

# Railway products

Performance and Safety. Our tradition since 1872.



**KÁRÁSZY**  
Stock absorber specialist

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## INTRODUCTION

Kárászy Ltd has been designing and producing railway shock absorbers since the beginning of 2000.

In Hungary our company is the only producer of railway shock absorbers. Our profile covers small series production consequently our advantage is flexibility.

According to the needs of our clients our company undertakes production of only one shock absorber if it is needed.

The series developed during the previous years can be adapted into the given installation environment, so almost any needs of our clients can be met.





## COMPANY HISTORY OF KÁRÁSZY LTD

Our company has gone through several changes since its foundation in **1872**. Originally horse-drawn carriages were produced at our company but nowadays shock absorbers are designed, produced and renewed.

Currently Kárászy Ltd is a family-owned business which profile was shock absorbers repairing until the 1990s. Owing to the **40-year experience** and the constant supervision of our engineers, the quality of railway shock absorbers repairing by our company agrees with the newly produced ones.

At the beginning of the 2000s Kárászy Ltd started to produce its **self-designed** shock absorbers in order to meet Hungarian needs. Owing to the continuous development, the quality and the reliability of our shock absorbers rivals with the world leading shock absorber producers.

Initially our market was limited to Hungary but nowadays it is expanded to the surrounding countries as well, like Austria, Romania and you can find our shock absorbers even in other countries like Russia and Egypt.



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## PRODUCT RANGE AND SERVICES

### - Production

Our railway shock absorber supply is spread for the following installation places:

- Primary damping
- Secondary vertical damping
- Secondary horizontal damping

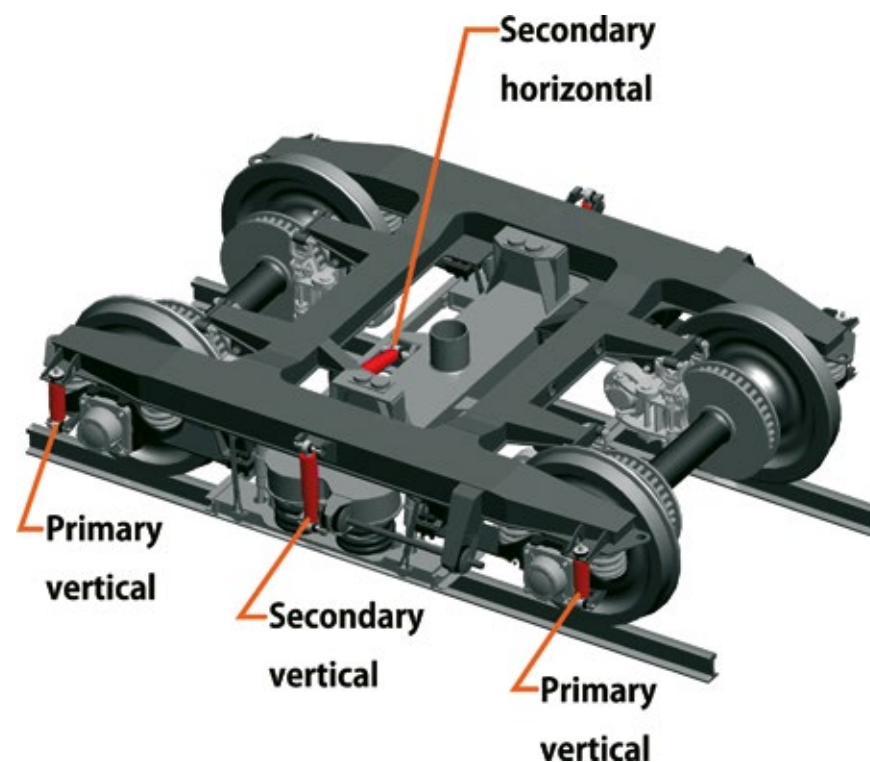
Our shock absorber series adapt to the needs of train bogie. Narrow installation place, dusty environment, high palliative force and of course horizontal installation cannot cause any problem. With the renewal of our shock absorbers their lifespan can be extended so that they are to operate for 25-30 years with the appropriate maintenance.

