turn the O/C knob to

the right (toward the back of the camera) until it clicks shut. Turn the rewind knob gently in the direction of the arrow until you feel a slight tension. This will take up any slack in the film cartridge. Set the indicator of the frame counter at 40 by turning the frame counter preset wheel, and then press the trigger button and make two blank exposures. Lastly, set the number of the frames on the loaded film. For convenience in setting, the frame counter preset wheel will rotate in either direction.





## POWER SOURCES

The Motor Drive MD-3 can be used with the Cordless Battery Pack MB-1 or MB-2, or with the AC/DC converters.

### MB-2

#### Installing the batteries

Release the battery holders by pressing the grip clips on each side of the battery pack, and pull them out. Place four penlight batteries in each holder MS-2, making sure that the positive and negative (+ and -) terminals are lined up correctly. Then fit the battery-loaded holders back into the MB-2 until they click into position.


#### Life-span of the batteries


The number of rolls of film that can be shot with one set of batteries is difficult to predict accurately, since this depends on too many variable factors. In the same manner, the number of rolls of film that can be shot at the motor drive's rated speed varies with the types of batteries used. The rated firing speed can be maintained for approximately ten 36-exposure rolls of film when zinc-carbon batteries are used, and for about 20 rolls of film when alkaline-manganese batteries are used. These amounts can be extended to approximately 50 and 80 rolls, respectively, but with a corresponding slowdown in the firing speed.



This table shows the number of 36-exposure rolls of film which can be fired on one set of batteries.

Number of rolls	10	20	50	80	100
Type of batteries					
Zinc-carbon					
Alkaline-manganese					

 The range of guaranteed firing speed

 The range within operative battery power but without guarantee of the rated firing speed

### Checking battery power

Press the power check button on the side of the Battery Pack MB-2. If the LED's light up, the batteries have sufficient power. If not, the batteries are exhausted and must be changed. All eight batteries should be changed, since full performance will not be obtained if old and new batteries are mixed.



## POWER SOURCES—Continued

### MB-1

The Cordless Battery Pack MB-1 holds ten penlight batteries, or two MN-1 NC Battery Units, which are available as optional accessories.

### Installing the batteries

Fold out the clip on the O/C key of the battery pack and turn in the direction of the arrow to open the cover of the battery holder. Place five batteries in each of the Penlight Battery Holder MS-1 as illustrated on the side of the holder. Then slip the holder into the battery pack. To install the MN-1 NC Battery Units, slide them into the pack in the same way.



### Life-span of the batteries

The number of rolls that can be shot with one set of batteries varies as follows. Approximately 15 36-exposure rolls can be shot at the guaranteed rated firing speed with zinc-carbon batteries, and approximately 30 rolls with alkaline-manganese batteries. These amounts can be extended to approximately 100 and 160 rolls, respectively, but with a corresponding slowdown in the firing speed. NC battery units have enough power for shooting 80 rolls of film at the rated firing speed, or up to 120 rolls but at slower firing speeds.



This table shows the number of 36-exposure rolls of film which can be fired on one set of batteries.

Number of rolls						
Type of batteries	15	30	80	100	120	160
Zinc-carbon						
Alkaline-manganese						
NC battery unit MN-1 (fully charged)						

-  The range of the guaranteed firing speed  
 The range within operative battery power, but without guarantee of the rated firing speed

### Checking battery power

To check the battery power, depress the power check button on the side of the battery pack. If both the LED's light up, the batteries have sufficient power. If only the lower LED lights up, the batteries can still be used, but will be exhausted soon. If neither LED lights up, the batteries must be changed. All ten batteries should be changed, since full performance will not be obtained if old and new batteries are mixed.



