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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

300/301/400/401/411/511/611/NOCTO 400

www.butkus.us
Welcome to the world-wide family of **Sunpak** owners! More than six 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.
OPERATION

1) Install Batteries

1. Slide cover of battery compartment (back) partially towards top. Now, gently fold down cover in direction shown.
2. Insert four AA-size batteries (Alkaline or Nickel-Cadmium) as shown.

3. Press cover until it snaps into place.
*For information on using Nickel-Cadmium batteries, see page 22.
II) Mount on Camera

1. Slide Sunpak into camera’s accessory shoe (or shoe of flash bracket if one is required). Turn the knurled locking screw counter-clockwise to insure rigid mounting to your camera’s shoe.

2. For cameras with ‘Hot Shoe’ (cordless) flash contact, no further connection is necessary. (Note: leave PC Cord plugged into retaining pin on Sunpak side; if unplugged, flash will not fire through hot shoe.)

If camera does not have ‘Hot Shoe’, pull out Sunpak’s PC Cord (illustrated) and plug into camera flash outlet as shown.
3. If camera has separate flash outlets marked 'M' and 'X', attach Sunpak cord to 'X' outlet.

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

5. Set shutter to fastest speed **synchronized with electronic flash**. For non-interchangeable-lens cameras, this is usually the fastest speed. With interchangeable-lens cameras, the highest usable speed is generally 1/60th second; however, cameras with the vertical-travel Copal 'Square' shutter (or similar type) permit electronic flash synchronization up to 1/125th second.

Most cameras indicate the fastest 'X'-synch speed either by showing the letter 'X' on the speed dial, or by marking the fastest usable speed in a special color. If in doubt, check with your camera dealer (or in camera's instruction manual). Should this not be immediately possible, set shutter to 1/25th or 1/30th second: at this speed, **all** modern cameras are synchronized.
III) Determine Lens Opening: Sunpak 400

1. Check ASA rating (speed) of film in use. (Example: ASA 50) Line up the Triangle (illustrated) on your Sunpak’s Exposure Guide to this number.

2. Focus (by looking through the finder or by estimating distance and setting it). Now, read the indicated distance (in feet) shown on your camera’s focusing ring. (Example: ASA 50 film and subject at 9 feet.)

3. The correct lens opening is shown by your Sunpak’s Exposure Guide **below** this same distance. (Example: ASA 50 film-subject at 9 feet; correct lens opening is f/8.)

4. Set camera lens to this opening (in this example, f/8).
IV) Determine Correct Lens Opening: Sunpak Auto 401

1. Check ASA rating (speed) of film in use. (Example: ASA 50.) Line up the triangle at the bottom of your Sunpak’s Exposure Calculator (illustrated) so it’s pointing to this number.

2. To shoot at greatest distances as well as close-ups, follow the curved blue line at the top of your Exposure Calculator. The lens opening shown where this line stops is the correct lens opening for photographs from 19 inches to 18 feet. (With ASA 50 film, the blue line stops at f/4.) Set your lens to this opening.
3. Move the switch on the front of your flash to the left, so it's under the blue indicator.

4. No further adjustment is needed... your pictures will automatically receive the correct volume of light at all distances between 19 inches and 18 feet. Alternatively, your Sunpak Auto 401 permits you to use a smaller lens opening: this gives you the advantage of greater...
depth-of-field, so that more objects in front of and behind the subject will appear in sharp focus. (Extra depth-of-field is also helpful when you’re shooting a moving object — children at play, for example — and it’s difficult to focus precisely.) Here’s how:

A) After having set the ASA speed alongside the triangle (illustrated) on your exposure calculator, follow the curved red line near the top of the calculator. The lens opening shown where this line stops is the correct lens opening for photographs from 19 inches to 9 feet. (With ASA 50 film, the red line stops at f/8.) Set your lens to this opening.

B) Move the switch on the front of your flash to the right, so it’s under the red indicator.

C) No further adjustment is needed . . . your pictures will automatically receive the correct volume of light at all distances between 19 inches and 9 feet.

Note: If the range selector switch (on the front) is in the middle position, your flash will operate in manual mode. Generally, it’s desirable to use this only when you wish to shoot at distances greater than 18 feet. (See instructions for determining correct lens opening manually, page 7.)
V) Select Flash Position

Your Sunpak flash is equipped with a unique 3-way mounting system. Simply turn the flash unit in the desired direction as shown. Select the position which is most comfortable, and gives you the best access to your camera’s controls.

* When shooting with wide-angle lenses, always place flash in horizontal position. This assures a wide light path, enabling you to use 35mm wide-angle lenses on your 35mm camera.
VI) Shoot

1. Press On/Off Switch (at back) to the right (so red is visible). You’ll hear a faint hum (that’s the unit warming up) and in a couple of seconds the indicator light on the back will start to glow: that means your flash is ready to fire.

