



Figure 139—B-2  
Turbo Supercharger  
Installation

## 9. TURBO SUPERCHARGER, INDUCTION AND EXHAUST SYSTEM.

### a. DESCRIPTION.

(1) Each engine is individually equipped with a type B-2 General Electric exhaust-driven turbo supercharger. Duct inlets for carburetor air and intercooler air are paired near the nacelles in the leading edge of the wing. The turbo is installed in the engine exhaust system at the bottom of the nacelle. On the outboard nacelles the location is forward of the front spar, but on the inboard nacelles the wheel well forces installation of the turbo (and intercooler) aft of the front spar.

(2) The induction system is designed so that carburetor air must pass through the turbo supercharger impeller and intercooler at all times. Exhaust gas pressure drives the supercharger impeller by being forced to flow through a nozzle box where the gases are directed against a turbine wheel mounted on the lower end of

the impeller shaft. The flow of exhaust gas through the turbine wheel is controlled by the waste gate in the nozzle box; thus, all or a part of the exhaust gas may be utilized to obtain the desired manifold pressure. The exhaust tail pipe terminates at the turbo.

(3) Carburetor air flows into the duct system at the wing leading edge, and passes to the turbo supercharger impeller, by which it is compressed and forced through the intercooler into the carburetor. A relief valve is provided in the supercharger intake duct to permit the entrance of air to the supercharger in case the flow through the inlet is accidentally restricted.

(4) Selection of either filtered or unfiltered air for the carburetor is possible through a tee joint and valve assembly installed in the intake duct to the turbo supercharger. Filtered air is obtained by adjusting the control valves so that air from inside the wing (or nacelle) passes through cleaning elements before being introduced into the supercharger. Spring-loaded relief valves,

