

Note 85



Peak torque to top-power RPM ratio for DFV

The extent to which the 1967 DFV was limited in RPM for mechanical reasons, short of its 'natural' power-peak speed, can be shown by the following comparisons:-

	<u>1967</u>	<u>1967</u>	<u>1983</u>
Engine	FVA	DFV	DFV
Data Source	583	59	59
$\frac{\text{Peak Torque RPM}}{\text{Top-Power RPM}} = F$	$\frac{7000}{9000}$ = 77.8%	$\frac{8500}{9000}$ = 94.4%	$\frac{9000}{11200}$ = 80.4%

An F ratio of 80% would have meant a Peak Power RPM (NP) for the 1967 DFV of $8500/0.8 = 10,600$.

All these facts were not known in 1967, of course. No power curve was published then for the DFV (nor was any DFV power curve published until one for the 1983 90 mm bore variant (.interim DFY') appeared in 1993 (65), so far as this author knows). However, for whatever reason and whoever supplied it, there was a *misleading* piece of data published at the time of the first DFV announcement in April 1967 - that Peak Torque was 270 lb ft @ 7000 RPM (857). Thus it would then have *appeared* that the F ratio was $7000/9000 = 77.8\%$, a normal figure.

An experienced observer was *not* misled. 'One of Britain's top engine designers' (probably Harry Mundy, former Chief Designer for Coventry Climax) pointed out that "*if true*" the torque corresponded to 223 psi (15.4 Bar), which he found "*remarkable*" on petrol at R = 11 compared to previous best practice (859). The correct figure for the 1967 DFV, released in 1983, was actually 245 lb ft @ 8500 RPM (59), equal to 203 psi (14.0 Bar). A very fine performance, of course, but not quite so "*remarkable*" as Ford's 1967 Press release would have had its readers believe!

Also in 1967 after the victorious DFV debut another experienced observer, Tony Rudd (then Chief Engineer of BRM), was quoted as estimating that, *if the power curve of the engine were extended to its theoretical peak*, it would give 450 HP (856) as compared to the 405 HP at 9000 RPM which was being quoted by Cosworth.

The new electronic speed governor was not very precise in its limit - a spread of several hundred RPM was quoted for pre-1978 (19) - and it had to be redesigned twice before it was reliable (in 1970 (168) and 1978 (19)). Inadvertently exceeding the intended 9000 RPM mechanical rating may be an explanation for some of the 1967 engine failures.