

CHAPTER 1

Internal Combustion Systems

1.1 Car Engines

Modern car industry uses mainly internal combustion engines. The reason for calling them this is fuel combustion taking place in the engine cylinder. The car industry meets the 21st century with a wide variety of design solutions for the internal combustion engines. This diversification could be classified on the basis of some basic principles listed underneath:

Based on the type of fuel used engines could be [1]:

- petrol type
- diesel fuel type (Fig.1)
- liquid gas type engines;
- There are some internal combustion engines using other types of fuel but they are not found so often. These are some special purpose cars (like sports cars, for example) that are uniquely manufactured.

Based on operation principle [2]:

- Four-stroke engines. The characteristic feature for them is that their operation cycle involves four strokes (Fig.2). First stroke (admission) – the air-fuel mixture enters the cylinder. Second stroke (compression) – the piston compresses the air-fuel mixture through its motion. Third stroke (combustion) – the air-fuel mixture ignites and combusts thus moving the piston and this is the only stroke in the cycle performing work. Fourth stroke (release) - the exhaust gas is released [2].
- Two-stroke engines (Fig.3) [3]. First stroke – admission of fresh gas into the cylinder from carburetor and simultaneous compression of the gas mixture in the area above the piston. Second stroke - pre-compression of fresh gas in the crankcase and combustion of gas mixture in the cylinder. Exhaust gases are released and fresh gas enters the combustion section from the crankcase through overflow ducts [3].

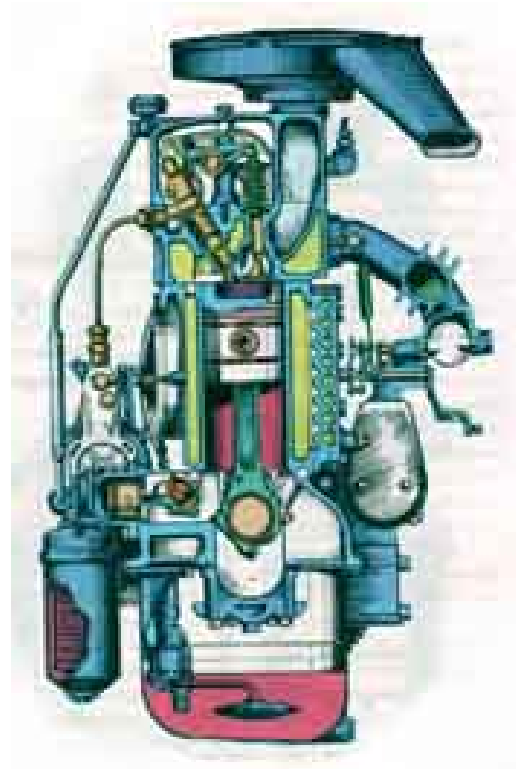


Fig.1