
TECHNICAL INFORMATION

Forensic Alternative Light Source Kit

Catalog No. FAL3000

INTRODUCTION

Physical evidence is a crucial part of any criminal investigation and the FAL300 Forensic Alternative Light Source simplifies locating items of forensic interest. This compact, self-contained light source offers unlimited freedom to move about the crime scene. The instrument may be hand-held in two different positions or mounted on a standard photographic-type tripod. Battery operation permits searching a multitude of surfaces, even when working in the tightest situations, and especially when searching for microparticle, physiological or latent print evidence.

The FAL300's high-intensity discharge Xenon lamp in conjunction with a series of six bandpass filters (365-530nm), provides all of the lights needed to identify many forms of physical evidence: semen, saliva, other materials with natural fluorescence, and fluorescent powders and dyes. High intensity white light is available for thoroughly scanning the crime scene. The filters are contained in two sliding filter arrays for quick selection of individual wavelengths and changeover from one array to the other. Detents are machined



into each array providing positive positioning. Each filter is labeled for easy filter selection.

The intense light source and low-loss filters simplify photography when the camera is equipped with the appropriate barrier filter. The FAL3000 kit is supplied with three 52mm barrier filters: Orange, Yellow and Red.

The FAL300 give superior high intensity performance, lasting up to 2 hours of constant use on one battery charge. The battery pack is easily charged, and can be left on the charger without any risk of overcharging. An optional AC conversion kit is available to use the FAL300 without the battery pack.

The FAL300 is used to assist in locating the following kinds of evidence:

- *Hair*
- *Latent fingerprints*
- *Treated fingerprints*
(*DFO, fluorescent powders, fluorescent dyes, etc.*)
- *Fibers*
- *Certain narcotics & drugs*
- *Bite marks*
- *Physiological fluids*
(*semen, saliva, etc.*)
- *Dust prints*

APPLICATIONS

Caution/Warnings

- Warning! Read all cautionary labels on the battery charger before using.
- Warning! To reduce risk of injury, chargers should only be used to charge SIRCHIE battery packs. The charger may damage or cause other types of batteries explode, resulting in personal injury and/or property damage.
- Caution! Do not expose charger or battery pack to precipitation or allow contact with water.
- Warning! DO NOT USE AN EXTENSION CORD with the battery charger. Use of improper extension cord could result in a risk of fire and electric shock.
- Caution! DO NOT EXPOSE batteries to temperatures exceeding 120°F (50°C), which can cause deterioration.
- Caution! DO NOT CHARGE BATTERY PACK when the temperature is BELOW 40°F (4°C) or ABOVE 104°F (40°C). This is very important for proper operation.
- Warning! DO NOT INCINERATE BATTERY PACK. It can explode in a fire.
- Warning! DISPOSE OF EXTENDED LIFE BATTERIES PROPERLY. These are rechargeable sealed lead acid batteries. Recycle and/or dispose of according to local regulatory laws.



DFO processed latent print @ 505nm, viewed with orange barrier filter.

GETTING STARTED

Charging the Battery Pack:

1. Plug the battery charger into a standard wall outlet (120V AC US).
2. Plug the battery pack into the battery charger (see Fig. 1).
3. The battery is charging when the yellow indicator light is lit.
4. When the battery reaches 80% charged, the green light will blink.
5. When the battery is completely charged, the green light will stop blinking and remain lit.
6. The battery can remain on the charger after charging is complete and the charger will maintain the charge without damaging the battery.

Operation:

1. Attach the handle by lifting one of the two locking slides and placing in either the handle or pistol position.
2. Select the Sliding Filter Array to be used and insert it into the slot behind the lens. The user should be able to read the label on the slide from the rear of the instrument.
3. Place battery pack on belt or use the shoulder sling provided.
4. Place the power cord into the power jack on the top side of the light body until it snaps into place (see Fig 2).
5. Turn the power on by pressing the power switch forward into the ON position.
6. Use by sweeping the area with the light circle. The light will be more intense the closer the unit is to the subject viewing area.



