

TECHNICAL EXPERTISE OF THE WHEEL'S ARM - COAL EXTRACTION MACHINE - T2052

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ABSTRACT: In this paper presents the technical condition of the wheel arm on which the cups are fixed from coal extraction machine T2052, following the technical expertise. The rehabilitation to which the metal beam lifting-lowering mechanism will be subjected will be done by executing the intervention works which will bring back to the normal operating parameters both the structural part and the functional part. The paper presents: the verification methods of the subassembly as well as the proposed technical solutions for its repair.

KEY WORDS: expertise, coal extraction machine, rehabilitation

1. INTRODUCTION

The coal removal machine -T2052, with wheel with bucket, is part of the family of coal-fired equipment, which is intended for the discharge of solid fuel deposits. The technological role is to take the solid fuel from the stacks and deposit it on a belt conveyor for transfer to the bunkers that feed the mills-fan. The latter sprays it in the hearth of the boiler in the thermal power plant.

The largest component parts that are part of the analyzed equipment are: the wheel with cups; the rail travel mechanism; the infrastructure; the superstructure with the pivot mechanism; the wheel's arm with cups and the forearm with lifting-lowering mechanism.

With the help of the wheel mechanism grip of the cups and of the stator (wheel bottom) the coal is taken from the stack with the help of cups and is brought on the conveyor belt located on the wheel arm, which transports it to the spill through the bunker inside the rotation platform and the front belt that will

transport it to the plant or to the fuel storage storage stacks.

The rotation, lifting and translation mechanisms help to position the cups in various positions on the coal stack (when unloading from the railway wagons, on the trestle II), for their loading by rotational motion of the port-cups wheel. The loading from the stack is made starting from the lower position up to 450 -500mm, above the horizontal face to the front, then follows the emptying, by falling on the wheel guard until the positioning at the top of each bucket, on the conveyor on the wheel arm that runs to the center of the car through the inclined plane that distributes and takes over the coal by the conveyor belt.

The wheel arm with cups contains: the metal construction of the arm; carpet guide parts; cable suspension system, arm bearing system.

In this paper are presented the non-conformities encountered at the wheel arm - section III.

2. THE WHEEL'S ARM NON-CONFORMITIES

Figure 1 shows the sketch of section III of the elinda (the support of the port-cups wheel mechanism). Certain checks are recommended before starting the repair for the machine “Coal extraction machine

T2052” - whose capacity is 1200 t / h, in an area adjacent to the place of operation, at the end of the line, with the belt conveyor

removed from tension, in a surrounded area and signaled.

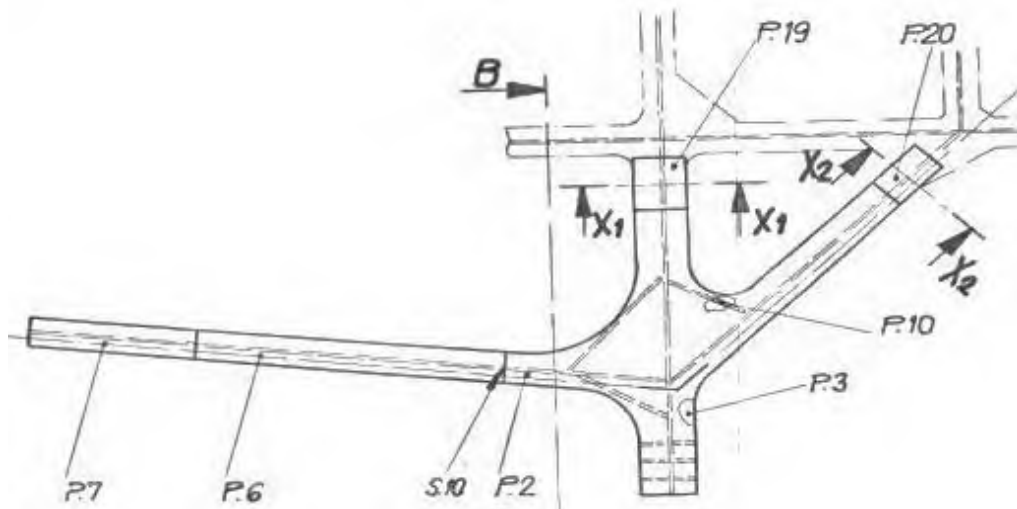


Figure 1. Sketch of section III (the port-cups wheel holder)

