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SUNPAK AUTO321 ELECTRONIC FLASH UNIT

Owner's Manual
IMPORTANT SAFEGUARDS

When using your photographic equipment, basic safety precautions should always be followed, including the following:

1. Read and understand all instructions.
2. Close supervision is necessary when any appliance is used by or near children. Do not leave appliance unattended while in use.
3. Do not operate appliance if the appliance has been dropped or damaged—until it has been examined by a qualified serviceman.
4. To protect against electrical shock hazards, do not immerse this appliance in water or other liquids.
5. To avoid electric shock hazard, do not disassemble this appliance, but take it to a qualified serviceman when some service or repair work is required. Incorrect reassembly can cause electric shock hazard when the appliance is used subsequently.
6. Do not operate appliance with a damaged cord.
7. Do not let cord hang over edge of table or counter or touch hot surfaces.
8. If an extension cord is necessary, care should be taken to arrange the cord so that it will not be tripped over or pulled.

SAVE THESE INSTRUCTIONS
Introduction
Welcome to the world-wide family of SUNPAK owners!
More than seven million SUNPAK electronic flash systems have been chosen by photographers throughout the world for their rugged construction, innovative design, and fast, easy operation. To insure that you get the most out of your electronic flash, please take the few minutes required to check through this owner’s manual with your SUNPAK flash in front of you.

Condensed Operating Instructions for Automatic Operation
1. Set the ASA.
2. Set the Auto/Manual Selector Switch so that the green or yellow "A" appears.
3. Move the On/Off Switch to the "On" position. The green auto signal will glow.
4. Wait for the Ready/Test amber light to glow.
5. Set the aperture on your camera to the corresponding aperture which appears on the computer f/stop window. You are ready to take your pictures.

For more creative use with your Sunpak Auto 321 please read pages 12 to 17.

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Description of Parts

- Flash Window
- Auto Sensor
- Hot Shoe Contact
- Knurled Lock Ring
- Swivel Mounting Foot
- F/Stop Scale
  - Computer Operation Range
    - Green: 1.6’-28’
    - Yellow: 1.6’-14’
- ASA Speed Set Knob
- ASA Speed Indicator Window
- Bounce Flash Head
- Accessory Mounting Groove
- Computer F/stop Window
- Auto/Manual Selector Window
- Auto/Manual Selector Switch
Operation

POWER SOURCES

A. Your Sunpak Auto321 may be used with three different power sources:

<table>
<thead>
<tr>
<th>Power Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four alkaline AA batteries</td>
</tr>
<tr>
<td>Four rechargeable, nickel-cadmium AA batteries</td>
</tr>
<tr>
<td>The Sunpak Dual Voltage AC Adapter</td>
</tr>
</tbody>
</table>

To Install Batteries:

1. Slide the battery compartment cover toward the top of the unit. Now gently fold down cover in direction shown.

2. Insert four AA-size batteries (Alkaline or Nickel-Cadmium) as shown.

B. Alkaline or Nickel-Cadmium Batteries?

The major advantage of alkaline batteries is that they provide more flashes per set. While nickel-cadmium batteries will provide fewer flashes per set, they will recycle your Auto 321 slightly faster and can be recharged hundreds of times for more economical operation over the long run.

www.orphancameras.com
C. Using the Dual Voltage AC Adapter:

1. For AC operation, be sure to check that the voltage selector on your Dual Voltage AC Adapter is set to the appropriate voltage. Your AC Adapter has been factory set for 120 volts, the U.S. standard. For use in other countries where 100 volts, 220 volts, and 240 volts are standard, you may adjust the setting as illustrated.

2. Plug into the AC socket on the flash and into standard wall outlet as illustrated. The AC adapter supplies virtually unlimited flashes and is ideal for indoor use.

NOTE: If the Dual Voltage AC Adapter is incorrectly set, the adapter will not function properly and may damage your Auto 321.

3. Press cover until it snaps into place.

*For information on using Nickel-Cadmium batteries, see page 17 # 2.
1. Slide the unit into the camera’s accessory shoe (or shoe of flash bracket if one is required). Turn the knurled locking screw counter-clockwise to insure secure mounting to your camera’s shoe.

2. For cameras with a Hot Shoe (cordless) flash contact, no further connection is necessary. (Note: leave PC cord plugged into retaining pin on the unit, if unplugged the flash will not fire.) If the camera does not have a “Hot Shoe”, pull out the PC cord (illustrated) and plug into the camera’s flash outlet as shown.

3. If the camera has separate flash outlets (terminals) marked “M” and “X”, attach Sunpak cord to the “X” outlet (terminal).

