

I Engine identification

Head/engine prefixes and camshaft cover recognition

The original colours of the Lotus cam cover denoted the power output and the vehicle application. The cam cover itself underwent three design changes at Lotus.

Up to October 1968, the cover had the word 'Lotus' cast along each side and painted the same colour as the cover itself. The oil cap was circular. From October 1968, the word 'Lotus' was cast in large block capitals at the end of the cover and had a polished-alloy finish, together with its surround. The oil cap was changed to a three-eared type. From October 1970 to the end of production, the cover was ribbed and 'Lotus Big Valve' was cast in place of the word 'Lotus'.

In addition to different cam-cover colours, the engine carried a prefix letter, or letters, to denote its specification and the application for which it had been built. As can be seen from the accompanying table, Lotus produced many varieties, some of which a lot of people do not even realize exist. From 1968 onwards, most of the cylinder heads also carried one of three letters—'H', 'N' or 'S'—stamped on the raised boss at the front of the number one spark-plug well. Again, contrary to information in manuals, books and magazine articles, the stampings have the following meanings:

- H High compression only (10.3:1)
- N High compression and big valves (inlet)
- S Big valves, Federal only, standard compression (9.5:1)

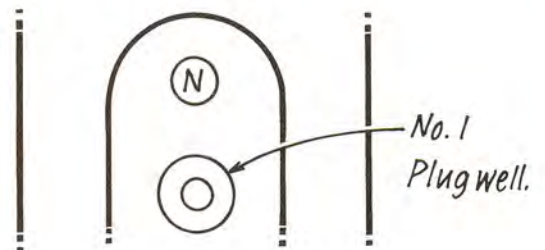
NOTE The latest Lotus workshop manuals (1974, reprint) have amendments to this information. The S/E Stromberg engine is recognized as having a 10.3:1 compression ratio.

Heads built prior to 1968 carried no stamping, and all had a standard 9.5:1 compression ratio and normal valves.

As we have seen, camshafts were:

| | | |
|----------------------------|-------------|-----------------------|
| B-type (standard) | no groove | 0.375 in. total lift |
| C-type (S/E) | one groove | 0.3498 in. total lift |
| D-type (Super S/E, Sprint) | two grooves | 0.3600 in. total lift |
| E-type | plain | 0.3659 in. total lift |

NOTE Total lift is measured from the base circle. Actual valve lift in the engine is total lift minus the mean cold tappet clearance. For example, with the D-type camshaft, the total lift is 0.3600 in., but the mean inlet-tappet clearance is 0.007 in. and the mean exhaust-tappet clearance is 0.010 in. The actual valve lift, therefore, is 0.3530 in. (inlet) and 0.3500 in. (exhaust).



Cylinder-head identification letter in plug well



Camshaft recognition:

No groove indicates standard B-type

One groove indicates S/E C-type

Two grooves indicate Super S/E (Sprint) D-type

I Twin-cam identification

| Serial prefix | Engine type and market | Application and Year | Head stamp | Big Valve | High compression | Camshaft type | Cam-cover colour |
|---------------|---------------------------------------|-------------------------------|------------|-----------|------------------|---------------|----------------------------|
| C | S/E Weber Domestic and export | Elan 1963 onwards | | | | C | Green |
| D | Standard Weber Domestic and export | Elan 1963 onwards | | | | B | Dark blue |
| E | S/E Weber Domestic and export | Lotus-Cortina 1963 onwards | | | | C | Silver (black on Mk II) |