## POWER SOURCES — Continued

### AC/DC converter

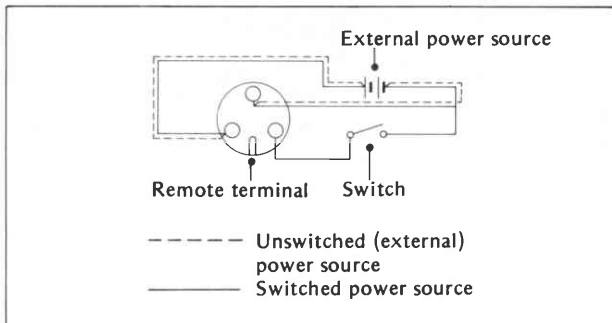
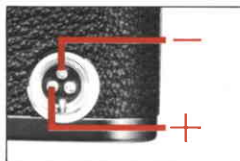
When using an AC/DC converter as the power source, connect it to the remote terminal on the motor drive with the Connecting Cord MC-2.



### Other power sources

Any direct and consistent current between 12 and 15 volts, and more than 1.5 amps, is suitable as a power source. Remember, however, that too much current can damage the motor drive's circuitry.

To connect the motor drive to an external power source, plug one end of a suitable cord into the three-pin socket on the motor drive and the other end into the power supply. The diagrams below may be useful in establishing a power circuit.



## FRAME COUNTER

The frame counter on the motor drive shows the number of unexposed frames remaining on a roll of film. It is calibrated in even numbers from 0 to 40. The frame counter preset wheel can be rotated in either direction. When the counter reaches zero, the motor will stop automatically. If you want a certain number of frames to be set for continuous firing, just set the counter to the desired number. This operation can be done repeatedly. The frame counter on the camera also continues to operate when the motor drive is attached, so you can easily see how many exposures you have left.

- Be careful to set the number of frames correctly. If you overestimate the number remaining on a roll of film, the result may be that the motor will pull the film off the supply spool or damage its perforated edges, since the motor will continue to operate until the counter reaches zero.
- Turning the frame counter's preset wheel away from its zero position when the motor drive is removed from the camera may occasionally result in the motor drive running freely until the counter resets itself to zero. This is a normal operating condition, caused by the end of the film being reached before the motor drive completes its advance cycle, and is no cause for concern. When the motor drive is reattached to the camera, this condition will be corrected automatically.
- The motor will not operate when the counter is at zero. Always check the counter before starting to shoot, especially at the beginning of a roll.



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- The motor will not operate when the counter is at zero. Always check the counter before starting to shoot, especially at the beginning of a roll.



## MODE CONTROL (SC) RING

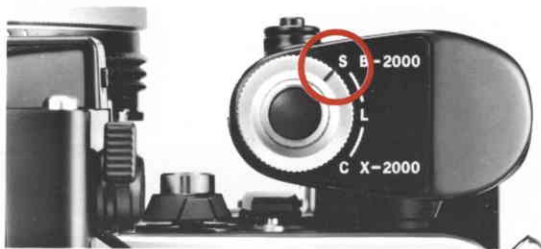
For single-frame shooting, set the mode selector ring at "S" and for continuous shooting, set it at "C." Depress the ring lock-release and select the operation mode required. The usable shutter speeds are from 1 to 1/2000 sec. plus B for single-frame shooting, and from X (1/80) to 1/2000 sec. for continuous. When the ring is at the "L" position, the trigger button will be locked. Use this setting when you are not shooting, as it will prevent accidental exposures.



## OPERATION

### Single-frame shooting

Depress the SC locking button on the motor drive hand-grip and turn the mode selector ring to "S." As soon as the trigger button is released, the motor drive automatically winds on the film and cocks the shutter ready for the next exposure. When using shutter speeds slower than 1/60 sec., be sure to keep the trigger button depressed long enough for the shutter to complete the exposure. Otherwise, the exposure time may be shortened unintentionally. Do not press the trigger while the film is being wound.





## REWINDING

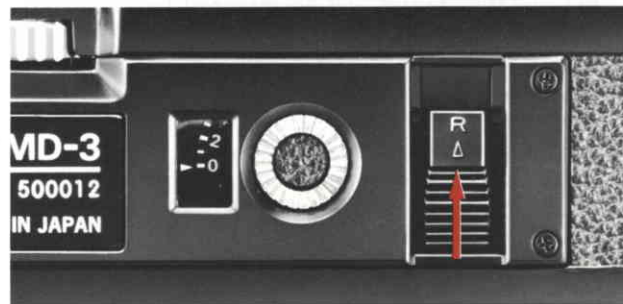
### Continuous shooting

Set the mode selector ring to "C." Choose any shutter speed from 1/80 and faster. As long as the trigger button is held down, the motor drive will continue to fire automatically. Releasing the button stops the motor drive after it has advanced the film one frame and cocked the shutter for the next exposure.