4. If the camera has a switch (usually around the lens barrel) marked “M” and “X”, set the switch to the “X” position.

5. Set the shutter to the fastest shutter speed synchronized for electronic flash. For non-SLR cameras, this is usually the fastest speed. With SLR cameras, the highest usable speed is generally 1/60th second; however, some permit flash synchronization up to 1/125th second. To be sure, refer to your camera’s instruction manual.
AUTOMATIC OPERATION

Your Sunpak Auto 321 measures the light reflected by your subject and automatically regulates the lighting intensity for correct exposure. The Auto ("Computer") sensor is housed in the front of your flash, below the flash reflector. By moving the selector switch slide to either the green or yellow mark, your flash is set for automatic operation.

A. Slide the ASA Film Speed Scale so that the ASA number in use is visible from the ASA speed window (example ASA 100).

B. The green and yellow lines now point to the correct f/stop for automatic operation.

For the maximum distance range in automatic operation, move the Selector Switch (on the side of the flash) to the right so that the green "A" appears.

Then set your camera lens to the opening indicated by the green line. (For ASA 100 film, the lens opening is f/2.8).

Your flash and lens are now set for correct exposure at all distances between 19 inches and 28 feet.

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NOTE: If the ASA number for your film is not printed on the ASA Film Speed Scale, use an intermediate marking as shown:

<table>
<thead>
<tr>
<th>Marked ASA Speeds:</th>
<th>25</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>64</th>
<th>*</th>
<th>*</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Nos.:</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>250</td>
<td>320</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. For maximum depth-of-field (greatest sharpness in front of, and in back of, the subject) move the selector switch (on the side of the flash) to the center, so the yellow "A" appears.

Then set your camera lens to the opening indicated by the yellow line (for ASA 100 film, the lens opening is 5.6).

Your flash and lens are now adjusted for correct exposure at distances between 19 inches and 14 feet.

It's easy - just follow these steps:

A. Move the On/Off Switch (on the back of the flash) to the "On" position (so red is visible). Within seconds, you'll notice the . . .

B. Green "Auto Mode" window will light up. This confirms that your flash is set for automatic operation. Then, the . . .

C. "Ready/Test" light will glow . . . showing that your flash is ready to fire at full power.

D. Take the picture!
For succeeding exposures, just wait until the Ready/Test Light comes on; make sure you're within the distance range for automatic operation.

NOTE: To verify correct automatic exposure, just aim your flash directly toward your subject and press the "Ready/Test" button. This will cause the flash to fire without actually exposing any film. If the automatic exposure is correct for your subject, the green "Auto Signal" lamp will flash immediately after the "test" exposure. If the lamp does not flash, move closer to your subject (or, if you are shooting in yellow auto mode, switch to green and adjust the aperture accordingly). This green lamp provides positive verification that in automatic operation, your picture will be correctly exposed.
GUIDE NUMBER AND "FLASHMATIC" CAMER A OPERATION:

A "Guide Number" is simply a number expressing the power of a flash unit in relation to the sensitivity (ASA film speed) of the film in use. In use, the photographer divides the flash-to-subject distance into the Guide Number, and the result is the f/stop for correct exposure. Normally, reference to Guide Numbers is not necessary as the computer mechanism and scale of your Sunpak Auto 321 make such calculations automatically. However, there are instances in which precise Guide Number information is needed:

Use with "Flashmatic" Cameras or Lenses

Many 35mm rangefinder-type cameras (such as the Konica Auto S3) incorporate their own automatic flash-exposure controls. With cameras (or lenses) of this type, the flash is set to Manual (selector switch to white symbol "M") AND THE LENS APERTURE IS AUTOMATICALLY SELECTED BY THE CAMERA AS YOU FOCUS. For correct exposure with such cameras or lenses, the Guide Number for your film/flash combination must be set on the Guide Number Scale of the lens.

Guide Numbers of the Auto 321

<table>
<thead>
<tr>
<th>ASA FILM SPEED</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
<th>250</th>
<th>320</th>
<th>400</th>
</tr>
</thead>
</table>

| GUIDE NUMBERS (MANUAL) | 40 | 45 | 50 | 56 | 64 | 71 | 80 | 89 | 101 | 113 | 126 | 143 | 160 |

To determine maximum effective range in manual operation (in feet) divide the guide number by the aperture (f/stop).

Distances = \( \frac{\text{G.N.}}{\text{f/number}} \)

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A. Slide the ASA Film Speed Scale so that the ASA number in use is shown.

