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УСТАНОВЛЕНИЕ НОРМАТИВОВ ВРЕМЕНИ ПРОЦЕССА ТЕХНИЧЕСКОГО ВОЗДЕЙСТВИЯ НА ЛЕГКОВЫХ ТРАНСПОРТНЫХ СРЕДСТВАХ

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*Аннотация. В статье анализируются несколько методов регули-
рования труда. Методом фотосъемки рабочего дня рассчитаны
нормативы времени на проведение работ по техническому обслужи-
ванию и ремонту сцепления Шевроле НексияР3.*

*Ключевые слова: время, эталон, метод, хронометраж, исследо-
вание, фотография, сопряжение, операция, рассечение, сборка.*

ESTABLISHMENT OF THE TIME STANDARDS OF THE TECHNICAL INFLUENCE PROCESS ON LIGHT VEHICLES

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*Annotation. The article analyzes several methods of labor regula-
tion. Using the method of working day photography, time standards for mainte-
nance and repair work on the Chevrolet NexiaR3 clutch were calculated.*

*Key words: time, standard, method, timing, research, photography,
coupling, operation, dissection, assembly.*

The main task of standardization is to scientifically determine the time required to perform the specified work and to find resources for improving 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 T_m 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. In the enterprise, if the worker performs various repair operations during the shift, time standards are used to standardize their work. If the worker performs the same type of work during the shift, the production standards for the shift are used to standardize labor. There is a relationship between production rate and time rate [1-2]:

$$T_i = \frac{1}{T_m} \quad (1)$$

The increase or decrease of the production rate depending on the decrease of the time rate is determined from the following expressions:

$$Y = \frac{100 * X}{100 - X}; \quad X = \frac{100 * Y}{100 + Y} \quad (2)$$

where:

Y-production rate increase, %;

Reduction of X-time norm, %.

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

$$T_m = \frac{T_n}{n} + T_{op} + T_q; \quad (3)$$

where:

T_n -preparation-completion time;

T_{op} -top-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 drawing and the workplace, the adaptation of the equipment and tools to the work, and the activities related to the completion of the work. The

preparatory-finishing time is spent once for each individual work, its duration does not depend on the volume and type of work, from which it can be concluded that the more the number of items of one type, the more per unit of product the shorter the preparation time.

Operation time consists of main and auxiliary times:

$$T_{op} = T_a + T_{yo}; \quad (4)$$

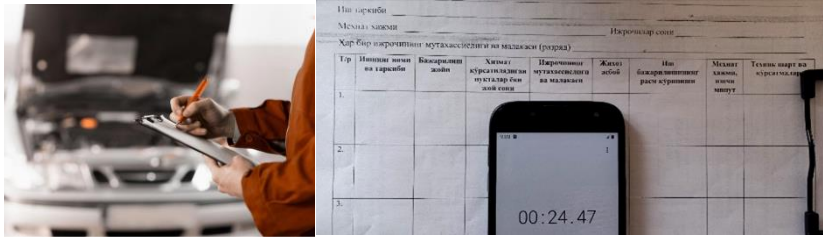
The following methods of work standardization are used: comparison, experimental-static, standardization by elements, analytical-research, calculation-analytical and photography of the working day.

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 Chevrolet Nexia clutch, it is disassembled and assembled. We will need a technological map, a stopwatch and a camera.

Working day photography is a direct calculation of working time by hours. In this case, all the time consumption of workers 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 production leaders and to spread their achievements among other workers [3].

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 goals and tasks of photographing the working day of the workers.



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Figure 1. – Scheme of the process of determining the time of the technical impact on the clutch of a light car

Prior to the beginning of the observation, the information known is entered on 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 observation is completed, its results will be developed. Based on the received information, the balance of working time in the shift is determined, a conclusion is made about the possibility of increasing 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. It means that the monitoring of working hours is 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.

Timekeeping is used to study the consumption of worker time spent on an operation or its individual periodically recurring elements. Establishing time standards for new developments and adjusting existing standards for existing developments [4-5].

Table 1 – The process of technical influence on light car dust time standard

№	Job title and features	Nexia R3
1.	Remove and install compression leader and driven clutch discs (with transmission removed). Disassemble, clean, inspect, lubricate and install the compression leader and driven discs.	0,44
2.	Removing and installing the clutch launch bearing (removed from the gearbox). Bearing removal, inspection, lubrication and installation.	0,33
3.	Disassembly-assembly and installation of the clutch plug (disassembled from the gearbox). Check, install the outer handle, bearing, forks (with replacement of bushings if necessary).	0,85
4.	Disassembly and installation of the fork handle (removed from the gearbox). Remove and install the handle.	0,25
Clutch Disassembly Procedure		
5.	Bracket with pedal assembly - disassembly and installation (when removed: steering drive shaft assembly and left seat). Disconnect the clutch shaft and clutch connecting rod, similar, disconnect the plug of the brake booster pusher from the brake pedal, remove the pedal holder with a set of pedals, check, attach and install.	0,76
6.	Clutch cover or brake pedal pad or clutch pedal pull-out spring - disassembly and assembly (per 1 unit). Remove and install the cover or spring.	0,27

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