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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 THIS APPLIANCE UNATTENDED WHILE IN USE.
3. DO NOT OPERATE APPLIANCE IF IT 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.

SAVE THESE INSTRUCTIONS

www.butkus.us
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.

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Description of Parts for the Auto 221S

1. Flash Window
2. Battery Compartment Cover
3. Auto Sensor
4. Knurled Lock Ring
5. Hot Shoe Contact
6. Auto/Manual Selector Switch
7. On/Off Switch
8. Built-In PC Cord
9. Film Speed Index Window
10. Film Speed Set Knob
11. Auto Operation Range
12. Distance Scale
13. F/stop Scale
14. Ready Light/Test Button
Description of Parts for the Sunpak 220

1. Flash Window
2. Battery Compartment Cover
3. Knurled Lock Ring
4. Hot Shoe Contact
5. On/Off Switch
6. Built-in PC cord
7. Film Speed Index Window
8. Film Speed Set Knob
9. Distance Scale
10. F/Stop Scale
11. Ready Light/Test Button
Operation

1) To Install Batteries

1. Move Battery compartment Cover (illustrated) in direction shown.

2. Insert two AA (penlight) batteries with the positive (+) ends facing into the unit. Your Sunpak flash may be used with either alkaline or rechargeable nickel-cadmium batteries.

3. Replace the cover by engaging it in the grooves, pressing batteries inwards with your finger, and sliding the cover back in the place until fully closed.

Either 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 flash slightly faster and can be recharged hundreds of times for more economical operation over the long run.
II) Mounting the unit on the Camera

1. Mount your Sunpak flash to the hot shoe of your camera.
   Note: Leave PC cord plugged into the retaining pin on the flash. If unplugged, the flash will not fire through the hot shoe. If the camera does not have a "Hot Shoe", pull out the PC cord (as illustrated) and plug into the camera's flash outlet as shown.

2. If the camera has separate flash outlets (terminal) marked "M" and "X", attach the PC cord to the "X" outlet (terminal). If the camera has a switch (usually around the lens barrel) marked "M" and "X", set the switch to the "X" position.

3. Set the shutter speed dial of your camera to the proper shutter speed for flash synchronization. Refer to the Owner's Manual of your camera for the correct setting.

III) Turn the switch on

Move the On/Off Switch upwards to the "On" position.
The amber ready light will glow as soon as the unit is charged and ready for picturing. This takes approximately 10 seconds.
IV) Automatic Operation: Auto 221 S

1. Adjust the Auto/Manual Selector Switch to either the "Yellow" or "Green" "A" (auto) mark.
2. Set the Film Speed Index Window to the film speed in use. (Example: ASA/ISO 100 film)
3. The automatic operation range and correct F/stop (with ASA/ISO 100 film) will be:
   - Green "A": 2.3' to 36' at F/2. For maximum distance range.
   - Yellow "A": 1.6' to 13' at F/5.6. For maximum depth-of-field control, the greatest sharpness in front, and in back of the subject.
4. The distance indicated by dot lines are maximum operating distance with use of Tele-Kit.

V) Manual Operation: Auto 221 S

1. Adjust the Auto/Manual Switch to "M" (manual) mark.
2. You may determine the proper F/stop by matching the aperture and distance scales on your calculator scale. The distance scale refers to the flash-to-subject distance. (Example: At 13', use F/5.6 with ASA/ISO 100).
3. Then set your camera at the corresponding lens opening. (F/5.6).
• When Tele-Kit is used for Manual Operation, set the Film Speed Scale to the ASA/ISO speed which is double the speed of your film. (Example: if your film speed is ASA/ISO 100, set the flash's ASA/ISO to 200). This will compensate for increased light output by the Tele-Kit for Manual Operation. However, for Automatic Operation, no compensation is necessary.

VI) Determine Lens Opening:
Sunpak 220

1. Adjust the Film Speed Scale to the film speed in use. (Example: ASA/ISO 100).
2. You may determine the proper F/stop by matching the aperture and distance scales on your calculator scale. The distance scale refers to the flash-to-subject distance. (Example: At 13', use F/5.6 with ASA/ISO 100).
3. Then set your camera at to the correct lens opening. (F/5.6).

VII) Take your picture

Take the picture as you would when using a bulb flash. For succeeding pictures, wait until the ready light glows again, re-check flash-to-subject distance and reset your aperture before shooting.
Guide Number and "Flashmatic" Camera Operation

<table>
<thead>
<tr>
<th>If your Film's ASA/ISO Rating is:</th>
<th>25</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use this Guide Number (FT.)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>(Without Tele-Kit)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>57</td>
<td>64</td>
<td>72</td>
<td>80</td>
<td>91</td>
<td>102</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>(With Tele-Kit)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>85</td>
<td>95</td>
<td>106</td>
<td>118</td>
<td>134</td>
<td>150</td>
<td>212</td>
<td></td>
</tr>
</tbody>
</table>

With Flashmatic Cameras

Certain cameras, especially many 35mm cameras without interchangeable lens systems, have a special feature that will provide correct flash exposure automatically after setting your camera to the "Guide Number" of the flash unit you are using. As you focus, the aperture opens or closes depending on the exposure range. Set your camera according to the chart above depending on the speed (ASA/ISO rating) of your film.

