DETERMINATION OF TIME STANDARDS FOR MAINTENANCE AND REPAIR OF CHEVROLET NEXIA CAR CLUTCH

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https://doi.org/10.5281/zenodo.7663670

Abstract. The article analyzes several methods of labor regulation. Using the method of photographing the working day, the time standards for the maintenance and repair of the Chevrolet Nexia clutch were calculated.
Key words: time, standard, method, timing, research, analytical research, photography, speedometer, clutch, operation, disassembly, assembly.

The main task of standardization is to scientifically determine the time required to perform the specified work and to find reserves for perfecting the organization of labor based on the study of the technological process.

Depending on the type of work to be performed, two forms of repair labor standardization are used: the time standards Tm required for the production of a unit of product and the production standard T_i, which determines the amount of product produced in a unit of time. If the worker performs various repair operations in the enterprise during the shift, time standards are used to standardize their work. If the worker performs one type of work during the shift, the production standards during the shift are used to standardize labor. There is the following relationship between production rate and time rate:

$$T_i = \frac{1}{T_m}$$

Depending on the decrease of the time standard, the increase or decrease of the production rate is determined from the following expressions:

$$Y = \frac{100 * X}{100 - X}; \quad X = \frac{100 * Y}{100 + Y};$$

where: Y-production rate increase, %; Reduction of X-time norm, %.

The time standard consists of the sum of the following time expenditures:

$$T_m = \frac{T_{tt}}{n} + T_{op} + T_q;$$

where: T_{tt}-preparation-completion time; T_{op} operation time; T_q - additional time spent; n-the number of details being processed.

Preparation-completion time means the set of time spent by the worker for the preparation of the equipment necessary for the initial work, the preparation of the drawing and the workplace, the adaptation of the equipment and tools to the work, and the completion of the work. Preparation-finishing time is spent once for each individual work, its duration does not

depend on the volume and type of work, from this it can be concluded that the greater the number of items of one type, the more per unit of product preparation time will be shorter.

Operation time consists of main and auxiliary times:

$$T_{op} = T_a + T_{yo};$$

The following methods of labor standardization are used: comparison, experimental-static, standardization by elements, analytical-research, calculation-analytical and working day photography.

From the methods listed above, we chose the method of photographing the working day. In the conditions of a real car service, in order to repair the clutch of a Chevrolet Nexia car, it is disassembled and assembled. We will need a technological map, a stopwatch and a camera to perform the work.

Working day photography consists of direct calculation of working time by hours. In this case, all the time consumption of the worker or equipment is observed during a full shift or several shifts, during some part of it. As a result, the actual cost of work time spent by the worker or the equipment; determining the reasons for the loss of working time; obtaining preliminary information to determine additional, preparation-final times; determining the reasons for failure to fulfill production tasks; it allows to study the experience of the advanced production and to spread their achievements among other workers.

Before photographing the working day, it is necessary to explain to the observer the issues that he will identify. First, he should know what time consumption and in what volume should be determined. After that, an observation plan is drawn up, they get acquainted with the object of observation, choose a place for observation and prepare all the necessary tools for observation: a form of observation sheets, a watch, a tablet, pens, etc.

In order for the observation to be effective, before starting the observation, it is necessary to introduce the purpose and tasks of photographing the working day of the workers.

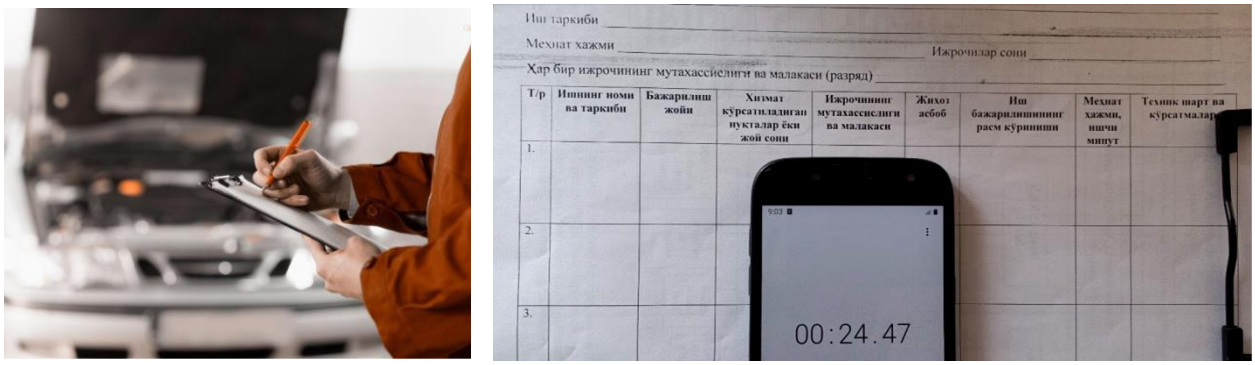

Figure 1. Scheme for determining the time of the maintenance process of the clutch of a light car.

Prior to the beginning of the observation, the known information is entered in the observation sheet. It is necessary to determine the time spent by the monitoring worker or group of workers during the whole working day.

After the end of the observation, its results will be developed. Based on the received information, the balance of the working time in the shift is determined, it is concluded that it is possible to increase the work productivity, and measures are created to eliminate the loss of working time. To get more accurate information, it is necessary to photograph the working day several times.

One of the types of photography of the working day is the method of momentary observation. This method is based on mathematical statistics, which shortens the observation period. Its meaning is that monitoring of working hours is carried out short, sudden and non-periodic. It determines the return of individual types of time spent. It determines how much of the observed time consumption is in relation to the total time and its absolute value in terms of time.

Timing is used to study the expenditure of the worker's time spent on the execution of an operation or its separate periodically repeating elements. Determination of time standards for new developments and correction of existing standards for existing developments.

№	Name of work and characteristics	Nexia
CLUTCH		
1.	Remove and install the clutch discs' pressure and driven (with the gearbox removed). Remove the pressure and driven discs, clean, check, lubricate the splines, install.	0,44
2.	Clutch release bearing with clutch assembly - removal and installation (on a removed gearbox). Take off, check, lubricate, install, bearing.	0,33
3.	Clutch release fork assembly - removal and installation (on a removed gearbox). Remove the outer lever bearing, fork (with replacement of bushings if necessary), check, install.	0,85
4.	The lever of an external fork of switching off - removal and installation (on the removed transmission). Remove and install lever.	0,25
Clutch Release Drive		
1.	Bracket with pedals assay - removal and installation (when removed: steering column with cardan shaft assay and left seat). Disconnect the clutch release cable from the pedal shaft lever, wires, brake pedal from the brake booster pusher fork, remove the pedal bracket with pedals assembly, check, install attach.	0,76
2.	Clutch or brake pedal pad or clutch pedal release spring - removal and installation (per 1 pc). Remove and install trim or spring.	0,27

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