ANNALS of the ORADEA UNIVERSITY.

Fascicle of Management and Technological Engineering, Volume VII (XVII), 2008

HYDRO-PNEUMATIC BUFFERS FOR TRACTORS

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Keywords: tractor, suspension, buffer, comfortableness

EXTENDED ABSTRACT

In the case of the wheeled tractors, the seat stands for the essential element of the suspension, playing the part of ensuring the optimal working conditions, the maneuvering as easy as possible of the hand wheel, of the levers and of the pedals, as well as of protecting the tractor driver from the harmful action of the vibrations transmitted through the body of the tractor, during its moving along roads with dislevelments.

For an efficient protection of the tractor driver against the shocks and the vibrations, the seat must contain at least one elastic element and a buffering element. The author of the present paper submits a few solutions for hydro-pneumatic buffering that should ensure the comfortableness conditions.

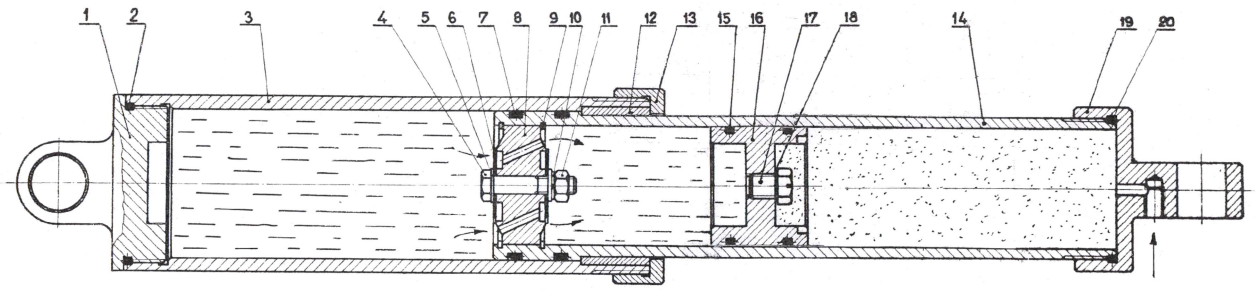

Fig. 1. Hydro-pneumatic buffer for the tractor seat

The own frequency of the tractor should not exceed 3 Hz. There is recommended for it to range between 1 Hz … 2.5 Hz. The buffering coefficient should be optimal, so that the amplification factor on the level of the resonance frequency should not exceed 1.5.

Following the tests that were carried out on the hydro-pulse, resorting to the method of the maximal amplitude, there was settled the buffering factor:

(1) $$\xi = \frac{\omega_2^2 - \omega_1^2}{2\left(\omega_2^2 + \omega_1^2\right)} = 0.376$$

And the buffering coefficient there ensues:

(2) $$c = 2m\xi\omega_n = 0{,}85\,\frac{kN \cdot s}{m}$$

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