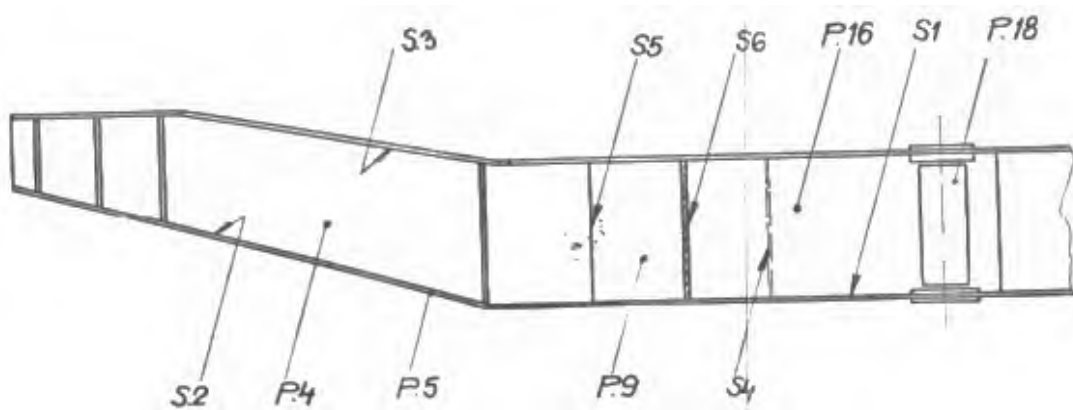


Figure 2. Sketch - section III - side view

The wheel arm will be placed at an angle of 90^0 or 45^0 to the axis of the conveyor, and the balance arm to the access path from the outside of the belt conveyor or to the inside between the unloading path and

the belt conveyor. If it will not be possible to create access to the work area, the traffic will be diverted on a side road chosen by the beneficiary.



Figure 3. Part break - position 2.

One of the first nonconformities encountered at the position 2 (see figure 1),

was the rupture of the soleplate and the heart of the support due to the twisted position of

the wheel arm when the weight of the wheel and the weight of the actuator has an axial force component that is supported only by it, figure 3.

It was found that the screws in the joint between section III and section II are degraded, on the two soles, figure 4.

It is recommended to replace the screws on the lower sole during the repair.



Figure 4. Wear of the screws in the joint area of section II with section III.

It was found that, in the absence of the walkway, some bars were welded by the two sections II and III, these led to the appearance of slag, coal deposition fact which was

followed by a degradation of both soleplates as well as the gripping ears of the tie rod, figure 5.



Figure 5. Improvisation walkway

Here it is recommended to repair the entire area regarding the access road and the walkway according to the initial documentation.

3. CONCLUSIONS

The deficiencies of the resistance structure are urgently remedied.

The metal beam is twisted as a result of the overload, the rupture of section III appeared due to the axial force.

Mandatory will have to be redone in conditions support, support and taking over tasks.

The repair will be done without disassembly, it will be done only with the horizontal placement of the subassemblies.

The repair of the component elements (platforms) of the metal beam will be done according to the technical documentation, except for the platform that will be attached on the wheel drive group. As for the platform that is mounted on the console does not require a change but only a repair. Also, it was found that the walkway over the conveyor to the drive group of the port-cups wheel and at the end of the belt to the stator is missing. For this reason it will be executed and mounted based on the realization of a project that will be verified and approved.

It is necessary to repair the conveyor roller seating elements as well as the repair of the roller supports, the conveyor support and the side guards.

4. REFERENCES

1. Constantin, M , ș.a. – Asamblarea întreținerea și repararea mașinilor și instalațiilor, Editura All, București, 2002
2. Cîrțînă Liviu Marius, Stăncioiu A., Rădulescu C - Aspects regarding expertise of the orizontalization device of command cabine of the coal mining machine - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.111-114, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/18_LMC~1.pdf
3. Cîrțînă Liviu Marius, Rădulescu C., Stăncioiu - Aspects regarding expertise the mechanism of riding of elinde from the coal extraction machine A- Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.115-118, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/19_LMC~1.pdf
4. Rădulescu C., Cîrțînă L.M., Stăncioiu – Aspects regarding the expertise of lifting-descent mechanism platform of a coal extraction machine – Part I - Confereng 2018,

- Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.149-152, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/26_CRA~1.pdf
5. Rădulescu C., Cîrțînă L.M., Stăncioiu – Aspects regarding the expertise of lifting-descent mechanism platform of a coal extraction machine – Part II - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.153-156, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/27_CRA~1.pdf
 6. Stăncioiu A., Cîrțînă L.M., Rădulescu C. Aspects relating to expertise of the mast coal mining machines – the first part - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.167-170, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/30_AST~1.pdf
 7. Stăncioiu A., Cîrțînă L.M., Rădulescu C. Aspects relating to expertise of the mast coal mining machines – the second part - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.171-174, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/30_AST~1.pdf