B. Move the Selector Switch (on the side of flash) to the left so the white "M" appears.

C. Your scales for distance and f/stop now show the correct exposures. Find the flash-to-subject distance by focusing in the normal way, and noting the distance shown on your lens. (Example: 39 feet).

D. Set your lens to the lens opening shown for this distance. (Example: with ASA100 film, correct lens opening at 39 feet is f/2).

E. Shoot! All photographs taken at this flash-to-subject distance will be correctly exposed.
Selecting Flash Position

Your Auto 321 has a unique flash head assembly which allows you to aim the light in many directions. This enables you to use the Auto 321 to render more pleasing and more creative lighting results. For added convenience, the adjustable Bounce Flash Head is marked so you can determine the exact angle of bounce you desire. For even more creative control, you can rotate the swivel mounting foot to obtain more bounce flash angles.

WIDE-ANGLE LENSES: For best results when using moderate wide-angle lenses with direct flash, such as a 35mm focal length lens with a 35mm camera, adjust the bounce flash head so that the rectangular reflector matches the rectangular format of the camera. In most cases, this is accomplished by pivoting the reflector 90 degrees to the left or right. For other wide-angle lenses, use the optional accessory wide-angle diffusion filters (these accessories are included in the Sunpak Filter Kit-Cat. No.651-738) or bounce lighting may also be used for maximum flash coverage.

A. To rotate the adjustable Bounce Flash Head, gently slide it forward with your thumb and forefinger and turn to desired setting. DO NOT FORCE THE HEAD.

B. To adjust the three position swivel mounting foot, twist as illustrated with your thumb and forefinger. The column automatically locks in either a vertical or horizontal position, but can be left in any in-between position.
For Better Bounce Flash Pictures

Don't Stand Too Close to Your Subject.

Reason: The light will be reflected downward at an angle so acute that no light (or very little light) can reach your subject's face. This will cause unpleasant looking dark (shadow) areas under the subject's nose and eyes.

Rotate the flash sufficiently to prevent the subject or the background immediately behind the subject from receiving any portion of direct light from the flash.

In small rooms, try bouncing the light off the wall onto the ceiling. Provided it is a white wall and ceiling, this technique gives much more even lighting than direct off-ceiling bounce where space is limited.
Remember that you can bounce light off the wall if the ceiling is too high. In many homes, a white wall makes an excellent reflective surface for bounce flash ... and, quite often, more light can reach the subject since the light does not have to travel as far.

If you can't find a suitable bounce surface, you can make one ... If the wall or ceiling is any color other than white, your subject will show that color in the finished photograph. Therefore, create your own bounce surface ... possibly you can use an ordinary piece of white cardboard held or taped in front of the flash tube housing so that it reflects the light onto the subject.
In close-up photography, many excellent lighting effects can be achieved by using one or more pieces of white cardboard as reflective surfaces in bounce flash. The soft, diffused effect of "bounce" light often reveals fascinating details of small objects.

For extensive use in portrait and child photography, many photographers prefer "umbrella" lighting, created by bouncing the flash off a white or silvered umbrella. Check with your dealer for recommendations on umbrellas and lightstands if this approach interests you.

NOTE: To determine the bounce lighting technique which satisfies you, try experimenting using all of the flash head positions.
Multiple Flash Operation with the Sunpak Auto Slave Unit

Using two or more Sunpak electronic flash units can produce stunningly attractive professional portraits. Equally, using additional flash units strategically positioned can substantially expand your photographic capabilities. To do this: use the compact, solid-state Sunpak Auto Slave Unit, available from your Sunpak dealer (Cat. No. 651-715). This permits wireless synchronization of any number of Sunpak electronic flash units at distances up to 100' from the "Master" unit. When the master unit (with shutter cord connected to the camera) is fired, all other slave-equipped units fire simultaneously.

A. Plug the Sunpak Slave Unit into the flash cord of your auxiliary (second) flash unit.
B. Adjust the sensor eye of the Slave so that it faces the master flash unit.
C. Determine the correct lens opening manually (as a starting guide, close down lens one f/number from indicated aperture when using two directly-aimed flashes).
D. Connect the main flash to your camera in the normal manner.
E. Shoot . . . when the light from the master (camera-connected) flash reaches the Sunpak Slave's sensor the Slave automatically fires the second flash in perfect synchronization with the first! The Sunpak Slave operates at distances of up to 100 feet from the master flash, and is unaffected by even the brightest color lighting.
For maximum creativity and ease of operation, many optional accessories are available for your Auto 321. Just like today’s system cameras, you can customize your Auto 321 to suit your exact photographic requirements.

