

## Гидравлический амортизатор, адаптированный к низким температурам: конструкция, оценка параметров

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+40 –50 °

## Hydraulic shock absorber adapted to low temperatures: design and parameter evaluation

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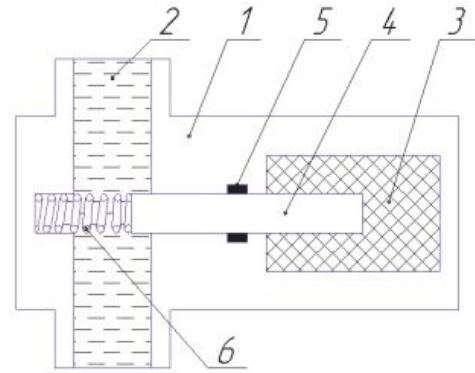
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*Operating conditions of road transport in the regions of Siberia and the Far North differ sharply opposite temperature regimes, which, depending on the season can vary from +40 °C to -50 °C. Negative temperatures in these regions are observed almost eight months a year, which, of course, should be taken into account when developing new equipment designed to work in such harsh conditions. It is known that the performance of a hydraulic shock absorber is determined by the viscous properties of the shock-absorbing liquid poured into its body. The lower the ambient temperature is, the higher the viscosity of the liquid is. Consequently, there is higher resistance to pumping it through the valves and through the channels of the shock absorber. And this, in turn, leads to an increase in both compression and recoil. The increase in the compression force of the shock absorber leads to an increase in acceleration and oscillation frequency of the sprung masses of the car, which adversely affects the comfort of the driver and passengers, the safety of the cargo and the load-bearing structure. Sometimes the compressive force is so great that the pressure created by the liquid destroys the rubber seals or leads to valve failure. This damages the shock absorber which, in turn, needs repair or replacement. The increase in the effort of the shock absorber leads to a loss of contact with the road wheel, as the suspension does not always have time to "stretch" after hitting the wheel on the pit or pothole, which adversely affects the stability and controllability of the car. Therefore, the development of new designs of shock absorbers with adjustable characteristics, including ambient temperature, and the assessment of their parameters is an urgent task. The article is devoted to the solution of this problem.*

**Keywords:** hydraulic shock absorber; car suspension; adoption; low temperature; control parameter; working fluid; parameter; performance data; performance diagram.

[1; 6; 7; 8; 12].



2. ; 3— ; 4— ; 5— ; 6— ; 7—

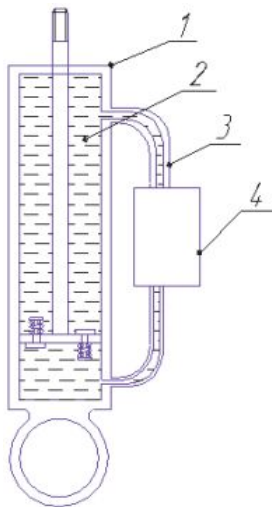
1, 2.

1, 2

3.

2.

5

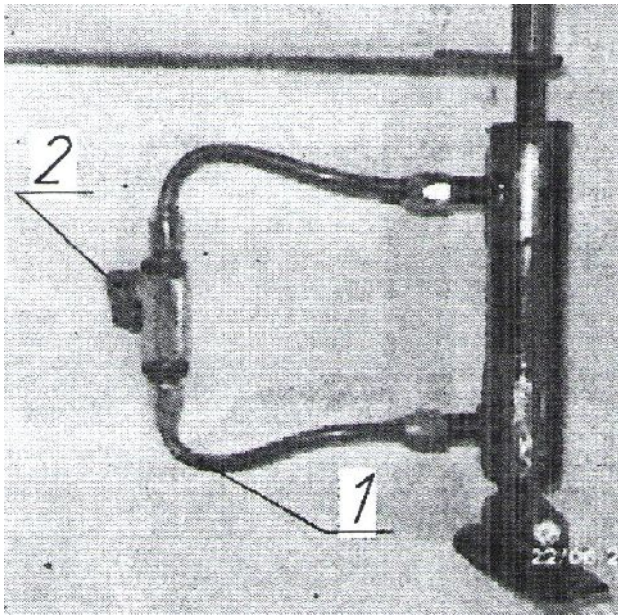


1.

