

camshaft. The closing time of the valves is adjusted in the same way. It is recommendable to put down marks on the timing gears.

Sometimes, valve opening and closing times are not stated in degrees but in millimetres, e.g. inlet valve opens 60 mm before top dead-centre etc. The distance of 60 mm can be determined by means of a dial gauge, cranking the crankshaft backwards. However, it is easily possible to convert millimetres into degrees, using the following simple formula.

*Example:*

Assume the inlet valve opens 60 mm before top dead centre. The diameter of the flywheel is 540 mm. First, the circumference of the flywheel is determined by

$$\text{Circumference} = \pi \times D$$

$$\text{Circumference} = 3.14 \times 540$$

$$\text{Circumference} = 1,696 \text{ mm}$$

Then the following formula is used:

$$\text{Required value in degrees} = \frac{360^\circ \times 60 \text{ mm}}{1,696 \text{ mm}}$$

$$\text{Required value in degrees} = 13^\circ$$

If degrees are stated and the value in mm is to be found, the conversion is, for example, as follows:

$$360^\circ = 540 \text{ mm} \times 3.14$$

$$1^\circ = \frac{540 \text{ mm} \times 3.14}{360^\circ}$$

$$13^\circ = \frac{13^\circ \times 540 \text{ mm} \times 3.14}{360^\circ}$$

$$13^\circ = 61 \text{ mm}$$

(That slight difference between the results of the two examples is due to the fact that the value in mm or degrees has been expressed in round numbers and decimals dropped.)

## (5) Fuel System

The fuel system contains the fuel supply required for operation and feeds the fuel through a filter to the carburetter or to the injection pump. The fuel system normally consists of the following components:

Fuel tank

Fuel pipes

Fuel change-over tap

Fuel pump

(if the tractor is not equipped with a gravity tank)