FIGURE 1



FIGURE 2

The FAL3000 should be used to examine the crime scene, rotating through the various filters for the different types of evidence.

TABLE I: Choosing the correct light for various types of evidence

USAGE CHART			
Evidence Type or Use	Light to Use	Goggles	Camera Filter
Bodily fluids, semen	365nm	UV, yellow, orange	NONE
Bone fragments	365nm	UV, orange	NONE, orange
Latent fingerprints in oils, grease	450nm	Yellow	Yellow
Fluorescent powders (most)	415nm, 450nm	Yellow, Orange	Orange
DFO treated latent prints	450, 470nm	Orange, Red	Orange
Cyanoacrylate stained with Basic Yellow	450nm, 470nm	Yellow, Orange	Orange
Cyanoacrylate stained with Rhodamine G	470nm, 505nm	Orange, Red	Orange
Trace evidence on blue/green background	530nm	Orange, Red	Red
General crime scene search	White	NONE	NONE

Tripod Use

The operator is afforded hands-free operation with the professional duty included. The lamp assembly is equipped with a 1/4-20 threaded mounting socket and the tripod features a removable mounting coupler.

MAINTENANCE

No field repairs to the instrument or battery charger are recommended. If the instrument will not function and you have determined that the batteries are fully charged, and that the lamp has been replaced, please contact Customer Service at 800-356-7311 for a return authorization.

General:

- The outside of the unit can be cleaned with a mild detergent and water. Do not immerse in any liquid.

- The projector lens and filter slides should be cleaned with a lens cloth or lens paper **ONLY**. Paper products and other cleaning materials will damage the surfaces.

Replacing the Batteries:

- The batteries are rated for over 300 charging cycles. When the battery charge lasts less than 30 minutes, the batteries should be replaced.
- Replacement batteries should be ordered through SIRCHIE, No. FAL309 2-6V DC sealed lead acid 8Ah.
- Remove the batteries from the battery case.
- Remove the cords from the battery terminals (Fig. 3).
- Remove the connection cable from between the batteries.
- Place the connection cable on the new batteries.
- Install the cords, being careful to connect the positive cord to the positive terminal as marked.
- Place batteries back into case.

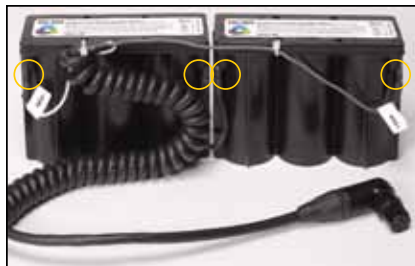


FIGURE 3—Battery terminal locations.

TROUBLESHOOTING

- If the unit fails, the battery, fuse, or lamp may be at fault. To troubleshoot, first make sure the battery is fully charged.
- If the battery is fully charged, follow the instructions below to check the fuse. If necessary, replace the fuse.
- If the fuse is OK, replace the lamp as directed below.
- If these steps do not fix the unit, return for repair.

Lamp Replacement

CAUTION: When it becomes necessary to replace the lamp, remove the battery and allow the instrument to cool down before proceeding.

1. Grasp the main barrel and twist counterclockwise until it reaches the end of the threads. Carefully lift the barrel away from the instrument (Fig. 4), being careful not to touch the lamp as it may be hot.
2. Place instrument vertically on a flat surface. Remove the Spacer Ring.
3. Use a magnetic Phillips screwdriver to loosen and remove the two clamp screws (Fig. 5). This will prevent the screws from falling down inside the instrument. Carefully remove the clamps.
4. While holding the lamp assembly in one hand, carefully unplug the lamp power connector (Fig. 6). Set the expired lamp aside.
5. Unpack the new lamp assembly and plug it into the lamp connector. **CAUTION!** DO NOT touch lamp as this will significantly reduce the life of the bulb.
6. Reinstall both clamps one at a time. Do not fully tighten the first clamp. Position the second clamp and tighten its screw, and then fully tighten the first clamp.
7. Reinstall the Spacer Ring and screw the main barrel onto the instrument.
8. Reinstall the battery and test the lamp.



