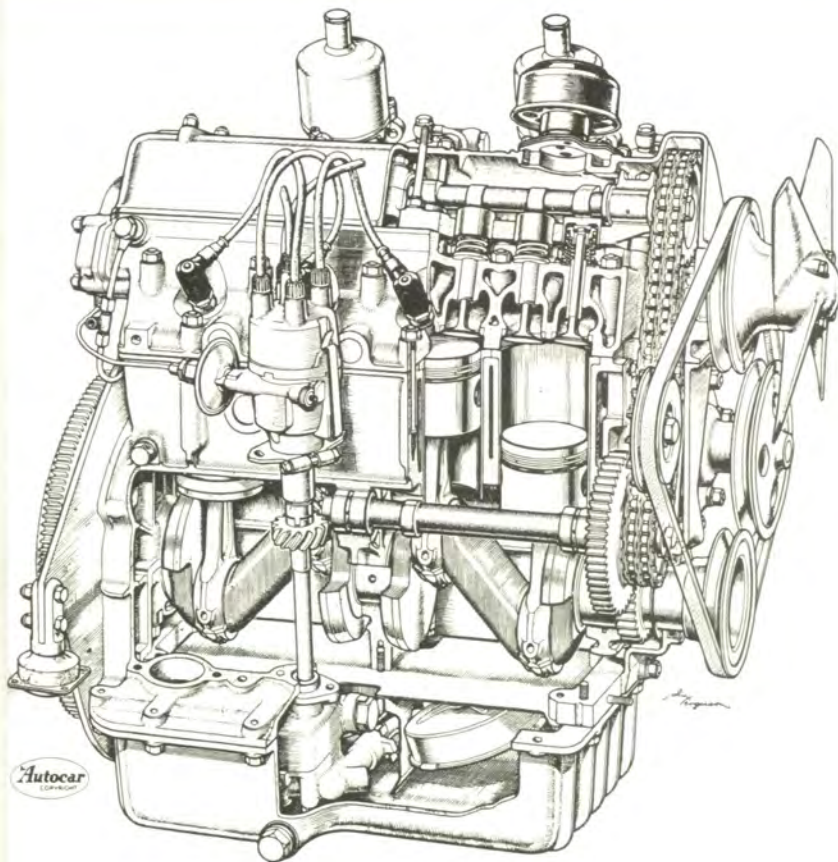


## Climax - An engine to be proud of

The Coventry Climax company has some fascinating history having, in 1903, made, not only motor cars but, engines for car, boats and generating sets. In 1914 some of their earliest engines powered the sledges that Ernest Shackleton used on the British expedition to Antarctica. During the Great War, the company made a variety of generating sets for military purposes, particularly for search lights. Between the two world wars many thousands of their engines, both petrol and diesel, were used to power British cars and lorries and during World War II Coventry Climax 'Godiva' trailer fire pumps became the standard equipment specified by the British Government.



THE COVENTRY CLIMAX TYPE F.W.A. ENGINE  
(By kind permission of "The Autocar")

In 1950, with the Korean War threatening to spread, the British Government issued a specification for the design of a new lightweight fire pump. It had to be light enough to be carried by two men and have an output of 350 gallons of water per minute at 100 psi. With their previous experience of trailer pumps, Coventry Climax was in a good position to meet the challenge. In 1952 their new FWP 'Featherweight' firepump with its cast

alloy, sohc engine of 1020cc and output of 35 bhp at 3,500 rpm won them the large Government contract.

### THE FW SOHC SERIES.

Always in search of ways to win, members of the motor racing world were soon making enquiries of the compact FWP engine with its bare weight of just 180 lbs. In response to this interest, the company undertook tests to attain higher crankshaft speeds.

An enlarged version of 1098cc was built known as the FWA ('A' being for automotive) which produced 71 bhp at 6,000 rpm. The first of these engines was finished just in time to be fitted to a Kieft sports-racing car entered in the Le Mans 24 hour race of 1954. Although the car retired after some 10½ hours with a seized rear axle, the new engine performed well up to that point. In the following September the engine proved its worth in the same car by winning the 1100cc class of the RAC Tourist Trophy race.

By this time more racing car constructors including Cooper and Lotus ordered FWA engines which by 1955 had been developed to produce 75 bhp at 6,000 rpm. These engines were very soon successful, collecting 69 firsts, 49 seconds and 42 third places in 98 events. Also Twelve International Class 'G' records were broken at Montlhéry by a Cooper with a FWA engine, including the one-hour record at 125.34 mph. Soon a FWA Stage 2 was produced with a high-lift camshaft and a modified induction system to give 84 bhp at 6,900 rpm.

With the advent of Formula Two racing Coventry Climax were asked to enlarge the 1100cc engine to suit and the FWB of 1460cc was introduced. Whilst the power output of the FWB was increased by more than 1/3 (108 bhp at 6,400 rpm), it only weighed 5 lbs more than the smaller version. The FWB performed very well in 1956, powering cars to 47 places in 55 events. These results caused Coventry Climax to fit a de-tuned FWB engine (the FWBP) to a high performance fire pump.

