ASPECTS REGARDING EXPERTISE THE MECHANISM OF RIDING OF ELINDE FROM THE COAL EXTRACTION MACHINE

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ABSTRACT: In this paper presents the technical state in which it is found in which is the mechanism of lifting ladder from the coal extraction machine, following technical expertise. Rehabilitation to which the lifting mechanism will be subjected of the ladder will be done through the execution of the intervention works which will return to normal operating parameters both the structural part and the functional part. In the work paper are presented: verification procedures of the mechanism as well as the technical solutions proposed to repair the mechanism.

KEY WORDS: mechanism, expertise, coal extraction machine

1. INTRODUCTION

The mechanism with the highest degree of responsibility in the equilibrium of the superstructure of the machine is the one that maintains in balance these mounted and positioned assemblies in an interdependence of operation.

The characteristics of the lifting mechanism of the ladder are presented in table 1.

It has the role of raising or lowering the arm of the port-cups (the ladder) with help the cable that wraps or unfolds on two cable drums, with left-right channels of cable.

Tab.1. The characteristics of the lift mechanism of ladder

Lifting speed at the center of the wheel with cups	3,08 m/min
Number of branches in the cables	2 x 10
Rated power of the electric motor, DA 40%	37 kW
Rated speed of the electric motor	710 rot/min
Transmission report of the reducer	196,7
Limit angles of the ladder	cca 3^0 – cca + $13,5^0$
Type of lifting cable	Warrington Seale 38-6x36- 1760/BG-s/z with a metallic heart
Brake; Diameter of the brake washer x number of brakes The capable braking torque of a brake Type of electrohydraulic lift Active time of the lift	400 mm x 2 buc 82 daNm REH 80/60 N5CA DA 40%

The mechanism is driven by an electric motor, with two shaft ends, on which is mounted the drive coupler and respectively coupling with additional brake washer and tachogenerator. Movement is transmitted to a cylindrical reducer with two-head input shaft on which two brake couplings are mounted, one constituting the corresponding coupling with the one on the engine, and the one the second is used as a safety coupling. On these brake couplings are mounted articulated brakes with sabots and electro-hydraulic lifts.

Fig.1. The mechanism of lifting ladder

Lifting cable, mounted on drums is positioned over the cable wheels what is forming the system of rolling, but also over the roll in the mobile box with the role of mobile weight of balancing provided with warning and stop limiters of the descent. This is part of the lifting mechanism of the ladder being of galvanized type, with a thick layer of zinc applied thermally, with a metallic heart.

2. DETERMINATION OF DEFECTS TO LIFTING MECHANISM of ELINDE

Of the major flaws which have been found to the subassemblies of the mechanism, we can emphasize:

The reducer (fig.2) has the lubrication system under pressure, but it also has losses at the entrances or exits of the plant from its housing, as well as on the installation, in the adjustment zone.

Wears are visible in bolt-bore couplings on the brakes mechanism of lifting.

Linings on the brake sabots are worn out.

Fig.2. The reducer and the drive motor

The three brakes have electrohydraulic lifters with shock absorbers, but they have oil losses, with the exception of the service brake (unregulated). Also, large wear was found on the safety brake, although this brake must work when closing, after complete shut down of the mechanism and will get up 2-3 seconds before of power supply of the electric motor.

Fig. 3. The brakes of the mechanism

In the case of the cable from the lifting mechanism, it has been noticed that the nuts have not been secured by bending the sheet fuses, on their sides, to three from fastening brackets of the cable, and at the fourth one is missing the fuse. The importance of these fuses bended is that the nuts they can not loosen that to allow detach the cable.

Fig.3. The drum of the lifting cable

Mounting the segments on the end flanges of cable drums was inappropriately made, being a great execution mistake, they can detach away due to vibrations out of operating time and can cling cable which can be damaged up to breakage and from here may result in a serious technical accident. It should be noted that, when installing the cable on the drum, the ends of the cable must have a length that measures at least 10 x ϕ_{cable}, at the exit from the clamp, so it is ensured against unplait, for safety against pull-out the cable in the clamp.

Also, an important role into the framework of lifting mechanism, him constitutes and limiter overspeed which is mounted on the motor spindle to the safety brake of type CEF 400 – 7/80 at the end of the spindle for the brake disk Φ400 CEF-400, having the role of limit the appearance overspeed to the descent. At verification made of this mechanism was found that the machine not has fitted this limiter, but has an improvisation with a tachogenerator, very dangerous in the technical safety of the machine.

3. CONCLUSIONS

Taking into account what has been said we can draw the following conclusions on how achievemented of the checks and repairs of mechanism of lifting ladder:

they will be restored couplings so their games be consistent with the ones presented in the machine documentation and will be remedied by replacing the linings from the brake sabots them. Also, will do:

- checking the clamps at the ends of the lifting cable on the drums of mechanical cable;
- insurance with fuses of sheet metal of nuts from the cable clamps and completing the fourth which is missing;
- welding the ends of the segments who are attached on the discs of the drums cable, without being finalized and welding between the segments and the discs of the drums (Finalization will be made when the atmospheric temperature is over 15^0C, for three consecutive days and the temperature will be at night of over $10^{\mathbf{0}}$**C**),
- brake adjustment (electrohydraulic lifters REH) electrohydraulic lifters on the lifting side and the side of the descent as execution times.
- will be eliminated oil losses of the transformer of electrohydraulic lifters (REH).

Until completion of the repair, will be controlled liquid level, which must not fall below the lower limit, at least once a week. The control and completion will be done by two people who will also complete a written document to that effect.

Ordering and laying in gutters of electrical cables which supplies the whole mechanism, including limiters and tahogenerator. During eliminating losses from REH-uri of the oil, by repairing them will be eliminated and improvisations from the brake elements. They will change metal ropes of placing at table the main motor, with flexible galvanized copper metal ropes.

It is necessary to control bolts and rubber bushings of the coupling between the motor and the gearbox.

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