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. Your Sunpak Auto 411 is one of the most advanced electronic flash units in the world. It is the product of extensive research and development and has been designed to give you many enjoyable years of service. Because many of the fine features of your new Auto 411 are so unique, please take a few minutes to read this owner’s manual carefully with your Auto 411 in front of you. The more you know about your new electronic flash, the better you can use it for maximum creativity in your pictures.
www.orphancameras.com

Adjustable Bounce Flash Head

Battery Holder Latch

Removable AA Battery Holder

Built-In PC Cord

Dual Auto Mode/Verification Signal Auto Exposure

Dual Ready Light/Test (open flash) Button

Color-Coded Auto/Manual Selector Switch

Color-Coded On/Off Switch

AC/High Voltage Socket

Color-Coded Bounce Flash Scale

Color-Coded Bounce Flash Index

Three-Position Flash Base

Remote Sensor Socket

Remote Sensor Plug Latch
Basic Operating Instructions:

1. Insert Batteries into Holder
   Insert batteries as illustrated into the removable AA Battery Holder. The holder itself has a guide on how the batteries should be loaded for correct polarity. Use either four AA alkaline or four AA nickel-cadmium batteries.

2. Load Holder into Battery Chamber
   Insert the loaded battery holder as illustrated into the battery chamber of your Auto 411. Press until holder snaps into place. Do not force holder. NOTE: If you are using the Dual-Voltage AC Adapter or the high voltage Sunpak 510-Volt Power Pak, plug connecting cord into the AC/High Voltage Socket.

3. Mount Flash to Camera
   Insert your Auto 411 to the shoe mount of your camera. If your camera has a hot shoe, your Auto 411 will automatically synchronize with your camera. If your camera does not have a hot shoe, plug built-in PC cord into appropriate socket for electronic flash on your camera (usually marked "X").

4. Set Film Speed Scale
   Slide outer dial until the appropriate film speed (ASA number) is indicated. For ASA of your film, refer to the instructions supplied with the film.
5. Select Working Aperture

With most films, you will have a choice of four apertures in automatic operation (six in manual). For automatic operation, choose the appropriate f/stop as indicated by the Aperture Index and adjust the Four-Position Aperture Selector, located under the auto sensor, to match the color code on the Aperture Index. For manual operation, adjust the Power Ratio Control for the desired aperture.

6. Turn The Unit On

Set on/off switch to "on". Using the Ready Light/Test (open flash) button, fire the Auto 411 about 5 times to form the capacitor. The ready light (amber color) will glow when the Auto 411 is ready to be fired. Be sure to set the Auto/Manual switch to the desired position. When in auto operation, the auto indicator light (green color) will glow. In addition, when your Auto 411 is flashed, the auto indicator will verify correct automatic exposure by blinking momentarily.

7. Aim Adjustable Bounce Flash Head

The unique Adjustable Bounce Flash Head of your Auto 411 can be aimed in any of 27 different positions. If using automatic operation, the built-in sensor will properly adjust the flash for perfectly-exposed pictures. For off-camera auto bounce flash operation, the optional accessory Remote Sensor is recommended. Note: The auto sensor must always face the subject for proper auto exposure control.

8. Take Your Picture

Be sure your camera's shutter speed is set for X synchronization. This is usually 1/60th or 1/125th second for focal plane shutter SLR cameras. Refer to your camera's owner's manual for the correct setting.
Operation

POWER SUPPLIES

Your Sunpak Auto 411 may be used with four different power sources:

- Four alkaline AA batteries
- Four rechargeable, nickel-cadmium AA batteries
- The Sunpak 510-Volt (High Voltage) Power Pak
- The Sunpak Dual Voltage AC Adapter

Battery Installation

1) Remove Battery Holder by pressing Battery Holder Latch up and pulling outward.

2) Install batteries as illustrated on the holder. Be sure to observe correct polarity or you may cause damage to your Auto 411.

Alkaline or Nickel-Cadmium Batteries?