A one-off 744cc version of the Feather Weight engine known as the FWC was built specifically for Lotus to achieve their legendary Index of Performance victory at



the 1957 24 Hour Le Mans race. Other versions of the series were the FWD ('D' for diesel) and the FWM ('M' for marine). The last of the 'FW' family was the FWE version of 1220cc which was developed in 1957 to meet a demand from the USA for cars entering 1300cc events and also to power Lotuses Type 14 Elite. There were a total of 1988 FW series engines made of which 1355 were FWE units.

Lotus fitted just one FWB and about 30 FWA units to the Series One Seven that was made between September 1957 and June 1960. As well as Lotus, other small road car manufacturers like Turner and Fairthorpe used FWA engines for their products. At some £250 it was nearly three times the price of the similar sized Ford sidevalve and BMC ohv engines that were around at the time, but for that you got twice the power.

#### THE FPF TC SERIES.

A new Formula Two series of races was to take-off in 1957 which specified unsupercharged 1½ litre engines using ordinary pump fuels rather than alcohol mixtures. Walter Hassan and Harry Mundy designed the FPF, as the new twin-cam unit was designated. It was to be the first 'production line' racing engine ever built in Great Britain. Between 1957 and 1965 some 273 units were made in nine different sizes ranging from 1475cc to 2.7 litres and producing from 141 to 240 bhp. Of the production, no less than 48 were the larger 2½ litre Grand Prix engines which during the 1959 and 1960 seasons were responsible for 13 Formula One wins and many second places in Cooper and Lotus cars.

#### THE FWMV V8 SERIES.

Coventry Climax had designed and built their experimental FPE-V8, a 2½ litre V8, in 1952 which had given some 264 bhp at 7,900 rpm. This engine can still be seen in the Godiva Public House, Coventry. However the new FWMV units were to be entirely different being developed from a FWM outboard-marine power unit which started life at 653cc, with a single overhead camshaft and progressing through automotive applications at 745cc and finally to a twin-cam racing version,

the FWMC, for Lotus to take to Le Mans in 1961.

In its original form the new 186 bhp FWMV V8 was first raced in Jack Brabham's Cooper at the Nurburgring in 1961. The race was not a success for the new engine as it broke a distributor drive shaft and was only 0.3 seconds quicker than Stirling Moss' FPF powered Lotus 18/21. Water-loss problems bugged the two engines on loan to Moss and Brabham for the Italian Grand Prix but with this sorted 18 units were laid down for the 1962 season. Of these three each went to Lotus, Cooper, Yeoman Credit and British Racing Partnership and two each to Brabham and Rob Walker with the other two being retained by the factory for development work. It was to be Graham Hill's and BRM's World Championship year, but it was a close run thing with Jim Clark coming second in his Lotus 24. In all Climax engines took four wins, five seconds and four third places in Formula One that year.

From 1963 to 1965 the FWMV V8, by then developing 200 bhp, powered 18 Grand Prix winners and helped to win many minor races. Remarkably no fewer than 16 of these are credited to Jim Clark in the Lotus 25 or 33, this driver/car combination being so superior that Jim Clark nearly always won if his car survived a race. In total some 33 1½ litre FWMV V8 units of various specifications were used in racing cars between 1961 and 1965.

When the 3-litre formula arrived for 1966, all the FWMV V8's became redundant. Although the formula included for 1½ litre engines to be supercharged Hassan refused to consider this possibility. British constructors were as far behind Ferrari as they had been in 1961 and as there was no replacement engine BRM enlisted their unit to 2 litres and Colin Chapman managed to get Coventry Climax to do the same for Lotus. With this new engine size producing about 240 bhp it won its first race in Mike Spence's hands in the non-championship South African Grand Prix on New Year's Day 1966.

#### THE FWMW FLAT-16 ENGINE

The very successful FWMV was not the last racing engine to be designed by

Coventry Climax. The FWMW flat-16, a little 1½ litre unit was the last, but sadly development time ran out as it was decided that the power output was not sufficiently better than the V8 to warrant the cost of running another car. Had the engine raced it would have been unique as no flat-16 unit had ever competed.

When they ceased, Coventry Climax had made competition engines for over 11 years. In 1954, when production first started, German and Italian teams were the dominant forces in Formula One. Success for this British company's racing units at first came powering small engined sports-racing cars like the Lotus Mark IXs and Elevens and Coopers. Then, in 1959 and 1960, Climax powered rear-engined Coopers gained the F1 World Constructor's Championship followed by the same successes for Lotus and Jim Clark in 1963 and 1965.

#### GLOSSARY

YEAR	TYPE	CAPACITY	USE
1952	FPE V-8	2.5 litre	Experimental
1954	FWA	1098cc	Automotive
1956	FWB	1460cc	Larger for Automotive
1957	FWC	744cc	Index of Performance
?	FWD	?	Diesel
1957	FWE	1220cc	U.S. & Lotus Elite.
?	FWM	c750cc	Marine
?	FWMA	?	Marine Automotive.
1961	FWMC	?	TC I of P Le Mans
1957	FPF	1475cc	Formula Two
1961	FPF Mk II	1500cc	Formula Two
1959	FPF	2495cc	Formula One
1962	FWMV	1.5 litre	Formula One
1966	FWMV	2.1 litre	Formula One
1964	FWMW	1.5 litre	F1 (not developed)