### - Repairing

Besides production of shock absorbers wide range of them is renewed. Together with repairing of our own shock absorbers the products of other producers are repaired as well: Koni, Sachs, STOS, Gerep, etc.

### - Design

We undertake design and production of new shock absorbers besides our own ones. Specialities of installation environment are taken into consideration during designing. Wide range of rubber mounting and metal elements are available. We are ready to design and produce only one shock absorber within short deadline.







## SERIES K142 AND K143

### - Primer, Seconder and Transversal Shock Absorbers of Railway Bogie

Construction of K142 and K143 railway shock absorber series follow the requirements imposed by the modern shock absorbers:

- Metal-free contact between friction elements.
- Valve-controlled damping.
- High-pressure seals for precise adjusting.
- Bleeder system is used.
- Foaming-free system is used.
- Renewable and ready-to-assembly implementation.
- Hardened, chrome plated piston rod.
- Extra high protection against dust (with K143 series).

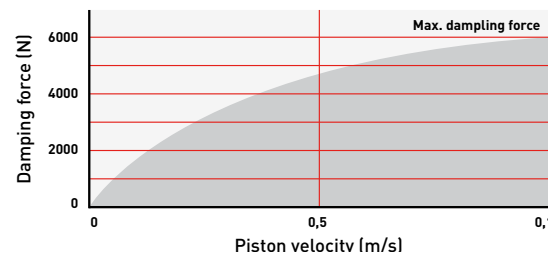
#### Technical specifications:

Max. damping force at 0,1m/s: 6 kN

Diameter of dust protector tube/house:  $\varnothing 90$  mm /  $\varnothing 80$  mm

The above mentioned characteristic features result in long-life usage. Their renewability makes them more valuable. The lifetime of these shock absorbers can reach **25-30 years**, besides continuous maintenance. It is not a negligible fact that the cost of renewability is much lower than that of a new shock absorber.

**Guarantee: 2 years or 300 000 km**



K142 and K143 railway shock absorbers



## SERIES K144

- Railway Bogie Shock Absorber. Maximal damping force: 12 000 N

Series K144 is designed for high load with robust size. Series K144 doubles the maximum damping force of standard shock absorbers and this way it provides proper damping for massive vehicles.

### Specifications:

- Robust design.
- Mounting elements and silent blocks which fit high damping forces.
- Hardened, chrome plated piston rod.
- Metal-free contact between friction elements.
- Valve-controlled damping.
- Max. damping force 12 000 N at 0,1 m/s piston velocity

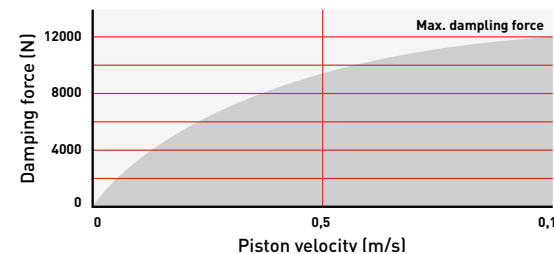
### Technical specifications:

Max. damping force at 0,1 m/s: 12 kN

Size of dust protector tube/house: Ø110 mm / Ø100 mm

K144 shock absorbers are designed for long-life usage due to their design (material quality, up-to-date construction, appropriate surface protection).

Guarantee: 2 years or 300 000 km



K144 railway shock absorbers





## SERIES K145

- Railway bogie shock absorber with short installation sizes

Kárászy K145 railway shock absorber series is a hybrid version of series K142 and K143. Due to bogie construction it might happen that there is not enough space for the installation of an average size and stroke-length shock absorber.

That is why our engineers designed the compact version of the most popular series which minimum installation height allows construction of quite short shock absorbers:

- Space-saving construction.
- All positive features of K142 and K143 can be found in system K145.
- Hardened, chrome-plated piston.
- Bleeder system is used.
- Foaming-free system is used.
- The most modern seal system is applied.
- Renewable and ready-to-assembly product.

Lifespan of Series K145 is the same as the ones of K142/143 because they inherited all the specifications which increase their lifetime so the greatest advantage of this system is the previously mentioned compact design.

