

THE EXPERTISE OF THE ENSEMBLE „THE METAL BEAM - SECTION II"- COAL EXTRACTION MACHINE - T2052

Lecturer PhD Eng. Rădulescu C., *University „Constantin Brâncuși,,
from Târgu-Jiu, ROMÂNIA*

Professor PhD Eng. Cîrțină L.M., *University „Constantin Brâncuși,,
from Târgu-Jiu, ROMÂNIA*

Professor PhD Eng. Penka Zlateva, *Technical University –
Varna, BULGARIA*

Lecturer PhD Eng. Stăncioiu A., *University „Constantin Brâncuși,,
from Târgu-Jiu, ROMÂNIA*

ABSTRACT: In this paper presents the technical condition in which it is found the metal beam - section II, from the T2052 coal extraction machine, following the performing technical expertise. The rehabilitation to which the metal beam - section II assembly will be subjected will be done by executing the intervention works that will bring back to the normal operating parameters both the structural part and the functional part. In the paper are shown: the verification methods of the assembly as well as the proposed technical solutions for its repair.

KEY WORDS: expertise, coal extraction machine, rehabilitation

1. INTRODUCTION

The wheel arm (metal beam) is part of the metal construction of the T2052 coal extraction machine, presenting itself comes in the form of two "I" shaped rails, the welded structure with braces in the upper and lower field and a reinforcement system and stiffening in various places. At both ends the side members have rotating platform mounting bores, or special constructions for mounting the bucket wheel. The wheel arm has the role of supporting the bucket wheel and its drive mechanism, but also the coal conveyor.

The wheel arm together with the rotating platform, the inclined arm, the mast, the tie rods, the ballast box and the platform for the lifting mechanism are part of the machine superstructure [1], [2] and [3].

The wheel's arm is supported by the two tie rods I and II which together with the mast form a non-deformable space triangle in two planes joined on the line of the tie rod I and thus do not allows the twisting of the gear

due to the variable efforts in the operation process of machine. The mast and metal beam fastening are made with cylindrical bolts secured with securing plates placed in places milled transversely on the longitudinal axis of the bolt to the outside of the cylinder on a certain depth. Metal beam is divided into three sections [4], [5]. In this paper are studied the non-conformities encountered on section II of the wheel's arm.

2. THE WHEEL'S ARM - SECTION II

In figure 1 shows the identification sketch of the wheel arm on section II, and figure 2 are shown two sections made along the wheel's arm. From these figures can be deduced the overall dimensions of the wheel arm, the total length being 16257mm.

The pieces from which it is built are made of sheet metal of different sizes, and the fastening between these simple or welded parts is done with the help of screws.

