AUTOMOBILE TRANSPORT ENGINE MAINTENANCE SEQUENCE

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Abstract: *Hermeticity of the connecting rod mechanism, compression of the connecting rod mechanism, oil depletion in the engine, gas transfer to the crankcase, oil gauges, adjustment of the connecting rod mechanism and gas distribution mechanism, engine repair, selection of piston and bearings, cylinder repair, selection of piston rings.*

Key words: *Crankshaft, engine oil depletion, gas to crankcase, oil gauges, engine repair, piston and insert selection*

In order to train highly qualified personnel for the republic's transport sector, fundamentally improve the system based on advanced foreign experience and international standards, introduce innovative methods of teaching and information technologies into the educational process, and further increase the scientific potential of the sector, the President of our country "Human Resources in the Transport Sector" "On measures to improve the training system" was adopted [1-2].

Monitoring and diagnostics of car engines. It is possible to determine the technical condition of the engine by means of external control and with the help of diagnostic equipment. By means of external control, it is possible to determine the technical condition of the engine and its parts based on their tightness, start-up, idle state, noise level during operation, vibration, and the color of exhaust gases coming out of the exhaust pipe during operation. In general, how the engine ignited, whether it is working smoothly and noiselessly during normal operation, depending on the color of the exhaust gas (if the smoke is colorless, white thick smoke means a cooling system failure, black thick smoke means a supply system failure, dark blue smoke indicates a malfunction of the cylinder-piston group) it is possible to tell the technical condition of the crank mechanism and the gas distribution mechanism.

Diagnosing the upper part of the piston in terms of viscosity consists in determining its compression, the amount of gases passing into the crankcase, the reduction of oil, the rarefaction of air during the intake stroke, and the decrease in its pressure when compressed air is injected into the cylinder.

Engine compression test consists of determining the pressure generated in the cylinder at the frequency at which the battery can rotate the crankshaft. The check is carried out separately for each cylinder with the help of compressors. Depending on the type of engines, this indicator is 0.44…12 MPa for carburetor engines, at least 2 MPa for diesel engines. Compression is determined with the help of a compressometer or compressograph, in place of lightning or nozzle (this indicator should not be less than 30…40% of the norm) [2,3,4,5].

The pressure or compression at the end of the compression stroke is determined after the engine is heated to 70…80^{o}C. By installing the rubber conical head of the compressor in the lightning hole, the crankshaft is rotated with the help of the starter, and the indicator of the device is considered. The compressor in diesel engines is determined for each cylinder at a temperature of 80^{o}C, at a speed of 450…550 rpm, at idle. The compressor is placed in place of the injector of the diesel engine cylinder under inspection [6-7].

In order to check the reduction of oil, the oil level is filled up to the norm during the operation of the car. A decrease in oil indicates wear of piston rings and violation of valve tightness. A decrease or increase in the oil level from the norm also causes a change in the color of the gases coming out of the engine.

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The passage of gases into the crankcase depends on the wear of the details of the cylinder-piston group and increases during the work process. At the maximum torque of the engine, a diagnostic device (gas meter) is connected instead of an oil dipstick, and the amount of gas that has passed into the crankcase in a certain time is determined.

Air rarefaction in the intake stroke depends on the speed of air filling, compression, resistance of the air cleaner, incomplete seating of the valves and uneven progress of the work process. Therefore, the rarity of the air and its consistency characterize the technical condition of the engine. Air rarefaction is determined through the intake manifold using a vacuum gauge. The condition of the engine mechanisms is determined after the adjustment of the supply and ignition systems. The indicator should be 0.5…0.57 MPa when the engine is turned with the starter, and 0.64…0.745 MPa when the engine is idle, and this indicator should remain unchanged [10-11].

When the compressed air leaves the cylinder, the piston is at the upper or lower end point, the valves are closed, so the consumption of the compressed air sent to the cylinder is determined using the tool. It is very simple and fast, and with the help of indicators it is possible to determine whether the cylinder and piston peoples are eaten, whether their elasticity is lost, whether broken or soot is pressed, whether the cylinder is eaten,whether the valves are burnt and nozzle, whether the valve springs and piston rings are broken, whether the block head clipper is burned.

Defects are detected by compressed air escaping from the cylinder. Compressed air is sent to the heated engine through reducer-3 and nozzle-10, from a hose connected by a coupling. The presence of one of the above-mentioned defects causes a decrease in the air pressure between the cylinder and the conductor-4, which is shown by the manometer-5 [11-12].

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Works performed in the maintenance of the crank mechanism of the engine and gas distribution mechanisms. In order to prevent the damage of the engine and its malfunctions, comprehensive preventive measures are carried out in motor transport enterprises. These works are fixing, adjusting and lubricating the engine during technical service and during periodic maintenance for modern cars. During the service period, the main attention is paid to fastening and adjustment works. The purpose of tightening is to check the solidity and tightness of engine connections (engine to frame support, cylinder head and crankcase to cylinder block, etc.). It is checked that the cylinder head is fixed to the block so that gas and coolant do not leak. This task is performed according to the instructions of the car manufacturer [5-8].

Valve clearance adjustments are performed during 2nd maintenance or as needed to ensure smooth operation of the gas distribution mechanism and filling of the cylinders with a fuel mixture, regulating the gas distribution process, which, in turn, , allows for increased engine power and compression.

The cylinder, cylinder head, rod and other parts of the valve drive mechanism are heated up to 80…150°C, and the valves up to 300…600°C, depending on the temperature of the engine. In this case, the heat gap between the parts is reduced, which causes the parts to be deformed under the influence of heat, and the valves do not fit tightly in their slots [12-13].

For this, the piston in the cylinder is brought to the upper end point during the compression stroke, the gap between the valves and the pistons belonging to the first cylinder is determined with the help of a caliper and, if necessary, adjusted, and the gap

between the remaining valves and pistons is performed according to the sequence of operation of the cylinders.

Currently, many motor transport enterprises and transport service centers have special workshops where crankshafts and gas distribution shafts are repaired. The worn support and connecting rod mounting necks of the crankshaft and the support necks of the gas distribution shaft are brought to repair dimensions using grinding equipment. After polishing, the necks of the crankshaft and gas distribution shaft are cleaned using an abrasive tape or GOI paste. The worn fists of the gas distribution shaft are processed using special grinding equipment [13].

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