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Welcome to the world-wide family of Sunpak owners! Your Sunpak Auto 511 electronic flash, made by one of the world’s largest manufacturers of precision electronic flash systems, has been carefully engineered and constructed to give you years of advanced photographic lighting. Since this flash is in many ways more versatile than other electronic flash units, please take the few minutes required to carefully read this Owner’s Manual... with your Sunpak Auto 511 in front of you.
Your Sunpak Auto 511 is an unusually powerful unit (Guide Number 100/ASA 100, 50/ASA 25) operating on interchangeable AA Nickel-Cadmium or 510v battery systems (Alkaline batteries may be used in emergencies as well); alternatively, it may be operated on standard AC current (100v – 240v) if desired. In automatic mode, the correct amount of light is automatically measured and regulated at any of four lens openings (or at any intermediate lens opening as well), at speeds ranging from 1/600th second to 1/50,000th second at close range. Energy-saving Thyristor circuitry stores, rather than 'dumps', the unused electrical power remaining after each flash; as a result, recycling time (at close distances) becomes as fast as 0.3 second – allowing practical application of motor-driven camera systems even at high rates of speed.
Yet Sunpak’s variable-intensity computer mechanism may be used manually as well... allowing variations in lighting volume from full power to as little as 1/64th power, for total control of lens aperture, depth of field, and recycling time. Additionally, this variable-power capability makes outdoor synchro/sun photography (fill-in flash) remarkably simple and precise with any shutter type with ‘X’ synchronization. For the first time, flash owners can select the exact amount of light required for supplementary outdoor lighting quickly, conveniently, and accurately.

Particular attention has been paid to maximizing handling speed: the mounting bracket is a one-touch, instantly-detachable type (with 12-position 360° bounce capability as well). Batteries are housed in a slide-in cartridge, further reducing handling and ‘down’ time during interchange. For maximum convenience, the manual exposure calculator dial has positive click-stops to prevent inadvertent mis-setting.

Yet, this uniquely versatile flash weighs just 25 ounces... light enough to be conveniently used in continuous eye-level operation.
1. Auto light sensor
2. AC receptacle
3. Flash window
4. Power switch (AC-BATT)
5. Manual exposure calculator
6. Slave unit receptacle
7. Synchro cord receptacle
8. Grip
9. Clamp
10. Synchro cord with parallel blade
11. Indicator lamp
12. Flash test button
13. Bracket attaching button
14. Battery cover
15. Bracket lock ring
16. Variable power selector
17. Auto/Manual selector switch
18. Auto aperture dial
19. Voltage selector switch
20. AC adapter
21. AC cord
22. AC plug
23. Camera set screw
24. Bracket
OPERATION OF SUNPAK AUTO 511

I. SELECT POWER SOURCE

Your Sunpak Auto 511 electronic flash accepts STANDARD AA-SIZE nickel-cadmium batteries. Each set provides from 45 to as many as 700 flashes per charge, with recycling time (interval between flashes) ranging from a maximum of five seconds to as little as 0.3 second at fractional power. When depleted, the batteries are removed and recharged in the Sunpak Charger.

Nickel-cadmium batteries may be recharged hundreds of times, with each charge providing sufficient power for most shooting requirements. In addition, performance is extremely constant as compared to disposable Alkaline batteries, which may vary considerably in power. For these reasons, nickel-cadmium batteries are recommended as the basic power source for your Sunpak Auto 511, with use of Alkaline batteries reserved for emergency or interim use while nickel-cadmium batteries are being charged.

II. INSERT BATTERIES

A) Using AA Nickel-Cadmium Batteries (Optional)

1. Twist battery compartment cover at bottom of flash grip to unlock, and slide out cover containing battery cartridge.
2. Insert four AA Nickel-Cadmium batteries in the direction shown on the cartridge.
3. Replace battery cartridge and tighten firmly.
4. Turn Battery/AC Switch (on back) to ‘Battery’ position (so red is visible). This turns on the flash, which begins to warm up for use.
5. When Indicator Light (on back) glows, you’re ready to shoot.

NOTE: Newly-purchased nickel-cadmium batteries usually contain a partial ‘charge’. For best results, give these batteries a full charge in the Sunpak Charger before using, as outlined in the instructions accompanying your charger.
NOTE: Spare Battery Holders (illustrated) for your Sunpak Auto 511 are available from your Sunpak dealer. With an extra Battery Holder, you can preload a fresh set of batteries—an excellent idea should unexpected picturertaking opportunities occur.