The number of frames shot per second will vary according to the power source used. The table below illustrates these variations.

Number of frames per second		Usable shutter speed (sec.)
Type of battery		
Cordless Battery Pack MB-1		X (1/80)– 1/2000
● Zinc-carbon	3.5	
● Alkaline-manganese	3.5	
● NC battery unit MN-1	4	
Cordless battery Pack MB-2		
● Zinc-carbon	2.5	
● Alkaline-manganese	2.5	
AC/DC Converter MA-4	4	

When the roll of film in the camera has been exposed, press the rewind slide up as far as it will go. Then unfold the rewind crank on the camera body and turn it to rewind the film. When the film is fully rewound, turn the O/C knob to open the camera back, and remove the film cartridge.



## DOUBLE / MULTIPLE EXPOSURES

You have a choice of two operational modes for making double or multiple exposures with your motorized F2, either "S" or "C." The "S" setting is recommended for photographic situations where a deliberate composition is aimed for; the "C" setting is more suitable for special effects such as multiple images of a moving subject on a single frame.

### Using "S" setting

First, set the mode selector to "S." and remember the number shown in the frame counter of the motor drive.

#### (A) For double exposures:

1. Push the rewind slide up as far as it will go; this will disengage the film transport mechanism. Then release the slide.
2. Make the first exposure by triggering the release button on the motor drive. When you lift your finger off the button, the shutter will be recocked by the motor drive but the film will not be advanced.
3. Trigger the shutter for the second exposure. Releasing your finger from the trigger button will result in the film advancing normally and the shutter recocking ready for the next ordinary exposure.
4. Reset the frame counter of the motor drive to read one frame less than the number shown before making the double exposure.

#### (B) For multiple exposures:

1. Push the rewind slide up and hold it up for the duration of the multiple exposure session.
2. Make the number of exposures you require, and release the rewind slide.
3. After completing the last exposure, make two blank exposures with the lens covered with a lens cap. These blank exposures are to reset the film transport mechanism and to advance the film ready for the next ordinary exposure or set of multiple exposures.
4. Then, reset the frame counter of the motor drive to read one frame less than the number shown before making the multiple exposures.

### Using "C" setting

First, set the mode selector to "C," and remember the number shown on the frame counter of the motor drive.

1. Push the rewind slide up as far as it will go. Hold the slide in the "up" position for the duration of the shooting session.
2. Trigger the motor drive for the required number of exposures or until the action you are following has finished.
3. Release the rewind slide, cover the lens and make two blank exposures.
4. Reset the frame counter of the motor drive to read one frame less than the number shown before making the multiple exposures.

### Note:

- 1) *You can always verify the correct number of exposed frames by referring to the camera's frame counter. The camera's frame counter only advances as the film is transported, providing you with a reliable means of determining the number of frames exposed.*
- 2) *You can also get multiple exposures by pushing the rewind slide up and then releasing it before each exposure. Pushing up and releasing the rewind slide during this operation tends to shift the film frame slightly, although this is insignificant (0.2mm shift), but you can avoid it altogether by holding the slide up throughout the sequence.*