3— ; 1— ; 2— ; 4—

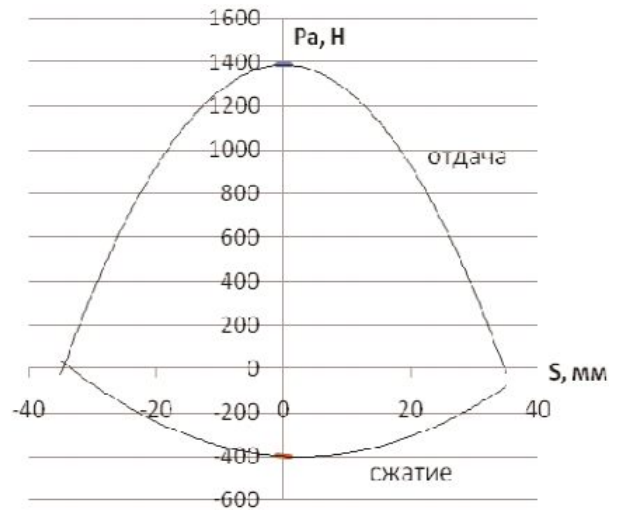
[8]

( .3).



.3.

:1— ; 2—



.4. ( )

24° [2; 5; 10; 11].

[3; 4],

.6.

.6

2 (Vn = 0,28 / )

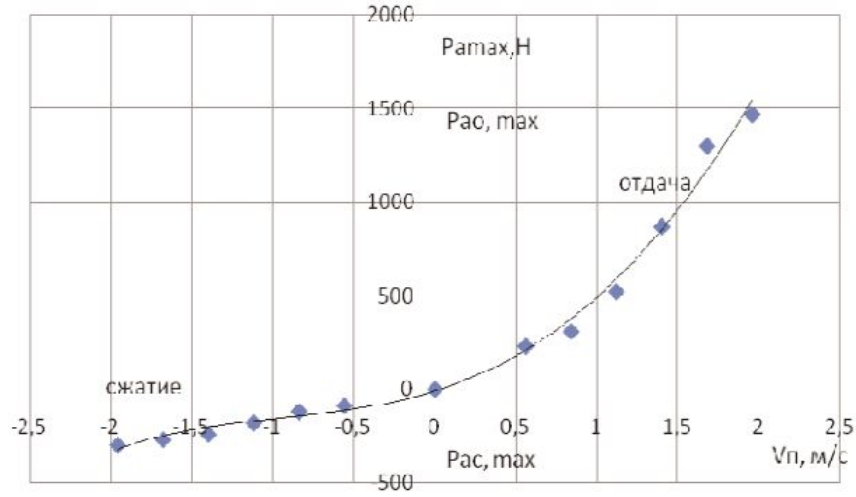
70

.4.

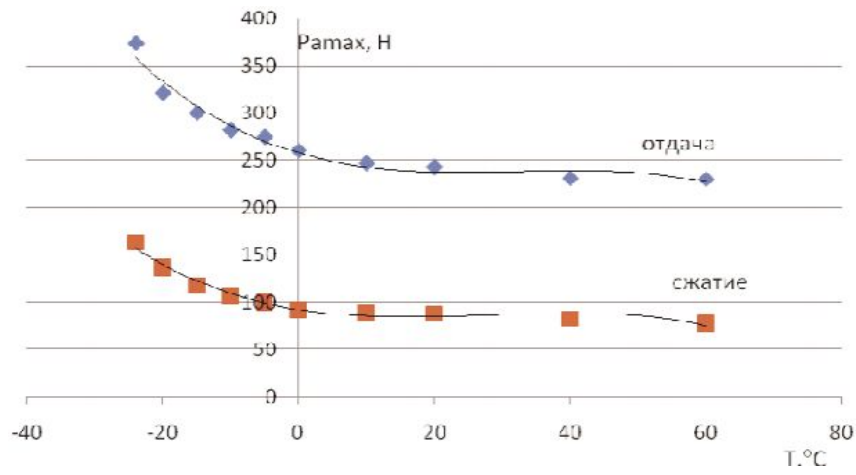
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.5.

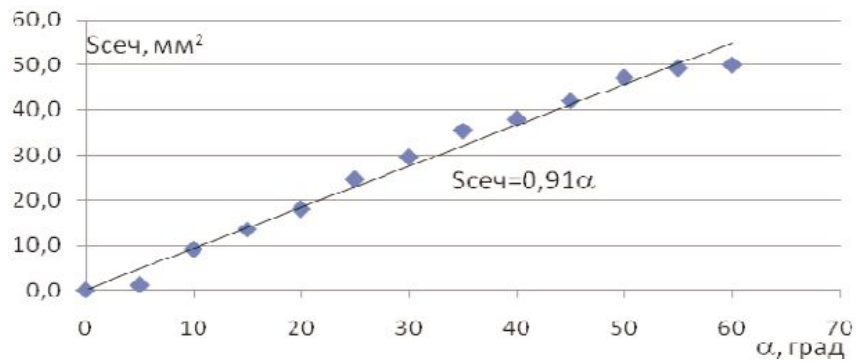
( .7).