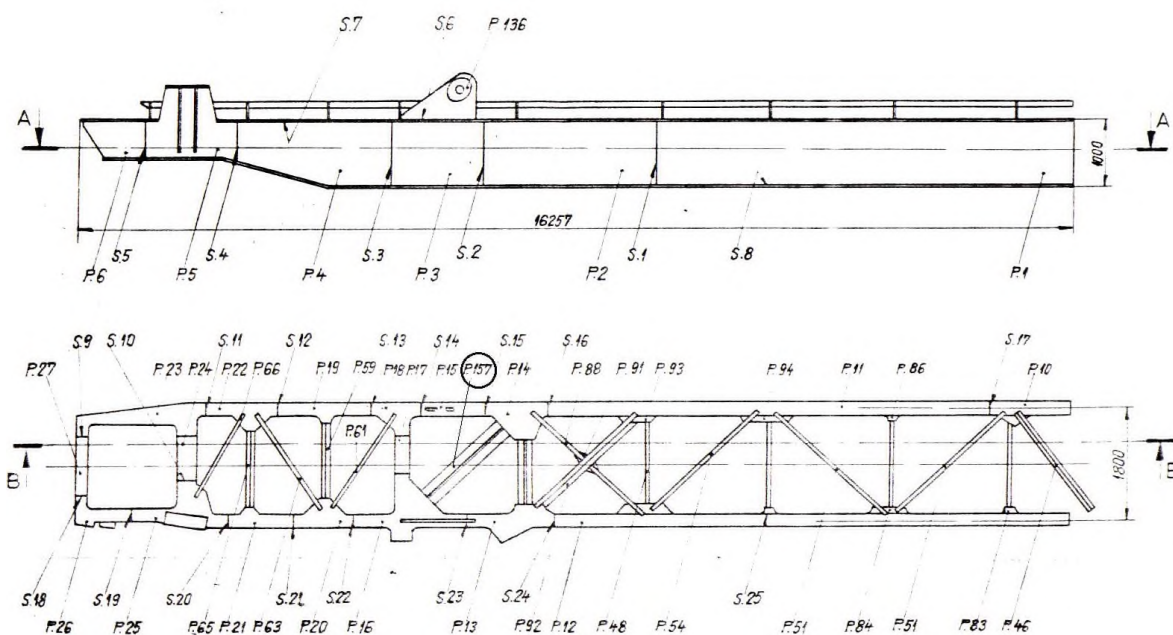


Figure1. Identification sketch for the wheel's arm

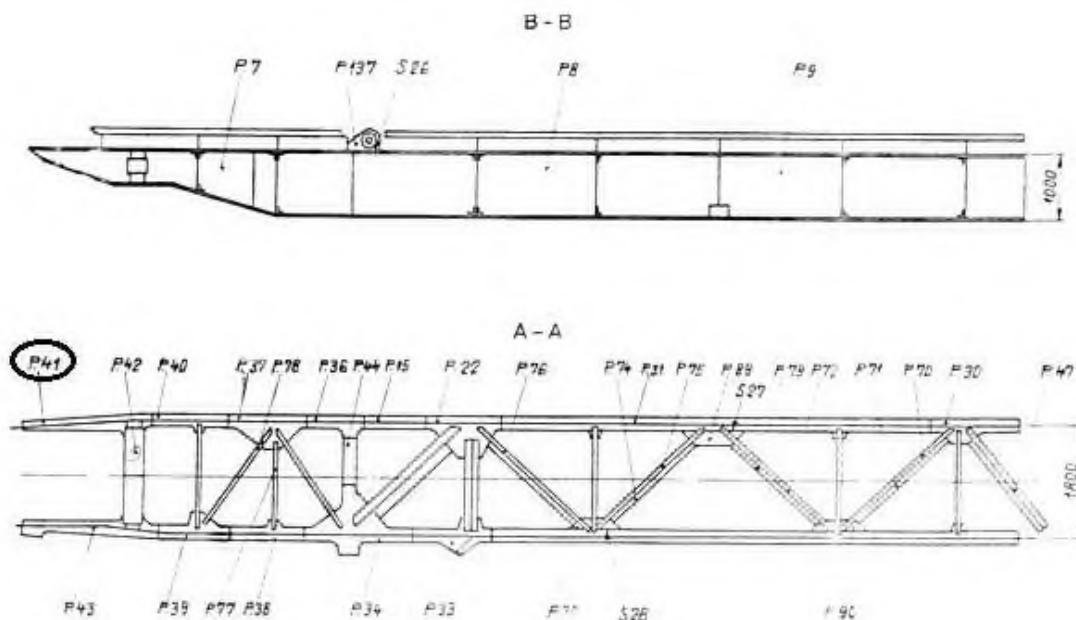


Figure 2. Sketch for the wheel's arm - section III - side view

3. NON-CONFORMITIES AND RECOMMENDATIONS

At the joint between the sections it was found that the screws are loose, they are

shown in figure 3, where it can be seen that the screws with defects are marked with red paint. It is recommended, in this case, to tighten or replace them if necessary

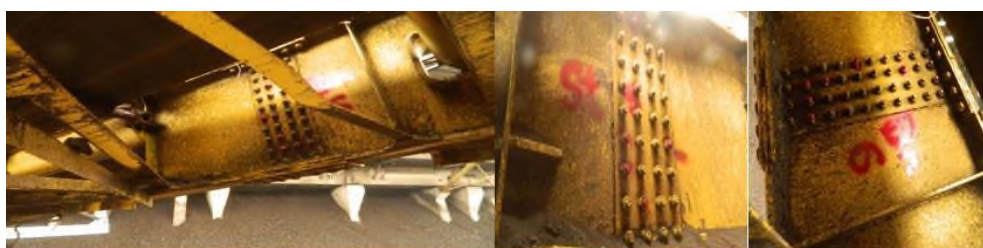


Figure 3. Non-conformities regarding the tightening screws.