B) Using AA-Size Alkaline Batteries (Optional)
Repeat above steps 1, 2, 3 and 4.
C) Using 510v Dry-Cell Battery Pak (Optional)

1. Insert 510v battery into Sunpak Quick-Pak as shown on Quick-Pak.
2. Set Sunpak 511 Battery/AC Switch (on back) to ‘AC’.
3. Plug Quick-Pak cord into your 511’s AC Outlet (directly above Battery/AC Switch on back).
4. When ready to shoot, turn Quick-Pak On/Off Switch ‘On’.
5. When Indicator Light (on back) glows, you’re ready to shoot.

D) Using AC (Line) Current

1. On Sunpak AC Adapter (included), make sure voltage selector switch (illustrated) is set for 100-120v current when using in U.S., Canada, or other countries employing this current type.

   When using in countries with 200-240v AC current, loosen Phillips screw on AC Adapter, re-set switch as shown, and replace Phillips screw. Important: Make sure voltage selector is set at correct position. If used at the wrong voltage, damage to your Sunpak flash may result.

2. Set Power Switch (on back of flash) to ‘AC’ position (black is visible and AC outlet is unobstructed).
3. Plug AC Adapter cord into your flash unit’s AC outlet (on back, above Battery/AC Switch). Now, plug AC Adapter into wall outlet. This turns on the flash, which begins to warm up for use.

4. When Indicator Light (on back) glows, you’re ready to shoot.
III. MOUNT ON CAMERA

1. Depress Locking Button (silver) on Flash Grip clamp and push Flash Bracket inwards until it stops. Release Locking Button.

2. Turn retaining screw of Locking Button clockwise; this locks clamp and bracket securely.

3. Attach camera to bracket using large retaining screw on bracket.

4. Connect flash synch cord from flash (under Sunpak name in front) to camera’s PC outlet. (If camera has outlets or selector switch marked ‘M’ and ‘X’, use ‘X’ outlet or setting.)

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.
Synchrocord receptacle

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IV. AUTOMATIC OPERATION

1. Turn switch on side of flash to "Auto" position (red is visible). Your Sunpak Auto 511 flash has three calculator dials: one on the back, and two on the side. The larger (two-color) dial on the side is used for determining lens opening for automatic operation.

2. Set ASA speed for film in use by holding inner dial while rotating outer dial until speed is indicated by red triangle marked 'ASA'. (Example: ASA 50.)

3. Rotate calculator wheel clockwise until it stops. The triangle outside the wheel indicates the smallest lens opening which may be used (example: with ASA 50 film, smallest lens opening is f8). Now, rotate the calculator wheel counter-clockwise until it stops. The triangle outside the wheel now indicates the largest lens opening which may be used (example: with ASA 50 film, f2.8).

You may shoot at any lens opening (or fractional opening) in between these minimum and maximum apertures, by simply setting your lens to the desired aperture and making sure that same aperture (for example: f5.6) is shown opposite the triangle on your calculator wheel.
4. The maximum distance at which you can shoot at a given aperture is shown by the "Max. dist." within the calculator wheel, opposite the same triangle which indicates the lens opening. (For example: with ASA 50 film and a lens opening f5.6, the maximum distance indicated at the 'Max. dist.' is 12'.) All pictures taken from 19'' to this maximum distance (12' at this opening) will be perfectly exposed automatically by your Sunpak's computer mechanism.

NOTE: The minimum distance for correct exposure is 19'' at any low aperture.

5. Now, just focus...and shoot! Your Sunpak 511 will automatically produce the correct volume of light for a perfectly-exposed picture.

6. For greatest distance range, select the widest lens opening (f2.8 with ASA 50 film) available by turning the calculator wheel counterclockwise until it stops. (With this lens opening, you can shoot as far as 25' from the subject.)
The degree of creative control which this allows you is genuinely remarkable. It is entirely practical to work at an in-between (fractional) lens opening such as \( f3.5 \), \( f6.3 \), or whatever precise opening is desired. Through this continuously-variable Sunpak system, you may enjoy total depth-of-field control.
V. MANUAL OPERATION AT MAXIMUM POWER

1. Move Power Ratio/Auto Switch (on side of flash) to Power Ratio position (so blue is visible).

2. For maximum light output (enabling you to shoot at greatest distances), set Power Ratio/Selector Dial (smaller dial on left) to 'Full' as shown.

