



Note 79

Comparison of Climax FPF with Cosworth FVA

Engine	Other comparisons			
	Coventry Climax FPF L5L Mk 2	Cosworth FVA	Coventry Climax FWMV Mk 6	Borgward RS
Data sources	33,54,56,57, 131	58, 63, 247, 583	34	181, 205, 711
Date	Mid 1961	Mid 1967 (Note A)	1965	1958
CN	IL4	IL4	90V8	IL4
B/S mm	81.788/71.12 = 1.15	85.725/69.14 = 1.24	72.39/45.466 = 1.592	80/74 - 1.081
V cc	1495	1596 +6.8%	1497	1488
Fuel	Petrol 102 RON	Petrol 102 RON	Petrol 102 RON	Petrol 102 RON
R	10.7	11	12	10.2
VNI, VIA	1,66°	2,40° (See Note 78)	2,60°	2, 64°
R x VIA	706°	440°	720°	653°
I VA / PA	0.296	0.305	0.266	0.340
Valve gear	DOHC, CVRS	DOHC, CVRS	DOHC, CVRS	DOHC, CVRS
IVL / IVD	0.234	0.304 +29.9%	0.318 -4.4%*	0.227 +33.9%**
IOD	290°	320° +10.3%	290° +10.3%	294° +8.8%
LIN mm	?	297 (Note B)	301 (Note B)	?
Inlet draught angle	12°	30°	20°	6°
Circumferential swirl	Yes	No	Yes	No
Tumble swirl angle (Note C)	0	20° (See Note 26)	0	0
Squish	No	Yes	Yes	No
Fuel supply	2x2 choke Weber carbs	Lucas Mk 2 fuel injection	Lucas fuel injection	Bosch direct fuel injection
Ignition	2 plugs/cyl, magneto	1 plug/cyl, Lucas transistorised	1 plug/cyl, Lucas transistorised	2 plugs/cyl/coils
PP @NP HP @ RPM	151 @ 7500	222 @ 9000 +47% (Note D)	212 @ 10300 +4.7%	150 @ 7500 +48% (Note I)
MaxRPM	8200	9500	11000	8500
PP/V HP/litre	101.0	139.0 +37.6%	141.6 -1.8%*	100.8 +37.9%**
BMPP Bar	12.05	13.83 +14.8%	12.30 +12.4%	12.03 +15.0%
MPSP m/s	17.78	20.74 +16.6%	15.61 +32.9%	18.50 +12.1%
MVSP m/s	3.23	3.44 +6.5%	3.58 »3.9%	2.. 30 +49.6%
MGVP m/s	60.1	68.0 +13.1%	58.7 +15.8%	54.41 +25.0%
MPDP g	2862	4009 +40.0% (Note G)	3270 +22.6%	2941 +36.3%
W kg	129 (Note E)	118 (Note F) -8.4%	135 -12.6%	128 -7.8%
HP/W HP/kg	1.17	1.88 +60.7%	1.57 +19.7%	1.17 +60.7%
Price	£1500 (£1830 @ 1967 level)	£2500 (Note H)	£5000 (£5300 @ 1967 level)	?
Price/HP @ mid 1967 level	12.1	11.3 -6.6%	25.1 -55.0%	
			* FVA relative to FWMV 6	** FVA relative to RS



Notes

- (A) Raced in F2 over 1967-1971. During development the engine was raced by Mike Costin in a Brabham chassis at club meetings from July 1966 (as the FVB short-stroke variant).
- (B) [Note 27](#) indicates that the inlets would resonate at the following MPS:
- | | |
|-------|--|
| FVA | $88.25 \times (69.14/297) = 20.5 \text{ m/s}$ |
| FWMV6 | $88.25 \times (45.466/301) = 13.3 \text{ m/s}$ |
- (C) Angle which the outer wall of the inlet port just before the valve seat makes with the valve centreline.
- (D) In early 1967 Cosworth built the FVB engine, an FVA destroked to 1.5L, to check the forthcoming DFV output. This gave 200 HP; (134 HP/L) (605). In 1969 the FVA power was raised by:- modified valve timing; altered port shapes; 4-into-1 exhaust system. Con rods were strengthened for higher RPM. The 1970 rating was therefore:- 240 HP @ 9,500 RPM; (150.4 HP/L) (168), equal to BMPP = 14.16 Bar @ MPSP = 21.89 m/s.
- (E) All Al-alloy static structure: 115.7 kg for Mk 1 (33) plus 13.6 kg for Mk 2 (56) with 2.5L-type crankcase.
- (F) A production cylinder block was required by F2 rules. The part chosen was Ford 120E, cast iron, bored-out from 3 3/16" to 3 3/8". Al-alloy head. The Lucas 100 psi f.i. pump and Lucas spark generator were both chassis-mounted and not included in engine weight. If these items had been counted the weight would have been similar to the FPF Mk 2.
- (G) A Dykes top compression ring was used on both engines, but the FVA made full use of this whereas Walter Hassan was still timing his engines to avoid exceeding 100,000 ft/sec² (3100g). See [Note 13 Part II](#).
- (H) Development costs charged to other accounts in each case. Climax absorbed theirs, Cosworth's were paid by Ford.

The production iron block would have reduced the price of the FVA.

- (I) 150 HP was quoted as sustained power, but up to 165 HP for sprints (BMPP = 13.23 Bar). This might be compared with the developed 240 HP of the FVA (Note D) at BMPP = 14.16 Bar, which was 7% greater.

The Borgward RS had no deliberate shaping of the inlet ports to create 'Barrel Turbulence' (Tumble Swirl).