ТЕХНИКАЛЫҚ ҒЫЛЫМДАР / ТЕХНИЧЕСКИЕ НАУКИ / TECHNICAL SCIENCES

UDC 693.5.002
SCSTI 67.17.19

DEVELOPMENT OF A DEVICE FOR CUTTING INSTALLATION FITTINGS FOR REPAIR OF TRANSPORTS

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Abstract

The article deals with promising areas of improvement of repair of transport equipment, various types of devices for cutting mounting fittings in the repair of transport equipment: grinder, rebar shears, machines for cutting rebars, manual scissors for rebars, special scissors, hydraulic scissors for rebars, electric scissors for rebars, guillotine for chopping. As well as the development of own tools for cutting and installation of rebar in the repair of transport equipment. The productivity of the installer and the quality of the work performed by him depends on the availability of a modern set of tools and devices. The tool used in the production of works should be light, since a large mass of the tool quickly tires the worker. The maximum weight of the hand tool should not exceed 8 kg, with a larger weight, it is necessary to use suspensions or any devices that facilitate the use of the tool. In construction, the predominant distribution of electric and pneumatic hand machines.

Key words: mounting fittings, cutting device, transport equipment, reinforcing shears, consumables, special machines, bench tool.

РАЗРАБОТКА ПРИСПОСОБЛЕНИЯ ДЛЯ РАЗРЕЗАНИЯ МОНТАЖНОЙ АРМАТУРЫ ПРИ РЕМОНТЕ ТРАНСПОРТНОЙ ТЕХНИКИ

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Аннотация

В статье рассматриваются перспективные направления совершенствования ремонта транспортной техники, различные виды приспособления для разрезания монтажной арматуры при ремонте транспортной техники: болгарка, арматурные ножницы, станки для резки арматуры, ручные ножницы для арматуры, специальные ножницы, гидравлические ножницы для арматуры, электрические ножницы для арматуры, гильотина для рубки. А также разработка собственного приспособления для разрезания монтажной арматуры при ремонте транспортной техники. Производительность труда монтажника и качество выполняемых им работ зависит от наличия у него современного набора инструмента и приспособлений. Инструмент, применяемый при производстве работ, должен быть легким, так как большая масса инструмента быстро утомляет рабочего. Предельная масса ручного инструмента не должна превышать 8 кг, при большей массе необходимо применять подвески или какие-либо приспособления, облегчающие использование инструмента. В строительстве преимущественное распространение получили электрические и пневматические ручные машины.

Ключевые слова: монтажная арматура, разрезательное приспособление, транспортная техника, арматурные ножницы, расходный материал, специальные станки, слесарный инструмент.

КӨЛІК ТЕХНИКАСЫН ЖӨНДЕУ КЕЗІНДЕ МОНТАЖДАУ АРМАТУРАСЫН КЕСУГЕ АРНАЛҒАН АЙЛАБҰЙЫМДАРДЫ ӘЗІРЛЕУ

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Аңдатпа

Мақалада көлік техникасын жөндеуді жетілдірудің перспективалық бағыттары, көлік техникасын жөндеу кезінде монтаждық арматураны кесуге арналған құрылғылардың түрлі түрлері қарастырылады: Болгар, арматуралық қайшы, арматураны кесуге арналған станоктар, арматураға арналған қол қайшылар, арнайы қайшы, арматураға арналған гидравликалық қайшылар, арматураға арналған электр қайшылар, кесуге арналған гильотина. Сондай-ақ көлік техникасын жөндеу кезінде монтаждық арматураны кесу үшін жеке құрылғыны әзірлеу. Монтаждаушының еңбек өнімділігі және ол орындайтын жұмыстардың сапасы оның құрал-саймандар мен айлабұйымдардың қазіргі заманғы жиынтығының болуына байланысты болады. Жұмыс жүргізу кезінде қолданылатын құрал жеңіл болуы тиіс, өйткені құралдың үлкен массасы жұмысшыны тез шаршатады. Қол құралының шекті салмағы 8 кг-нан аспауы тиіс, салмағы үлкен болған жағдайда аспапты пайдалануды жеңілдететін аспаларды немесе қандай да бір құралдарды қолдану қажет. Құрылыста электр және пневматикалық қол машиналары басым таралды.

