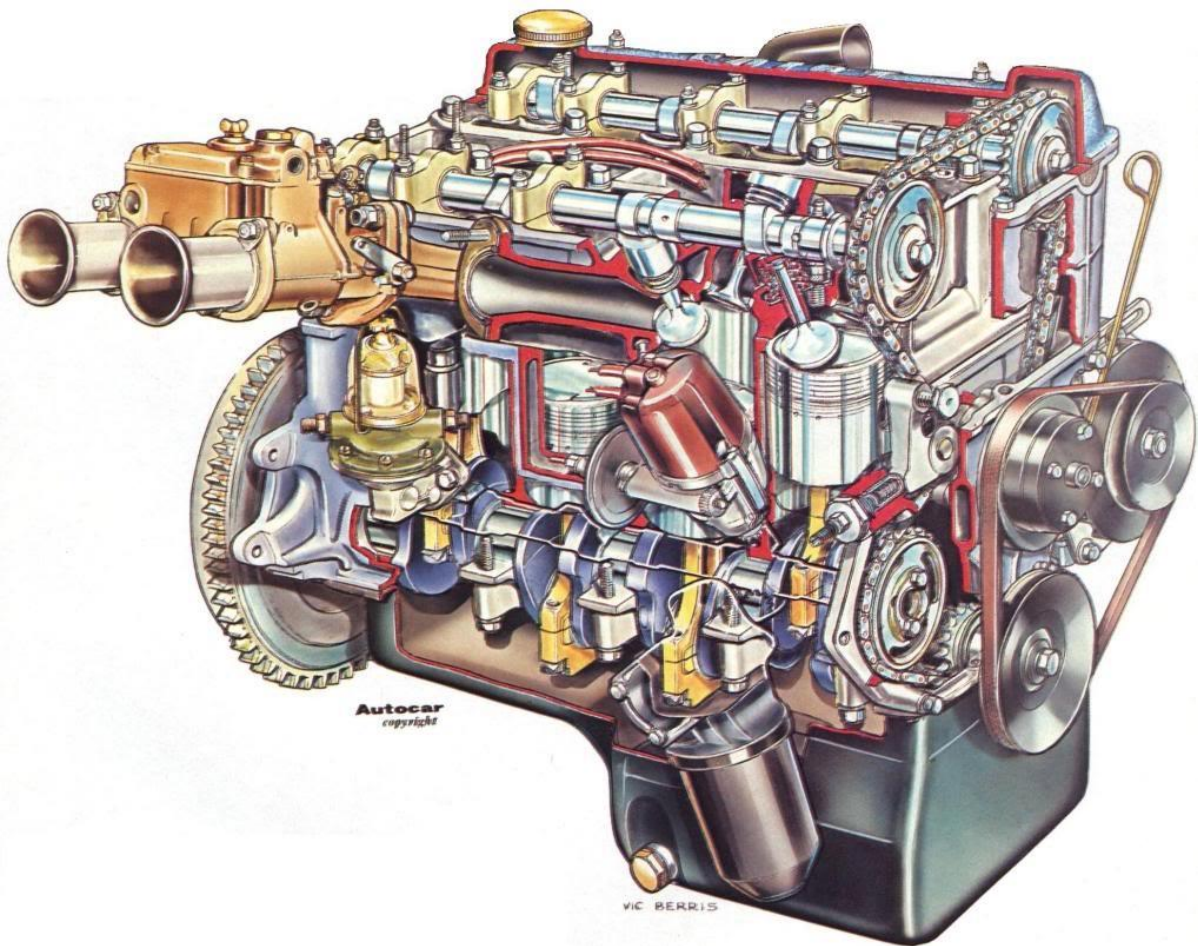




CLUB LOTUS ELAN SECTION

Elan & +2 Engine Types



The wonderful Vic Berris cutaway drawing of the Twin Cam, from Autocar magazine

The Lotus Twin Cam engine was a successful road and race unit, conceived by Colin Chapman once he had struck a deal with Ford for supply of the engine blocks. Chapman asked Harry Mundy, the ex-chief designer at Coventry-Climax and later to become an engine designer at Jaguar, to draw a new twin

cam head for these blocks. Richard Ansdale, a transmission designer at Thorneycroft, then carried out the detailed design of the head, including the front cover. It was Steve Sanville, engine shop foreman at Lotus, who carried out the first engine builds in 1961. By autumn of 1962 both the Elan and the new engine were being tested for production, which was begun in February 1963.