2. Take the picture!

3. For succeeding pictures, just wait until the indicator light glows (usually after 6-9 seconds following the last shot with model 400); check distance (if you’re closer or further away, re-set the lens opening as indicated on the Exposure Guide) . . . and continue shooting, picture after picture, with no further adjustments. (Of course, when you’re done shooting remember to turn the On/Off switch ‘Off’. The indicator light may continue to glow for several minutes; that’s O. K.)
USE WITH 'FLASHMATIC' CAMERAS

Some cameras (and interchangeable lenses) have built-in devices that calculate and set the correct lens opening for you, as you focus. To do this, they have to know the "Guide Number" for your flash/film combination. To find this, take the correct lens opening (see page 7) for your film type at a distance of ten feet, and multiply by ten.

(Example: For ASA 50 film, correct opening at ten feet is f/7.5; the number is 75.) Set this "Guide Number" on the control ring around your lens . . . and shoot. (Check camera instruction manual for exact operation.)

IMPORTANT: With 'Flashmatic' cameras, use Model Auto 401 in manual mode (with range selector switch in middle position).
VII) For Plug-In AC Operation

Your Sunpak electronic flash can take an unlimited number of pictures — without batteries! Just slip out the AC Adapter supplied with the flash, and plug the tip of the cord into the outlet at the back of the flash. (You’ll note that this can’t be done unless the On/Off Switch is in the ‘Off’ position, so black is visible.) It’s not necessary to remove batteries, however. Plug the other end of the Adapter cord into an ordinary power outlet . . . and shoot! Your flash is now receiving power directly from standard AC current.
Your AC Adapter is factory-adjusted for standard 100-120v AC current, as used throughout the United States and many foreign countries. When traveling abroad, you may wish to use it in a country with 200-240v AC current. This is easily accomplished by removing the safety screw (illustrated) on the Adapter with a Phillips screwdriver, moving the voltage selector to the 200/240v position, and replacing and tightening the screw.

IMPORTANT: Don’t change voltage while the Adapter is plugged in! A further suggestion: re-set the voltage to U.S. current (100-120v) as soon as you return home — operation of the flash on the wrong voltage setting can cause damage.
HELPFUL HINTS

You’ll get more enjoyment out of your Sunpak if you follow these handy tips:

1. **Use Alkaline Batteries.** All brands are good, and all give you a lot more flashes than ordinary (zinc-carbon type) batteries. Alkalines hold their power longer, and are more stable (in warm or cold weather) than ordinary batteries. While Alkalines are somewhat more expensive, they pay for themselves in greater number of flashes and greater dependability. (Use of other battery types won’t hurt your flash in any way, but it will mean you’ll get fewer flashes per set.)

Alkaline Battery Numbers
- Eveready E-91
- Burgess AL-9
- Mallory MN-1500
- NEDA 15A
- Ray-O-Vac 815
2. **Check Camera Controls.** With cameras which do not have 'hot' shoe, make sure the flash cord is plugged into the 'X' outlet, or that the synch switch ("M–X") is set at 'X'. Of course, make certain the cord is firmly plugged in. And, remember to adjust the lens opening when you move closer to or further away from your subject when using Model 400, except with 'Flashmatic' camera models.

3. **Use the Fastest Possible Shutter Speed.** If your camera 'synchs' with electronic flash up to 1/125th second, shoot at 1/125th (instead of a slower speed). The faster the speed, the less likely that the existing (ambient) light will cause an image to register on the film (this is called a 'ghost' image, and it's quite annoying). Use the fastest speed possible for best results.
4. **Use 'Test Flash' to Check Lighting Effects.** Your Sunpak can be fired without actually exposing film, to let you preview a lighting effect. (The feature is handy for a final check before taking important pictures, too.) How to do: Just press the 'Ready Light' window. This trips the flash without exposing any film.
CARE OF YOUR ELECTRONIC FLASH

Your Sunpak electronic flash has been engineered to require almost no 'maintenance' in the normal sense of the word. 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 indicator light to come on between flashes): if it’s more than 10 or 15 seconds, a fresh pair of alkaline batteries should be obtained. 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 leaves a whitish-powder on the battery, which passes onto your Sunpak’s electrical contacts. (If this has happened, replace the batteries after cleaning the Sunpak’s internal battery contacts with a penknife.) Finally, it’s a good idea to remove the batteries once in 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 for a period of several weeks or more, remove the batteries and store them separately (inside a plastic bag is a good way).

