

Jabiru Cold Weather Starting Tips

As winter approaches, it's important to know how to maintain and operate your Jabiru engine in cold weather. Jabiru Australia PTY LTD put this checklist together to help owners understand how to keep their engine starting smoothly despite the cold. (And we added a few notes as well...)

Spark plugs. Spark plugs must be within the set life and be gapped correctly. In winter spark plug gaps can be reduced as low as 0.020" to allow the plugs to fire more easily.

Ignition leads. Ignition leads must be in good condition. Ensure all end terminals are tight and fitting to the distributor & spark plugs correctly. Don't forget to check the plug where the ignition coils connect to the distributor cap. Jabiru USA recommends replacing ignition leads every 2 years.

Distributor assembly. Check that the distributor & rotor are in good condition. Check that there is no moisture inside the cap and that all the electrical terminals are clean.

Air and Fuel Filters. Check that all filters are clean.

Battery condition. The life of a battery varies but is generally less than 4 years. Jabiru USA recommends replacement of the battery every 2 years. Odyssey batteries, used in our Jabiru LSA, are readily available at Batteries Plus retail stores and motorsports stores.

Preheat. We recommend preheating the engine when ambient temperatures are below 40F. Between 32 and 40 degrees, a preheat can be as simple as warming the intake manifold with a hair dryer to enable more fuel to vaporize. Cold intake pipes tend to allow fuel to condense on the sides of the pipes, making it harder to atomize and get up into the combustion chamber. The Tanis electric preheater is recommended as the easiest and safest way to preheat a Jabiru engine. Propane and kerosene heaters are not recommended because direct hot air may damage the cowling and soft hoses in the engine compartment.

Starting method. The recommended procedure is to hold the choke fully ON and the throttle fully CLOSED. The Bing carburetor uses an enrichment-type choke system (as opposed to a butterfly-type choke) which will ONLY work properly if the throttle is fully closed. When the throttle butterfly is closed it creates a vacuum which is then used to suck fuel through the choke jet – if the throttle is not closed there is less vacuum and the choke does not work as designed. Also note that there is a tendency for the choke to spring back slightly from the ON position if the knob is released – operators are recommended to hold the knob fully ON when starting to make sure it stays properly on.

Operation. Minimize the time spent at low RPM with high-powered devices running. At low RPM the alternator produce virtually no power – certainly not enough to run landing lights, strobe lights and avionics suites. The deficit between the power draw of these systems and the alternator output must be drawn from the battery. Excessive operation like this will drain the battery and significantly reduce the output available for cold starting the next day. The Transponder, in particular, is a high-draw item that should be left off during warm-up until you are ready for flight.

Fly regularly! Any vehicle will be harder to start if it goes a long time between outings. If the aircraft has not been flown for a few weeks then charging the battery before attempting a start is recommended. Standing also affects the quality of the fuel in the carburetor and fuel system – volatile elements in the fuel can evaporate, making it harder for the carburetor to atomize it properly.

Cold Weather Accessories. A Trickle Charger can be left plugged in all the time to keep your battery maintained. A Tanis engine heater is also available from Jabiru USA. This can be left plugged in all the time during the winter and will keep your oil and cylinder heads warm. Tanis cowl blankets are tailored to fit standard Jabiru cowlings and are also available for you to keep your engine warm between flights on those coffee & breakfast outings on cold winter days.

For S-LSA aircraft, the following items should be checked by a mechanic:

Starter motor condition. Check that the bushes in the starter motor bendix drive housing are in good condition. Ensure the brushes are not worn out, that the commutator is clean and all electrical connections are clean. This may require removing the heat shrink from the soldered connection on the starter motor and checking for corrosion.

Ignition coil gaps. Check that the coils have been set with the correct air gap from the flywheel magnets. This gap should be no more than .010". If the gap is larger, it needs to be adjusted to provide a stronger spark.

Carburetor. Check that the carburetor float level is set correctly and that the carburetor is clean and in good condition. Ensure there is no debris blocking jets (including the choke jet) etc.

Choke Jet. The choke jet needs to have a bore of about 1.2mm. This gives the engine more fuel when the choke is applied, making it easier to start. New engines and aircraft have been set at this size since around February 2011, however older units should be checked and, if necessary, enlarged.

Idle speed. Ensure that the idle RPM is set correctly. If the idle is too high the throttle butterfly will be open slightly – which will prevent the choke from working properly, as described above. Idle RPM on the ground should be 800-900 RPM.

As always, if you or your mechanic have any questions about maintaining your Jabiru, don't hesitate to give us a call at (931) 680-2800. Have fun & stay warm out there!