It is remarkable that during the Twin Cam's production run of ten years a large variety of engine types were fitted to Elans, +2s, Lotus Cortinas, Escort Twin Cams, Lotus Sevens and Europas. We therefore thought that we would take a look at these types. We have taken the table from the excellent 'Lotus Twin-Cam Engine' by Miles Wilkins as our starting point, as well as exploring the production lists for the Elan and +2 that we have available. As we might have expected from Lotus, a few anomalies have arisen but we hope to have thrown a wee bit more light on this subject for members.

Below is the table we have put together listing the 28 engine types produced by Lotus. We have included the Cortina, Escort and Europa for the sake of completeness, though that is as far as we have taken our research on them, hence they lack a part number; neither is the Seven included in our research. We are principally looking at the head changes here and will leave discussion of engine block types for another article:

Engine Prefix Lotus Part No	Elan Type Or Other Lotus	Carburettor	BHP (app rox)	Camshaft Type Lotus Part No	Market	Dates	Cam Cover Colour
S Prototype	1500	Weber	100	B026 E 0351	Domestic	Nov 62 to Feb 63, 10 early cars only	Natural
LP (Lotus Power)	All Elans, Lotus Cortina, Escort TC	Weber	105	B026 E 0351	All	Feb 63 to Jan 69	Blue
A026 E 0701 B026 E 0701 C026 E 0701	S1, S2 S2, S3 S3, SS SE		115	C026 E 0351			Green
LP (Lotus Power)	+2	Weber	115	C026 E 0351	All	Aug 67 to Nov 68	Blue
LF (Lotus Ford)	Lotus Cortina	Weber	105	B026 E 0351	All	Jan 63 on, no known examples	Blue
LF (Lotus Ford)	+2	Weber	115	C026 E 0351	All	May 67 to Sep 67, 13 early cars only	Blue
C C026 E 0701	SE SS, S4	Weber	115	C026 E 0351	All	Sep 68 to Jan 71	Green
D D026 E 0701	Standard	Weber	105	B026 E 0351	All	Mar 68 to Dec 70	Blue
E	Lotus Cortina Mk II	Weber	115	C026 E 0351	All	68 on	Un- painted
F F026 E 0701	+2 & +2S	Weber	115	C026 E 0351	All	Jul 69 to Jan 71	Red

