

Note 631949 Cooper versus Ferrari in Formula 2
(and the development over 10 years)

Ferrari V12 2L engines dominated early Formula 2. In 1949 it seemed possible to some commentators that a Cooper 500 cc chassis fitted with an existing JAP 55V2 1,000 cc aircooled engine, mid-mounted, could beat the front-engined “traditional-chassis” Ferrari, or other similar 2L cars, by virtue of a 10% higher Power/Loaded Weight ratio. This did not turn out to be the case in races of any great distance, even on low-speed circuits (egs. Isle of Man, Lake Garda). This was partly due to unreliability. Certainly the Cooper could not defeat the Ferrari on a high-speed circuit (Rheims). True, the Cooper effort was not a massive one relative to the works Ferrari entries in some events. In 1963 Laurence Pomeroy pointed out in ref. (33) (in a simplified analysis) that the influence of drag on the acceleration curve, even at medium speeds, had been overlooked, the Ferrari having around 20% more power in relation to frontal area.

A redesigned JAP 55V2 1,100 cc engine for 1950 did not change the situation, Ferrari having moved on also.

Cooper then turned in 1952 to the more powerful and reliable watercooled Bristol IL6 2L engine, front-mounted – by which time Ferrari had moved even further ahead with the Type 500!

However, via 1,100 cc Sports-Racing and then 1.5L Formula 2 cars, Cooper came to the Grand Prix line in 1959 with mid-engined vehicles substantially superior to Ferrari except on high-speed circuits. In 1960 that performance shortage was rectified with a lower car.

The development of Cooper cars is tabled below.

<u>Cooper chassis</u>				
<u>Date</u>	<u>Car</u>	<u>Wheelbase</u>	<u>Front Track</u>	<u>Engine Mounting</u>
		Mm	mm	
1948	500 cc	2159	1245	Mid
1949	1,000 cc	“	“	“
1952	2 Litre	2286	1270	Front
1955	1,100 cc	2261	1156	Mid
	Sports-Racing			
1957	1.5 Litre	2311	1156	“
	Formula 2			
1959	2.5 litre	“	1181	“
	Grand Prix			
1960	“	“	“	“
		+ 7% of 1948	-5% of 1948	

The Power/Weight advantage of increasing installed power is shown by these figures, where a 240 HP engine was installed successfully on a wheel plan area only 1.5% larger than that of the 38 HP car of 12 years earlier.

The cars all ran on 15” diameter wheels with tyre sections which were increased gradually from 4.00” all round to 5.00” front and 6.50” rear.

An illustration of the new 1950 JAP 1,000 cc engine, representing the 1,100 cc, is given on P.2.

1950 JAP (J.A.Prestwich) 1,000 cc
55V2 80/99 = 0.808 995.3 cc
Al-alloy cylinder barrels with cast-iron liners, Al-alloy heads, Mg-alloy ("Elektron") crankcase.
The Con.-Rod assembly is "fork-and-blade".

Representing

1950 84/99 = 0.848 1,097.3 cc

R = 14; Methanol fuel.

Peak Power (PP) = 95 BHP @ 6,000 RPM.

Weight (W) = 56.7 kg.

PP/W = 1.67 BHP/kg.

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