1. The Sunpak Auto Slave allows your Auto 321, or any flash unit with a PC cord, to be used as a slave unit by plugging its PC cord into a built-in PC socket on the slave. Cat. No. 651-715

2. The Sunpak QBC-3 Nicad 3-Hour Charger. This charger is for use with Sunpak QB-3 Nicad batteries. It charges one to four batteries at a time. It will fully recharge batteries in 3 hours.
Sunpak QBC-3 Nicad 3-hour charger . . . Cat. No. 651-731
Sunpak QB-3 Nicad batteries (4 pcs.) Cat. No. 651-732
Sunpak QBC-3 Nicad 3-hour charger with QB-3 Nicad batteries Cat. No. 651-733

3. The Sunpak Filter Kit/Sunpak Filter Holder. Filter kit consists of red, blue, green and yellow color filters as well as a neutral density filter, 85B color correction filter for use with tungsten film, and two wide angle diffusers. Supplied with case. Filter holder is also available separately.
Filter Kit Cat. No. 651-738
Filter Holder Cat. No. 651-745

4. The Sunpak Pro Grip/Standard Grip/6x6 Bracket. The Sunpak Pro Grip features a built-in rotating hot shoe, ball head, contoured grip, tripod socket and allows aiming of the flash in virtually any direction. It is supplied with 35mm Sunpak 12-position bracket and cable release. The Standard Grip is identical except it features a fixed hot shoe. The Sunpak 6x6 Bracket can be used with either grip when using 2 1/4 film format cameras.
Pro Grip Cat. No. 651-774
Standard Grip Cat. No. 651-773
6x6 Bracket Cat. No. 651-752
Care of Your Electronic Flash

Your Sunpak electronic flash has been engineered to require almost no maintenance. Still to insure best performance year-in and year-out follow these basic pointers:

1. Inspect Batteries Frequently:

"Inspect" means for reasonable recycling time (the length of time it takes the ready light to come on between flashes): if it's more than 10 or 15 seconds, a fresh set of alkaline batteries should be obtained (or if nickel cadmium batteries are used, they must be recharged).

It's also wise to check your batteries for appearance: sometimes even the best of batteries discharge or leak some chemical material through the jacket...and leave a whitish powder on the battery, which passes onto your Sunpak flash unit's electrical contacts. If this has happened, replace the batteries after cleaning the Sunpak's internal battery contacts with a pen-knife. Finally, it's a good idea to remove the batteries once a while and wipe them with a handkerchief— the cleaner the battery surface, the easier it is for the energy to pass through your flashgun's electrical system.

2. Remove Batteries:

If for some reason you do not intend to use your flash unit for a period of several weeks or more, remove the batteries and store them separately. Storage inside a plastic bag is one good way.

3. Make sure the flash is securely attached to the accessory shoe (and that the accessory shoe is securely attached to your camera!)

4. Maintenance:

If your Auto 321's reflector window becomes dirty, use one drop of lens cleaner on a lens cleaning tissue to clean it. A small amount of lens cleaner and lens tissue or a slightly moist cloth can be used to clean the rest of the unit.

BE SURE TO THOROUGHLY DRY THE UNIT IMMEDIATELY AFTER CLEANING.

5. Service:

In the unlikely event that your Sunpak electronic flash requires service, return it to your dealer or the sole U.S. Distributor at the address shown on page 20. Do not, under any conditions, attempt to disassemble and/or adjust it yourself: electronic flash operates on high voltage and should not be taken apart. However, keep in mind that flash failure is more likely to result from weak batteries than any other single cause; if it doesn't fire, check batteries and contacts carefully.
Specifications:

Guide Number: 40 (ASA 25 film)
80 (ASA 100 film)
160 (ASA 400 film)

BCPS: 1130

With AA NiCad Batteries (4):
  Number of flashes per set: 85
  Recycling time: 4 seconds

With AA Alkaline Batteries (4):
  Number of flashes per set: 195
  Recycling time: 6.5 seconds

With Dual Voltage AC Adapter:
  Recycling time: 8 seconds (120 V)

Automatic Distance Range: 19" – 28’
Flash Duration: 1/2700th – 1/50000th sec.
Sensor Acceptance Angle: 15°
Angle of illumination:
  Horizontal 45° x Vertical 60° (Standard position)
  35m/m lens on 35m/m camera (Horizontal Position)
  50m/m lens on 35m/m camera (Vertical Position)

Color Temperature: 5500° Kelvin
Dimensions: 1.5" x 3.7" x 3.8"
Weight: 8.5 oz. (without batteries)

NOTE:
* Specifications subject to change without notice.
  All specifications are based upon American National Standards Institute (ANSI) testing procedures.