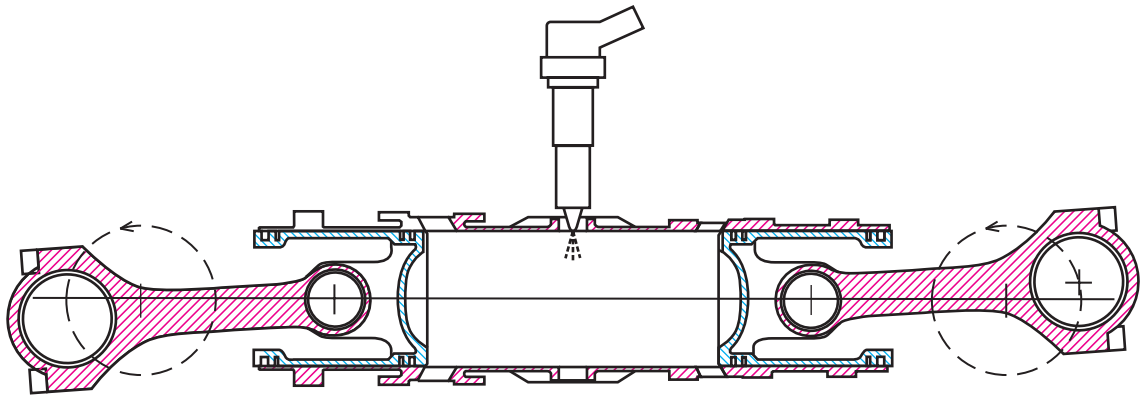


Gemini 100



SCHEMATIC VIEW ONLY

Principles of operation

The above schematic view shows the basic layout of an opposed piston engine in which the combustion chamber is formed between two pistons occupying the same cylinder. Inlet and exhaust ports are formed by orifices in the cylinder walls, opened and closed by the movement of the pistons in the cylinder. Induction and scavenging are achieved by positive pressure from an engine driven supercharger.

As well as eliminating the camshaft, valve gear and cylinder head joints that are the main sources of unreliability and high maintenance activity in conventional aircraft engines the simplicity of the layout allows significant weight and cost savings to be made in a well designed opposed piston engine.

In higher power variants of the engine a turbo charger is used to increase power and offload the supercharger drive to the further benefit of both power and fuel efficiency. Powerplant Developments Ltd in co-operation with our associated company Weslake has completed design studies for Gemini engines of up to 600 horsepower.

Crankshafts

The twin half-length crankshafts of the Gemini engine being shorter than conventional crankshafts have greater torsional stiffness. In addition, to ensure that crankshaft problems often seen in conventional aircraft engines are eliminated very high quality steel, "EN40", is used for Gemini crankshafts. This is a material frequently used in Formula One engine crankshafts that routinely run at up to 19000 rpm.

Installed weight

To reach the total installed weight of a liquid cooled engine used to replace a conventional aircraft engine allowance must be made both for the weight of the coolant, the heat exchanger (radiator) and the associated hoses and fittings. The installed weight of a Gemini 100 is therefore less than 75.5kg (166lb) compared with, for example, a Continental O-200 that produces the same 100 hp but weighs nearly 200lb including accessories or a 112hp Lycoming O-235 that weighs 242lb.



**Powerplant
Developments**