3. Now, refer only to the large calculator wheel on the back of your flash. Set the correct film speed opposite the 'Full' indicator around the dial. (Example: ASA 50.)

4. Focus your lens as you normally do; read off the distance shown on the footage scale of your lens. (For example: 12'.) The lens opening appearing below this distance (on the calculator dial) is the correct lens opening for a picture at this distance. (Example: correct lens opening with ASA 50 film and subject at 12' is f5.6.)

5. Set this opening on your lens, and shoot. All photographs taken at this distance will be properly exposed.

6. In general, the sole advantage of manual exposure control at full power is the ability to shoot at distances greater than 25 feet.
VI. MANUAL OPERATION:
Selecting Light Output For Different Lens Openings

Your Sunpak Auto 511 electronic flash has the unique capability of varying light output (duration) even when used in manual mode. This allows you to shoot at wider lens openings (f/numbers) to control depth-of-field (simultaneously shortening recycling time and greater numbers of flashes). Yet, this remarkable feature is extremely easy to use:

1. Move Power Ratio/Auto Switch (at side of flash) to ‘Power Ratio’ position (so blue is visible beside switch).
2. Focus as you normally do; read off the distance indicated by the footage scale on your lens. (Example: 12 feet.)
3. Choose and set the desired lens opening on your camera’s lens. (Example: f4.)
4. Rotate Calculator Wheel (on back of flash) until correct distance (12’) appears above desired lens opening (f4).
5. Now, the correct Power Ratio setting appears alongside the ASA speed for the film you are using. (Example: For ASA 50 film, Power Ratio for f4 aperture at 12’ is ½.) Set this number (½) on the Power Ratio dial as shown.
6. Shoot... your Sunpak Auto 511 will automatically deliver the correct volume of light for a perfectly-exposed picture at this distance and lens opening. In this example, using straight manual exposure (at full power) would have required a lens opening of f5.6; yet your Sunpak allowed you to shoot at f4. You could also expose at f2.8, f2.0 or f1.4 by simply positioning the distance above the desired lens opening, then reading the Power Ratio setting above the film speed and resetting it. Thus, total depth-of-field control is now yours... with the remarkable Sunpak Auto 511.

SHOOTING AT CONTROLLED RECYCLING TIMES

On "Automatic", your Sunpak Auto 511 will provide exactly the volume of light required, then save the remaining energy for subsequent shots. Many photographers, however, require the ability to shoot shot after shot very rapidly irrespective of flash-to-subject distance.

Example: Photography of a sporting event with a motor-driven camera. Here, the Sunpak Power Ratio control again provides a practical solution:

1. Follow this rule: each one-step reduction in operating "Power Ratio" reduces recycling time by approximately 50%. 

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2. Determine recycling time to "Full" power (manual) with your equipment and fresh batteries (or AC current should this power source be selected).
Example: recycling speed with 120v AC is determined to be approximately 4 seconds at full power.

3. Select Power Ratio Accordingly! If exposures every two seconds are required, operate at 1/2-power. For exposures every second, a Power Ratio of 1/4th is thus indicated. (NOTE: As battery power may diminish in use, it is recommended to choose an even smaller Power Ratio wherever possible; for example, shoot at 1/8-power when it is known that 1/4-power will provide the approximate recycling speed required. This practice will compensate for inevitable fluctuations in line and battery voltage, differences in temperature, etc.)
Use of the optional Sunpak Professional 510v Battery Pak will shorten recycling times by as much as 400%... allowing, at smallest Power Ratios, operation of motorized cameras at the highest rates of speed.
* Individual tests are suggested with your equipment and power sources to determine exact recycling speeds under typical working conditions. These tests will accurately reflect usable recycling speeds with your "system"
Your Sunpak Auto 511 electronic flash can be of significant benefit even in outdoor photography. Example: bright day at the beach... much too bright for your subject to face into the sun. So you turn her around, and shoot against the sunlight: a backlit shot. You even carefully take a close-up meter reading of her face, to insure that the exposure is based on the light on her face (relatively dim) and not the background light (extremely bright). While this technique will produce a well-exposed image of the subject, the background will be rendered far too light; the brightness values in the scene are beyond the ability of any film to record...

