

# Bus & Truck **products**

Tailor made safety. Engineered by Kárászy



**KARSUS**

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## ABOUT US

**The KARSUS (Kárászy Suspension) name came along after 150 years of existence and experience of KÁRÁSZY Company in the field of shock absorbers. Recycling has always been a fundamental criterion in the designing of KARSUS shock absorbers. We pay the greatest attention to environmental protection and the application of green technologies in the manufacturing process.**

KARSUS shock absorbers are designed for rail cars, locomotives, trucks, and buses. All ranges of products are designed and developed by Kárászy Co.'s experience, knowledge and engineering capacity. Our products can meet any demands that may arise in the field; a custom design, regional product adaptations and tests, prototype support, small or large series production. Decide it, dream it, and Kárászy makes it real!

Our R&D projects are supported and granted by various EU and local authorities. Environmental protection is Kárászy's essential values. We aimed to reduce the quantities of solid waste deposited in landfills. Kárászy shock absorbers are made from sustainable and recyclable materials, while waste is reduced through recycling. Besides, we apply environmentally friendly manufacturing systems for producing shock absorbers. What is more, each KARSUS shock absorbers can be operated

with extensive functions as long as 25-30 years throughout the vehicle's lifetime.

Our company has strong cooperation with prestigious universities on an international scale for years and takes an active part in advancing the engineering science and technology in Hungary. Thanks to this remarkable company tradition since 1872, we now have a team of highly qualified engineers who empower us to develop and manufacture high-performance shock absorbers. Nowadays, Kárászy Co. has become the largest shock absorber manufacturer in Central Europe. Innovation and value-adding partnerships are fundamental values of Kárászy's mission statement. Kárászy Co. products and engineering services meet global customer's requirements with complete satisfaction from Europe to Asia to Africa to America with the best quality and robust cooperation.

Kárászy's international team is at the disposal of our customers globally.

We continuously strive to ensure whoever travels by a vehicle equipped with KARSUS shock absorbers can get home comfortably and safely anywhere and anytime.

**KARSUS – *"Taylor made safety"***

# HISTORY



Tailor made safety. Engineered by Kárászy

The new manufacturing plant is built and environmentally friendly, green technologies and automated pieces of equipment are installed.



2020

The brand name KARSUS is created and the development and testing of the entire portfolio of rail car shock absorbers is completed. We can meet any possible demands of the railway with our 7 different series.



2018

The development of bus and utility vehicle shock absorbers commences in cooperation with Rába.



2010

Development of the first range of rail car shock absorbers in own production for MÁV. The rail car shock absorber manufacturing plant is constructed.



2003

Small and medium series manufacturing and recycling of shock absorbers mainly for passenger cars and utility vehicles. This is also the year when the sale of the various brands of shock absorbers starts.



1990

The second generation of the Kárászy family was already engaged in the business of forging springs for horse carts and later for passenger cars and utility vehicles.



1920



2019

The development and testing of the entire portfolio of bus and utility vehicle shock absorbers is completed. The series K40, K45 and K50 are created.



2016

The development of high-speed rail car shock absorbers begins for primary, secondary and anti-yaw locations.



2008

The small and medium series manufacturing of rail car shock absorbers commences under the brand name KÁRÁSZY. At this time, we are already capable of meeting the great majority of demands in Hungary by manufacturing three ranges.



2000

Elaboration of the technology for the recycling of various rail car shock absorbers and commencement of the establishing of the railway division.



1960

Kárászy brothers start refurbishing shock absorbers for passenger cars. This was a rare and unique service in Hungary at the time, as new shock absorbers were completely unavailable.



1872

István Kárászy, founder of the company starts its activity in the vehicle industry by manufacturing horse carts. The first official trade licence was issued in 1874 by the Hungarian authority of the time.



## PRODUCTION

### - Production

Kárászy commercial shock absorber covers the need for the following applications;

- Buses
- Trucks
- Trailers
- Special vehicles

Our shock absorber series adapts fully to the needs of commercial vehicles suspension. Kárászy shock absorbers can meet any demands that may arise in the field, including narrow installation (i.e., size requirements), corrosive (e.g., dusty, humid, etc.) environment, high loading condition, horizontal installation, etc. Kárászy commercial vehicle shock absorbers can serve as long as 10-15 years with appropriate maintenance and care.

