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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
Description of Parts

1. Flashtube Housing
2. Accessory Mounting Grooves
3. Vertical Bounce Scale
4. Flash Synchro PC Cord Outlet
5. Auto Sensor
6. Flash Grip
7. Bracket Mounting Guide
8. Bracket Mounting Socket
9. Bounce Head
10. Instant Readout Exposure Control Center
11. AC/510V Outlet
12. Battery/AC, HV Selector (On/Off) Switch
13. Ready/Test (Open Flash) Button
14. ASA Scale
15. ASA Selector Switch
16. Auto Distance Scale
17. Auto F/Stop Scale
18. Auto Signal Lamp
19. Auto/Manual Selector Switch
20. Battery Holder

Manual (Power Ratio) Operation
21. Power Ratio Control Index
22. Distance Scale for Normal and Tele/Wide Accessories
23. Power Ratio Control Selector Dial
24. F/Stop Scale

25. Flash Synchro PC Cord
26. Adapter Plug for Powerpak for 510V Batteries
27. Filter Holder
28. Wide-Angle Diffuser
29. Camera Mounting Bracket
30. Camera Retaining Screw
31. Flash Retaining Screw

3

20
Description of Parts

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31. Flash Retaining Screw
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 to the green or yellow "A" position.

3. Move the Battery/AC HV Selector Switch to the "batt" position.

4. Wait for the Ready/Test amber light to glow.

5. Set the aperture on your camera to the corresponding aperture which appears in the computer f/stop window. You are ready to take your pictures.

For more creative use with your Sunpak AP-52, please read page 11 to 25.

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Operation

POWER SOURCES:

Your Sunpak AP-52 may be used with five different power sources:

<table>
<thead>
<tr>
<th>Four AA alkaline batteries (not included)</th>
<th>Four AA rechargeable nickel-cadmium batteries (optional)</th>
<th>The Sunpak Multi-Voltage AC Adapter (AD-27) (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Sunpak Powerpak for 510-Volt (High Voltage) Batteries (optional)</td>
<td>The Sunpak 510V rechargeable battery NC510 (for use with Sunpak Powerpak) (optional)</td>
<td></td>
</tr>
</tbody>
</table>
To Install Batteries:

1. Remove battery holder from flash handle as illustrated.
2. Open the battery holder as illustrated.
3. Insert four AA size batteries (alkaline or nickel-cadmium) as shown. The battery holder has a guide showing the correct positioning of the batteries for proper polarity. (+, — contacts)
4. Replace the loaded battery holder into the battery chamber of your AP-52 as illustrated.

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 AP-52 slightly faster and can be recharged hundreds of times for more economical operation over the long run.
Using the Multi-Voltage AC Adapter or the Sunpak Powerpak for 510-Volt Batteries

1. For AC operation, be sure to check that the voltage selector on your Multi-Voltage AC Adapter is set to the appropriate voltage. Your AC Adapter has been factory set for 120V, the U.S. standard. For use in other countries where 100V, 220V and 240V are standard, you may adjust the setting as illustrated. Remove the small Phillips head screw located next to voltage window and rotate the selector switch with a screw driver to the proper voltage setting. After the voltage setting has been made, the screw must be reinstalled to prevent accidental movement of the selector switch.

2. Plug into the AC/High Voltage socket on the flash and into a standard wall outlet as illustrated. The AC Adapter will supply virtually unlimited flashes and is ideal for indoor use.

Note: If the Multi-Voltage AC Adapter is incorrectly set, the adapter will not function properly and may damage your AP-52.

3. When you use the optional accessory Sunpak Powerpak for 510-Volt Battery, first attach the supplied plug adapter to the end of Powerpak cord and plug it into the AP-52 in the same manner as you would with the Multi-Voltage AC Adapter. The Sunpak Powerpak for 510-Volt Battery allows extremely rapid recycle times and the greatest number of flashes.

*When using Multi-Voltage AC Adapter or Sunpak Powerpak for 510-Volt Batteries, always set Battery/AC HV Selector Switch to AC/HV position.
MOUNTING THE FLASH TO THE CAMERA:

1. Attach the bracket to the 'Bracket Mounting Socket' at the bottom of the grip as illustrated, and tighten the screw firmly.

2. Center the camera retaining screw under your camera’s tripod socket, and tighten securely.

3. Connect the PC cord to the flash synchro (PC) terminal (insert the connecting pin until it snaps into position), and the camera’s flash terminal as shown. *If the camera has separate flash terminals marked ‘M’ and ‘X’, attach Sunpak cord to the ‘X’ terminal.