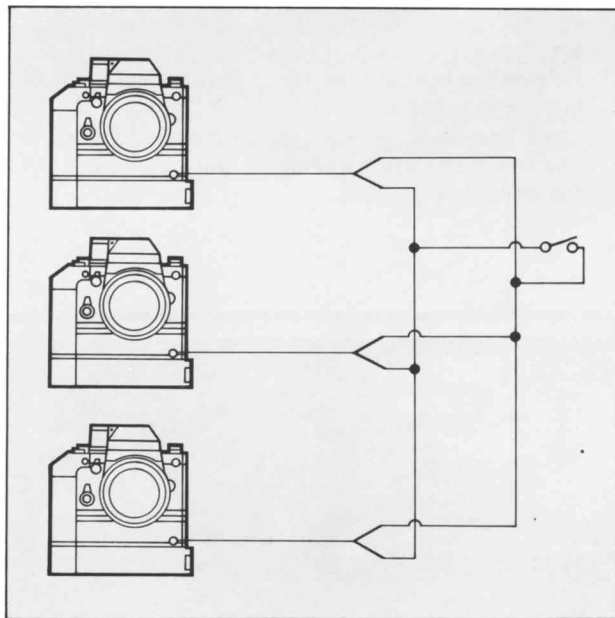


## OPERATION WITH A SPEEDLIGHT

Operation with a repeating flash unit, such as the SB-6, is possible at any shutter speed up to 1/80 sec. It can be synchronized at various speeds up to 3.8 frames per second by shifting the output power setting, but it should be borne in mind that this may not be the case with other brands of flash equipment.

## SIMULTANEOUS FIRING

Two or more cameras may be fired in unison, either in single-frame or continuous operation. Connect each camera with a motor drive, cordless battery pack and MC-4 Remote Cord. Then connect the red and black plugs on the remote cords to a single switch to trigger the motor drives together as shown in the illustration below.



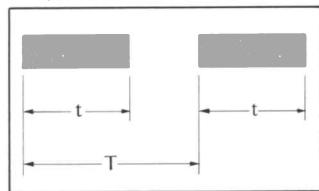
# MOTOR DRIVE OPERATION TIMING

When performing various operations using an intervalometer or similar device connected to the cordless-battery-pack-equipped motorized camera, certain timing factors must be taken into consideration to achieve proper results. For each special shooting situation, weigh each factor carefully and make compensation adjustments in timing as necessary.

A time lag exists between the triggering of the camera (via the remote control device) and the actual release of the shutter. When the mirror is locked up, this delay is 0.03–0.05 sec.; when the mirror is coupled, however, the delay is extended to 0.05–0.07 sec. Note that for the mirror-coupled condition, the time delay varies slightly depending on the power source and voltage.

The following illustrations show how to obtain the correct timing interval.

When the mode selector ring is in the "C" position, the on/off switch opens and closes the trigger circuit as shown below. Usable shutter speeds are from X (1/80) to 1/2000.

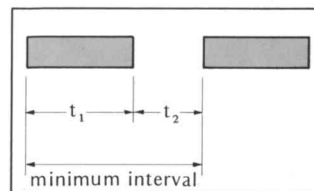


■ = time of closing the trigger circuit  
 $(0.05 \text{ sec.} \leq t \leq 0.15 \text{ sec.})$   
 T = desired interval

The value for T varies according to the power source used, but must be greater than the time interval shown in the table below.

Power source	MB-1		MB-2	MA-4
	Penlight	MN-1		
Time interval "T" sec.	0.32	0.28	0.45	0.28

When the mode selector ring is set at the "S" position, the trigger circuit is opened and closed as shown below. The motor drive will begin to make exposures at a predetermined interval. Any shutter speed can be used.



■ = time of closing the trigger circuit  
 $t_1$  = time for completion of exposure sequence  
 $t_2 = 0.25 \text{ sec. (increases as battery voltage decreases)}$

For exposures longer than one second, use the "B" setting. At this setting, exposure time is almost equal to the time required to close the trigger circuit ( $t_1$ ).

# REMOTE CONTROL

## Remote Cord MC-4

The motor drive can also be triggered by connecting the Remote Cord MC-4 to its remote terminal. The shutter will be released by contact between the two ends of the remote cord. An extension cable can also be connected; any length is acceptable, so long as the circuit resistance does not exceed 100 ohms.



## Intervalometer MT-1

This timing control device enables various special-effects photographic techniques such as time-lapse, work-sampling, time-exposure and delayed-exposure. Its output socket should be connected to the remote terminal on the motor drive via the Extension Cord MC-5.



### Radio Control Set MW-1

The Radio Control Set MW-1 is an FM wireless remote control device to operate the motor-drive-equipped camera at distances up to 0.7 km in open, unobstructed areas, and up to 0.3 km in urban or mountainous areas. It can operate up to three cameras, either individually or simultaneously.