Solution: Sunpak Auto 511... and its variable-intensity lighting selector. **Here's how:**

1. With your camera’s built-in exposure meter (or a separate meter), determine correct lens opening **for the brightest part of the scene** when exposed at the fastest speed at which your camera synchronizes with electronic flash. (Automatic cameras of the shutter-priority type, such as the Konica Autoreflex T3 and A3, may be used in “Automatic” mode.) Example: Set your camera’s shutter to 1/125th second (or to whatever is the fastest speed synchronized for electronic flash). Your meter indicates correct exposure for the brightest part of the scene — usually the background. Example: f/8. Set your lens to this opening. (Automatic cameras will, of course, set this opening automatically.)
2. Focus, and read the camera-to-subject distance in feet from your lens' distance scale. Example: 6 feet.

3. You have now determined the two required parameters for correct exposure — aperture and distance. Move your Sunpak Auto 511 Calculator dial so that the required distance (6') appears above the required aperture (f8). **Opposite the ASA speed of the film in use,** your calculator dial now indicates the correct Power Ratio setting for perfectly-balanced fill-in flash. Example: Where an aperture of f8 is required at a distance of 6', a “Power Ratio” of 1/4 is indicated for ASA 100 film.

The possibilities are almost endless: subjects partially in sunlight, partially in shadow; subjects under trees or foliage, which casts hundreds of small shadows across the subject; a subject indoors, gazing through a window, part of their face lit by the daylight and part unlit; in these and a thousand and one situations, your Sunpak Auto 511 will create strikingly beautiful daylight/synchro photographs for you.

4. Set the Power Ratio dial (on side) to this position ... and shoot! **Your picture will be perfectly exposed, as the light of the flash is now balanced perfectly** with the exposure required for the brightest part of the scene!

- The technique described above provides equal brilliance on the subject and the brightest part of the overall scene. This effect is called “full” fill-in, and gives excellent results with a majority of subjects.
- Should you prefer a slight fill-in effect (less light on subject), move the Power Ratio control to the next smallest position: for example, 1/8 when 1/4 is indicated. Use this technique when your subject is in only slight shadow, or is unusually light in complexion or appearance.
- Alternatively, you may wish to employ a more pronounced fill-in flash effect when your subject is either dark in complexion, or in extremely heavy shadows and thus much less well lit than the brightest part of the scene. This "extra" fill-in effect is achieved simply by dialing a Power Ratio one step greater than indicated — for example, 1/2 instead of 1/4.
- It is obviously possible to vary the amount of "fill" infinitely, through use of intermediate Power Ratio positions between marked positions. Experiment, when possible, to determine the Ratio most pleasing to you with subjects representative of your normal picturetaking.

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**CONSTANT APERTURE CONTROL IN PHOTOMACROGRAPHY**

Assignment: Macro ... the world of the infinitesimal. Perhaps, showing a specimen at life-size (1x) — or at 7 times life-size. Often, it is desirable to take photomacrographs at many different magnifications and distances ... yet equally desirable to maintain a constant lens aperture for each shot (preferably the smallest usable aperture, to gain maximum depth-of-field.)

1. Place your flash so that the reflector surface is approximately 19" (1.6') from the subject, and aimed directly at the subject.

2. On your Sunpak's calculator dial, align the distance (1.6') with the minimum available aperture of the lens.
   
   Example: f16. Set your lens to this opening.
3. Opposite the ASA film speed in use, read off the correct Power Ratio setting for normal photography. Example: With ASA 100 film, correct Power Ratio position is 1/16th. This setting is correct the one for all exposures not requiring additional compensation for bellows extension or magnification. However, photography at a distance closer than about eight times the focal length of a lens requires additional exposure, to compensate for the increased lens-to-film distance. This exposure factor is normally shown on scales attached to the bellows units, or in the instructional material supplied with extension tubes and bellows. Normally, this factor is applied by opening the lens to a wider aperture — which is basically undesirable in close-up photography. To apply it, and continue shooting at the same lens opening regardless of the "exposure factor" simply ...

4. Multiply the "exposure factor" by the Power Ratio originally obtained for uncompensated exposures at 1.6'. Example: Shooting at 1:1 (1x — life size), the indicated exposure factor with your bellows unit is "4." You have already determined a Power Ratio setting of 1/16th for uncompensated exposures. 4 x 1/16 = 4/16 = 1/4; the correct Power Ratio is in this case 1/4th. Set this Power Ratio ... and shoot — no further adjustment of any sort is required.

