

# The Elan Factory - Product Data Sheet



## Vernier Timing Pulleys for Lotus Turbo Esprit

When rebuilding or modifying a Lotus Turbo Esprit engine with standard components, there is no provision for altering the valve timing figures. The valve timing is usually achieved by aligning the timing marks which are identified as a series of coloured dots. These coloured dots indicate what the Maximum Opening Point (MOP) is in degrees. This convention is utilised on all Lotus 900 series of engines. Because of normal production tolerances in any manufactured item, it is almost certain that the cam timing will deviate from the ideal position. For a regular engine in a normal state of tune this may be perfectly acceptable.

It is worth noting, that any double over-head camshaft (or single over head camshaft) engine that has had its compression ratio raised by skim-ming the cylinder head, will automatically have had the valve timing altered. This is because the effective distance between the crank centre-line and the cam centre-line has been reduced. Simply adjusting the chain or belt tensioner to take up the slack will alter the position of the cam pulley in relation to the crankshaft. As the tensioner on both Ford/Lotus TC and 900 series engines is on the left hand side (as viewed from the front of the engine) this means that the camshaft timing will be retarded.

However, for whatever reason the cam timing may deviate, any performance engine becomes much less tolerant of inaccurate valve timings and accuracy is essential to achieve maximum performance. For example, a five-degree error on both camshafts installed in a 912 (normally aspirated) engine will result in a loss of 10 brake horse power and even more on 910 turbo-charged engines. Other problems will also emerge such as poor idle-speed, poor throttle response, engine back-fires and fuel stand-off (this is where fuel is sprayed back out of the carburettors)



An elegant solution that allows you to easily adjust the valve timing is to use a vernier timing pulley. These components are used in place of the standard cam pulley. They fit on the camshaft using the standard key in the normal way, but because of their built-in adjustment, allow the timing to be accurately adjusted. To achieve the best possible results please request our installation sheet which provides details of setting and adjusting camshaft timing.

These pulleys are supplied with full instructions and are an excellent way of achieving additional useful horse power.

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