### - Recycling

We offer a comprehensive shock absorber recycling services to our customers. Beyond a doubt, shock absorbers recycling is a cost-effective solution for its operational life and a green environment. Kárászy shock absorbers are recyclable, reusable and consider the environment! Recycling and sustainability are the core values for Kárászy. Our offer for recycling covers every commercial shock absorber used in the automotive industry.



### - Design

Our offer includes the new design, re-design of existing products, and manufacturing various types of shock absorbers. We assist our clients at every step of product development, from basic research to commercial shock absorber manufacturing and its integration into the vehicle. Our design range covers a wide range of elastomeric mounting and metal elements. What is more, we can help our partners to design a new product and produce it within a short time, even if it is only one shock absorber.

# SHOCK ABSORBER K40

- for commercial vehicles

The shock absorber product line K40 is a system specifically designed for use in commercial vehicles. It is an advanced version of the highly successful K100-40 system.

During their design work our engineers took into account the needs of the vehicle, the operator and vehicle drivers alike. For vehicles, operators and drivers safe road-holding capacity, acceptable value for money and sufficient comfort, respectively, have been the fundamental input parameters.

The key novelty of the K40 system is that it can be mounted and hence, recycled. With due care paid, its useful lifetime might easily reach that of the vehicle.

## Key features:

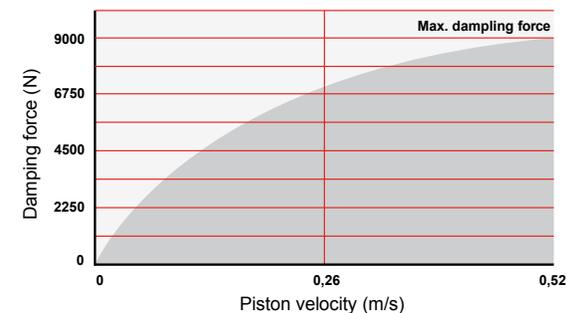
- Damping force adjustable in a wide range
- Damping force adjustable irrespective of the direction of stress
- Mountable, recyclable design
- No metallic contact between friction elements
- Increased amount of oil for efficiency
- Special closure and sealing system for the shock absorber
- Custom built valve design developed by Kárászy Kft.

## Engineering details:

Maximum damping force (in pulling direction) at a speed of 0.52 m/s: 9 kN  
Diameter of the anti-dust tube / shock absorber house:  $\varnothing$  72 mm /  $\varnothing$  60 mm



The closure of the K40 shock absorber has been accomplished using specially design seals. The point is that the specifically designed sealing is able to follow more easily the lateral plunger movements encountered during the operation of the shock absorber compared to a general solution. There is less chance this way to get contamination into the inner parts of the shock absorber. As a result, K40 shock absorbers preserve their dampening ability on the long run and represent long term satisfaction to operators and vehicle drivers alike.



Shock absorber K40

# SHOCK ABSORBER K45

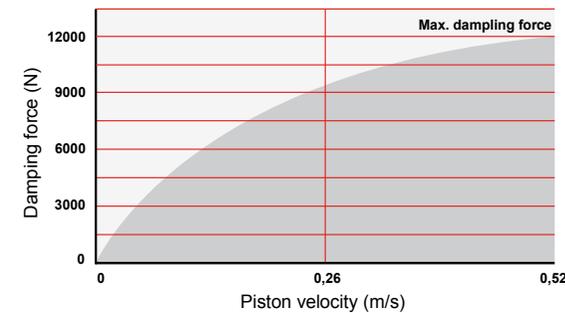
- for commercial vehicles

The shock absorber product line K45 is a system designed for commercial vehicles with a large mass. Its properties are identical with those of the K40 system but its maximum damping force exceeds substantially the former, therefore it can be recommended primarily for heavy duty trucks and vehicles.

### Key features:

- Damping force adjustable in a wide range
- Damping force adjustable irrespective of the direction of stress
- Mountable, recyclable design
- No metallic contact between friction elements
- Increased amount of oil for efficiency
- Special closure and sealing system for the shock absorber
- Custom built valve design developed by Kárászy Kft.

The K45 system is basically identical with the K40 system, but due to its larger diameter a lot greater dampening force can be achieved by it in pulling direction. This is how it provides an optimum running stability and quality to large mass power vehicles such as power machines, large coaches, trailer trucks etc.