* This procedure is applicable not only to photography of three-dimensional objects, but in slide duplicating as well. In use, the flash is placed 19" from the outer surface of the duplicator. A film test is suggested to deter-
mine the absorption factor of the diffusion shield normally used with slide copiers; this factor is then applied to the ASA film speed, and operation from that point carried out as described above.

Placement of the flash at 19″ or more from the subject is strongly recommended. At this distance, a wide light path is obtained; equally important, light output of the flash is uniform. Using your flash at closer distances may result in over-exposure as well as possible misdirection of the light.

Individual photographers will immediately discern other areas in which the unique thyristor-linked variable power control mechanism will prove an aid to better photography. Obvious situation would include multiple-light portrait and product photography, where an entire series of pictures may be taken with the “ratio” or relative strength of main, fill, and back-lights adjusted by means of the Power Selector — no need to move flash units or stands back and forth as before!

Another important advantage: *obtaining extra flashes in emergencies* where replacement batteries are not conveniently available — if, for example, you’re shooting a wedding ... and half-way through the recycling time lengthens substantially, indicating that fresh batteries or recharging are needed. Solution: switch to “Manual” operation at a fractional power setting such as 1/4th or 1/8th power — and increase the available number of flashes — irrespective of distance — accordingly (4x as many on 1/4 power, 8x on 1/8th, and so on.)
Your Sunpak Auto 511 electronic flash allows soft, shadowless 'bounce' lighting to be used whenever desired. This advanced lighting technique beams the light off ceiling or wall, to spread a soft, diffused light evenly throughout the entire area. Bounce lighting is almost totally free of the shadows which often accompany direct lighting, making it particularly valuable for photography of people as well as finely-detailed close-up and macro subjects.

1. Loosen locking screw on Sunpak flash clamp by turning it counter-clockwise. Press retaining button inwards and hold it.
2. Partially remove bracket from flash clamp, and rotate bracket clockwise until desired angle is reached.
3. Release flash bracket, which snaps into place. Tighten locking screw.

Your Sunpak Auto 511 is now ready for bounce flash photography.

(Note: exposures must be determined manually, preferably by experience or test shots in the rooms most likely to be used. As a starting point, allow two f/stops additional exposure — say, f4 instead of f8 — for an average white ceiling at a height of seven or eight feet. Wherever possible, bracket exposures — shoot several at different lens openings — to insure perfect exposure.)
Off-Camera Flash

Off-Camera flash offers many of the benefits of bounce flash, yet enables automatic operation. In addition, it allows the full power of the flash to be used, thus permitting professional lighting effects irrespective of distance or ceiling reflectance. It’s easy to use:

1. Set Flash to ‘Auto’ position, and adjust camera lens to $f$/number indicated by Automatic calculator dial.
2. Focus on your subject. Hold camera securely in right hand.
3. Press Bracket Locking Button inwards, and lift flash away from bracket. Hold flash in left hand, as far away from your camera as possible; aim flash directly at subject.
4. Take the picture! Your flash will measure and deliver exactly the light required for your subject ... and the highly directional lighting will provide excellent illumination. Since the flash is beamed towards your subject off the optical axis, shadows will be directed away from the subject — out of the picture area.

It’s a basic professional lighting technique ... made easy by your Sunpak’s unique quick-release flash bracket!
IX. MULTIPLE FLASH OPERATION WITH 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 (for example, at different locations at a basketball game) can substantially expand photographic capabilities. How to do: use the compact, solid-state Sunpak Auto Slave Unit, available from your Sunpak dealer. This permits wireless synchronization of any number of Sunpak Auto 511 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.

1. Plug Sunpak Slave Unit into receptacle under flash head of auxiliary (second) flash unit.
2. Adjust sensor eye of Slave so that it faces master flash unit.
3. Determine correct lens opening manually (as a starting guide, close down lens one f/number from indicated aperture when using two directly-aimed flashes).
4. Connect main flash to camera in normal manner.
5. 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 indoor lighting.
Note: Always use Sunpak Slave for multiple flash with your Sunpak Auto 511. Due to the low voltage (24 volts) of the triggering circuit, series operation using connecting cables is not possible. In use, these flash units are particularly suitable for multiple-flash work because of their unique ability to vary light output via the Power Ratio control. Thus, one can easily adjust intensity of main, fill-in, or any other lights — without actually moving each flash. For more comprehensive details on application of multiple-flash, consult any of the excellent reference manuals available from your Sunpak dealer.
2. Check Camera and Flash Controls

On the flash, simply make sure that the Power Ratio/Auto Switch is towards ‘Auto’ when operating automatically, towards ‘Power Ratio’ when operating in any manual mode (full or variable power). When working on manual, the Power Ratio dial must be at the ‘Full’ position for full-power operation.