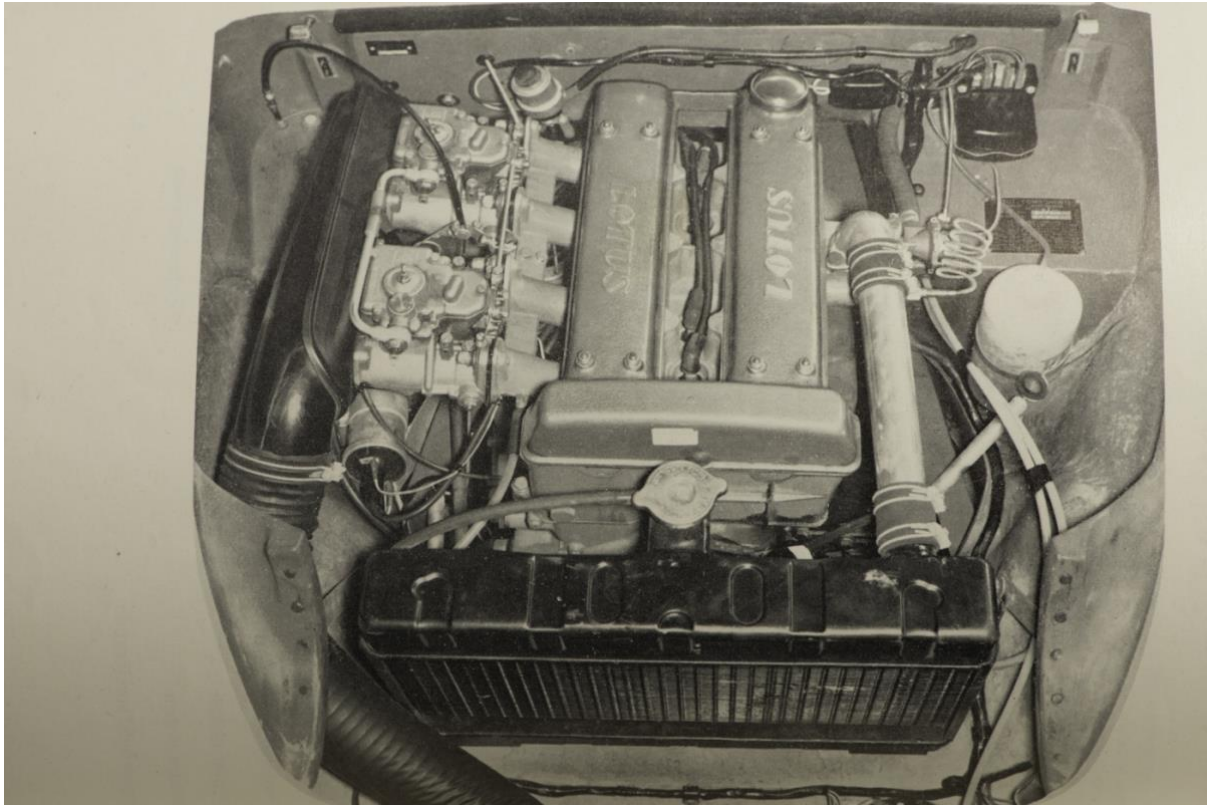
G G026 E 0701	S4	Stromberg	108	C026 E 0351	Federal	Jun 68 to Feb 72	Red Stromberg equipped engines needed an extra boss on the top of the RHS to take the throttle cable bracket
G G026 E 0701	+2	Stromberg	108	C026 E 0351	Federal	Nov 68 to Jan 69	Red
H H026 E 0701	S4 Super SE (Only 4 fitted)	Weber	124	D026 E 0351	Domestic	Oct 68 to Oct 70	Red
H H026 E 0701	+2 (Only 227 fitted)	Weber	124	D026 E 0351	Domestic	Jun 68 to Mar 69	Red
I I026 E 0701	+2 & +2S	Stromberg	108	C026 E 0351	Federal	Mar 69 to Dec 72	Red
J	Escort Twin Cam	Weber	115	C026 E 0351	Domestic Export	Feb 68 to Jun 71	Black
K K026 E 0701	S4	Stromberg	105	C026 E 0351	Domestic	Dec 68 to Mar 71	Black
L L026 E 0701	SE S3, SS, S4	Stromberg	118	D026 E 0351	Domestic	Jan 69 to Mar 71	Red
L L026 E 0701	+2	Stromberg	118	D026 E 0351	Domestic	Apr 69 to Jun 69	Red
M M026 E 0701	+2S	Stromberg	118	D026 E 0351	Domestic	May 68 to Jan 71	Red
N N026 E 0701	Sprint	Weber	126	D026 E 0351	Domestic	Jan 71 to Jun 72	Black Ribbed
N N026 E 0701	Sprint	Dellorto	126	D026 E 0351	Domestic	May 72 to Mar 73	Black Ribbed, some Red later
P P026 E 0701	Plus 2S 130	Weber	126	D026 E 0351	Domestic	Feb 71 to Jun 72	Black Ribbed
P P026 E 0701	Plus 2S 130	Dellorto	126	D026 E 0351	Domestic	May 72 to Feb 74	Black Ribbed, some Red later
Q Y026 E 0701W	Europa	Stromberg	118	D026 E 0351	Domestic	Late 71 on	Red
R R026 E 0701W	Europa Special	Dellorto	126	D026 E 0351	Domestic	Late 72 on	Black Ribbed
S S026 E 0701W	Europa	Stromberg	110	C026 E 0351	Federal	Late 71 on	Red Ribbed
T	Sprint	Stromberg BV	110	C026 E 0351	Federal	Apr 71 to Aug 72	Red Ribbed
U	Plus 2S 130	Stromberg BV	110	C026 E 0351	Federal	Aug 71 to Aug 72	Red Ribbed
V Z026 E 0701W	Europa	Dellorto	126	C026 E 0351	Domestic	Late 71 on	Red Ribbed
W	Sprint	Stromberg BV	110	E026 E 0351	Federal	Apr 71 to Aug 72	Red Ribbed
W	Plus 2S 130	Stromberg BV	110	E026 E 0351	Federal	Feb 72 to Jul 72	Red Ribbed