### Engineering details:

Maximum damping force (in pulling direction) at a speed of 0.52 m/s: 12 kN

Diameter of the anti-dust gooseneck / shock absorber casing:

Ø 75 mm / Ø 65 mm



Shock absorber K45

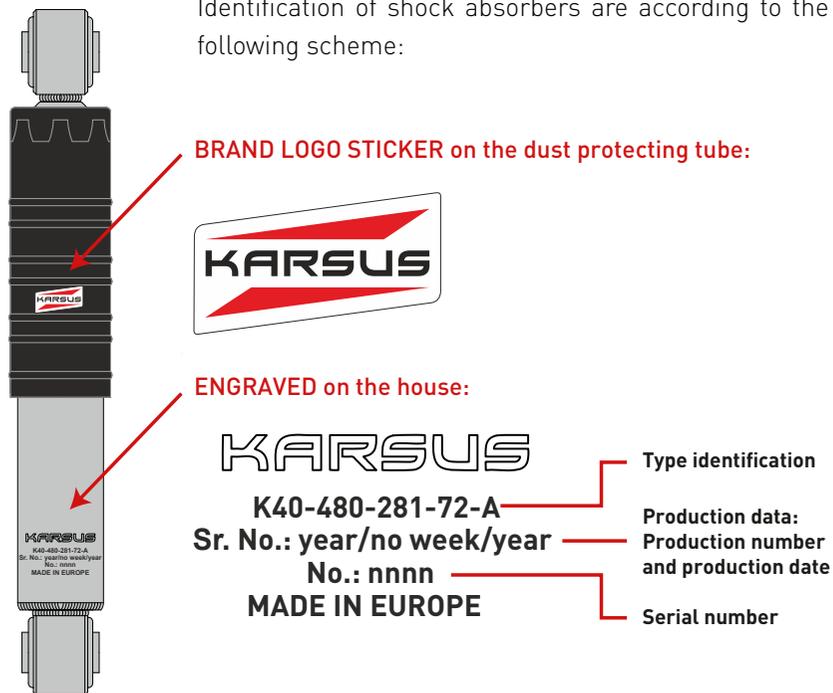




## TECHNICAL DESCRIPTION

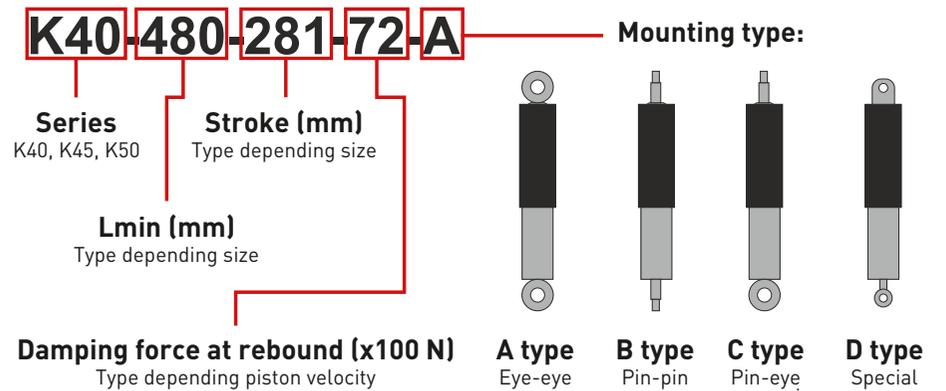
### - Identification

Identification of shock absorbers are according to the following scheme:



### - Explanation of type identification

Identification of the shock absorbers based on their parameters:





## RECYCLABILITY

- 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.