Түйінді сөздер: монтаждық арматура, кескіш құрылғы, көлік техникасы, арматуралық қайшы, шығын материалдары, арнайы станоктар, слесарлық құрал-сайман.

Introduction

The use of steel reinforcement in the repair of transport equipment is widespread. It is used in the manufacture of various metal structures. Rebar shears or special machines are used for cutting rebar. In our article we will talk about what are the main features of working with these tools and devices.

First, you need to decide what is generally required cutting rebar. The fact is that the valves are manufactured by enterprises in accordance with certain standards. We are talking not only about compliance with the necessary technological stages, but also the size range. When working with mounting fittings, it is impossible to do without adjusting the dimensions of the element to specific needs. For these purposes, various devices can be used [1].

So, the following tools can be used for reinforcement:

Bulgarian. Cutting rebar with angle grinder is often used as a temporary measure. Technically, this device copes with the task perfectly, but it requires the use of electricity, which is not always possible. In addition, the grinder needs consumables, and the tool itself does not become newer from work.

Rebar scissors. Are another device used for these purposes. This option is most appropriate. It does not require any connection to the power grid, nor the use of any consumables.

Rebar cutting machine. As a rule, it is a question of stationary variants of production which demand connection to power networks and special skills of the personnel. Rebar such machines cut perfectly, but their purchase is justified only in conditions of constant use. Machines can be arranged on the principle of the same scissors or made in the form of a guillotine.

One of the most popular tools used for cutting rebar are special scissors. By its principle of operation, the tool does not differ from the usual analogue. These are the same two cutting edges that are connected together. The useful action of the device is produced as a result of the displacement of the planes relative to each other. There are several types of such devices:

Hand scissors for fittings. They are characterized by strength of construction, materials used for their manufacture and long handles, which contribute to the creation of a large lever. This is necessary to ensure the possibility of cutting a steel bar of almost any diameter (within the limits allowed for a particular model). The advantage of this type of tool is the autonomy of application and high versatility. With the help of such scissors, you can cut the reinforcement directly at the work site, for example, inside the Foundation pit, which is sometimes necessary.

Hydraulic shears for fittings. Are the second type of devices in this category. According to the principle of action from the manual analogue do not differ, but use the energy supplied under pressure of the liquid. Approximately the same scheme operates and all the familiar Jack. This tool can be used independently and act as a manual, and installed on a special frame, turning into a lightweight version of the machine. The advantages of such devices include higher power compared to mechanical counterparts. For example, the manual hydraulic rebar cutter is able to work confidently with rebars up to 30 mm in diameter.

Electric scissors for fittings. This is another option for manufacturing devices of this type. Here the useful action is produced by converting the energy of the electric current into mechanical energy of compression. Such a device will be characterized by the highest power among similar ones. However, the work requires a connection to the mains, in addition, these scissors will have impressive dimensions, so their use is considered only as stationary. The choice of tool type should be based on the specific objectives and the expected intensity of work.

Rebar cutting machines are used for cutting rebar in stationary conditions or when it comes to large volumes of work. Depending on the type of construction and the principle of operation, they can also be divided into several types: Manual rebar cutting machine. In fact – it is attached to the frame by a pair of scissors, which are different from the manual counterpart, perhaps, only in size and capacity. The electric machine. This type of fixture can operate on the principle of scissors or be equipped with rotating cutting elements. It is characterized by high performance and, at the same time, bulkiness.

Guillotine for chopping. Such machines are also successfully used for work with valves. The principle of operation of such a device is similar to scissors, but has a number of design features. The guillotine uses special long knives, which when working form a perfectly smooth cut, without burrs and deformations. There are models of mechanical, Electromechanical, hydraulic and even pneumatic type [2].

All these devices are effective and cope with their tasks, but for me, as for every modern person I want to use something that is not dangerous to health and the most effective.

Let's give an example, own development of the adaptation for cutting of mounting fittings at repair of transport equipment.

As a basis, I took specialized scissors for cutting mounting fittings, where I added a pneumatic cylinder. In this device, I used standard scissors for cutting mounting fittings according to GOST, to which I attached a pneumatic cylinder for fast and high-quality use, as well as not traumatic for health.

Conclusion

Thanks to their application, despite the simple design, productivity, accuracy and accuracy of work will significantly increase.

This development is at the source of implementation and will be covered and reflected in my master's thesis.

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