**Guarantee: 2 years or 300 000 km**

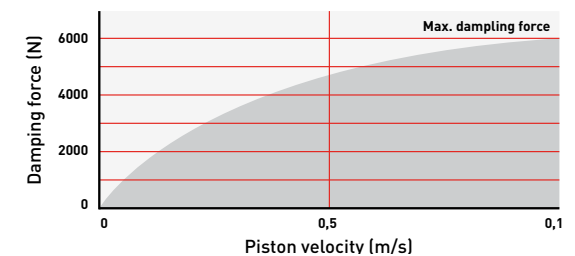
### Technical specifications:

Max. damping force at 0,1m/s: 6 kN

Diameter of dust protector tube/house:  
Ø90 mm / Ø80 mm



K145 railway shock absorbers







## SHOCK ABSORBER REPAIRING

- Renewal of the following shock absorbers: KONI, SACHS, KÁRÁSZY and other

Our services:

- Repair of almost any kind of railway shock absorbers.
- Service centre of KONI railway shock absorbers.
- Repair of our self-produced shock absorbers.
- Continuous engineer supervision to reach the best quality.
- In case of rectification of waste shock.
- Absorbers our company provides its selfproduced shock absorbers.
- Technical certificates are granted according to needs.
- The bench examination of each repaired shock absorber.
- Modern repairing technology.

Our company using its several decade professional experience renews railway shock absorbers in excellent quality both for its Hungarian and foreign clients.

Our experts repair shock absorbers under continuous engineer supervision so the quality of the final product equals with that of the new ones. Technical certificates about the renewal of shock absorbers are granted for our clients according to their needs.



Instead of shock absorbers which cannot be repaired economically, our company can offer its self-produced ones.

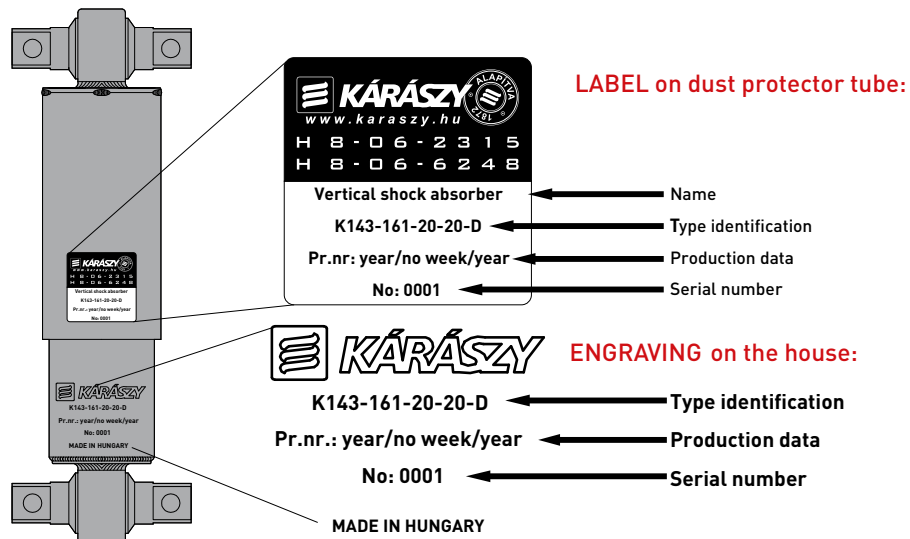
Repaired railway shock absorbers



## TECHNICAL DESCRIPTION

### - Identification

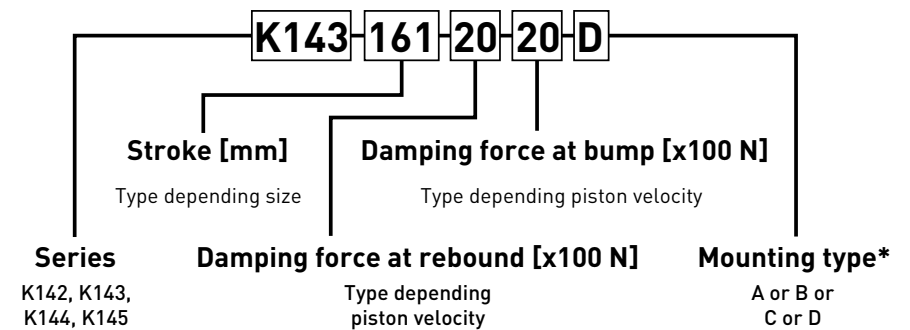
Identification of shock absorbers are according to the following scheme:



