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materiallar to'plami

The most indispensable knowledge and skills for the development of the direction of mechanical engineering in the modern education system.

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Annotation: Mechanical engineering creates a technical base necessary for the development of industry and agriculture. Therefore, the task of every working engineer and scientist is to create new machines that fully meet the requirements of our time, are highly productive, durable and have a high efficiency. For this, when designing machines, it is necessary to ensure that the details are as light as possible, strong enough, resistant to friction, simple in shape, convenient to use and safe, as well as fully meet the requirements of state standards.

Key words: mechanism, detail, gear, vibration, condition, bearing, shaft.

According to the scientific research, it is necessary that the parts should be quickly and easily replaced with new ones when they fail. Of course, only highly qualified specialists can solve such a task. The "Machine details" course has a special place in training such specialists. A set of mechanisms made up of several details, a tool designed to perform a specific job is called a machine. Each machine is made up of three groups of mechanisms: driving, executing and transmitting mechanisms. A part of the machine made of the same material and not divided into individual parts is called a detail. For example, nut, bolt, key, spring, etc. are details. The part of the machine designed to perform a specific task and made up of several details is called a unit. Examples of nodes are reducers, couplings, bearings and so on. So, the machine is made of nodes, and the nodes are made of details. There are many such details and components, they are used in almost all types of cars. These include bolts, nuts, gears, belt drives, bearings, shafts, and more. Such parts and units perform common tasks in cars. Their structure and design methods are studied in the science of machine detailing. Thus, the science of machine details is a science that studies the structure of details and nodes common to almost all types of machines, as well as the methods of calculating and designing them economically. Thus, the science of machine details is a science that studies the structure of details and nodes common to almost all types of machines, as well as the methods of calculating and designing them economically. The main details and concepts studied in the machine detailing course are as follows. In order to make nodes from parts and machines from nodes, it is necessary to connect them to each other with some means. The group of compounds that perform such a task and their constituent parts is the first group of details to be studied in this course. Various transmissions are the means that are located between the energy source and the working parts of the machine, allowing to control the speed of movement as required. Such gears and the parts that make them form another part of the machine detailing course. It is known that details called shafts and axles are used to ensure the movement of any rotating parts and to install them. Shafts and axles must have their

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own supports. In addition, one moving node is connected to another node through its shafts. Various couplings are used to connect the shafts. Therefore, the shafts, axles and their supports, which provide the required rotational movement, and the couplings that connect the shafts with each other form the next series of machine details. In addition to the above, various springs, components of the lubrication system, body details, etc. are found in almost all cars and are studied in this course. Therefore, the joints, transmissions, shafts and axles, their supports, couplings, springs and various body parts common to most machines form the main details and nodes studied in the machine detailing course. The part to be designed, firstly, has the ability to work under the same conditions, that is, it must maintain its strength for a certain period of time and not require excessive repair. it should be non-hazardous, fourthly, it should be convenient and economical to prepare from the technological point of view, that is, it should be small in size, as light as possible, and inexpensive while maintaining its strength. Therefore, in order for the product designed by each designer to be of high quality, it is necessary to take into account all the requirements described above. Durability, uniformity, heat resistance, resistance to vibration and corrosion are the main characteristics that determine the performance of the part. It depends on the conditions of operation of the detail, according to which sign it is necessary to determine the working capacity of the detail. For example, the main characteristic for determining the performance of a sliding friction bearing is wear resistance, for bolts, strength, and for shafts, uniformity, strength and vibration resistance. The feature of being able to work without breaking and flawlessly under the conditions of deformation of the part under working conditions is called its strength. When designing new details, first of all, it is necessary to ensure their durability. For some parts, especially parts that work under the influence of force, the reinforcement alone will not be enough. For example, under the influence of a certain force and torque, a rotating shaft can bend beyond the permissible limit, despite being strong. Such a shaft should not be used, because the distance between the parts installed on the shaft, for example, between the gears, is limited. More than permissible bending of the shaft causes these parts to fail earlier than intended. If the value found as a result of the calculation is less than the allowed value or equal to ten, the accuracy of the detail is considered satisfactory. It should be noted that excessive detailing of others has a negative effect on their durability. For example, an excessive number of teeth of a gear wheel made of steel leads to the appearance of dynamic forces and increased noise during operation. So, in necessary cases, details are required to be given to a certain extent. The yield of details is determined by the methods given in the material resistance course. The increasing speed of the machines and the reduction of the weight of the parts create an opportunity for the appearance of various vibrations. It is known that vibrations have a negative effect on the operation of the machine and accelerate the failure of parts due to fatigue. In this regard, the phenomenon of resonance is especially dangerous. Usually, in order to ensure the vibration resistance of the details, it is necessary to eliminate the factors that cause the phenomenon of resonance. It is known that the phenomenon of resonance occurs when the specific vibration frequency of the part itself becomes the same. Therefore, it is necessary to calculate these two frequencies and ensure that they are

not equal to each other. In addition, special elastic elements are used to reduce vibration in cars. Lubricating the rubbing parts as necessary, using corrosion-resistant materials, plastic are measures to reduce corrosion. Generally speaking, the most important of the above-mentioned characteristics for most parts is strength, because parts that are not strong will not work at all. In order to ensure the strength of the detail, it is necessary to find the stress generated on the dangerous section or surface from the force or moment acting on it and compare it with the permissible value. If the value of the stress found as a result of the calculation is less than or equal to the permissible value, the strength of the detail is ensured.

Conclusion:

All in all, such important sciences are considered the most urgent aspect that needs to be developed today. It can be added that in the field of mechanical engineering we find it necessary to present problems and solutions. Therefore, in addition to the strength of such details, the uniqueness must be ensured. For this purpose, where the detail can be bent more, the value of the deformation in that place is determined and compared with the permissible value.

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