



Note 5

Delage power 1925 – 1927

Most data sources for the Delage racing cars in 1925 and 1927, which have been selected here as CoY, give the following powers and crank speeds:-

			<u>HP</u>	<u>@ RPM</u>
Type 2LCV	2 Litre	1925	190	7,000
Original type 15-S-8	1.5 Litre	1926	160	7,500
Improved	“ ”	1927	170	8,000

These are the powers entered in Appendix 1 (sources quoted there) but there are good reasons for believing that they are exaggerated as sustainable figures. These reasons are given below, considering the 1927 1.5 L engine.

1. Pomeroy (4) made the point that the car was provided with a 5th “overdrive” gear ratio which reduced RPM by 19% compared with direct drive. This shows that the designer, Lory, did not expect the engine to sustain 8,000 RPM, only 6,500 RPM. The tachometer was coloured green from 6,000 to 7,500 RPM (39).

It is not doubted that the engine *could* exceed 8,000 RPM. When Campbell bought two of these cars in 1928 his mechanic, Leo Villa, was told by the works that the maximum permitted speed was 8,400 (226). Later on, when Giulio Ramponi was testing the engine which he modified for Dick Seaman (see Item 4), it is said that he accidentally over-revved to 9,000 RPM for several minutes without mishap (39). This overspeed reliability without piston/valve collision was probably a large factor in the car’s successes, although Item 5 below does suggest that high rpm could not be sustained for long without piston ring flutter fatigue.

2. The 1927 Delage claim can be compared with a contemporary test result on the FIAT type 406 2 x IL6 1.5 L, which was not a published claim with all the possible intent to mislead but works data only revealed in 1950(66):-

	<u>1927</u>	
	<u>Delage</u>	<u>FIAT</u>
	<u>Claimed</u>	<u>Works test</u>
Compression Ratio (R)	6.5	7 from drawing
Inlet Valve Pressure (IVP)	1.51 ATA	1.85 ATA
HP	170	160
@ RPM	8,000	8,000

From a 3% lower power (by ASE, Air Standard Efficiency) and 18% less from IVP the Delage could have been expected to have rather less than 130 HP. It might have been rather more than this because its 55.8mm bore versus the FIAT’s 50mm would have produced a higher Combustion Efficiency (EC) by having a lower (Surface Area)/(Chamber Volume) ratio. At the most this would be an improvement from 65% to 70%, so the Delage might have reached around 140 HP.

3. On the Brooklands Outer Circuit the 1926 Delage lapped at only 117.91 MPH (4), far below the speed expected from a general study of performance on this course (732) if its power had really been 160 HP. However, there must have been some problem such as driver inexperience of the bumpy, banked track, because a 1927 type in the hands of Lord Howe achieved 127.05 in 1931 (645). Even this speed, with a claimed 170 HP, is poor when compared to the performance in 1935 of Freddy Dixon in his naturally-aspirated 2 L Riley Special. This was a car of very similar size and shape to the Delage i.e. open-wheeled, low-slung and a narrow “2-seater” width. The Riley did have an elongated tail which presumably did add a trifle to the speed or Dixon would not have used it! Dixon’s lap, actually made during a 500 mile race, was 134.4 MPH, 5.8% higher than the Delage on a power not exceeding 150 HP (141).

4. When Guilio Ramponi in 1936 developed the 1927 Delage engine for Dick Seaman to race in Voiturette events**, his changes and the results compared with the works specification as follows:-

	<u>1927</u> <u>Claimed</u>	<u>1936</u>	
R	6.5	7.5*	New pistons (521) probably slipper-type with reduced friction.
IVP	1.51ATA	1.82ATA*	(445), obtained by speeding-up the supercharger (659).
Valve timing			“Modified”
HP	170	185	Tested by Laystall (39, 521)
@ RPM	8,000	8,000	
		7,000	was considered the normal maximum in races (489).

*These increases in R and IVP were probably made possible by increasing the alcohol %age in the fuel compared to the works Delage’s Elcosina (which was 44%ethyl alcohol, 55% benzole, 1% castor oil), although the car was still able to race 200 miles nonstop.

The 185 HP tested by a respected company suggests that the original 1927 specification, with 5% and 17% less power from R and IVP respectively, would have yielded rather under 150 HP.

**A picture of the Seaman Delage is given in [Note 46](#), which speculates that Enzo Ferrari may have been influenced in proposing the Tipo 158 to Alfa Romeo by the performance of this car in 1936. After the season he would have been able to obtain details of the modified Delage from Ramponi, who was an old colleague at Alfa.

5. In [Note 13 Part II](#) on Piston Ring Flutter it is shown that a plain iron ring fitted with normal loose radial clearances has a flutter limit of:-
 (Ring Axial Width (w) x Max. Piston Deceleration (MPD)) = 4,000 mm.g.
 The 1927 Delage had w = 1.5 mm (enlarged section from (4)) and consequently would have entered ring flutter at MPD = 2667 g. This corresponds to 7,000 RPM.
 Therefore any higher RPM could only have been held briefly before flutter broke up the rings in fatigue, losing power because of blow-by and with crankcase oil blown overboard. This is really a clinching point.

Probable cause of exaggerated power

A 10% drop in power between a “flash” brake reading(i.e. one obtained by taking an engine to high RPM while still cold)and steady settled-temperature reading is quite possible. This is shown for Maserati engines in [Note 6](#). The MG designer H.N.Charles commented that, on the highly-supercharged Q-type of 1934, even an additional 18% of power was available above the steady figure for a short period which was lost on throttling back to avoid detonation as the engine warmed up (331).

Deducting 10% from 170 would give 153 HP.

Conclusion

This Delage case has been treated at length because of the importance, not to say even worship, attached to the 1925 – 1927 designs.

It is concluded that, to be comparable with other engines, the power of these Delage engines should be reduced by 10% relative to the usually published figures, at about 150 HP @ 7000 RPM for the 1927 15-S-8 and 170 HP @ 6,200 RPM for the 2LCV, because they were produced unsubtainably by “flash” testing,

P.S. A power curve for the 1926 Talbot IL8 1.5 L rival to the Delage is attached which shows 160 HP @ 7,000 RPM. This car was faster than the Delage in the only race in which they both competed, the 1926 Brooklands GP. Incurable front brake judder slowed the Talbots and the vibration probably caused the broken axle and two split supercharger casings from which the team of 3 cars retired.

POWER CURVES

Eg.	For comparison with Eg. 13			
DASO	12			
YEAR	1926			
Make	Talbot			
Model	GP			
Vcc	1488			
Ind. System	MSC			
Confign.	IL8			
Bmm	56			
Smm	75.5			
	N	P	MPS	BMEP
	kRPM	HP	m/s	Bar
	2.5	64	6.29	15.40
	3	79	7.55	15.84
	3.5	95	8.81	16.32
	4	110	10.07	16.54
	4.5	123	11.33	16.44
	5	135	12.58	16.24
	5.5	145	13.84	15.85
	6	152	15.10	15.23
	6.5	157	16.36	14.53
	7	160	17.62	13.75