On the camera, make sure the synch cord is plugged into the ‘X’ outlet (or that the synchro switch, if one is present, is at ‘X’ position). And, make sure the shutter is set at the fastest speed that’s synchronized for electronic flash.

3. Use the Fastest Possible Shutter Speed

If your camera ‘synchs’ with electronic flash at 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 a secondary or ‘ghost’ image to appear on the film.

4. Use ‘Test’ Flash to Check Lighting Effects.

When your flash is turned on, pressing the ‘Test’ button on the back of the flash will fire the flash without actually exposing your film. This lets you preview a lighting effect (and also provides a handy check that everything’s working properly before an important picture, too).
XI. CARE OF YOUR ELECTRONIC FLASH

Your Sunpak Auto 511 electronic flash has been engineered to require almost no ‘maintenance’ in the normal sense of the word. Still, to insure top performance year-in and year-out, follow these basic pointers:

1. Inspect Batteries Frequently.
   ‘Inspect’ means for reasonable recycling time; if it’s longer than 20 seconds (Alkaline batteries), 10 seconds (nickel-cadmium batteries), or 1 second (510v battery), your batteries should be replaced (or, if nickel-cadmium type, recharged). It’s also wise to check your batteries from time to time for appearance: sometimes, even the best of batteries discharge some chemical material through the jacket, and leave a whitish powder on the battery surface, which can pass onto the electrical contacts of the flash. (If this has happened, replace batteries after cleaning the flashgun’s battery contacts with a penknife.) It’s also a good idea to remove the batteries from time to time and wipe them with a dry handkerchief: the cleaner the battery surface, the easier it is for the battery energy to pass through your flashgun’s electrical system.

2. Remove Batteries When Not in Use.
   In the event you will not be using your flash for several weeks or more, remove the batteries and store them separately (inside a plastic bag is a good way).
3. Store Flash Carefully
When you're done using your flash, detach the mounting bracket by pressing in the release button (turn Locking Ring counter-clockwise if release button will not operate). Remove flash bracket from camera, and carefully store flash unit, bracket, and cord ... together, so they'll be ready next time you're taking pictures!
As with any precision instrument, protect your flash from moisture, exposure, or hard bumps or jolts. You'll be rewarded with thousands of excellent exposures .....
Technical Specifications of Sunpak Auto 511:

- **Light Output:** 1600 BCPS
- **Guide Numbers:** 100/ASA 100; 75/ASA 50; 50/ASA 25
- **Angle of Illumination:** 60° Horizontal and 55° Vertical (permits use of 35mm lenses on 35mm cameras)
- **Power Source:**
  - AA Alkaline Batteries (4)
  - AA Nickel-Cadmium Batteries (4)
  - 510v Dry Battery (1)
  - 100 ~ 240v AC
- **No. of Flashes:**
  - With Alkaline Batteries, 90 – 1,800
  - With Nickel-Cadmium Batteries, 45 – 700
  - With 510v Battery, 500 – 10,000
  - With AC Current, Unlimited
- **Recycling Time:**
  - With Alkaline Batteries, 0.3 – 10 Seconds
  - With Nickel-Cadmium Batteries, 0.3 – 5 Seconds
  - With 510v Battery, 0.3 – 1 Second
  - With AC Current, 0.3 – 5 Seconds
Flash Duration: 1/600 Second – 1/50,000th Second
Automatic Aperture Control: Continuously variable over four-stop range (f4–f11 with ASA 100 film)
Computer Range: 19” – 25’ (maximum aperture), 19” – 9” (minimum aperture)
Sensor Acceptance Angle: 28°
Variable Power Selector: Continuously-variable from full to 1/64th power in manual operation
Color Temperature: 5500° K, matching standard color films (daylight type)
Synchronization Contact: Polarized 3-prong Shutter Cord; remote Slave input. Open Flash Control.
Mounting: Instantly-detachable bracket with 12-position 360° bounce control
Weights: 25 oz. (less batteries)
Dimensions: 3.6” x 3.7” x 8” (including grip)

Notice: Features and specifications are subject to change without prior notice.