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GENERAL STRUCTURE OF CAR ENGINES

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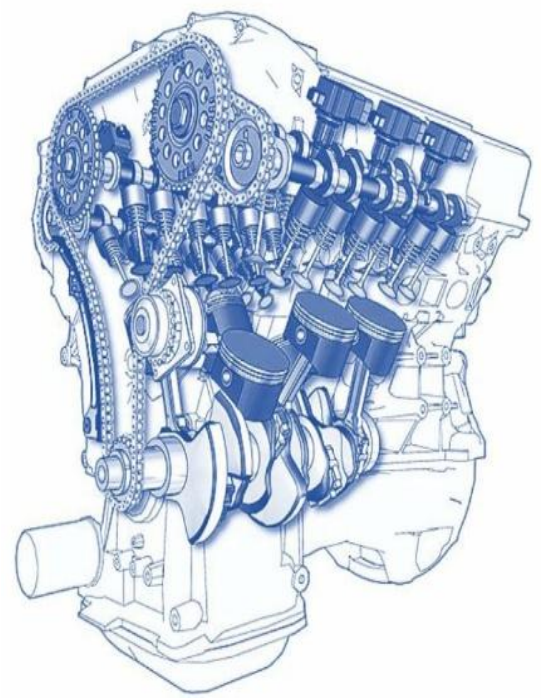
Abstract
This article expresses thoughts on the general structure of car engines, their types, parts, tasks.

Keywords: car engines, slindr blocks, porches, shatuns, combustion, piston movement.

Introduction

A car engine - is the heart of any car that converts fuel energy into mechanical energy to drive the car.



Porcelain internal combustion engine (RICE).

The thermal energy generated by the combustion of the fuel mixture in the combustion chamber, by dramatically expanding the working sphere (gaseous fuel products) in the cylinder, becomes the mechanical work of the piston's advanced return and circular motion of the crankshaft. The advanced motion of the piston is achieved by the krivoship-shatun mechanism of the elbow shaft.

Internal combustion with porcelain as fuel in engines:
- liquids (gasoline, diesel, alcohols, biodiesel);
– consists of gases (liquefied gas-natural gas, hydrogen, Petroleum cracking gaseous products, biogas).
The full rotation of the engine is a one-sided advance-turn motion of the piston, consisting of a sequence of tactics. There are two-stroke and four-stroke engines per working cycle (Figure 1).

In different piston engines, the number of cylinders can range from 1 to 24. Cylinder volume-the transverse cross section of the cylinder is told to the product of the porshen road. The total volume of all cylinders is usually called the engine volume.
The engine consists of a crankcase with a cylinder head, a cylinder head cover, a cylinder block and a crankcase with an undercarriage (Figure 2).

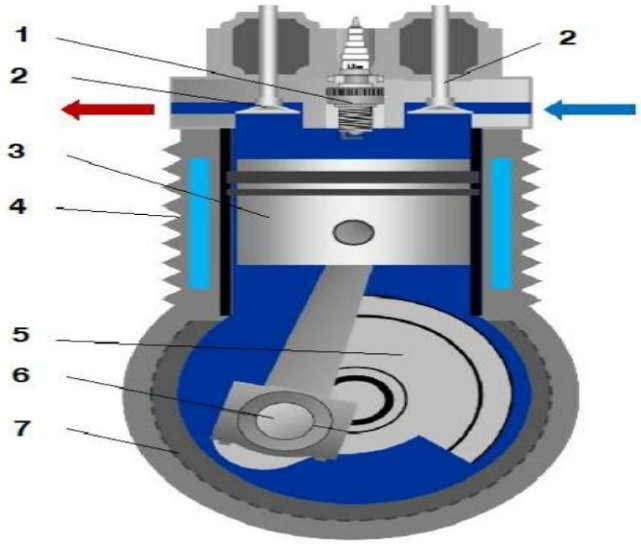


Figure 2. Structure of the piston internal combustion engine:
1-ignition switch; 2-input and output valves; 3-piston; 4-cylinder; 5-crank shaft; 6-shatun; 7-crankcase

The internal combustion engine is composed of the following mechanisms and systems: krivoship-shatunny mechanism, gas distribution mechanism, as well as cooling, lubrication, fuel supply, ignition (in a gasoline engine) and mileage systems.

Krivoship-shatunli mechanism.
Inside the cylinder, the worker takes the pressure of the gas generated by the combustion of the combustible mixture on himself, converting the linear advance and return motion of the piston inside the cylinder into the circular motion of the crank shaft.
Inside the cylinder there are compression (compaction) and oil-curing porcelain rings-glass-shaped porcelain moving with the top facing up. Porshen is connected to the elbow val by

shatun. The elbow val consists of the base necks and the shatun neck. The cylinder, piston, shatun and elbow shaft together form a crivoship-shatun mechanism.
This mechanism converts the adventitious motion of the piston into the circular motion of the elbow shaft.
The cylinder is sealed from the upper side with a cylinder head. In this head, input and output valves are installed, the opening and closing of which correspond to the movement of the China and the rotation of the elbow valve.

Gas distribution mechanism. The combustible worker serves to perform the entry of the mixture or air into the cylinder as well as the discharge of the gases used. This mechanism includes a gas distribution valve, a valve stepper, pushers, valves, valve actuators, a coromislo, a coromislo axle, a barbell.

