

Note 95Best 3.5L NA engines in 1987 and 1988

<u>Year</u>	<u>1987</u>	<u>1988</u>	
Make	Cosworth	Cosworth	
Type	DFZ	DFR	Note (1)
Sources	47,62,207	47,62,207	
Configuration	90V8	90V8	Note (2)
Valves per Cylinder	4v/c	4v/c	Note (3)
Bore/Stroke (B/S)	90mm/68.6 = 1.312	90mm/68.6 = 1.312	
Sweptvolume (V) cc	3,491	3,491	
Compression Ratio (R)	12	n.a.	
Peak Power (PP) HP @ RPM (NP)	565 10,500	594 10,750	+5.1%
Brake Mean Effective Pressure @ NP (BMPP) Bar @ Mean Piston Speed (MPSP) m/s	13.8 24.0	14.2 24.6	
Mean Gas Velocity at Inlet @ PP (MGVP) m/s	76.0	72.3	
Mean Valve Speed @ PP (MVSP) m/s BNP m/s	na 15.8	na 16.1	
Weight (W) kg PP/W HP/kg	145 3.90	140 4.24	+8.9%
Installed in:- Most successful driver	Tyrrell* 016 Jonathan Palmer**	Benetton B188 Thierry Boutsen	
Championship points as ratio of Winner:-			
Constructor	8.02%	19.6%	
Driver	9.6%	30.0%	
*Winner of the Colin Chapman Cup.			
** Winner of the Jim Clark Cup.			

Note (1):- The 'DFZ' clearly was expected to be the last of the line, following DFV (Double Four Valve), DFW, DFX, and DFY, so perhaps 'DFR' stood for 'Re-Born'!

Note (2):- The DFR was 80% different in parts from the DFZ (207). Taking advantage of the new 5½ inch diameter carbon-carbon clutch instead of the previous 7¼ inch, the crankcase was redesigned to lower the crank by 1 inch (574).

Note (3):- Cosworth had an agreement with Yamaha by which the Japanese firm would design 5v/c cylinder heads (3 inlet, 2 exhaust) along the lines which had been quite successful since 1985 in racing-sports motor-cycles (FZ750) and which were used for 1986 in Japanese F2 (OX66 V6 2L). A forecast of 630HP had been given for this joint-project DFR.

No such power was obtained in winter 1987-1988 tests. Therefore the heads had to be re-designed rapidly to normal Cosworth 4v/c principles (207).

It is speculated that Honda, when deciding to develop their 1.5L TC engine for ` 1988, anticipated that the 3.5L NA Cosworth-Yamaha would *not* produce the forecast power, since their V4 750cc 4v/c racing-sports motor-cycles usually beat the IL4 750cc 5v/c Yamahas. The ageing Honda F2 engine also beat the new Yamaha F2 in the final Japanese series of 1986.

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