EV	Europa	Dellorto	122	C026 E 0351	European	Late 71	Black Ribbed
ER	Europa Special	Dellorto	122	D026 E 0351	European	72 on	Red Ribbed
EN	Sprint	Dellorto	122	D026 E 0351	European	Oct 72 to Mar 73	Red Ribbed
EP	Plus 2S 130	Dellorto	122	D026 E 0351	European	Oct 72 to Feb 74	Red Ribbed

The first thing to note is that there is a discrepancy between some of the Lotus part numbers in the Parts List book and the engine prefixes. It seems clear though that Lotus intended the prefix letter to be the first digit of the engine part number, so we have reflected that for the Elan. We would also assume that these part numbers continued in the same vein from engine type T onwards (and for the Cortina, Escort & Europa types), though that is not recorded in the Parts Lists we have available. It is also clear that for the late European versions, Lotus merely added an E in front of the relevant prefix to denote the slightly different carburation settings used to adhere to the then newly introduced European Union emission regulations, which resulted in a slight drop of horsepower according to Wilkins.

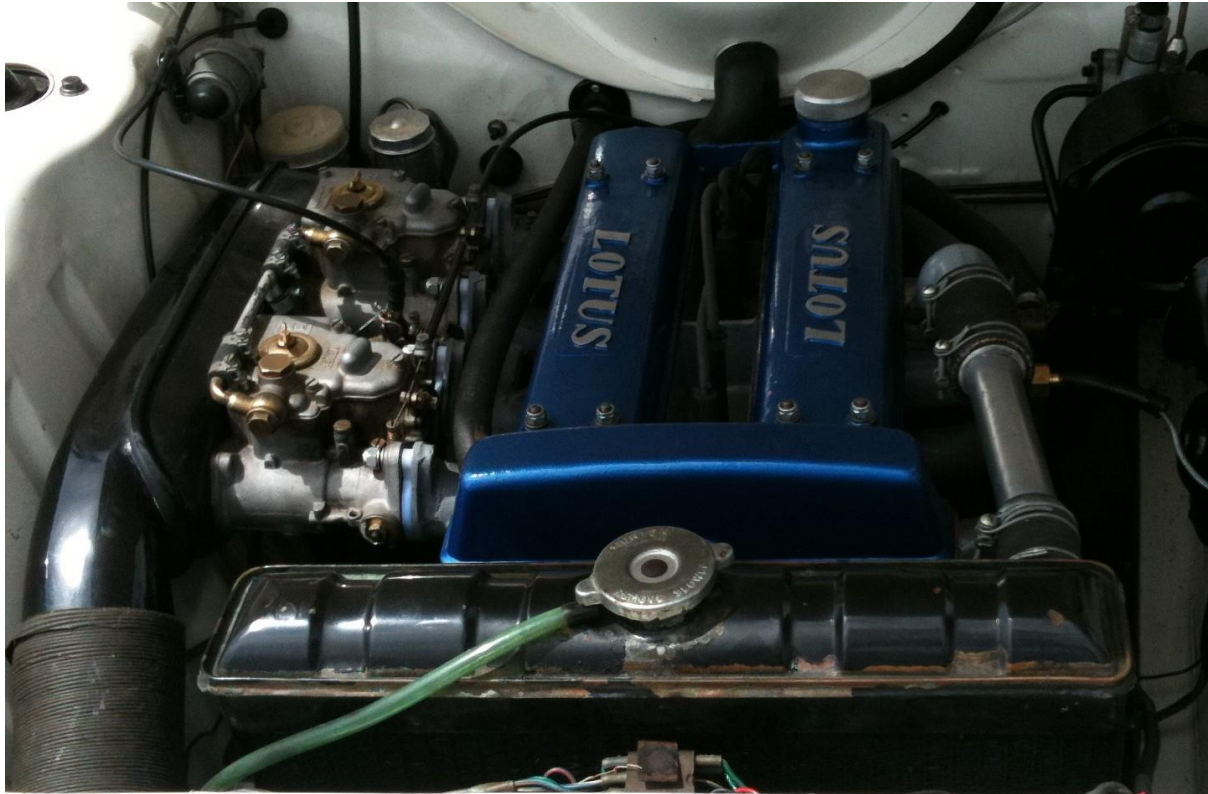
The next curiosity is that in the first five years of production, when all engine numbers were prefixed with the LP designation, no differentiation was made between the standard output and the SE version. In fact, if we look at the dates we can see that it was not really until after Lotus had moved to Hethel, had taken the entire engine production in-house and were going public necessitating better record keeping that engine types started to be differentiated in a meaningful way.