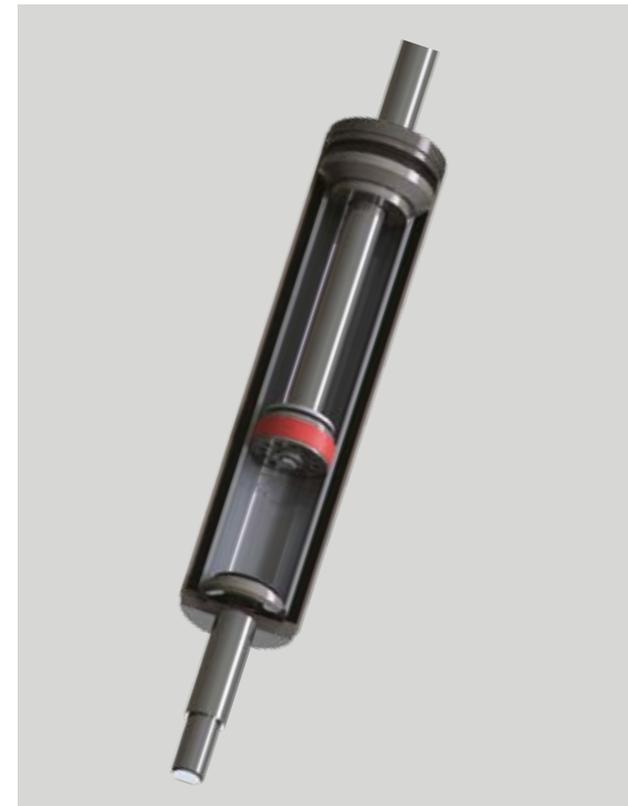
**Guarantee: 1 years**

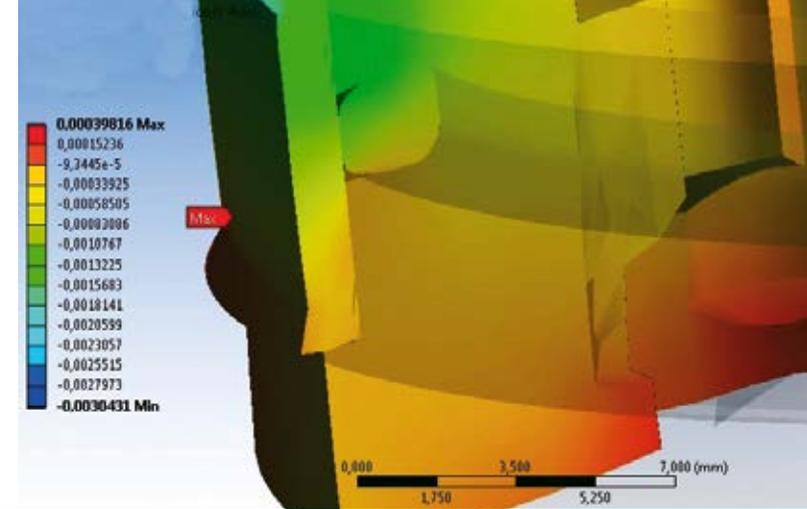
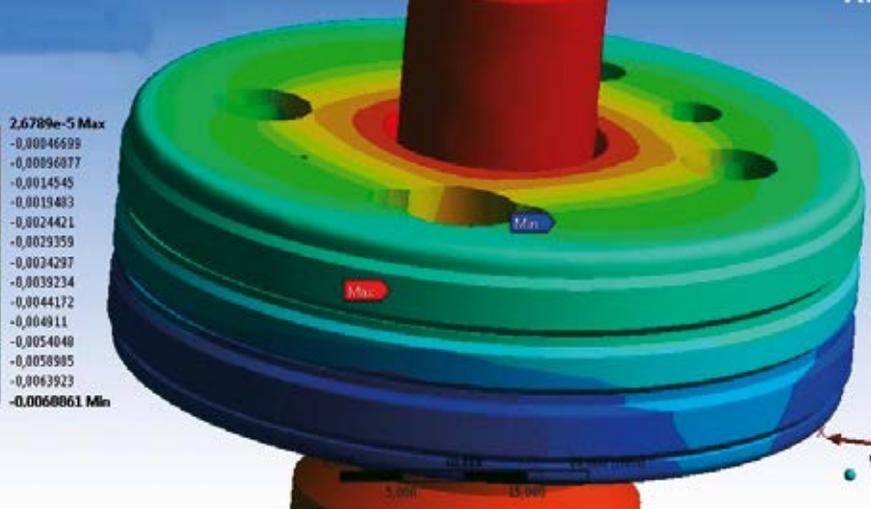


## - Construction

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 asymmetrical 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.





