

## **ASPECTS REGARDING THE EXPERTISE OF LIFTING-DESCENT MECHANISM PLATFORM OF A COAL EXTRACTION MACHINE – Part I**

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**ABSTRACT:** in this paper presents the technical state of the platform of uplift-descent the mechanism of the coal extraction machine, n following technical expertise. The rehabilitation to which will be subjected of the platform of uplift-descent the mechanism will be done by performing the intervention works which will restore in the normal operating parameters both the structural part and functional part. Also, in the paper are presented: the verification methods of the mechanism as well as the proposed technical solutions for the repair of the mechanism.

**KEY WORDS:** mechanism, expertise, coal extraction machine

### **1. INTRODUCTION**

The mechanism of uplift-descent the ladder has the role of raising or lowering the arm of the port-cup wheel by means of the cable that wraps respectively unwraps, on two tambours. The mechanism is actuated by an electric motor with two shaft ends on which is mounted the drive coupling and respectively the coupling with additional braking washer, and then the tachogenerator or speed limiter, of the type lumicron. The movement is transmitted to a cylindrical reducer with two-end input shaft on which two brake couplings are mounted, one constituting the corresponding coupling with the coupling on the engine. On these braking couplings On these braking couplings mounted articulated brakes with sabots and uplift electro-hydraulic. Lifting cable mounted on drums is positioned over the cable wheels what makes the batteries of mole, but also over the roll in

the mobile box with the role of mobile weight of the balancing provided with "stop" warning limiters of the descent.

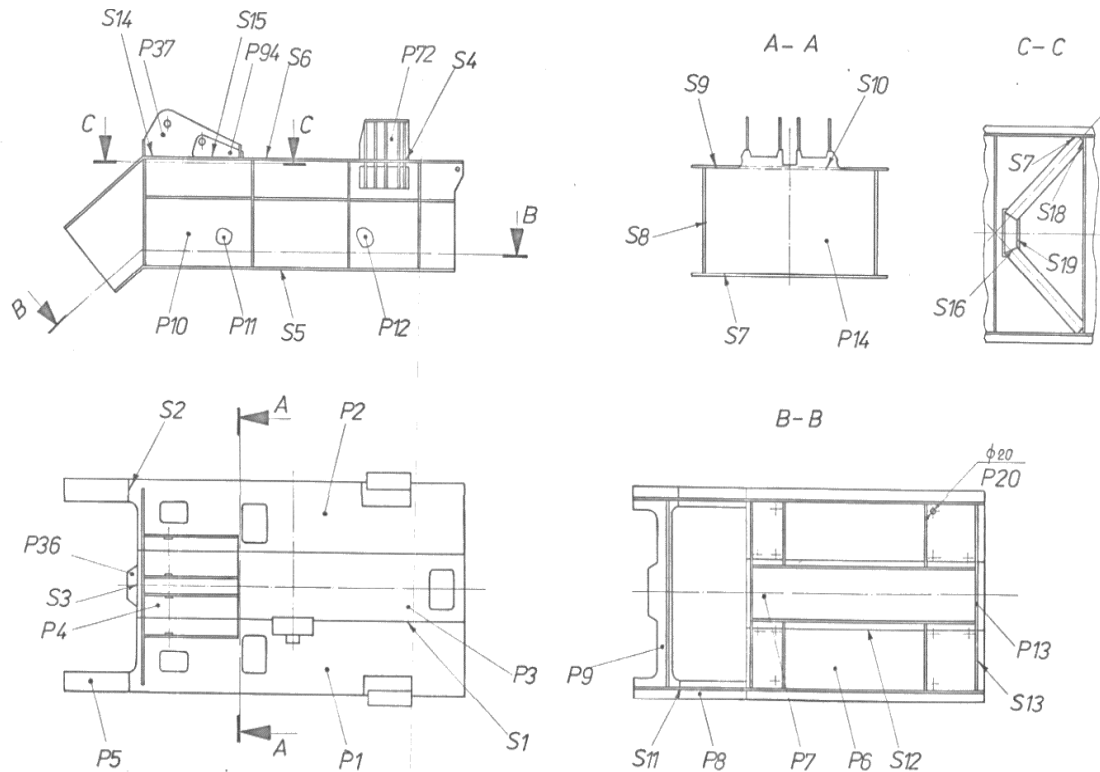
In order to perform the repair of the mechanism it is necessary to make a technical examination his. This paper will present the mode of expertise and its conclusions.