In addition, the 'Die Cast' head, which had half-moon projections in the plug well, was fitted from 1962 to about July 1966. Then the 'Sand Cast' head was fitted from about July 1966 onwards. The change from a four bolt to a six bolt head is unambiguous as it's defined in the Lotus parts manual as change point engine number 7800 in April 1967. Looking at the data for Elan builds, this puts the six bolt engine into cars in early June 1967, which confirms that they started to be built a couple of months earlier. The change from 'Lotus' script on both cam covers to 'Lotus' on the front of the cam cover was made around July 1967. This was so that the 'Lotus' script could be seen in the Mk2 Lotus Cortina, which had a large air filter mounted on top of the cam cover, obscuring the view of the script. At about this time the oil filler cap was changed from the round type to the 3 eared type.



An early S1 Elan engine compartment

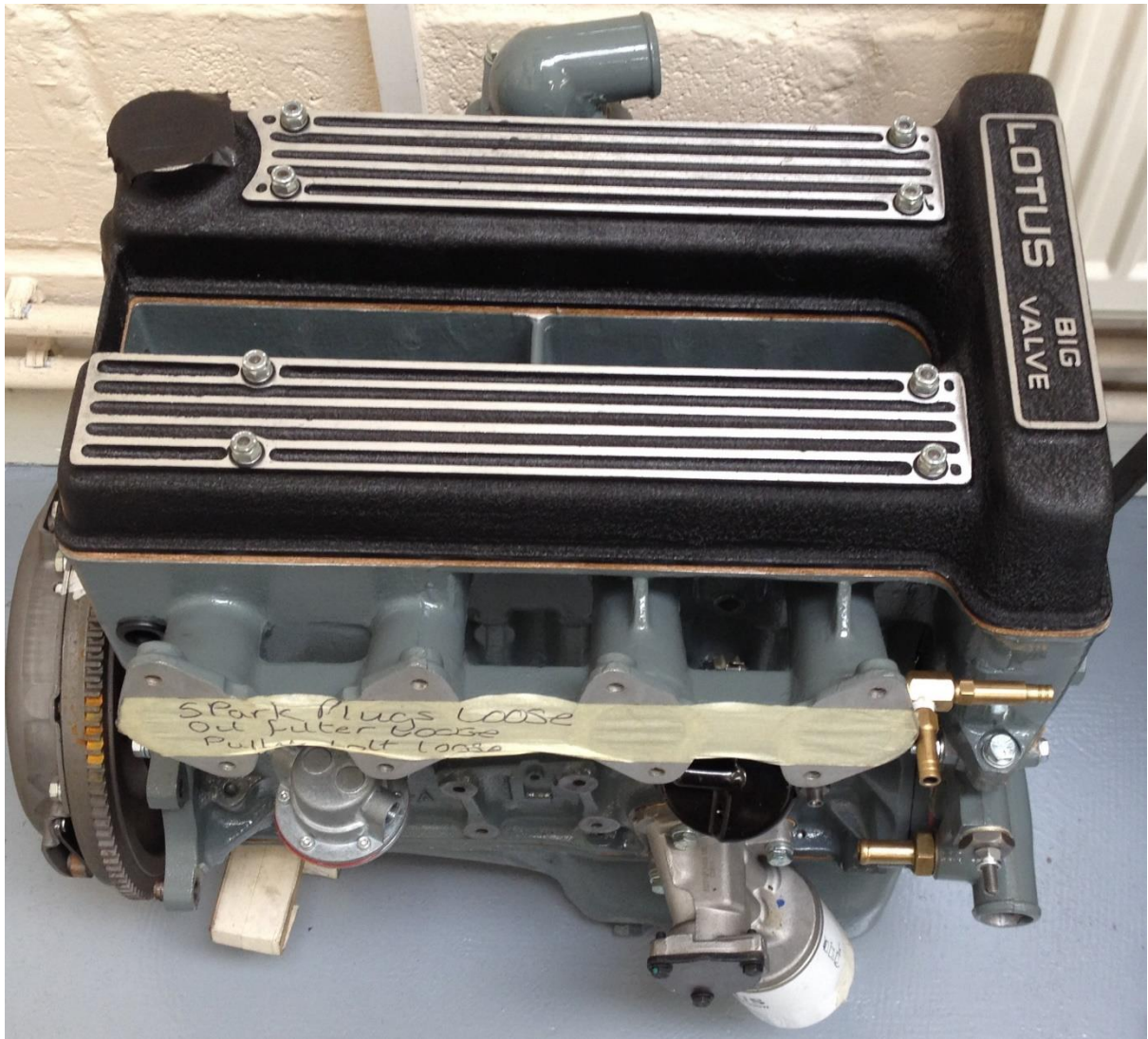
So 1968 assumes a significance for our study of engine types, since that is when many of the engines were changed to reflect both markets and power output, as well as car model. As an aside, we have noted that it is often more revealing to look at the invoice (in the absence of any other) dates on production records, rather than the unit number. Cars were not built strictly by unit number order; far from it. Putting cars into date order gives us a better idea of production weeks and months, quantities built as well as other ways for us to gain a better understanding of Elan production. The four types of cam shafts fitted had grooves in their ends