

Plug a charged 4.8V to 12V battery pack into the power plug, making sure to observe correct polarity. The higher the battery voltage, the wider the flow control range and the higher the maximum flow rate. **For best results, a 6V to 9.6V battery is recommended unless a higher fluid volume is required.** The SkyWriter draws less than 250 mA, so a 150 mA or greater battery pack is sufficient.

For initial setup, plug the radio connector into a switched channel such as landing gear or flaps. Turn on radio, make sure switch is off (100% negative) for at least 5 seconds and turn on. If the pump pushes fluid toward the muffler, the plumbing is installed correctly. If it tries to pump toward the tank, reverse the yellow tubes on the smoke pump.

Radio Setup for Non-programmable Radios

Use a switched channel to switch the SkyWriter on and off. Since there is no trim control on a switched channel, there is no flow control, and flow will be at maximum when the switch is on. Note: Do not run the SkyWriter dry more than 30 seconds as this can cause severe damage to the unit.

Radio Setup for Programmable Radios

The microprocessor on the SkyWriter control board thinks like a servo. When the pump is off, the processor is responding to a full throw in the negative direction. When it is pumping, it responds to a throw past neutral in the other direction, and sets pump motor speed based on the positive throw percentage.

You will have to determine the best settings while the engine is running at normal operating temperature, as the optimum flow rate depends on the engine, muffler, ambient conditions and the specific smoke fluid.

For simple switched operation with single speed flow control, use the ATV settings on the chosen switched channel to set desired flow rate. Note: The off position must be a value below zero, as zero is neutral. We recommend off be negative 100%. Unless the pump sees a suitable value below zero for the off command, it will not initialize properly. Refer to your radio's instruction manual for specific programming steps if needed.

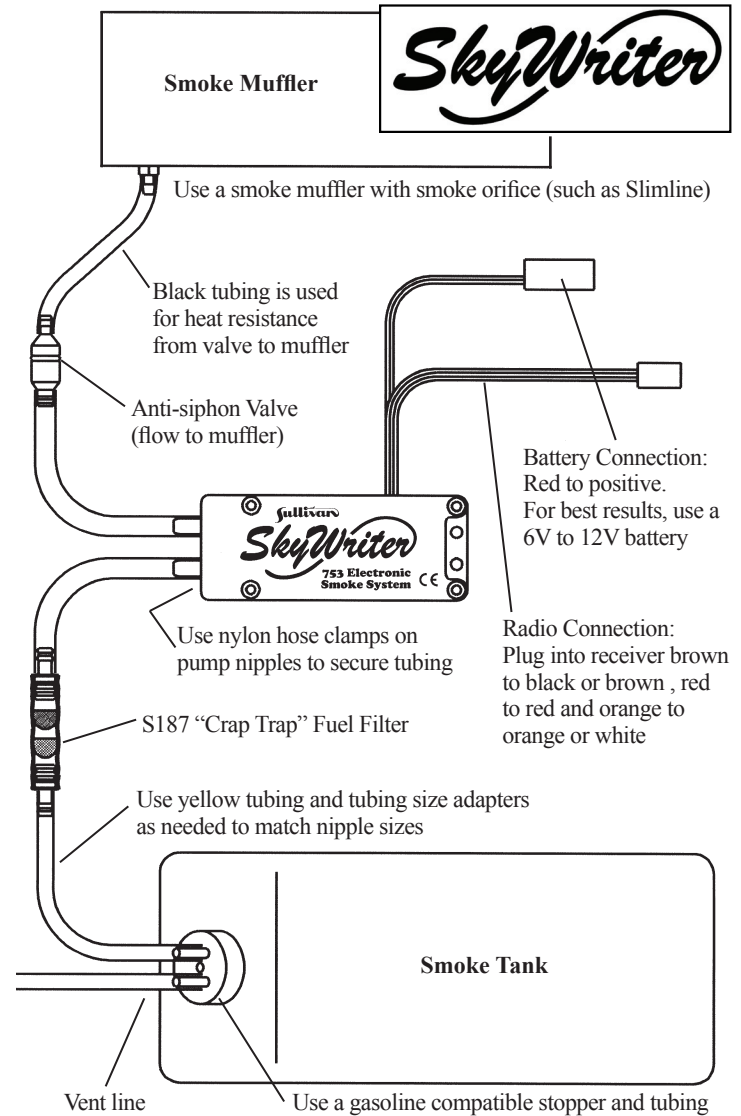
For mixed control (slaving the SkyWriter to the throttle control) set up as above then follow the radio manufacturer's instructions for mixing channels. Normally, a low setting would be used at idle and a higher setting used at full throttle.

Maintenance

Old smoke fluid can become "gummy" after a period of time. We recommend back-flushing your SkyWriter smoke system with a moderate solvent periodically. Be sure the solvent is completely removed from your lines before pumping fluid into a hot muffler.

Smoke Fluids

We recommend the use of commercially available smoke fluids. These formulas will not harm your paint or covering film and will produce the thickest clouds of white smoke. Most homebrew smoke formulations will also work although Sullivan will not assume any risks involved in the development or use of these formulas.



Instructions

Install the SkyWriter smoke pump where ever convenient on the aircraft. It will work in any position and can be mounted in foam or directly to the airframe. The SkyWriter is CE certified for radio interference filtering.

Plumb the system as shown above. Use the aluminum adapters as needed to match tubing diameters to nipple sizes. We suggest using twist-ties (supplied) or other clamps on tubing connections. It is easiest to do a system test before final installation. We suggest plumbing things up outside of the plane and operating it once as outlined in "Initial Setup" to verify flow direction and radio settings.

The purpose of the anti-siphon valve is to maintain pump prime. Before initial use, the pump must be primed by drawing smoke fluid through the pump. Test the valve's orientation by blowing air through it. Air should only flow through the valve in one direction.

The black Nitrile tubing is used for the valve-to-muffler connection as it can withstand the higher temperatures from muffler heat. The remainder of the smoke system plumbing should be done with suitable yellow fuel tubing.

To avoid air in the lines, which can cause the pump to lose prime, we recommend a three line tank stopper system, using the third line for filling. To check for a full tank, route the vent line where overflow can be seen.