4. Set the shutter speed dial to the fastest shutter speed recommended for flash synchronization. On single-lens reflex cameras with focal-plane shutters, this speed is usually 1/60th or 1/125th and sometimes marked ‘X’ on the shutter speed ring; cameras with in-the-lens shutters usually allow synchronization at speeds up to 1/800th second. Do not set the shutter to a speed faster than 1/800th second, as this may cause underexposure when the flash is used at maximum power.

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Automatic Operation

The sensitive silicon photo transistor of your AP-52 sensor measures the light reflected from your subject and automatically controls the flash duration to assure correct exposure within a wide range of distances. By moving the Auto/Manual Selector Switch to either the green or yellow 'A' mark, your flash is set for automatic operation. It's easy to use:

1. Set the Film Speed Scale to the appropriate ASA setting. For the ASA rating of your film, refer to the instructions supplied with the film.

Note: If the ASA number for your film is not indicated on the ASA film speed scale, use an intermediate markings as shown.

<table>
<thead>
<tr>
<th>Marked ASA Speeds:</th>
<th>25</th>
<th>*</th>
<th>50</th>
<th>*</th>
<th>100</th>
<th>*</th>
<th>200</th>
<th>*</th>
<th>400</th>
<th>*</th>
<th>800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Nos:</td>
<td>25</td>
<td>32</td>
<td>32</td>
<td>40</td>
<td>40</td>
<td>64</td>
<td>64</td>
<td>80</td>
<td>80</td>
<td>125</td>
<td>125</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>160</td>
<td></td>
<td>200</td>
<td></td>
<td>320</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>320</td>
<td></td>
<td>400</td>
<td></td>
<td>640</td>
<td></td>
<td>800</td>
</tr>
</tbody>
</table>

2. For the maximum distance range in automatic operation, move the Auto/Manual Selector Switch to the green 'A' position, so that the green line and f/2.8 appear (ASA 100 Film). Then set your camera lens opening (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 4.6 feet and 35 feet.

3. For maximum depth-of-field (greatest sharpness in front of, and in back of, the subject) move the Auto/Manual Selector Switch to the yellow 'A' position, so the yellow line and f/5.6 appear. Then set your camera lens opening (for ASA 100 film, the lens opening is f/5.6). Your flash and lens are now adjusted for correct exposure at all distances between 2.3 feet and 17.5 feet.
TAKING THE PICTURE:

It's easy — just follow these steps:

1. Move the Battery/AC HV Switch (on the back of the flash) to the 'batt' position.
2. You will hear a faint hum and, in a few seconds, the Ready/Test Button on the back of flash will start to glow. This confirms that your flash is ready to fire.

3. Take the picture!
   Your flash will automatically deliver the correct amount of light for correct exposure within the distance range indicated. For succeeding exposures . . . Just wait until the ready/test light comes on. Make sure you are within the usable auto distance range for the lens opening in use and . . . shoot!

To Verify Correct Auto Exposure:

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 glow immediately after the 'test' exposure. If the lamp does not glow, 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.
Power Ratio (Manual) Operation

With Sunpak's unique Power Ratio Control you can adjust the light output over a five stop range, (from full to 1/16 power.). This feature gives you greater depth-of-field control, ability to control battery life and recycle times, precise fill-in flash capability, macro/close-up capability and the ability to control flash duration.

Using the Power Ratio Control at Full Power:

1. Set the Auto/Manual Selector Switch to 'M' for manual power ratio operation.
2. Set the film speed scale to the desired ASA setting (example ASA 100).
3. Adjust the power ratio control to full power by turning Power Ratio Selector Dial.
4. The scales for distance and f/stop now show the correct exposures. Find the flash-to-subject (not camera-to-subject) distance. (example 12')
5. Set your lens to the lens opening shown for this distance. (example: with ASA 100 film, the correct lens opening at 12' is f/8).
1. As when using the Power Ratio at Full power, set the Film Speed Scale to the appropriate ASA rating and be sure the Auto/Manual Selector Switch is on “M”.

2. Determine the distance of your subject from your flash. When the AP-52 is mounted to the camera, you can easily do so by focusing your camera’s lens and reading the distance indicated by the distance scale on the lens.

3. Turn the Power Ratio Control Dial until you have the desired f/stop opposite this distance. ALWAYS TURN THE POWER RATIO CONTROL DIAL TO A MARKED (CLICK STOP) POSITION. DO NOT SET THE POWER RATIO BETWEEN MARKED RATIOS OR THE UNIT WILL NOT OPERATE AS DESIRED.

4. Be sure the distance scale shows there is the proper amount of light for the correct exposure of your subject. If not, increase or decrease the power as needed.