.5.



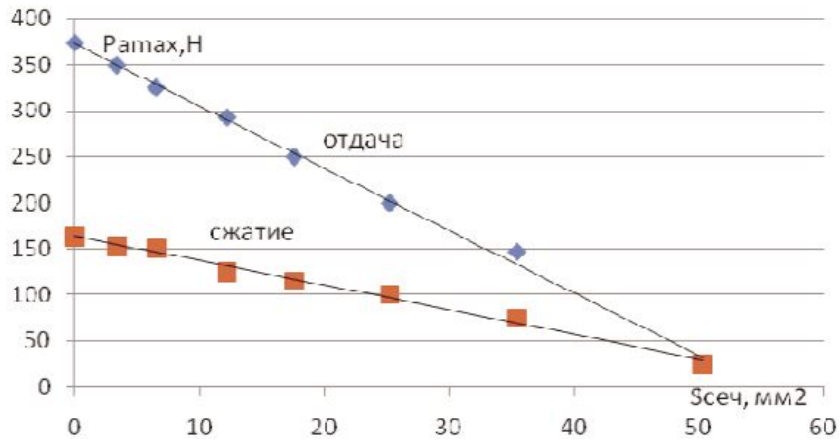
.6.



.7.

.8

$\alpha = -24^\circ$  ,  
 $m(S, \alpha)$  ,  
 $(S, \alpha)$  ,  
 $-24 + 60^\circ$  ,  
 $(\alpha, m)$  ,  
 $+22^\circ$  )



.8.

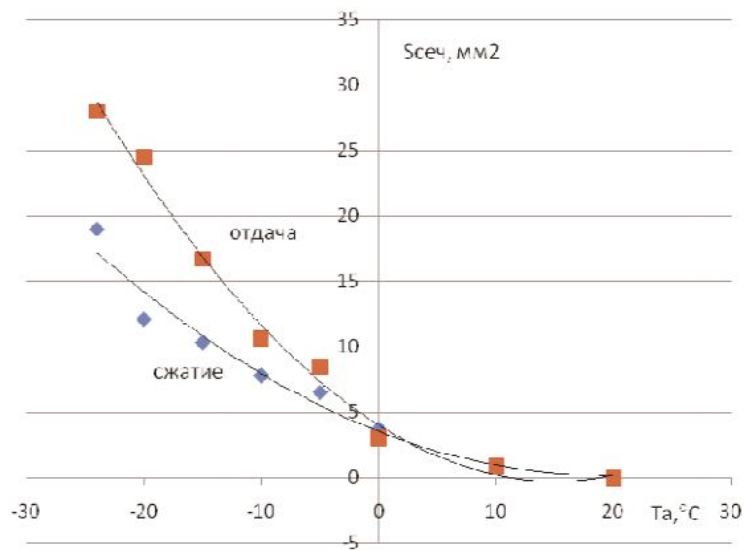
$-24^\circ$

( = 244 ),

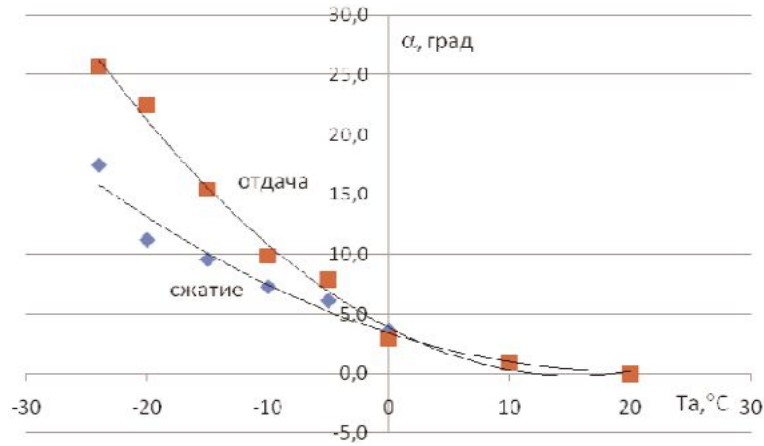
( = 88 )

S ( .9),  
( .10).

.2.



.9.



. 10.

11. . . . .
12. . . . ., 2005. 430 .
- . . . . ., 1968. 124 .

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