### **2. THE MECHANISM OF UPLIFT-DESCENT THE LADDER**

The upper platform of the lifting mechanism is a welded metal construction is a welded metal construction in the form of a box on which it is mounted the mechanism of uplift-descent the ladder. It is mounted to superior part of the balancing arm (counter arm) through the intermedium of demountable assembly organs of the type screw and nut. Attaching the platform to the

inclined arm is through intermedium the link plates placed on the soles and the hearts of the two beams of the inclined arm having the form "I". In fig. 1 is showed the drawing

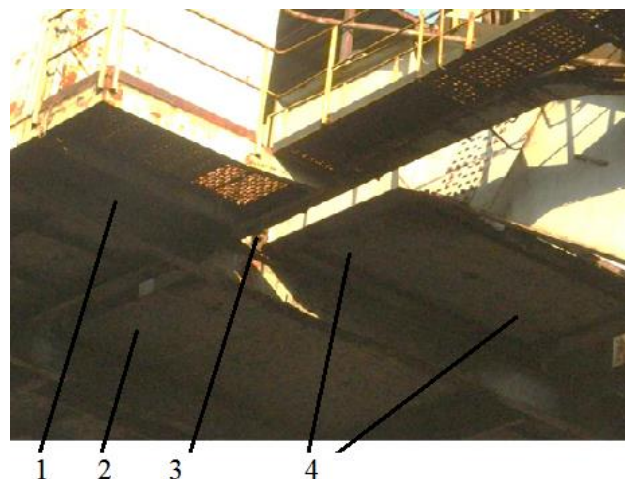
of assembly's the upper platform of the lifting mechanism [4], [5] and [6].



**Fig.1. The upper platform of the lifting mechanism**

Inside this platform, as can be seen in Fig.1, section A-A, will slide „mobile box”, and in the compartments P6 and P7 are the places sitting of the fixed balancing lest of the rotating superstructure of the machine. On the lower rear side, position P8, is

mounted the transverse girders what support electric booths of the apparatus. The positions P37 are made of two welded parts at mounting, on site and, due to their importance, will be controlled in the stretch-traction area of the cord welding.



**Fig.2. The platform of mechanism**

In fig. 2 is showed the platform of the lifting mechanism - bottom view- in which it is distinguished: the platform (1), gripping mode of the support beams (3) gripping mode of electrical cabins (2) and the mobile box of lest (4).

### **3.SUBANSAMBLES'S DEFECTS OF THE LIFTING MECHANISM – THE NON-DESTRUCTIVE CONTROL OF THE WELDED JOINTS**

The non-destructive control of the welded joints was made with a modern control methods and namely the control whit the ultrasound or ultrasonic control. For this type of control, the fundamental properties of vibratory movements are used: the propagation velocity of the ultrasonic waves depends on the nature of the vibration environment; ultrasonic wave movements are transmitted from one environment to another, respecting the laws of refraction; at the meeting of some obstacles, ultrasonic waves are reflected by the laws of refraction. These

vibrations are characterized by their frequency, and when this is greater than the upper limit of acoustic frequencies perceptible to the human ear, ultrasonic vibrations are appear. Frequencies of ultrasonic vibrations range from 16 kHz to about 10 MHz. To ahe non-destructive control of the welded joints, the sources of ultrasonic vibrations used are piezoelectric transducers, to which ultrasonic vibrations are obtained using the piezoelectric effect, with quartz crystals which electrically excited at a high frequency, produce mechanical vibrations of the same frequency [1].

Following checks made found more defects o different parts of the mechanism, of these defects can be enumerated: rusting the assembly elements (screw nut) both at the center and at the edge of the ladder (catching the countearm) fig.3; rusting assembled sheets; rusting the area in the main heart, on the side from the platform; the occurrence of material cuts at the grip of countearm on superior girder against wind to the front plat, fig.4, surface defects etc.



**Fig.3 Rusting the assembly elements and rusting assembled sheets.**



**Fig.4. Surface defects**

Following the welding control of this ensemble, by means of ultrasound devices, this not put it in evidence degradations which to require remedial intervention on both sides of the mechanism.

#### **4.CONCLUSION**

Taking into account the above, some conclusions could be drawn about the defects:

- rusting the assembly elements (screw nut both at the center and at the edge of the ladder;
- rusting the area in the main heart, on the side from the platform;
- controlled welds did not presented defects which could jeopardize the machine;
- the welded structure of the assembly has no major deficiencies from the basic documentation except that oxy-gas cuts have been performed without complying with the technical specifications, which is why they must be repaired.

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