### Modulite Remote Control Set ML-1

Connect the receiver of the Modulite Remote Control Set ML-1 to the remote terminal on the motor drive via the Connecting Cord MC-8. Using the Modulite Set, you can perform remote control operation over a distance of up to 60m. The receiver only responds to a modulated light signal from the transmitter, so the possibility of inadvertent triggering due to the influence of speedlight or other bright light sources is eliminated.



## ACCESSORIES

### Quick Charger MH-1

The MH-1 recharges 70 to 80 percent of the power of the NC Battery Unit MN-1 in approximately three hours. There are four acceptable levels of input power, namely 100V, 117V, 220V, and 240V.

### Shutter Release MR-1

Screwing the MR-1 into the remote terminal of the motor drive provides a choice of trigger button positions, which makes shooting at difficult camera angles more convenient. It is also threaded to accept the Nikon Cable Release AR-2 for copying and still life operation.

### Pistol Grip Model 2

The Pistol Grip Model 2 (available as an optional accessory) provides comfortable support for fingertip operation of the motor-drive-equipped Nikon F2-series camera powered by a cordless battery pack. It is particularly useful for a telephoto lens, a zoom lens or a Reflex-Nikkor lens provided with a tripod mounting collar. The pistol grip is connected to the remote terminal on the motor drive via the Connecting Cord MC-3.

### Battery Pack Jacket MA-3

The Battery Pack Jacket MA-3 is felt-lined and leather-clad to provide the batteries inside the Cordless Battery Pack MB-1 with necessary protection against the cold. It ensures that the motor drive will continue to work at peak efficiency. The two straps affixed to the jacket allow it to be slung from the neck, shoulder, or waist.





## SPECIFICATIONS

### **Suitable camera:**

Any Nikon F2-series camera

### **Shooting mode:**

Single-frame or continuous (max. 36 frames)

### **Shooting speed:**

4 fps. max. (using MN-1 NiCd units or AC/DC converter)

### **Frame counter:**

Subtractive type

Possible to preset the desired number of exposures. Automatic motor stop when the frame counter reaches zero

### **Usable shutter speeds:**

1/80–1/2000 sec. (continuous)

1–1/2000 sec. plus B (single-frame)

### **Power sources:**

DC supply between 12 and 15 volts

Cordless Battery Pack MB-1

Cordless Battery Pack MB-2

AC/DC Converter MA-4

### **Remote control:**

Possible; uses the remote terminal on the MD-3, connected via a connecting cord.

### **Dimensions:**

Approx. 147 (W) x 106 (H) x 62 (D) mm  
(including the grip)

**Weight:** Approx. 355g

## OPTIMUM BATTERY PERFORMANCE

1. **New batteries:** Between manufacturing and first use, all batteries exhibit some drain. Therefore, care should be taken to purchase the newest (and freshest) ones possible. To help you do this, some manufacturers stamp the date of manufacture on the bottom of each battery; ask your camera dealer for assistance in interpreting the codes.
2. **Temperature:** Battery life ratings are based on operation at around 20°C (68°F). At other temperatures, battery life is shortened. At 0°C, for instance, battery life is shortened by as much as 2/3. Spare batteries should therefore be kept available if operation in low temperatures is anticipated.
3. **Continuous use:** Batteries are drained much more quickly by continuous use than by intermittent use.
4. **Storage:** When not in use, the batteries should be removed from the cordless battery pack to prevent damage by leaking. To minimize drain during the period of disuse, store the batteries in a cool, dry place.
5. **Battery brands:** Do not use mixed brands of batteries, nor batteries with different model numbers. Also, avoid mixing new and old batteries since proper performance will not be obtained and battery leakage into your MD-3 may occur.
6. **Disposal:** Do not dispose of batteries by burning. Also, for safety's sake, do not disassemble batteries when disposing.
7. **Polarity:** When installing batteries, observe the voltage polarities carefully. Reversal of the positive (+) and negative (–) terminals will result in leakage. If leakage should occur, clean carefully or take your MD-3 to your dealer.