Note 108

Cosworth 2006 Type CA Series 6 Eg SO25

DASO (1069) and (1070) provided official Cosworth data for this engine and (1092) added details of the engine when re-introduced for 2010 as the type CA2010 (with the FIA RPM limit of 18,000). Further details were given in (1107). Official data are shown underlined.
90 V8 Bore (B) = 98 mm (rule maximum permitted); Stroke = 39.75 mm.
Swept Volume (V) = 2,399 cc (rule maximum 2,400 cc).

B/S = 2.465;
100/Smm = 2.515;

PP = 755 BHP
@ NP = 19,250 RPM.

TP = 214.4 lb.ft. (1070)
@ NT = 17,000 RPM
$\left(\frac{NP - NT}{NP}\right)$ = 11.7% Fixed Inlet (by FIA rule).

Compression Ratio (R) = 13.3 (1107), so ASE = 0.645.

Inlet Valve Head Diameter (IVD) = 41.3 mm, so IVA/PA = 0.355.
Inlet Valve Lift (IVL) = 16 mm, so IVL/IVD = 0.387 (2006 spec.).
Valve Included Angle (VIA) = 18^0 plus 3^0 longitudinal inclination.

PP/V = 314.7 BHP/Litre;
MPSP = 25.51 m/s;
BMPP = 14.63 Bar;
ECOM (EV x EC x EM) = 59.7% (Suggested EV = 1.3; EC = 0.7; EM = 0.67).

Weight (W) = 95 kg (rule minimum);
PP/W = 7.95 BHP/kg.

Mean Gas Velocity at inlet @ NP (MGVP) = 71.8 m/s.

BNP = 31.4 m/s.

Con. Rod Length between centres/Stroke (CRL/S) = 2.570
Maximum Piston Deceleration @ NP(MPDP) = 9,834 g.

A Power curve for the CA series 6 was given in DASO (1070) and is shown (redrawn) on P.2.

(1107) states that the CA in 2013 mod. standard, running "full rich" mixture for maximum power, had a Specific Fuel Consumption of 275g/kW.Hr. Allowing for the fuel being, by rule, 94.25% petrol + 5.75% ethanol this was a Brake Thermal Efficiency of 30.0%.
In that year PP was 768 BHP @ 17,250 RPM (BMPP = 16.61 Bar @ 22.86 m/s), corresponding to Volumetric Efficiency (EV) = 1.45. IVL had been increased to 17 mm (IVL/IVD = 0.412), worth 2 HP. Improved fuel and oil had contributed over 8 HP (1107).

A 2013 engine illustration is shown on P.3.

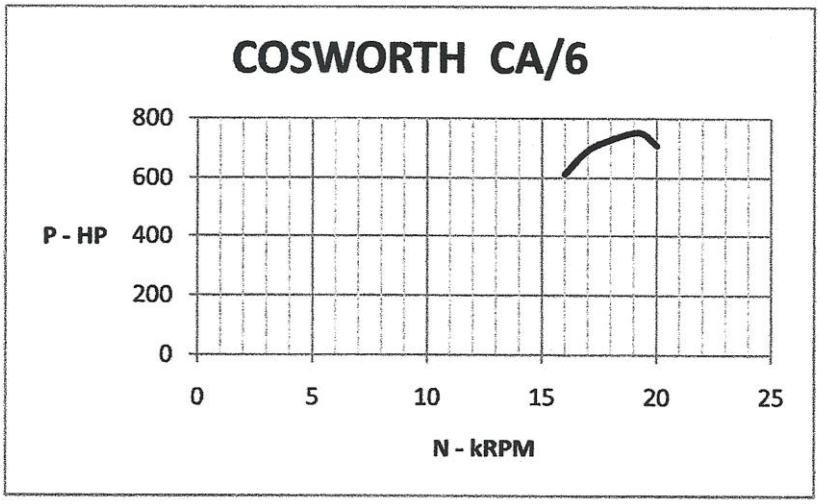
References

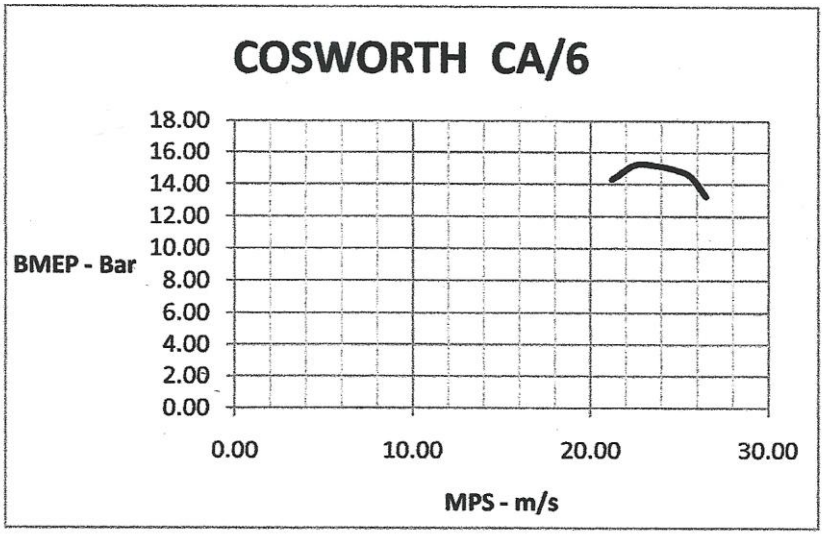
(1069) *Race Engine Technology* No. 20 Feb. 2007.
(1070) " 21 Mar/Apl 2007.
(1092) Cosworth website consulted 6 Oct 2010.
(1107) *Race Engine Technology* No. 73 Sept/Oct 2013 (a particularly comprehensive report).

POWER CURVES

Eg.	SO25		
DASO	1070	and 1092	Note 108
YEAR	2006		
Make	Cosworth		
Model	CA/6		
Vcc	2399		
Ind. System	NA		
Confign.	90V8		
Bmm	98		
Smm	39.75		

N	P	MPS	BMEP
kRPM	HP	m/s	Bar
16	614	21.20	14.31
17	694	22.53	15.23
18	731	23.85	15.15
18.5	744	24.51	15.00
18.75	750	24.84	14.92
19	754	25.18	14.80
19.25	755	25.51	14.63
19.5	747	25.84	14.29
20	711	26.50	13.26





Race Engine Technology No. 073 Sept/Oct 2013 CA2013

In the new 2006 formula the CA powered the Williams FW28 but the relatively low-budget team were uncompetitive, finishing 8th in the Constructors' Championship with only 11 points. The highest finishes were 2 x 6th places.

Cosworth did not compete in 2007 to 2009 but returned in 2010 with Williams (FW32) and 3 low-budget teams (Lotus, HRT, and Virgin). Results were again disappointing, Williams finishing 6th in the Constructors' Championship with a best 4th place. The small teams did not score a point.

The Williams FW33 again used the CA in 2011 but obtained only 5 points for 9th place in the Constructors' Championship. HRT and Virgin also fitted the engine but scored no points. In 2012 the CA powered the Marussia and HRT cars but with no points and in 2013 it was used only by Marussia with no success.