

LET YOUR LIGHT SHINE BRIGHT

Keep your Nightsun® Searchlight Bright and on Point

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Chances are you've seen a news clip of a law enforcement helicopter on scene with the SX-16 Nightsun® searchlight on a stolen car pursuit, or the SX-5 Starburst, on an EMS helicopter landing to rescue a life. In both scenarios, the searchlight came to aid as a multi-faceted mission tool to provide a daylight condition in the middle of the night. If you have ever worked on a law enforcement helicopter, you've probably worked on a Nightsun® searchlight. It's a solid, simple and reliable tool that only receives attention when a lamp fails. However, continued use results in wear and tear that over time diminishes the performance of your Nightsun® searchlight system. Why let your searchlight performance fall into the dark abyss?



SX-16 Nightsun®

Follow along as we shed some light on how to keep your SX-16 Nightsun® and/or SX-5 Starburst Searchlight shining bright and on point like new.

- 1. Improve your lamp life** – A lamp should provide at least 400 hours of life during normal use. Several factors can contribute to a reduction in lamp life. Aside from short usage periods and short or non-existent blower cool downs, hardware factors such as inefficient cooling blowers, dirty air filters and poor cables or connections are major contributors in reducing lamp life. The following maintenance tips and recommendations will help increase the life of your lamp and help keep costs down in the long run.
 - a. **Proper cooling-** Operating methods you should encourage
 - i. A constant reminder to the flight crew advising them that it is very important to turn the system power switch back on, so as to activate the cooling blower for at least 5 minutes after using the searchlight and extinguishing the lamp. This action will properly cool the lamp down and prevent overheating and premature lamp failures.

- ii. Cooling system maintenance - A clean air filter and efficient cooling blower will keep your Lamp within its optimum temperature range for prolonged lamp life. Further information on this can be found in the Nightsun[®] Maintenance Manual. However, as a quick recommendation;



Air Filter

1. Clean your filter with compressed air or wash it warm water and soap. Replace the air filter if the element is brittle.
2. Replace your cooling blower or upgrade to a new brushless cooling blower. Spectrolab has introduced a new brushless cooling blower with a Mean Time Between Failure (MTBF) of 10,000 hours. This is a major improvement over the standard blower which has been rated by the manufacturer with an MTBF of approximately 400 hours. The new brushless blower also yields a higher Cubic Feet per Minute (CFM) air flow than the standard blower, prolonging lamp life. Replacing the brushes on your blower won't always restore proper efficiency and is not recommended by the manufacturer, so it's always better to replace the entire blower assembly or upgrade to the better brushless configuration.



Brushless Blower

2. Cable your Cables & Connections

- a. Cables – external cables will wear more quickly as they are exposed to the environment. Check the cables frequently for frayed or broken wires to ensure proper power conductivity to the searchlight. This will help keep your searchlight trouble free.
- b. Connectors – A poor connection can lead to increased electrical resistance, resulting in lamp ignition difficulties. Ensuring that your connector pins and sockets make solid contact will help the searchlight and lamp receive all the power it needs optimum reliable performance.

3. **Improve your beam intensity** – Keep your Nightsun[®] shining bright as new by simply cleaning and maintaining your reflector and front window. The reflector will degrade over a period of time as it is exposed to the environment. As a result the light beam intensity will diminish. Spectrolab has introduced a new EVR Coated Reflector for their SX-16 Nightsun[®] Enhanced Searchlight that yields 20% more light output.



Reflector

- a. Proper Reflector Conditioning & Maintenance – a periodic cleaning of your reflector with dish washing liquid, distilled water and a cotton ball is good to preserve the reflector's surface for optimum performance. The useful lifetime of a reflector is typically between 3 to 5 years, depending on the local environment and hours of use. If the reflector is cloudy, pitted, has corrosion, or if the reflective coating has peeled off, it must be replaced.
 - b. Proper focus adjustments – Over time a searchlight can lose its proper focus adjustment and that will lead to an undesired beam pattern and shadows. Follow the focus adjustment procedures in your Nightsun[®] manual to ensure you have the best possible light output and pattern.
4. **Improve your searchlight stability** – Sometimes your Nightsun[®] may seem unsteady when on target. Though other factors contribute to this, such as aircraft vibration and slipstream characteristics, the shake is largely due to excessive gear play or backlash in the gimbals azimuth and elevation gearboxes. Over a period of time and use, the unsteadiness increases if the gimbals gearboxes are not periodically adjusted. Maintaining your gimbal and gearboxes to proper specifications will help keep your searchlight beam on target.



Azimuth Gearbox

- a. Adjust your gearboxes – There are several factors that can cause too much play in the gearboxes and that can cause the searchlight beam to not be steady on the target. There are several ways to remove excessive play in the gearbox. These remedies include adjustment of the gear-train, worm-gear replacement, shimming of the worm or the worm gear, and adjustment of the worm-shaft preload and shims. The Nightsun[®] maintenance manual provides more detail on the procedure of adjusting the gearboxes.
- b. Upgrade your gearboxes – Spectrolab has introduced a new gearbox design with internal improvements to remove gear backlash. The new elevation and azimuth gearboxes come standard on all new gimbal assemblies, including the new enhanced & SpectroLink configurations and are retro-compatible with all older configurations.
- c. Upgrade your gimbal arm – Spectrolab has introduced a new “enhanced” gimbal arm with structural features that improve lateral rigidity to reduce aircraft vibration and help keep the searchlight beam on target. This new gimbal arm has no service life limit, giving you another reason to upgrade when your current gimbal arm expires.



Enhanced Gimbal arm

- d. Read the maintenance manual – If you do not have a maintenance manual, contact Spectrolab’s Customer Service Department and ask for one and read more details of how to properly maintain your searchlight.

These are just some quick points on quick service tasks that you can do to help keep your SX-16 Nightsun[®] searchlight shining bright and on point. Check Spectrolab’s website for support, news and information regarding your local authorized service center

(<http://ils.spectrolab.com>), and always feel free to contact Spectrolab's Customer Service Department (1-800-936-4888) for any questions or comments you may have.

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