

1. Installation manual (new and Rev.D)
Attached to email
2. Airplane flight manual supplement
Attached to email
3. Normal procedures

There are two notable differences in the pre take off procedures for the supercharged 182 and they center on the fuel pumps and fuel pressure and the boost cutoff. Each pump is tested at run up to be sure it is operational and the fuel pressure is in the green (4.0-7.0 PSI). Then both are "ON" for takeoff although either pump will supply adequate pressure and volume.

If the battery WAS NOT fully charged during the before takeoff check list the fuel pressure would be low and possibly the "FUEL PRES LOW" annunciator would illuminate, which comes on at 1.5 PSI. If the battery WAS fully charged but the electrical system was not charging the "ALT INOP" annunciator would illuminate.

As the fuel level in the carburetor goes up and down air goes in and out of the fuel bowl through an opening just inside the mouth of the carburetor. When the supercharger is installed this air passage becomes pressurized and at RPMs above approximately 1700 the pressurized air in the fuel bowl pushes the fuel out and back to the fuel tank. The electric fuel pumps counter the air pressure so that the fuel enters the float chamber correctly.

If the electrical system failed completely, including the battery, it would have the same effect as turning off the fuel pumps. With the fuel pumps off and at RPMs over approximately 1700, the fuel bowl would run dry in 5-10 seconds. When the fuel bowl runs dry the engine begins to die, but as it begins to die and the RPM lowers the boost lowers and fuel begins to enter the fuel bowl. The engine roars back to life, the boost increases, the fuel is forced out of the bowl, and the cycle repeats. The whole cycle takes 5-10 seconds and will continue as long as there is fuel in the tanks. The cycle can be stopped by pulling the Boost Cutoff.

4. Emergency procedures

See AFMS attached to email

5. Boost pump operation explanation

The Boost Cutoff is operated during the before take off check. The pilot looks for an RPM drop but it is slight and difficult to detect at the low RPMs of the runup. The real reason the Boost Cutoff check is done is so that the control remains familiar and hits the full stop position, that is, it does not become something that goes for years without ever being touched.

If the engine cannot be restarted during an engine failure the Boost Cutoff should be pulled. Pulling the Boost Cutoff rotates a butterfly valve in the supercharger duct to approximately 52 degrees.

This cuts off the boost pressure to the engine and makes the engine think it is normally aspirated. At this point the aircraft can operate on gravity fuel pressure if the fuel pumps are inop.

6. Loss of electrical power explanation

Unknown