



RACK AND PINION, STEERING BOX CUTAWAY EDUCATIONAL TRAINER

A4

Product number
AE410730M

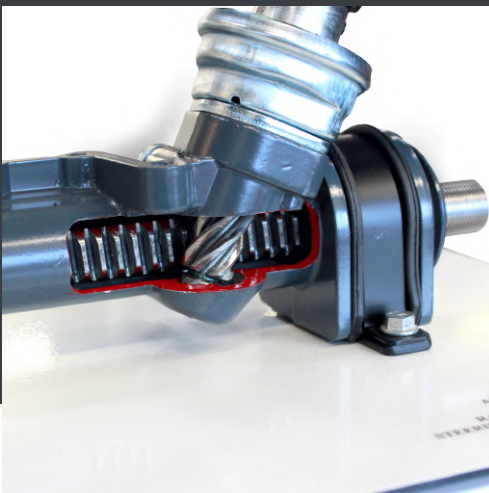


Steering box educational trainer provides a detailed cutaway view of the rack-and-pinion steering mechanism, allowing for an in-depth understanding of how steering systems operate. The model includes all essential components such as the toothed rod, steering column, pinion, and bushings, providing an accurate representation of real-world automotive systems. This unit is an essential training aid for comprehending steering gearboxes and their role in controlling vehicle direction, with a focus on gear ratios, backlash minimization, and precise handling.



Features

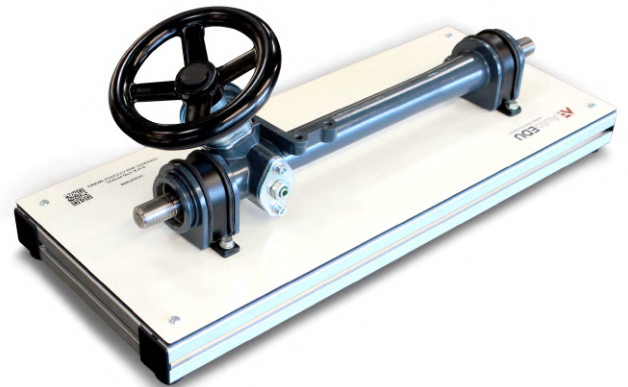
- Detailed cutaway of rack-and-pinion steering system with toothed rod, pinion, steering column, and bushings.
- Focus on gear ratios ranging from 10:1 to 18:1 for understanding how input force is translated into wheel movement.
- Low backlash mechanism ensures precise steering control, ideal for automotive students learning about vehicle dynamics.
- Integrated damping system that reduces vibrations and reactions to the steering wheel, ensuring smoother handling.
- All essential components clearly exposed for study, including the needle bearing, push block, and spring.





Value for Students

- Study the detailed operation of rack-and-pinion steering systems, learning how the pinion rotates the toothed rod to translate rotary motion into linear motion.
- Gain a practical understanding of gear ratios, exploring how the steering-to-output shaft ratio affects vehicle handling and driver effort.
- Examine the mechanical interaction between steering wheel input and wheel movement, including de-multiplication principles, backlash elimination, and direct motion efficiency.
- Analyze damping mechanisms that reduce vibrations in the steering linkage, providing a smoother driving experience.
- Identify and study critical components such as the steering box, pinion, bushings, and toothed rod, enabling detailed mechanical learning.
- Observe how design variations in steering systems impact performance and steering accuracy, enhancing knowledge of system optimization for different vehicle types.



Value for Instructors

- Fully functional and sectioned model allows teachers to effectively demonstrate the principles of rack-and-pinion steering systems.
- Uses real-world components to help students gain hands-on experience with an authentic automotive mechanism.
- Ensures clear visibility of the system's key parts, facilitating focused lessons on steering gearbox operation and vehicle control.
- Provides an easy-to-understand platform for explaining how gear ratios and de-multiplication affect driver input and vehicle movement.
- Helps students grasp the fundamentals of steering backlash, efficiency in direct motion, and the importance of vibration damping in real driving conditions.
- Robust construction with sectioned view allows multiple students to observe and engage simultaneously, promoting collaborative learning.



Specifications

- Dimensions: 700 x 250 x 300 mm (27.56 in x 9.84 in x 11.81 in)
- Weight: approx. 4 kg (8.8 lb)
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