The major advantage of alkaline batteries is they provide more flashes per set. While nickel-cadmium batteries will provide fewer flashes per set, they will recycle your Auto 411 slightly faster and can be recharged hundreds of times for more economical operation over the long run.
Using Dual-Voltage AC Adapter or Sunpak 510-Volt (High Voltage) Power Pak

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 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 screwdriver 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 standard wall outlet as illustrated. The AC adapter supplies virtually unlimited flashes and is ideal for indoor use.

3) When you use the optional accessory Sunpak 510-Volt (High Voltage) Power Pak, refer to the instructions supplied with that unit. Plug into the Auto 411 in the same manner as you would with the Dual-Voltage AC Adapter. The Sunpak 510-Volt (High Voltage) Power Pak allows extremely rapid recycle times and the greatest number of flashes from any portable power source.

Note: If the Dual Voltage AC Adapter is incorrectly set, the adapter will not function properly and may Damage your Auto 411.
Mounting to Camera

For easiest handling, the Auto 411 should be mounted to the accessory shoe on your camera.
If your camera does not have an accessory shoe, the Sunpak Pro Grip is suited for use with the Auto 411.

1. Raise the Mounting Foot Lock Ring on the flash by turning it clockwise.

2. Slide the flash into the shoe and tighten the lock ring by turning it counter-clockwise.

3. If your camera does not have a hot shoe, plug the built-in PC cord into the appropriate "X" sync outlet. Remember to set your camera's shutter speed to the proper setting for electronic flash.
Operation of Illuminated Power/Exposure Control Center

The Illuminated Power/Exposure Control Center is the "heart" of your Auto 411. By properly operating it, you can use your flash to its maximum creative capabilities.

Automatic Operation

1. Set the film speed scale to the appropriate ASA setting. For the ASA (film speed) rating of your film, refer to the instructions packed with the film.

2. As you set the film speed scale, the dial will rotate to show four apertures marked by the red, yellow, green and blue arrows of the Color-Coded Aperture Index. Set your camera's aperture to match one of these arrows and adjust the Four-Position Aperture Selector so the colors match.

3. Be sure the Auto/Manual Switch is in the auto position. As you use your unit, the Thyristor circuitry in the Auto 411 will automatically store all unexpended energy. The result of this advanced design is faster recycle times and greater number of flashes per battery.

AUTO FLASH TO SUBJECT OPERATING RANGE

<table>
<thead>
<tr>
<th>Scale</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>19&quot; to 9'</td>
</tr>
<tr>
<td>Yellow</td>
<td>27&quot; to 17'</td>
</tr>
<tr>
<td>Green</td>
<td>39&quot; to 25'</td>
</tr>
<tr>
<td>Blue</td>
<td>55&quot; to 35'</td>
</tr>
</tbody>
</table>

NOTE: The effective distance in automatic operation varies with the type of film used. Shown above are minimum and maximum distances. Consult the distance scale to see if the unit will operate automatically at the distance desired with your film. When using a filter with the Auto 411, the maximum effective distance may be different. Please refer to the filter kit instructions for possible adjustments you may have to make.
Power Ratio (Manual) Operation

With the unique Power Ratio Control on your Auto 411, you can adjust the light output so your camera can be used over a six stop range, from Full to 1/32 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.

Use of Power Ratio Control at Full Power

1. Set the Auto/Manual Selector Switch to "M" for manual operation.
2. Set the Film Speed Scale to the appropriate ASA setting.
3. Adjust the Power Ratio Control to Full power.
4. You may determine the proper f/stop by matching the aperture and distance scales on your calculator dial. The distance scale refers to the flash-to-subject distance, not the camera-to-subject distance, so be sure to measure flash-to-subject when you are using the Auto 411 for remote lighting. (EXAMPLE: At 10’, use f/8 with ASA 100 film.)
USING POWER RATIO

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 Auto 411 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 MOVE 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. (Example: With ASA 100 film, you may choose f/8, 5.6, 2.8, 4, 2 and 1.4).

4. Be sure the distance scale shows there is the proper amount of light for a 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 dial.
USING POWER RATIO FOR BETTER PICTURES

Depth of Field

Note that the top picture has great 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 your Power Ratio control, you have a choice of up to six different apertures for maximum control of depth of field. You can use this control to make pictures the way 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 to get 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 Auto 411 can freeze almost any action at full power with a flash speed of just 1/1,000th 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 1/15,500th second. See chart below.