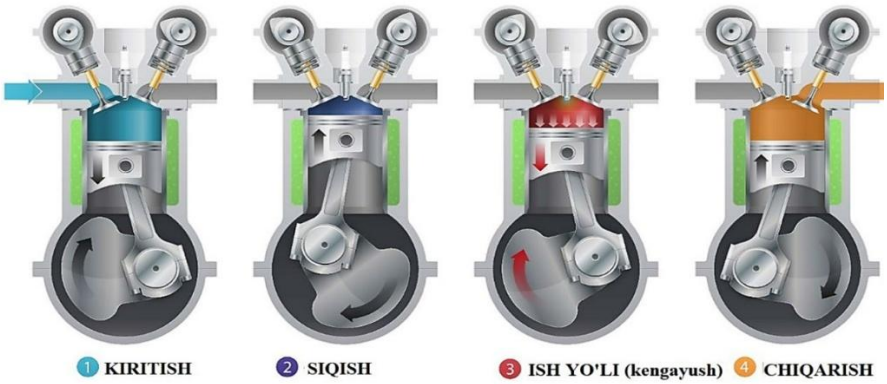
Fuel supply system. It cleans gasoline and air, prepares a combustible mixture from them, transmits it to the engine cylinders and expels used gases into the external environment.

Cooling system. The engine dissipates heat detached from the heated parts into the external environment and ensures its operation in the most comfortable heat mode. The engine is cooled by liquid or air.

Lubrication system. By sending oil with high pressure between the rubbing parts of the engine, it reduces their absorption, partially cools the surfaces of the rubbing parts, washes away the dirt and ingestion particles on the rubbing surfaces and cleans the oil in the bath.

Ignition system. To forcibly ignite a gasoline (gas) engine, an electric current generates a spark and sends it in order to the cylinders.
Marching system. Serves to drive the engine.

Principle of operation of iodine.
The working cycle of piston engines, composed of five processes, is usually performed in two rotations of the crank shaft, which is performed in four ways (takt) of the piston from one extreme position to another. Such engines are called four-stroke engines.



The first takt – filling of the engine cylinder with a new charge diesel – air, fuel-air mixture in gasoline engines ***(input)*** occurs when the porcelain moves from the upper edge state ***(U.E.S)*** to the lower edge state **(L.E.S)**. When the porcelain moves from yu.ch.h. to q.ch.h. – in the input tactic, a new charge ***(air or fuel-air mixture)*** mixes with the processed gases left in the combustion chamber from the previous working cycle. Thus, in the input tactic, a new charge enters the cylinder, gas exchange occurs between the new charge and the processed residual gases, while in engines where the mixture occurs outside, the preparation of the working mixture ***(fuel evaporation and its mixture with air and processed residual gases)*** continues actively. A decrease in residual gases, an increase in the amount and density of the combustible mixture in the composition of the working mixture increases the efficiency of engine work.

The second takt- compression occurs when the porcelain is moved from q.ch.h. to yu.ch.h. But at the first period ***(beginning)*** of this tact, a new charge will continue to enter the cylinder ***(dosage)*** or the mixture will be withdrawn from the cylinder, since the inlet valve will not be closed yet during this period; it will close after a slight passage from the porshen (***s.p.p).*** After the inlet valve is closed, the direct compression process begins, in which the pressure of the gases in the cylinder increases and the temperature rises. In engines where the mixture is formed inside the cylinder, at the end of the compression stroke, the fuel is sprayed into the cylinder under great pressure, mixed with air, heated, evaporated and ignited on its own. In engines where the mixture forms outside, the working mixture is ignited by a high voltage electric spark as it approaches the porcelain yu.ch.h. The last period of compression tact is characterized by the simultaneous passage of compression and combustion of the working mixture.

The third takt is an expansion-working Road. In the combustion chamber at the first stage of the cycle, the working mixture continues to burn intensively, the pressure and temperature of the gases increases sharply. In the process of combustion, expanding gases move the porcelain from yu.ch.h. to q.ch.h., doing a useful job – the so-called Working path. The force of the expanding gases pressure is transmitted through the China and the shatun to the shatun neck of the elbow shaft, forcing it to rotate, that is, perform useful mechanical work. Expansion process China q. ch.h. it ends with the opening of the exhaust valve before reaching the and the beginning of the release of exhaust gases from the cylinder.

The emission of the fourth takt-processed gases occurs when moving from porshen q.ch.h. to yu.ch.h. Under the influence of expanding exhaust gases, and then as a result of the piston shift, the exhaust gases are first released from the cylinder freely, and then forcibly. The input Valve also opens as the piston approaches the yu.ch.h. Thus, at the end of the release process, two – exhaust and inlet valves will be open, which will ensure the beginning of a new working cycle at the end of the release tactic, creating conditions for the internal combustion engine to work without interruption.

Main Components:

Cylinder block: is the basis of the engine, in which the cylinders are located. Inside the cylinders, the porches move and a process occurs in which the fuel mixture burns and the energy is released.

Porches: are metal parts that move inside the cylinders, squeezing the fuel mixture and transferring the energy generated by the fire to the shatuns.

Shatuns: connect the porches to the elbow valve and transfer their movements to each other.

Elbow valve: converts the rectilinear movements of the porches into circular motion and transmits them to the wheels of the car.

Cylinder head: the upper part of the cylinders, in which there are valves, ignition spark plugs (in gasoline engines) or forsunka (in diesel engines).

Gas distribution valve: controls the opening and closing of valves, through which the air-fuel mixture enters the cylinders and the output of the combustion products of the fuel is ensured.

Valves: designed to allow air-fuel mixture to enter the cylinders and the release of combustion products of the fuel.

Modern engines

Modern car engines are equipped with a turbocharger, direct fuel injection, variator and other innovative technologies, which allows them to increase their power, ensure fuel economy and increase environmental friendliness.

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