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7

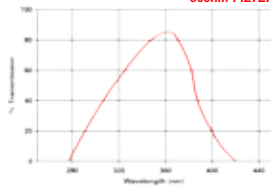
Fuse Replacement

- The fuse access is located on the back left side of unit. Using a small flathead screwdriver, push down and turn knob 1/4-turn counterclockwise to expose the fuse.
- Replace with 5mm x 20mm 6.3 amp type slow blow 250V fuse. Reinsert fuse knob, push down and turn 1/4-turn clockwise until it locks in place.

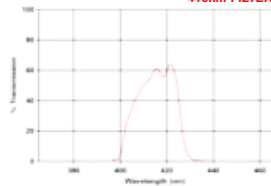
EXCITATION FILTER SPECTRAL CHARACTERISTICS

Approximate wavelengths of excitation filters depicted in nanometers (nm).

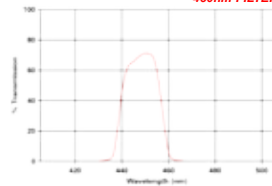
365nm FILTER



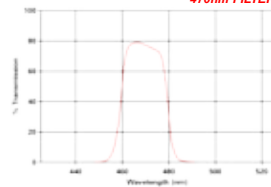
415nm FILTER



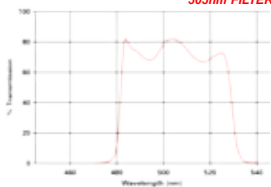
450nm FILTER



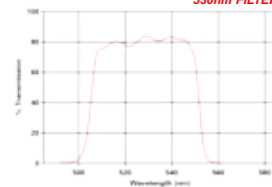
470nm FILTER



505nm FILTER



530nm FILTER



FAL3000 CONTENTS:

- 1- FAL300 Lamp Assembly with High-Intensity Xenon lamp
- 2- FAL309 Battery Pack
- 1- FAL201F Sliding Filter Array (365nm, 415nm, 450nm, white)
- 1- FAL202F Sliding Filter Array (470nm, 505nm, 530nm, white)
- 4- Barrier Filter Goggles (Yellow, Orange, Red, Clear-UV)
- 3- 52mm Camera Lens Barrier Filters (Orange, Red, Yellow)
- 1- 022-0139 Battery Charger
- 1- Professional Duty Tripod
- 1- Durable Molded Carrying Case w/precut foam insert; Dimensions: 28"W x 17"H x 10.5"D (71.1cm x 43.2cm x 26.7cm); Weight: 25 lbs. (11.5kg)



FAL3000 SPECIFICATIONS:

Sliding Filter Arrays

FAL201F: 365nm, 415nm, 450nm, white light

FAL202F: 470nm, 505nm, 530nm, white light



No. FAL300 Lamp Assembly

Light Source:

- 35-watt, high intensity Xenon lamp/igniter
- Approx. 3000 hours of operation
- Color temp.: ~4200° K. Lamp
- Output: 3200 lumens
- Dimensions: 14.75" x 5" x 5" (without handle) (375mm x 127mm x 127mm)

Weight w/battery & filter: 3.74 lbs. (1.72kg)

Cooling: 12V DC 11CFM quiet running fan

Cat. No. 022-0139 Battery Charger

- Seven hour charging time
- Input: 110/120 VAC 60Hz (U.S. Only) 110/220 VAC 50Hz (International)
- Output: 12V DC, 1.25A
- Automatic voltage regulation, monitors battery condition
- Weight: 1.4 lbs. (0.64 kg)
- Dimensions: 5.75" x 2.75" x 1.63" (146mm x 70mm x 41.3mm)

No. FAL309 Battery Pack

- 2-6V DC 8Ah series wired rechargeable sealed lead acid batteries
- Approx. 120 minutes of continuous operation from fully charged battery
- Dimensions: 11.5" x 2.75" x 5.5" (292mm x 70mm x 140mm)
- Weight: 6.1 lbs. (2.8kg)