Distance = \( \frac{\text{G.N.}}{f/\text{stop}} \)
Accessories Available for the Auto 221S/Sunpak 220

Sunpak Tele-Wide Lens Kit:
Consists of one tele lens adapter TL-4 and one wide angle diffuser. The Sunpak tele lens adapter actually increases the light intensity while decreasing the angle of illumination. The tele lens adapter may be used with 135mm focal length lenses or longer with 35mm format cameras. The Sunpak wide angle diffuser increases the angle of illumination of your flash so that it can cover a 28mm focal length lens on a 35mm cameras. The wide angle diffuser also helps to reduce harsh shadows by scattering the light thus making it ideal for portrait and still life photography. Cat. No. 651-737

To mount the tele lens adapter (or the wide angle diffuser) on the Sunpak Auto 221S or the 220, simply snap it on as illustrated.

<table>
<thead>
<tr>
<th></th>
<th>Auto 221S/Sunpak 220</th>
<th>With Tele-Lens Adapter</th>
<th>Without Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide Number (ASA/ISO 25)</td>
<td>53</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Lens Coverage (for 35mm format)</td>
<td>135mm</td>
<td>35mm</td>
<td></td>
</tr>
<tr>
<td>Effect on Illumination</td>
<td>Approx +1 E.V.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tele Lens Adapter:

Wide-Angle Diffuser:

<table>
<thead>
<tr>
<th></th>
<th>Auto 221S/Sunpak 220</th>
<th>With Wide-Angle Diffuser</th>
<th>Without Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide Number (ASA/ISO 25)</td>
<td>26</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Lens Coverage (for 35mm format)</td>
<td>28mm</td>
<td>35mm</td>
<td></td>
</tr>
<tr>
<td>Effect on Illumination</td>
<td>-1 E.V.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sunpak Auto Slave: Allows your 220 or Auto 221 S, 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 QBC-3 Nicad 3-Hour Charger: This charger is used 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 Basic Grip/6x6 Bracket: The Sunpak Basic Grip features a built-in hot shoe, contoured grip, tripod socket, and allows aiming of the flash in virtually any direction. Supplied with standard 12-position bracket (for use with 35mm style cameras), a PC cord and personalized monogram stickers. The Sunpak 6x6 Bracket can be used with Basic Grip when using 2¼ film format cameras. 
Basic Grip: Cat. No. 651-772 
6x6 Bracket: Cat. No. 651-752
Care of Your Electronic Flash Unit

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 or 30 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 your flashgun's electrical system.

2. Remove Batteries:

If for some reason you do not intend to use your flash unit for a period of several weeks or more, remove the batteries and store them separately.

3. Maintenance:

If your flash reflector window becomes dirty, use one drop of lens cleaner on a lens cleaning tissue. 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.

4. Service:

In the unlikely event that your Sunpak electronic flash requires service, return it to your dealer or the sole U.S. Distributor at the address shown on 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:

<table>
<thead>
<tr>
<th></th>
<th>Without Tele-Kit</th>
<th>With Tele-Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Guide Numbers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With ASA 400</td>
<td>144</td>
<td>212</td>
</tr>
<tr>
<td>With ASA 100</td>
<td>72</td>
<td>106</td>
</tr>
<tr>
<td>With ASA 25</td>
<td>36</td>
<td>53</td>
</tr>
<tr>
<td><strong>BCPS</strong></td>
<td></td>
<td>920</td>
</tr>
<tr>
<td>With 4 AA Alkaline Batteries:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of flashes</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Recycling time</td>
<td>5 sec.</td>
<td></td>
</tr>
<tr>
<td>With 4 AA Nickel Cadmium Batteries:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of flashes</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Recycling time</td>
<td>3 sec.</td>
<td></td>
</tr>
<tr>
<td><strong>Automatic Distance Range:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Auto 221 S)</td>
<td>2.3'–36'</td>
<td>(maximum aperture)</td>
</tr>
<tr>
<td></td>
<td>3.3'–53'</td>
<td>(with Tele-Kit)</td>
</tr>
<tr>
<td></td>
<td>1.6'–13'</td>
<td>(minimum aperture)</td>
</tr>
<tr>
<td></td>
<td>1.6'–18.7'</td>
<td>(with Tele-Kit)</td>
</tr>
<tr>
<td><strong>Flash Duration:</strong></td>
<td>1/3000th sec.–1/45000th sec. (Auto 221 S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/3000th sec. (Sunpak 220)</td>
<td></td>
</tr>
<tr>
<td><strong>Angle of Illumination:</strong></td>
<td>Vertical 45° x Horizontal 60° (Without Tele-Kit)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Covers the format of 35mm lens on 35mm camera.</td>
<td></td>
</tr>
<tr>
<td><strong>Color Temperature:</strong></td>
<td>Most suitable for daylight type color films.</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td>3.6” x 2.5” x 2.2” (exclusive of mounting shoe)</td>
<td></td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>Auto 221 S 6.2 oz. (less batteries)</td>
<td>Sunpak 220 5.7 oz. (less batteries)</td>
</tr>
</tbody>
</table>