### - Explanation of type identification

Identification of the shock absorbers based on their parameters:

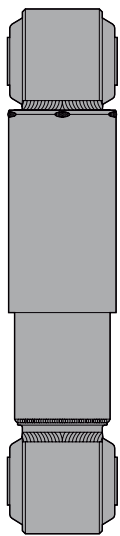
Example:



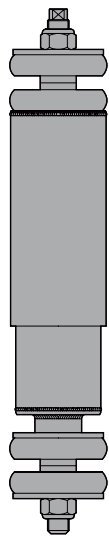




## \*MOUNTING TYPES:



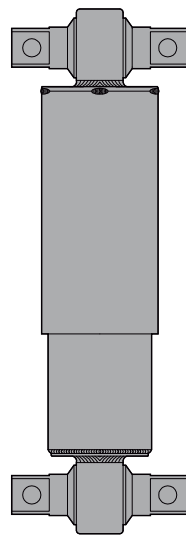
**A type**  
Eye-eye



**B type**  
Pin-pin



**C type**  
Pin-eye or eye-pin

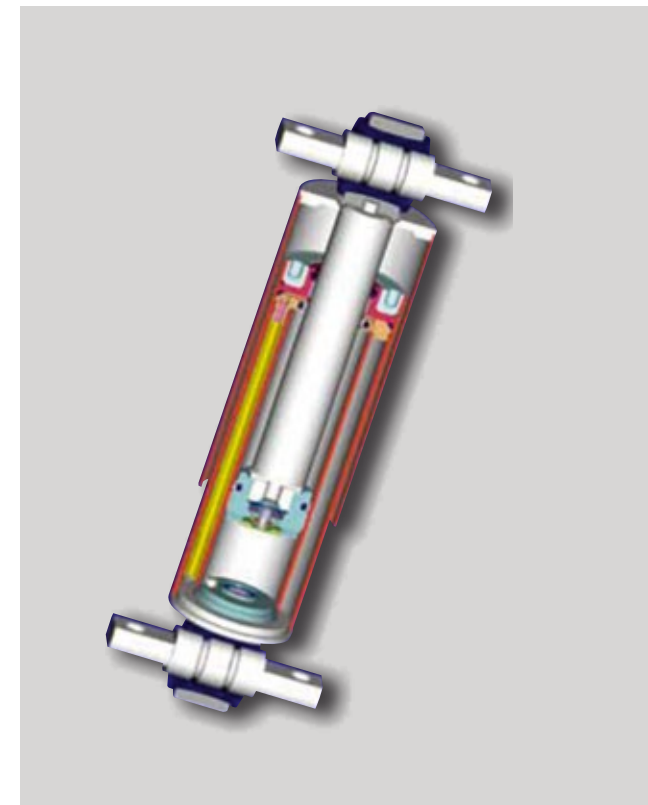


**D type**  
Special

### - Construction

All of our series work with twin-tube system. Advantages of twin-tube systems are robust construction and insensitivity against damage.

Due to the special geometry, shock absorbers have symmetric characteristics but there might be some kind of differences as well. The prescribed attenuation characteristic of shock absorbers is adjusted by a selfdesigned equipment before its assembly. With this method we ensure that the attenuation parameters of self-assembly shock absorbers perfectly meet the expectations.





## K100-40 AND K100-45 BUS & TRUCK SHOCK ABSORBERS

- Prefect road handling and sure arrival

Based on the experience of designing our railway shock absorber types we created the Bus & Truck shock absorber product line. During the design phase of the inner structure, we took care of metal-free contact between friction elements, ensuring long-lifetime.

Another great advantage of the structure is the use of surface hardened piston rods.

Due to surface hardening, the piston rod is more resistant to dirt, which increases the lifetime of the shock absorber.