## RESEARCH & DEVELOPMENT

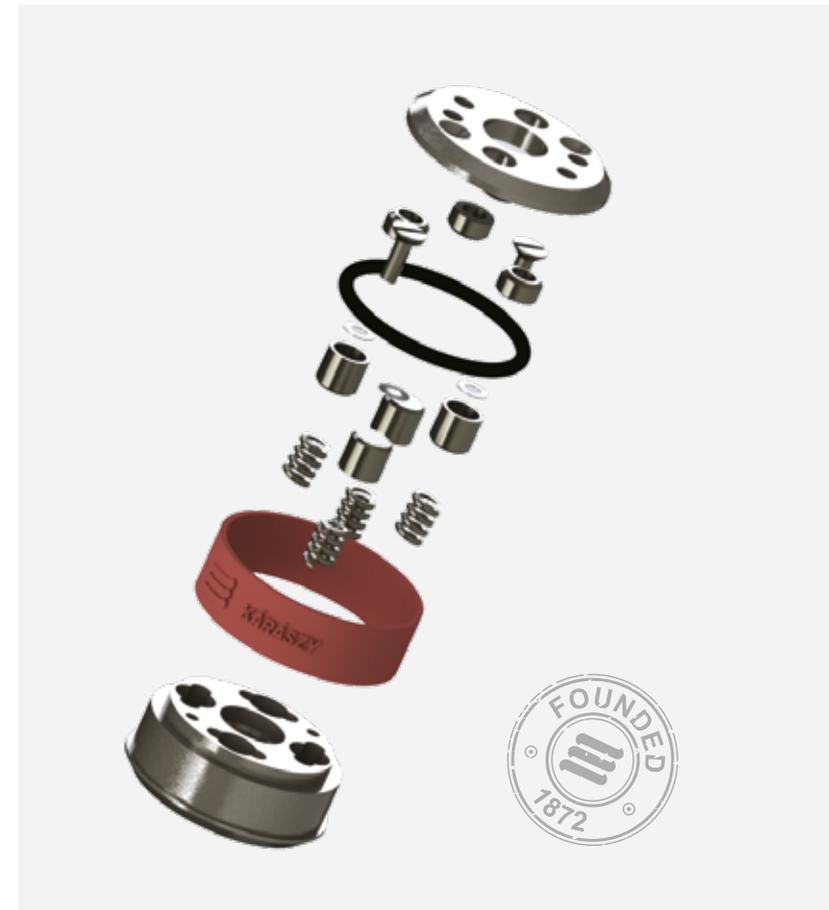
- There's more innovation underway today at Kárászy than at any time in our more than a century history...

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 or 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.

**KARSUS** - *"Taylor made safety"*





## REFERENCES

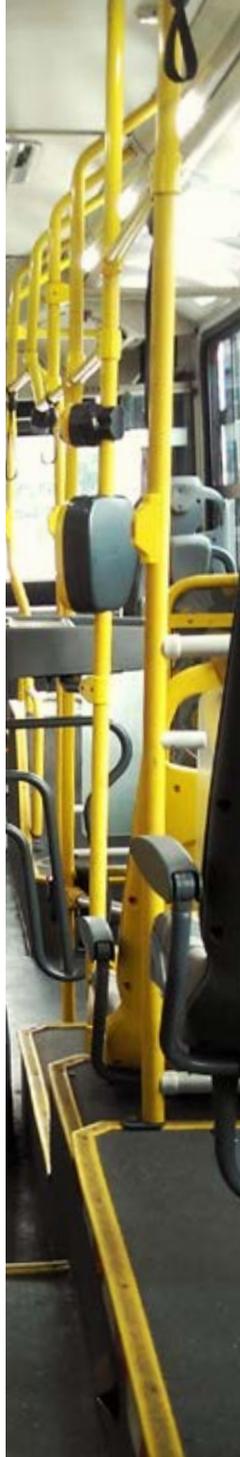
- Our shock absorbers are delivered not only to Hungarian clients but abroad as well: Austria, Egypt, Romania, Poland, Russia, USA, India, Bulgaria

### MAIN REFERENCES:

- Hungarian State Railway (HU)
- Ganz-Holding (HU)
- Public Transport of Budapest (HU)
- Bombardier (C)
- Stadler (SZ)
- GySev (AU-HU)
- Linsinger Austria Gmbh. (AU)
- Reloc (RM)
- Softronic (RM)
- Diesel Loko Distribution (PL)
- Trolley Support (USA)
- Sequoia Safety (INDIA)
- Interkom (BU)

### 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.**





# KARSUS

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