5. You are now ready to take your picture. Remember to adjust the aperture on your lens to match the aperture indicated on the calculator scale.

6. When using a tele adapter or wide angle diffuser, refer to the color coding to read the f/stop or distance. Blue lines correspond to the tele adapter, and red lines correspond to the wide angle diffusers.
USING POWER RATIO FOR BETTER PICTURES

Depth-of-Field

Note that the top picture has greater depth-of-field (the background and the subject are in focus) and the bottom picture has little depth-of-field (the subject is in focus but the background is not).

Because of the versatility of Power Ratio control, you have a choice of up to five different apertures for maximum control of depth-of-field. Use this control to create the pictures you want.

Examples:

When photographing still life, more depth-of-field is often required. Use the higher power settings and smaller lens openings for best results.

For portraits, use the lower power settings and larger lens openings for less depth-of-field.
Precise Fill-In Flash

The major advantage of fill-in flash is that it renders attractive outdoor portraits because it eliminates harsh shadows. Simply set your camera's aperture according to the meter reading for the background. Next set your Power Ratio to that aperture opposite the actual flash-to-subject distance. Be sure to use a shutter speed that will synchronize with electronic flash. The top picture was taken without fill-in flash. The bottom picture was taken with fill-in flash. Note how much more pleasing the lower one is.

Freezing Action

Your AP-52 can freeze almost any action at full power with a flash speed of just 1/800th second. For even briefer flash duration, which will allow freezing of the fastest action, you can use the Power Ratio's lower settings to obtain speeds as fast as 1/10,000th second. See chart below.

Working With Motor Drive Cameras

By using the 1/16th Power Ratio setting, far less energy is expended with each flash and the AP-52 will recycle almost instantly. With fresh batteries, you can shoot up to three pictures per second, thus making the AP-52 ideal for use with motor-driven and auto-wind cameras.

* For motor drive operation, the Sunpak Powerpak for 510-Volt batteries (Cat. No. 651-723) will provide the best results. (You can shoot up to four pictures per second.)

* Note: When taking up to 40 frames continuously, rest the flash unit for 10 minutes or more.

<table>
<thead>
<tr>
<th>Power Ratio</th>
<th>Flash Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>1/800th sec.</td>
</tr>
<tr>
<td>1/2</td>
<td>1/1500th sec.</td>
</tr>
<tr>
<td>1/4</td>
<td>1/3000th sec.</td>
</tr>
<tr>
<td>1/8</td>
<td>1/7000th sec.</td>
</tr>
<tr>
<td>1/16</td>
<td>1/10000th sec.</td>
</tr>
</tbody>
</table>
Selecting Flash Position

Your Sunpak AP-52 has a unique flash head assembly which allows you to aim the light in many directions. This enables you to use the Sunpak AP-52 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.

WIDE ANGLE LENSES:
The reflector is designed to illuminate the picture format of a 35mm wide angle lens on a 35mm camera. If you use wider angle lenses, use wide angle diffusers. 28mm wide angle diffuser is supplied with your AP-52 and also available in option together with 21mm wide angle diffuser by Sunpak Filter Kit, Cat. No. 651-738. Bounce lighting may also be used to increase flash coverage.

* Your AP-52 rotates every 15° on the bracket. Just loosen the flash retaining screw and rotate the flash body at any degree required, then fasten the screw securely. This offers more creative lighting options in manual operation.

If using automatic operation, the built-in sensor will properly adjust the flash for perfectly exposed pictures.

Note: The auto sensor must always face the subject for proper auto exposure control.
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 eyes and nose.

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.

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 flashtube 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.
Copy Photography

Because of its unique Power Ratio Control, your AP-52 is ideal for copy photography. By adjusting the power, you can use your AP-52 to control light output, which is critical with the relatively short flash-to-subject distances. For copying, you can use a copy stand, modified enlarger baseboard and girder or a tripod which can have its pan head mounted to the bottom of the center column. In addition, you can use one, two or four AP-52 s.

1. An ideal set-up for shadow-free copies is having two AP-52 s, one connected to your camera, another to the Sunpak Auto Slave, aimed at a 45° angle to the subject on the same axis as the camera. As the illustration shows, twice the normal amount of light is hitting the subject, so you should either close down the lens aperture by one stop (two stops when using four units) or adjust the Power Ratio Control by half the Power Ratio setting (−1 stop).

2. If you own another electronic flash unit, you can use the Power Ratio Control on your AP-52 to set the unit at a similar power level as the other unit. Simply match the guide number from the specification chart on page 25 with the appropriate power level to your other unit.