to denote type: B no grooves; C one groove; D two grooves and E no grooves. These letter types are reflected in the parts number prefix letter. The brake horse power figures are approximate and listed as a guide only. There has been ongoing discussion about the accuracy or otherwise of the Lotus figures and what was found in practice.



A Twin-Cam fitted to a Mk1 Lotus Cortina. Engine number LP0001 was fitted to a Lotus Cortina

The Super SE engine, fitted to only 4 Elans and 227 +2s, was developed by Steve Sanville in 1968, two years before the advent of the Big Valve engine. If nothing else, it demonstrates how relatively easily tuneable the Twin Cam is and, as we are aware, many owners have bought their own engines up to a similar state of tune to the Big Valve. The Elan is easily capable of managing this power increase.

We acknowledge that it is almost impossible to pin down with any degree of exactitude the precise dates and other data presented; indeed, it is possible to find examples of engine types that were supposed to be fitted to Elans only, fitted to other car types and vice versa. However, we hope that this table is helpful to members to get a better understanding of the engine types Lotus fitted to those of their cars using the wonderful Twin Cam engine. The power unit defined Lotus road cars in the 1960s and into the early 1970s, as well as acting as the basis for more powerful race engines in a wide variety of cars. Furthermore, well maintained it is an engine capable of high mileages and good reliability.



A part-complete rebuilt Twin-Cam Big Valve N type engine awaits to be re-homed