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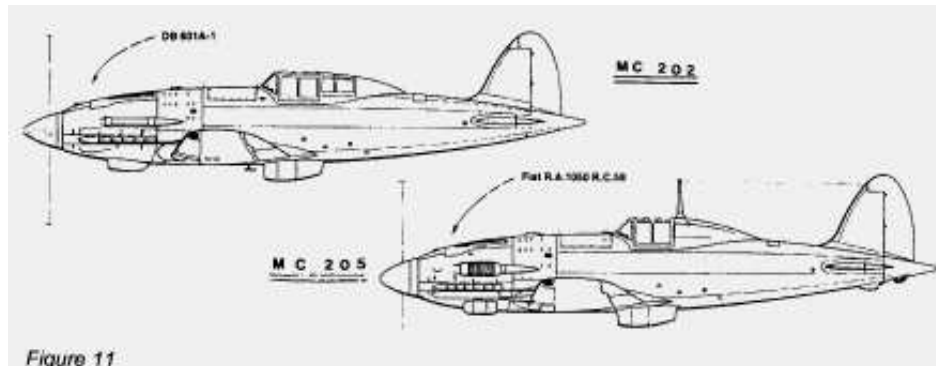
Cooling Systems

For Automotive Conversions

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Part 3



The third example is the Macchi MC.202 and MC.205. Figure 11 shows in the side view, the radiator well back under the fuselage, but ahead of the wing trailing edge. Right in the high pressure area of the wing. This is where a radiator or air intake should be located for top performance. The oil cooler is well out of the propeller pulses. With that clean cooling system, the radiator could be kept small and lightweight. This aircraft had no cooling problems and worked very well, even in Sicily. Some wiseguy wanted to move the radiator under the chin, to prove a point. Which he did, (Fig. 12) the engine over-heated in simulated dogfights and the aircraft lost in climb and top speed performance.



Example No. 4 is the Curtiss P 40. The XP-40 had the radiator right in the high pressure area under the wing, located where it belongs. Fig. 13 shows this neat and clean installation, a good, low drag cooling system.



Figure 13

Then they moved the radiator under the chin. The penalty was a larger unit, with high drag, that screwed up the airflow behind that big housing. This radiator was marginal and when the Allison V-1710-39 with 1150 HP was installed on the D-Model, things got really huge and ugly. The designer had initially gone to great pains to keep the flow around the airframe clean, with large fillets on the wingroot and the tail, only to have the airflow screwed up with that monster of a radiator housing (Fig. 14).



Figure 14

The Fairey Firefly is another example. The Mk1 with the 1735 HP Rolls Royce Griffon II B engine had a chin cooler. Figure 15A has all the details of this crappy and ugly installation.

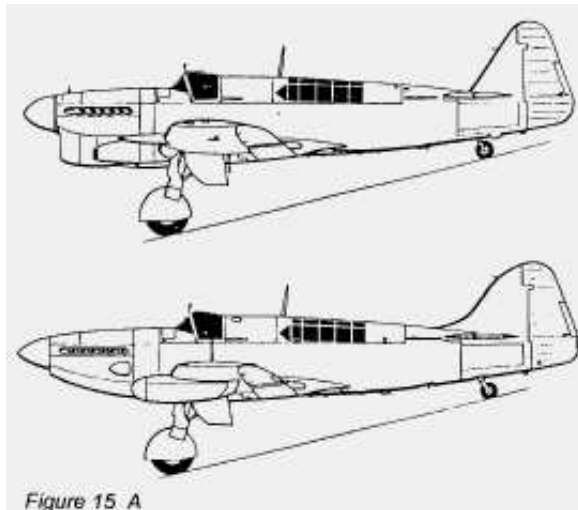
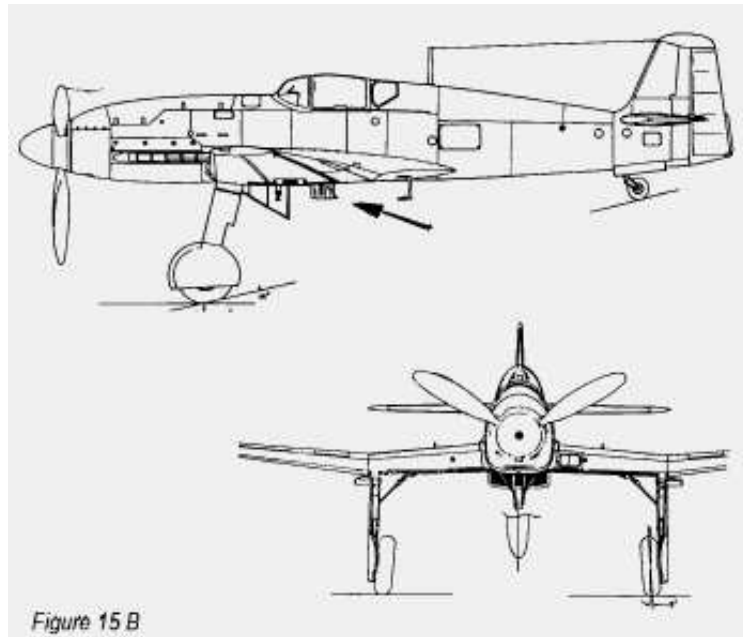


Figure 15 A

When the Griffon 74 with 2,245 HP became available, the chin cooler could not handle the cooling and the radiators got tucked away in the wing. Look at that clean engine cowling (Figure 15A bottom illustration), after the cooling was done right!

The Heinkel HE100 is example No. 6. In Fig. 15B you can hardly make out the short radiator under the wing.



Only the front view shows the housing clearly. This cooling system could handle the 1,020 HP of the DB-601A with capacity to spare. Now go back to the 109B and look at the huge sharkmouth that was needed to handle 340 HP less! Just because the radiator was in the wrong location.