- **Hobbies:** You can reproduce stamps, coins, seashells, butterflies, plant life and other items.
- **Vital Documents:** Diplomas, birth certificates, cancelled checks, licenses, etc.
- **Charts:** You can keep a photographic record of any charts or graphs you prepare for school or business. In addition, color transparencies of the charts can be made for slide presentations.
- **Valuable Possessions:** Items such as jewelry, silverware and works of art can be pre-photographed and used for insurance purposes.
Hints for Taking Photographs Using a Copy Set-Up

1. When photographing a three-dimensional subject, such as a coin, try setting the flash units at a 60° axis from the lens. This is also excellent for subjects with an irregular flat surface such as an oil painting, and high gloss subjects. For best possible results, experiment with different angles until you get the results you like.

2. For showing shadow and texture on three-dimensional subjects, use your AP-52s with each at different power levels. Again, experimentation is the best way to discover what is the best lighting ratio between the AP-52s for the subject you are copying.

3. For a softer lighting effect, fire the AP-52 through a material that will diffuse its light. Items such as artist's tracing paper and commercially available photographic diffusion material are ideal. For special effects, use one AP-52 with an accessory color filter at a higher power level than an AP-52 without a filter.

4. For lighting a highly-reflective subject with controlled light, try the tent lighting method. By simply taking heavy white paper or oak tag and bending it so the light from the unit surrounds, but won't directly hit the subject as illustrated.

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Other Flash Hints

Multiple Exposures
When shooting multiple exposures, your AP-52 is ideal because of its multi-directional capability. Be sure to use a dark background and center your flash on each individual subject. When placing the same people in one background scene, a tripod or other rigid camera support is recommended.

Special Effects
One of the most popular special effects today is the "Shoot" technique of superimposing one image over another. The only requirement is a simple cardboard tube. Take the first exposure using available light and center the area of the image you wish to superimpose the image on. Then, take a second exposure on the same film, using your AP-52. Simply use the tube to cover all but the centered area. For smaller centering areas, use two tubes for a telescope effect. Because the light from your AP-52 is higher than the available light in most cases, the image shot through the tube will dominate the available light image. For best results using this technique, make your superimposition on a dark area.

Open Flash
When shooting at night, you can use your AP-52 to act as a fill-in flash while setting your shutter speeds for background exposure. Simply push the Test (open flash) Button on your unit for one, two or more flashes while the shutter is open.

Macro/Close-Up
By using the lower power levels on your Auto AP-52, the exciting world of Macro/Close-Up photography can be mastered. Because of the lower power levels available from the AP-52, you can properly expose close-ups even when your flash is very close. To lower the light intensity even further, bounce the light or use the diffusion filter available in the accessory filter kit.
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 (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 AP-52. Just like today's system cameras, you can customize your AP-52 to suit your exact photographic requirements.

**Sunpak Auto Slave:**
Allows your AP-52, or any flash unit with a PC cord, to be used to trigger an auxiliary flash by plugging its PC cord into a built-in PC socket on the Slave. 
Cat. No. 651-715

**Sunpak Multi Voltage AC Adapter:**
The Sunpak Dual Voltage AC Adapter (AD-27) allows you unlimited flashes. Moreover, the world-wide voltage selector on the adapter gives you maximum convenience for your picture taking. 
Cat. No. 651-740

**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 approximately 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 Charger with QB-3 Nicad Batteries (4 pcs.) 
Cat. No. 651-733

**Sunpak Filter Kit:**
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 supplied with the AP-52 and available separately. 
Filter Kit 
Cat. No. 651-738

**Sunpak OB-3 Nicad Batteries (4 pcs.)**
Cat. No. 651-732

**Sunpak OBC-3 Nicad 3-hour Charger with OB-3 Nicad Batteries (4 pcs.)**
Cat. No. 651-733
Tele Adapter: To be used for 135 mm telephoto and zoom lens with 35mm camera. Decreases illumination angle while increasing light intensity. Cat. No. 651-791

Inside Your Sunpak AP-52

Aged Gold-Tone Flash Tube
Modern electronic flash units operate at speeds of 1/600th second or less. This burst of light is far shorter than the optimum exposure time today's films have. Your AP-52 uses a unique gold-tone flash tube that has been aged and pre-flashed until critical color balance is achieved. This means your AP-52 will give you warm, pleasing, correct color rendition with all daylight films.

Wide-Angle Illumination
The use of wide-angle lenses is very popular in photography today. Your AP-52 can be used with up to 35mm lenses without any accessories. By using the diffusion filters available in the accessory AP-52 Filter Kit, lenses up to 28mm focal length on 35mm cameras may be used. By using bounce light, even wider focal length lenses may be used.