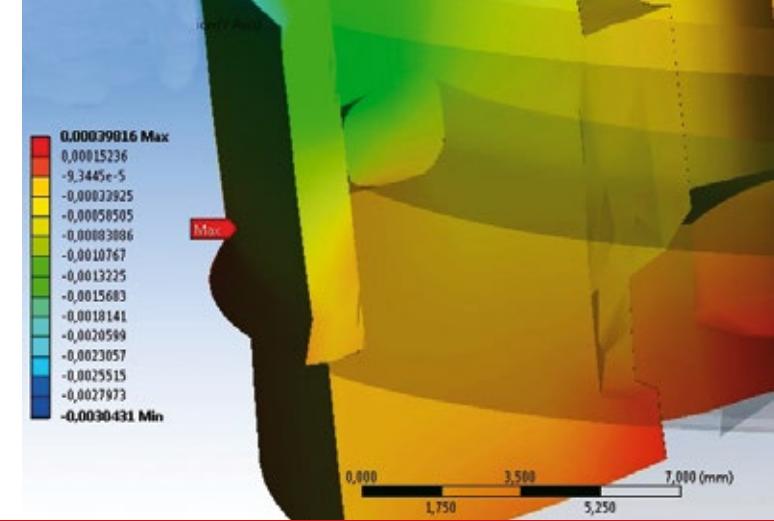
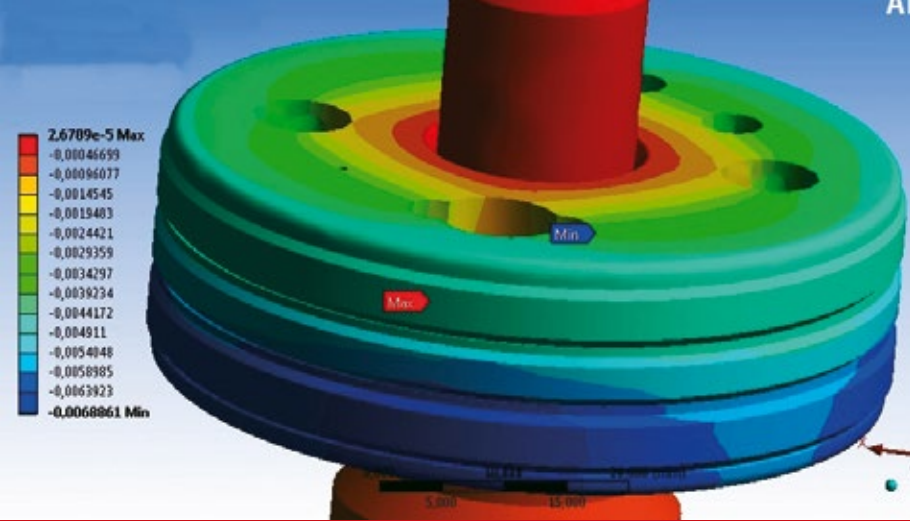
**Guarantee: 1 year**

### Specifications:

- Metal-free contact between friction elements.
- Hardened, chrome plated piston rod.
- Valve-controlled damping.
- Short delivery time.
- Renewable and ready-to-assembly implementation.
- Unique shock absorber design and production.
- Premium quality.
- Max. rebound force at 0,52 m/s: 11 kN.
- Max. bump force at 0,52 m/s: 2 kN.