Working With Motor Drive

By using the 1/32nd Power Ratio setting, far less energy is expended with each flash and the Auto 411 will recycle almost instantly. With fresh batteries, you can shoot up to three pictures per second, thus making the Auto 411 ideal for use with motor-driven and auto-wind cameras.

<table>
<thead>
<tr>
<th>POWER RATIO</th>
<th>FULL</th>
<th>1/2</th>
<th>1/4</th>
<th>1/8</th>
<th>1/16</th>
<th>1/32</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLASH DURATION</td>
<td>1/1000</td>
<td>1/1430</td>
<td>1/2800</td>
<td>1/9500</td>
<td>1/10500</td>
<td>1/15500</td>
</tr>
</tbody>
</table>
Operating Adjustable Bounce Flash Head

Your Auto 411 has a unique flash head assembly which allows you to aim the light in any of 27 possible directions. This allows you to use the Auto 411 to render more pleasing and more creative lighting results. For added convenience and repeatability, the Adjustable Bounce Flash Head has color-coded scales so you can determine the exact angle of bounce you desire. For even more creative control you can leave the head in any in-between position as well.

1. To rotate the Adjustable Bounce Flash Head, grip with thumb and forefinger and gently turn to desired setting.
   DO NOT FORCE HEAD

2. To adjust the Three-Position Flash Base, simply twist as illustrated with thumb and forefinger. The column automatically locks in either a vertical or horizontal position, but can be left in any in-between position.

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, be sure to adjust the bounce flash head so that rectangular reflector matches the rectangular format of the film. 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 lens or 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.
Hints for Better Bounce Pictures

* Don't Stand Too Close to Your Subject. Reason: the light will be reflected downwards at an angle so acute that no light (or very little light) can reach your subject's face. This can cause unpleasant-looking 'dark spots' under the subject's nose and eyes.

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

* In Small Rooms, Try Bouncing The Light Off The Wall Onto The Ceiling. Provided it's a white-colored wall and ceiling, this technique gives much more even lighting than direct off-ceiling bounce where space is limited. Try it!
* Remember That You Can Bounce Off The Wall If The Ceiling's Too High. There isn't any law that says bounce flash must be beamed off the ceiling! In many homes, a white-color 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.

* Can't Find A Suitable Bounce Surface? Make One ... If the wall or ceiling is any color other than white, your subject will show that color in the finished photograph. Solution: create your own bounce 'surface' ... possibly an ordinary piece of white cardboard held or taped in front of the flashtube housing, so that it reflects the flash 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 photo dealer for recommendations on umbrellas and lightstands if this approach interests you.

**NOTE:** For the bounce results that best please you, experiment using all bounce positions.
Copy Photography

Because of its unique Power Ratio Control, your Auto 411 is ideal for copy photography. By adjusting the power, you can use your Auto 411 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 Auto 411’s.

Copy Photography is fun and can be used for:

- **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.

A TYPICAL COPY SET UP FOR DOCUMENTS

1. An ideal set-up for shadow-free copies is having two Auto 411’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 Auto 411 to set the unit at a similar power level as the other unit. Simply match the guide number from the specification chart on page 26 with the appropriate power level to your other unit.
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 Auto 411s with each at different power levels. Again, experimentation is the best way to discover what is the best lighting ratio between the Auto 411s for the subject you are copying.

3. For a softer lighting effect, fire the 411 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 Auto 411 with an accessory color filter at a higher power level than an Auto 411 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.
Other Flash Hints

Multiple Exposures
When shooting multiple exposures, your Auto 411 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 auto 411. 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 Auto 411 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 Auto 411 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 411, the exciting world of Macro/Close-Up photography can be mastered. Because of the lower power levels available from the Auto 411, you can properly expose close-ups even when your flash is very close. To lower light intensity even further, bounce the light or use the diffusion filter available in the accessory filter kit.
Your Auto 411 is a System

For maximum creativity and ease of operation, many accessories are optionally available for your Auto 411. Just like today's system cameras, you can customize your Auto 411 to suit your exact photographic requirements.

