COMPUTER DIAGNOSTICS OF CARS

Mukimova Davlatkhon Karimovna,
PhD, Assosiate professor of the Department of the "Vehicle Engineering",
Abdupattayev Bekmurod Bakhrom ugli,
Faculty "Transport and logistics".
Course "Vehicle Engineering" is a 3rd year student.
Andijan of Mechine Building Institute, Andijan city, Uzbekistan.

The timely detection of abnormalities and faults at the earliest stage - a guarantee of stable operation and durability of the vehicle. To achieve this goal, computer diagnostics of cars is carried out. This is a wide range of diagnostic activities carried out with the help of computer technology aimed at detecting malfunctions by reading information from the sensors located at the main vehicle nodes.

Significance of computer diagnostics. For the normal functioning of the nodes and assemblies of vehicles periodically should be carried out computer diagnostics of cars. This is due to the increase in the share of electronic components - chips, sensors, microcircuits - in the design of the machine. Check their performance, identify errors in their software is possible only with the use of computer technology.

In modern car, almost all systems equipped with electronic control chips and sensors. Moreover, some systems, for example, ABS, engine, transmission, airbags can no longer function without microprocessors.

On the one hand, this complicates the technical maintenance, and on the other hand - reduces the risk of unforeseen breakdown and accident. Computer diagnostics of car systems can never completely replace the visual inspection - they must complement each other [1, 4-6].

Diagnostic process. Computer diagnostics is a process of reading and the subsequent decoding of error codes from electronic means of control and management of cars. For this purpose, specialized computer stands are connected to the systems - OEM scanners, portable readers, multifunctional devices.

Each manufacturer produces its own Diagnostic scanners that are compatible with the electronic components of a particular model and are best suited for testing. Computer diagnostics of car faults allows in real time to read and detect the slightest malfunctions in the operation of systems. All information is displayed on the scanner’s display or on the monitor of a PC or laptop computer.

Stages of diagnostics

The duration of the study of electronic components of the car usually does not exceed 30 minutes. In cases where a specific node is tested (ABS, engine), the first results are obtained after 10 minutes. In any case, the diagnosis is carried out in three stages:

1. General computer diagnostics of cars. This is reading the error codes in the "standby" mode, when none of the systems is functioning. It is necessary to identify the faulty unit.
2. Dynamic verification. The car is installed on a special stand, its main systems are started, information is read from the functioning sensors.
3. Delete the data. The database accumulated by the on-board computer is deleted, the controllers are activated (activated) to collect the information [2, 7-9].

The error codes received during the diagnosis are deciphered using special applications. Based on these data, a verdict is issued on the malfunction of a system.

When to conduct diagnostics? **At least once a year, computer diagnostics of cars should be carried out. This is if your machine is functioning without obvious faults.**

In the case of uncharacteristic sounds, jerks and other phenomena during the movement, it is worth immediately contacting the center for diagnostics:

- the engine, if it is unstable, loses power, fuel consumption has increased, there are extraneous noises;
- automatic transmission - when there are slips, jerks, knocking, oil leakage, impossibility to switch on any speed;
- suspension - with uneven wear of the rubber, after the appearance of knocking on the maneuver;
- ABS - if the car bounces on corners, the stability on the road has decreased;
- steering rack - with the appearance of knocks, creaks, increased backlash or the detection of leaks from the torque converter.

After diagnosing the systems and revealing the real causes of the malfunctions, a visual inspection and repair of the car by a master specialist is carried out.

Types of diagnostic devices. **All computer diagnostic systems for car shave two classifications - according to performance and functionality. In the first group, stand-alone scanners and adapters are selected. The first size is similar to a walkie-talkie, they have a display in their design and allow you to connect directly to the machine for reading information.**

Adapters work only conjuction with the computer, which is connected to the computer or sensors of the car by cable. According to the functional characteristics, the equipment can be:

- dealer - scanners from the automaker, are fully compatible with the machine, the possibility of reprogramming the computer;
- branded - diagnostic tools issued by a third-party company for a particular brand or model;
- multimachine - devices that are compatible with all cars or with a vehicle from a region (South Asian, American).

Obviously, it's better to give preference dealer equipment, but its value can reach several thousand dollars. Other scanners have less functionality, but it's enough for troubleshooting [3, 10-12].

Self-diagnosis

Many modern cars are equipped systems of self-diagnostics. Such equipment independently analyzes the TC systems and notifies the driver of the appearance of malfunctions. If you notice that the indicator light on the dashboard has turned on or turned off, then the computer diagnostics of the car has worked. Repair must be carried out immediately, otherwise you risk undermining the performance of other nodes [11].

Conclusion. Computerization and automation are inevitable phenomena accompanying technological progress. Electronic diagnosis can significantly reduce the cost of maintaining the car. However, it is worth remembering that such an event can not detect all the malfunctions. To achieve maximum efficiency from the

procedure, it is necessary to conduct it in tandem with a survey of transport by a master specialist.

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