3. **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 24. *Do not, under any conditions, attempt to disassemble and/or adjust it yourself:* electronic flash operates on pretty 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.
CHOOSING BATTERY TYPE

Your Sunpak electronic flash accepts both AA-size Alkaline batteries and rechargeable nickel-cadmium (Ni-Cad) cells. Each type offers practical advantages.

Alkaline batteries provide the greatest number of continuous flashes: approximately 225 per set, enough for several rolls of film. The interval between flashes (recycling time) averages 6 seconds. When recycling time becomes much longer, the batteries should be replaced with a fresh set. Thus, Alkaline batteries represent an excellent choice for occasional use, use where several rolls of film are to be shot at one time, or simply as a dependable ‘spare’ energy source that’s always ready.
USING RECHARGEABLE NICKEL-Cadmium BATTERIES

Your Sunpak electronic flash unit accepts standard AA-size nickel-cadmium batteries (4). These let you take approximately 125 flash pictures; then, simply remove the batteries and recharge them in the Sunpak Nickel-Cadmium Battery Charger. A full charge is obtained overnight (14 – 16 hours), but you'll accumulate enough energy within one hour to permit 20 flashes or more — enough to expose an entire roll of 35mm film! Many photographers find it convenient to work with two sets of nickel-cadmium batteries, keeping one set in their flash while the other set is being recharged.

Battery Type. Your Sunpak dealer can supply you with General Electric GC-1, Eveready CH-500, Bright Star 8000, Sanyo N-500-AA, or equivalent 1.25v AA-size nickel-cadmium batteries.

Charger. The Sunpak Nickel-Cadmium Battery Charger is exclusively designed for use with AA-size nickel-cadmium batteries. It features a unique selector switch which lets you charge either two or four batteries
at one time, and a convenient indicator lamp which lights up to show that batteries are correctly positioned. Another practical feature of this compact charger is a slot allowing you to wall-mount it if desired. You’ll find it a welcome addition to your Sunpak system... and probably find lots of other applications for using your nickel-cadmium batteries in radios, tape recorders, movie cameras, and other instruments using this popular battery type.

Performance. Nickel-cadmium batteries represent the most dependable power source for your electronic flash. In general, they provide faster recycling times than other battery types. The initial investment for nickel-cadmium batteries and charger is soon repaid by the ability to recharge the batteries literally hundreds of times... enough for a lifetime of flash photography.
Technical Specifications of Sunpak Auto 401* and Sunpak 400 Electronic Flash:

Mounting ......................... Fits standard accessory shoe or flash bracket; Horizontal or Vertical light path via 3-way adjustable mount

Light Output in BCPS ............. 1600
Guide Numbers .................... 100 with ASA 100 film; 75 with ASA 50 film; 50 with ASA 25 film
Power Sources .................... 4-AA Nickel-Cadmium 4-AA Alkaline 100-240v

<table>
<thead>
<tr>
<th>Number of Flashes</th>
<th>Optimum Recycling Time</th>
<th>Recharging Times: 20 Flashes</th>
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<tbody>
<tr>
<td>125</td>
<td>3.5 seconds</td>
<td>1 hour</td>
</tr>
<tr>
<td>225</td>
<td>6 seconds</td>
<td>14 hours</td>
</tr>
<tr>
<td>Unlimited</td>
<td>3 seconds</td>
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Exposure Control System ........ Automatic Computer Control with manual override (model 401); Manual (model 400)

Automatic Aperture Options* .... f/5.6 and f/11.0 with ASA 100 film; f/2.8 and f/5.6 with ASA 25 film

Automatic Distance Range* ....... 19”-18’ at maximum aperture; 19”-9’ at minimum aperture

Sensor Acceptance Angle* ........ 28°
Flash Duration ................. 1/1000th sec. - 1/50,000th sec. (model Auto 401);
1/1000th sec. (model 400)

Angle of Illumination ......... 55° Horizontal x 60° Vertical; allows use of 35mm
lenses on 35mm cameras, 75mm lenses on 2¼ x 2¼”
cameras, 90mm lenses on 2¼ x 2-3/4” cameras

Color Temperature .............. 5500° kelvin, balanced for standard daylight color
films

Synchronization Contacts ....... Built-in PC Cord and Hot Shoe Contact

Dimensions ..................... 1.4” x 3.5” x 3.6” (exclusive of mounting shoe)

Weight ........................... 7.9 oz. (less batteries; model Auto 401);
7.4 oz. (less batteries: model 400)

Supplied With ................. Dual-Voltage AC Adapter

Optional Accessories .......... Sunpak Nicad Charger and Nickel-Cadmium
Batteries; Sunpak Auto Slave Unit

* Applies To Model 401 Exclusively

Notice: Features and specifications are subject to change with out prior notice.