Diagonals of resistance (denoted DR), from the metal construction of the wheel's arm, are deformed, figure 4.

It is recommended, after unloading of voltage of the construction, to replace them.

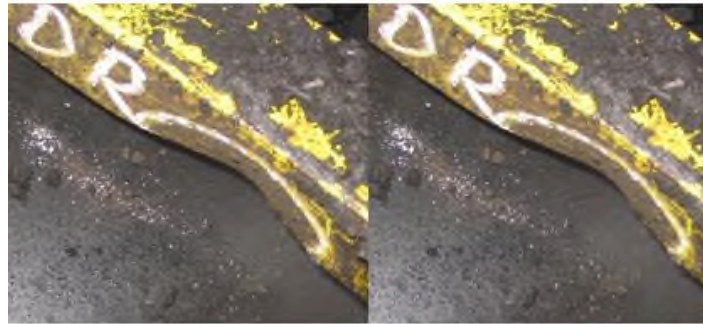


Figure 4. Diagonals of resistance

Important to remember that it is necessary to unload the effort because the metal construction is twisted due to overloads. The diagonal will be replaced when the superstructure is mounted when replacing the eling joint.

On the right side, near the joining eclipse between section I and section II, metal constructions were improperly welded, without having a functional role, fig.5.

The diagonal, see pos.157 of figure 1, was debited oxygas, irregular when mounting the roller support, figure 5. It is recommended to disassemble the support of roller and correct reassembly, polishing and strengthening the diagonal or replacing it.

The transverse beam, see position 41 of figure 2, in the lower field, in the joint area between section I and section II, (on section I) is bent, figure 7. It is recommended to replace it urgently.



Figure 5. Improper welding of metal structures.



Figure 7. Non-compliance - transverse beam

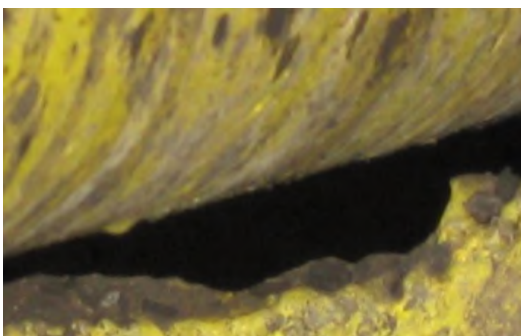


Fig.6. Non-conformities with respect to the diagonal given by heading 157.



Figure 8. Non-conformity - diagonal in the lower field

A diagonal in the lower field was cut for unknown reasons and was again improperly welded, figure 8. Repair is required with unloading and supporting the metal beam.

The soleplate in the lower field has been cut for unknown reasons, it will have to be adjusted during the repair, figure 9.

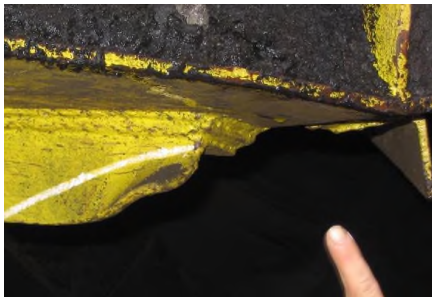


Figure 9. Non-conformities - the soleplate of the lower area.



Fig.10. Non-conformities - the soleplate of the upper area.

The soleplate in the upper field was debited due to the torsion of the construction of section II, figure 10. It is recommended that it be adjusted during repair. When repairing, after straightening the section, it will be completed trimmed area.

4. CONCLUSIONS

They will be fixed, in the shortest possible time, deficiencies in the structure of resistance, from those presented its non-conformities are observed.

They will adjust by polishing the areas where were debited oxy-gaz those parts that are not part of the resistance structure of the metal beam. Metal beam is torsioned, as a

result of the overload the rupture of Section III appeared due to the axial force.

5. REFERENCES

1. Constantin, M , ș.a. – Asamblarea întreținerea și repararea mașinilor și instalațiilor, Editura All, București, 2002
2. Cîrîină 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. Cîrîină 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.**, Cîrîină 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.**, Cîrîină 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., Cîrîină 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., Cîrîină L.M., **Rădulescu C.** Aspects relating to expertise of the mast coal mining machines – 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