LOTUS TWIN-CAM DATA

| Serial prefix | Engine type and market | Application and Year | Head stamp | Big Valve | High compression | Camshaft type | Cam-cover colour |
|---------------|-------------------------------|------------------------------|------------|-----------|------------------|---------------|--------------------------|
| F | S/E Weber Domestic and export | +2 and S 1967 | | | | C | Red |
| G | Stromberg Federal | Elan 1969 | | | | C | Red |
| H | Super S/E Weber Domestic | Elan early 1968 | H | | ✓ | D | Red |
| I | Stromberg Federal | +2 1969 | | | | C | Red |
| J | S/E Weber Domestic and export | Escort Twin Cam 1968 onwards | | | | C | Silver early, then black |
| K | Standard Stromberg Domestic | Elan 1969 | | | | C | Black |
| L | S/E Stromberg Domestic | Elan 1969 | H | | ✓ | D | Red |
| M | S/E Stromberg Domestic | +2S 1969 | H | | ✓ | D | Red |
| N | Big Valve Weber Domestic | Elan (Sprint) late 1970 | N | ✓ | ✓ | D | Black, ribbed |
| P | Big Valve Weber Domestic | +2S130 late 1970 | N | ✓ | ✓ | D | Black, ribbed |
| Q | S/E Stromberg Domestic | Europa late 1971 | H | | ✓ | D | Red |
| R | Big Valve Dellorto Domestic | Europa (Special) late 1972 | N | ✓ | ✓ | D | Black, ribbed |
| S | Big Valve Stromberg Federal | Europa late 1971 | S | ✓ | | C | Red |
| T | Big Valve Stromberg Federal | Elan late 1970 | S | ✓ | | C | Red |
| U | Big Valve Stromberg Federal | +2S late 1970 | S | ✓ | | C | Red |
| V | S/E Dellorto Domestic | Europa very late 1971 | | | | C | Red |
| W | Big Valve Stromberg Federal | Elan late 1970 into 1971 | N | ✓ | ✓ | E | Red |

| Serial prefix | Engine type and market | Application and Year | Head stamp | Big Valve | High compression | Camshaft type | Cam-cover colour |
|---------------|--------------------------------|----------------------------------|------------|-----------|------------------|---------------|------------------|
| EV | S/E Dellorto European | Europa very late 1971 | | | | C | Black |
| ER | Big Valve Dellorto European | Europa (Special) 1972 onwards | N | ✓ | ✓ | D | Red, ribbed |
| EN | Big Valve Dellorto European | Elan (Sprint) 1972 onwards | N | ✓ | ✓ | D | Red, ribbed |
| EP | Big Valve Dellorto European | +2S130 1972 onwards | N | ✓ | ✓ | D | Red, ribbed |

Many cam covers are easily swapped; indeed, some of the last domestic-market engines had European (i.e. red) covers, instead of black. The table above gives the original cam-cover colour, as it left the Lotus factory. Other engine tuners, of course, produced their own covers; these are not listed above, as the engine would have been bought from the factory originally.

The colours used were as follows:

| | | |
|--------------|------------------------------------------------------------------------|-------------------------------------------------------------|
| Green | BMC (now Austin Rover Group) engine paint as used on A-series engines. | |
| Blue | Ford rocker-cover paint, as used on Mk I Cortina and related engines. | |
| Silver | Left polished | |
| Black | Satin matt black crackle finish | } 'Lotus' and surround left polished. |
| Red | Poppy red crackle finish | |
| Black ribbed | Gloss black crackle finish | } 'Lotus Big Valve' and surround and ribs left polished. |
| Red ribbed | Signal red crackle finish | |

The crackle-finish paints are supplied by Trimate Ltd, and must be applied by professional, high-quality stove-enamellers.

NOTE The reds and blacks used are not the same. The gloss black and signal red were carried over to the 2 litre and 2.2 litre Type 907, 910, 911 and 912 engines.

The remainder of the engine was painted Lotus Grey—a grey with a touch of blue in it. The nearest equivalent is Massey Ferguson Stoneleigh Grey enamel, to which you should add a little blue enamel.

From a study of the engine-identification table, it comes as a surprise to see that Lotus made 24 varieties of the twin-cam. Many of these require quantifying. After the production of the engine became standardized at Hethel, from 1967 onwards, the official power figures (shown right) can be taken as representative across the whole spectrum; after all, the build and test procedures were the same for all engines.

| Engine | Gross bhp @ rpm |
|-----------------------------|-----------------|
| Standard Weber/Stromberg | 103-105 5500 |
| S/E Weber | 112-115 6000 |
| S/E Stromberg | 115-118 6000 |
| Big Valve Weber/Dellorto | 125-126 6500 |
| Federal Stromberg | (108) 6500 |
| Federal Big Valve Stromberg | (110) 6500 |
| European Big Valve Dellorto | 121-122 6500 |

Maximum torque

| Engine | lb ft | @ rpm |
|--------------------|-------|-------|
| 1498 cc | 102 | 4500 |
| 1558 cc standard | 108 | 4000 |
| S/E | 108 | 4000 |
| Big Valve | 113 | 5500 |
| Big Valve emission | 104 | 5000 |