Thyristor Circuitry
Sunpak's advanced thyristor circuitry is the latest in electronic flash technology. In less advanced automatic flash units, when the automatic sensor shuts off the flash, the circuit still expends the available energy as if a "full" power flash had been produced. However, thyristor circuitry saves the unused energy for the next flash. This means more flashes per battery and recycling times are more rapid, depending on distances and lighting conditions.
Guide Number and “Flashmatic” Camera 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 AP-52 make such calculations automatically. However, there are instances in which precise Guide Number information is needed:

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

Distance = \( \frac{G.N.}{f/stop} \)

<table>
<thead>
<tr>
<th>Manual Power Ratio</th>
<th>ASA Film Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Full</td>
<td>50</td>
</tr>
<tr>
<td>1/2</td>
<td>35</td>
</tr>
<tr>
<td>1/4</td>
<td>25</td>
</tr>
<tr>
<td>1/8</td>
<td>17</td>
</tr>
<tr>
<td>1/16</td>
<td>12</td>
</tr>
</tbody>
</table>

Guide Numbers of the AP-52 with Tele/Wide Accessories:

<table>
<thead>
<tr>
<th>Accessory</th>
<th>ASA 25</th>
<th>ASA 100</th>
<th>ASA 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>21/24mm</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>28mm</td>
<td>35</td>
<td>70</td>
<td>140</td>
</tr>
<tr>
<td>Normal</td>
<td>50</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Tele</td>
<td>70</td>
<td>140</td>
<td>280</td>
</tr>
</tbody>
</table>
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 instructions:

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 in a while and wipe them with a handkerchief—the cleaner the battery surface, the easier it is for the energy to pass through to the 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 your camera.

4. Maintenance:

If your AP-52's reflector window becomes dirty, use one drop of lens cleaner on 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 back of the Warranty Card. 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 Numbers: 200 (ASA 400 film), 100 (ASA 100 film), 50 (ASA 25 film)
B.C.P.S. 1700 (at Full)

Angle of Illumination: 60° Horizontal by 45° Vertical;
IN DIRECT FLASH: permits use of 35mm lenses on 35mm cameras, 80mm lenses on 6x6 cameras,
80mm lenses on 6x7 cameras.

Interchangeable Power Sources: 4AA NiCad Battery (optional)
4AA Alkaline Battery (not included)
AC: (Optional) Multi-Voltage AC Adapter (AD-27) at 100/120/220/240V Selector.
Sunpak Powerpak for 510V (High Voltage)
Battery (optional)
Sunpak NC510 Rechargeable Battery (optional)

Flash Speed:
1/800—1/22000th second depending on Auto distance.
1/800—1/10000th second depending on Manual Power Ratio setting in use.

Automatic Aperture Setting:
f/2.8, f/5.6 (ASA 100 film)

Automatic Distance Ranges:
4.6’—35’ (at maximum aperture)
2.3’—17.5’ (at minimum aperture)

Sensor Acceptance Angle: 15°

Bounce Flash: Adjustable Bounce Flash Head at
0°, 45°, 60° and 90° Vertical (automatic exposure)
every 15° Horizontal (manual exposure)

Number of Flashes & Recycling Times:

<table>
<thead>
<tr>
<th>Maximum Power</th>
<th>Minimum Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Flashes:</td>
<td></td>
</tr>
<tr>
<td>Recycling Time:</td>
<td></td>
</tr>
<tr>
<td>With AA NiCad Batteries:</td>
<td>50</td>
</tr>
<tr>
<td>6 sec.</td>
<td>0.3 sec.</td>
</tr>
<tr>
<td>With AA Alkaline Batteries:</td>
<td>100</td>
</tr>
<tr>
<td>10 sec.</td>
<td>0.3 sec.</td>
</tr>
<tr>
<td>With Sunpak Multi-Voltage AC Adapter (AD-27):</td>
<td>14 sec.</td>
</tr>
<tr>
<td>With Sunpak Powerpak for 510V Battery:</td>
<td>500</td>
</tr>
<tr>
<td>1 sec.</td>
<td>0.25 sec.</td>
</tr>
<tr>
<td>With Sunpak NC510 Rechargeable Battery:</td>
<td>90</td>
</tr>
<tr>
<td>1.2 sec.</td>
<td>0.25 sec.</td>
</tr>
</tbody>
</table>

Variable Power Ratio Range: Full, 1/2, 1/4, 1/8 and 1/16
Synchronization Contact: PC Cord
Color Temperature: 5500° Kelvin
Dimensions (HxWxD): 7.9" x 3.1" x 3.4"
Weight: 17.3 oz. (without batteries)

* All specifications subject to change without notice.