1. **Sunpak Auto Slave** Allows your Auto 411, 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. Needs no batteries and operates up to 100' with 360° sensitivity. Supplied with special tripod mount for your second flash.
   
   Cat. No. 651-715

2. **Sunpak 510-Volt (High Voltage) Power Pak** Allows professional 510-Volt batteries to be used for most rapid recycle times and situations where extended number of flashes is a must. Has built-in voltage regulation, detachable cord. An accessory 10' coiled cord also available.
   
   Cat. No. 651-723
   Sunpak 10' Coiled Cord - Cat. No. 651-754

3. **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
   Also Sunpak AA Nicad Charger (16-hour charge) AA Nickel Cadmium Batteries are available.
   Sunpak AA NiCad Charger Cat. No. 651-729
   AA Nickel Cadmium Batteries (4 pcs.)
   Cat. No. 651-720

4. **Sunpak Battery Holder** Extra battery holders fit into Auto 411. Ideal for fast, convenient changes.
   Cat. No. 651-749
5. **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

6. **Sunpak Pro Grip/Sunpak Standard Grip/Sunpak 6x6 Bracket**
The Sunpak Pro Grip features built-in rotating hot shoe, ball head, contoured grip, tripod socket and allows aiming of flash in virtually any direction. Supplied with 35mm Sunpak 12-position bracket, cable release. Sunpak 6x6 Bracket can be used with either grip when using 2 1/4 film format cameras. The Sunpak Standard Grip offers the same features as the Pro Grip with fixed hot shoe.
- Pro Grip  Cat. No. 651-774
- Standard Grip  Cat. No. 651-773
- 6x6 Bracket  Cat. No. 651-752

7. **Sunpak Remote Sensor**
For use with remote lighting, allows automatic exposure sensing when Auto 411 is not mounted to camera. Will synchronize unit with hot shoe. Allows continuously-variable range of four apertures in automatic operation. Supplied with 5' extension cord.  Cat. No. 651-716

8. **Sunpak Tele Kit**
Ideal for use with telephoto and zoom lenses of the most popular focal lengths, the Sunpak Tele Kit actually increases light intensity while decreasing the angle of illumination. This dual reflector outfit may be used for focal length lenses from 70 to 300mm with 35mm format cameras. The number of reflectors and vertical/horizontal orientation of the adjustable bounce flash head determine the proper lens to use. For specific recommended set ups with various 35mm format lenses, see chart below:

<table>
<thead>
<tr>
<th>LENS (mm)</th>
<th>Reflector Position</th>
<th>Supplemental Tele Kit Adapter</th>
<th>Guide No. (ASA 25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Horizontal</td>
<td>—</td>
<td>50</td>
</tr>
<tr>
<td>50</td>
<td>Vertical</td>
<td>—</td>
<td>50</td>
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<tr>
<td>70</td>
<td>Horizontal</td>
<td>Retracted</td>
<td>61*</td>
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<tr>
<td>135</td>
<td>Vertical</td>
<td>Retracted</td>
<td>61*</td>
</tr>
<tr>
<td>135</td>
<td>Horizontal</td>
<td>Extended</td>
<td>71**</td>
</tr>
<tr>
<td>300</td>
<td>Vertical</td>
<td>Extended</td>
<td>71**</td>
</tr>
</tbody>
</table>

* +.6 EV  ** +1 EV

Supplied with case.
- Cat. No. 651-746
Inside Your Auto 411

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.

WIDE-ANGLE ILLUMINATION
The use of wide-angle lenses is very popular in photography today. Your Auto 411 (horizontal position) can be used with up to 35mm cameras without any accessories. By using the diffusion filters available in the accessory Auto 411 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.

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 Auto 411 uses a unique gold-tone flash tube that has been aged and pre-flashed until critical color balance is achieved. This means your Auto 411 will give you warm, pleasing, correct color rendition with all daylight films.

ILLUMINATION LIGHT BUTTON
Your Sunpak Auto 411 has convenient Illumination Light Button. In dark atmosphere, you can illuminate Guide Number Dial by pressing this button.