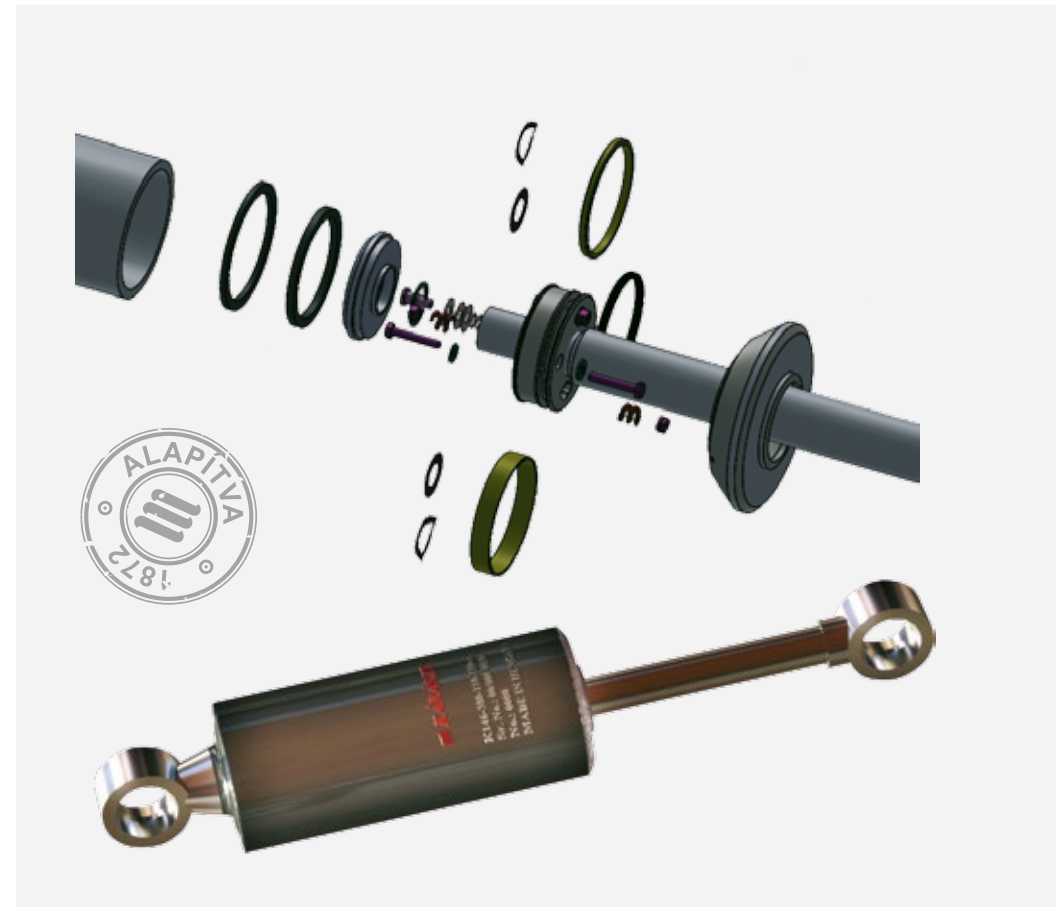
## RESEARCH & DEVELOPMENT

- There's more innovation underway today at Kárászy than at any time in our more than a century history...

The shock absorber is a product which directly affects the vehicle performance and equalizing the safety and comfort. In this respect, the shock absorber is a precious equipment which is likely to seal the fate of the vehicle and thereby the passengers.

The teams of Kárászy engineers work with close contacts to customers in worldwide on regional product adaptations and tests. Furthermore, the R&D employees ensure that innovations and trends from all over the world flow into the concept phase of future products of Kárászy Ltd.

Rigorous R&D studies are being conducted within Kárászy Ltd. in an innovative method, in harmony with the developing technologies and with the aim to become a leader in the global market. Such studies reveal a great importance in improving our customer-centered standards.





## REPARIBILITY

- Each series of railway shock absorbers can be repaired.

Lifespan of our shock absorbers can be significantly increased by regular maintenance. Applying repairable shock absorbers is a cost-effective solution during operation.

According to needs necessary spare parts are provided and repair technology is taught to our customers. Our shock absorbers can be renewed easily, simply and fast.

**Guarantee: 1 years**

## AWARDS

- 2012

In 2012 our series K143 shock absorber won the award of Hungarian Society for Quality.







## REFERENCES

- Our railway shock absorbers are delivered not only to Hungarian clients but abroad as well: Austria, Egypt, Romania, Poland, Russia

### OUR PARTNERS:

- Hungarian State Railway
- Ganz-Holding
- Public Transport of Budapest
- Bombardier
- Stadler
- GySev
- Linsinger Austria Gmbh.
- Reloc
- Softronic
- Diesel Loko Distribution
- Trolley Support (USA)

### QUALITY CERTIFICATES:

Our activities are carried out according to the following quality management systems: ISO 9001:2009, EN ISO 14001:2005, DIN EN 15085-2 CL1, EN 13802.







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