



Airbox (Air Filter) Shroud/Seal Assembly

What does it do?

A lot of Cessna airplanes are flying with a broken or missing Air Box Shroud/Seal assembly. For many people, they seem to be unimportant because airplanes can fly without them. So, what does the shroud *actually* do?

Cessna engineers had a reason for putting a sealing shroud around the air cleaner. The shroud provides a seal between the air filter and the cowling, which prevents RAM air (from the propeller and forward motion of the aircraft) from entering the lower cowl. But why is that important?

The engine cooling system depends on RAM air to enter the cowl opening on top of the engine. The air circulates around the engine and then draws into the lower cowl area. The opening of the aft lower cowl creates low pressure, which helps draw the turbulent air out into the slip stream. The Airbox Shroud prevents the high-pressure RAM air from diluting the low pressure created in the lower cowl. In essence, the shroud helps cool the engine by improving air flow through the cowl. The shroud is particularly important during climbs, ground operations, and hot weather flying.

Why does the Cessna Shroud Fail So Often?

The engine is constantly in motion, as a reaction to the firing of each cylinder. The cowl is fixed to the airframe with little flexibility. Since the airbox is a long way from the center of engine motion, it moves a lot in relation to the cowling. The seal friction restricts the airbox motion, which transfers a lot of energy into the plastic shroud. The plastic also ages with oil, solvents, and radiant heat. This plastic degradation combined with the constant energy from motion quickly fails the plastic shrouds. It is very important that you ensure that the Shroud seals are in proper position after the lower cowl is installed.