MONITOR CIRCUIT
Your Sunpak Auto 411 contains a built-in monitor and voltage regulation circuit that will maintain your unit at 100% power. The amber ready light will glow when the unit is at 85% power: an acceptable level for most picture taking. The ready light will blink when the unit is at 100% power and you will hear an audible pulsating signal caused by the monitor circuit electronically switching the power supply on and off. This power level is automatically maintained until the flash is fired; assuring consistent and repeatable results and, at the same time, reducing battery drain by as much as 50%. NOTE: The monitor circuit does not function when using the Dual-Voltage AC adapter or Sunpak 510 Volt Power Pak accessories.

Care of Your Auto 411

STORAGE
If you don't use your Auto 411 for several weeks, or if you plan to take it on a trip, the accessory compartment case is recommended. This case will not only hold your Auto 411, but its many accessories. Also be sure to remove the battery pack before storage to prevent possible damage due to battery leakage.

TURNING OFF UNIT
When you finish using your Auto 411, the ready light will still be glowing when you turn the unit off. Do not discharge you Auto 411 before putting it away. The next time you use it, the capacitor in your flash will reform faster and the life of your Auto 411 will be extended.
MAINTENANCE

If your Auto 411’s reflector window becomes dirty, use one drop of lens cleaner and 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.

<table>
<thead>
<tr>
<th>Manual Power Ratio</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>
<th>500</th>
<th>640</th>
<th>800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>50</td>
<td>56</td>
<td>63</td>
<td>70</td>
<td>.80</td>
<td>.89</td>
<td>100</td>
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<td>126</td>
<td>141</td>
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<td>283</td>
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<td>80</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
<td>1/16</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>17</td>
<td>20</td>
<td>22</td>
<td>25</td>
<td>28</td>
<td>31</td>
<td>35</td>
<td>40</td>
<td>44</td>
<td>50</td>
<td>56</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>1/32</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>17</td>
<td>20</td>
<td>22</td>
<td>25</td>
<td>28</td>
<td>31</td>
<td>35</td>
<td>40</td>
<td>44</td>
<td>50</td>
</tr>
</tbody>
</table>

Guide Numbers of Your Auto 411

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

\[
\text{Distances} = \frac{\text{G.N.}}{f/\text{number}}
\]
Sunpak Auto 411 Specifications:

<table>
<thead>
<tr>
<th>Guide Number</th>
<th>100 (ASA 100 film)</th>
<th>50 (ASA 25 film)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCPS</td>
<td>1770</td>
<td></td>
</tr>
<tr>
<td>With AA Nicad Batteries (4):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of flashes per set</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td>Recyclng time</td>
<td>5 seconds</td>
<td>5 seconds</td>
</tr>
<tr>
<td>With AA Alkaline Batteries (4):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of flashes per set</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>Recyclng time</td>
<td>10 seconds</td>
<td>10 seconds</td>
</tr>
<tr>
<td>With Sunpak 510-Volt (High Voltage) Powerpak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of flashes per battery</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Recyclng time</td>
<td>1 second</td>
<td>1 second</td>
</tr>
<tr>
<td>With Dual-Voltage AC Adapter</td>
<td>7 seconds (at 117V)</td>
<td>7 seconds (at 117V)</td>
</tr>
<tr>
<td>Automatic Distance Range</td>
<td>55” to 35’ at maximum aperture;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19” to 9’ at minimum aperture</td>
<td></td>
</tr>
<tr>
<td>Flash Duration</td>
<td>1/1,000th-1/50,000th second</td>
<td></td>
</tr>
<tr>
<td>Sensor Acceptance Angle</td>
<td>28°</td>
<td></td>
</tr>
<tr>
<td>Angle of illumination</td>
<td>Horizontal 45° x Vertical 60° (Standard Position)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35mm/m lens on 35mm/m camera (Horizontal Position)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50mm/m lens on 35mm/m camera (Vertical Position)</td>
<td></td>
</tr>
<tr>
<td>Color Temperature</td>
<td>5500° Kelvin</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>1.8”x4.3”x4.5” (exclusive of mounting shoe)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>15.7 oz. (less batteries)</td>
<td></td>
</tr>
</tbody>
</table>

Specifications subject to change without notice.