

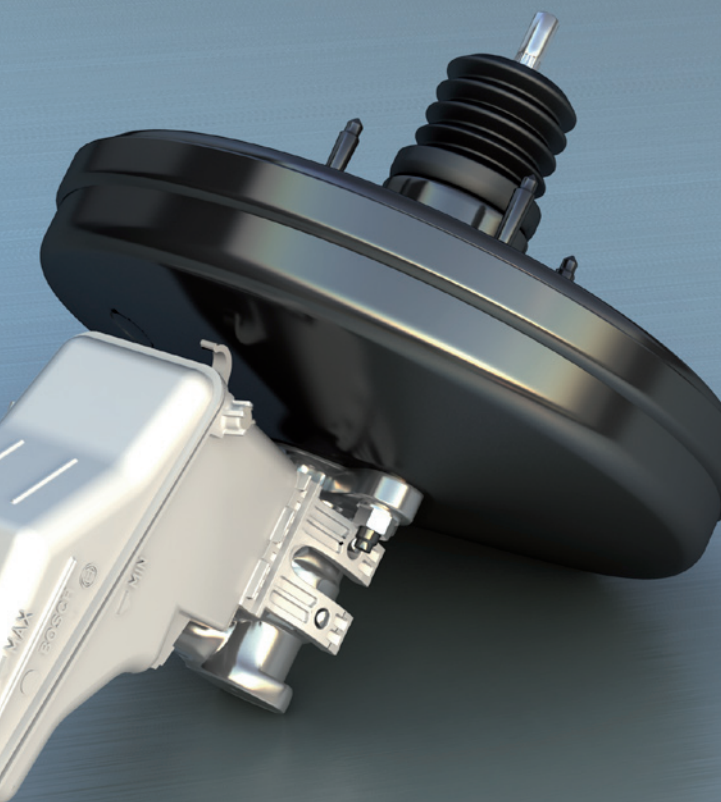
Chassis Systems Brakes

Safe and sensitive braking with power brake from Bosch



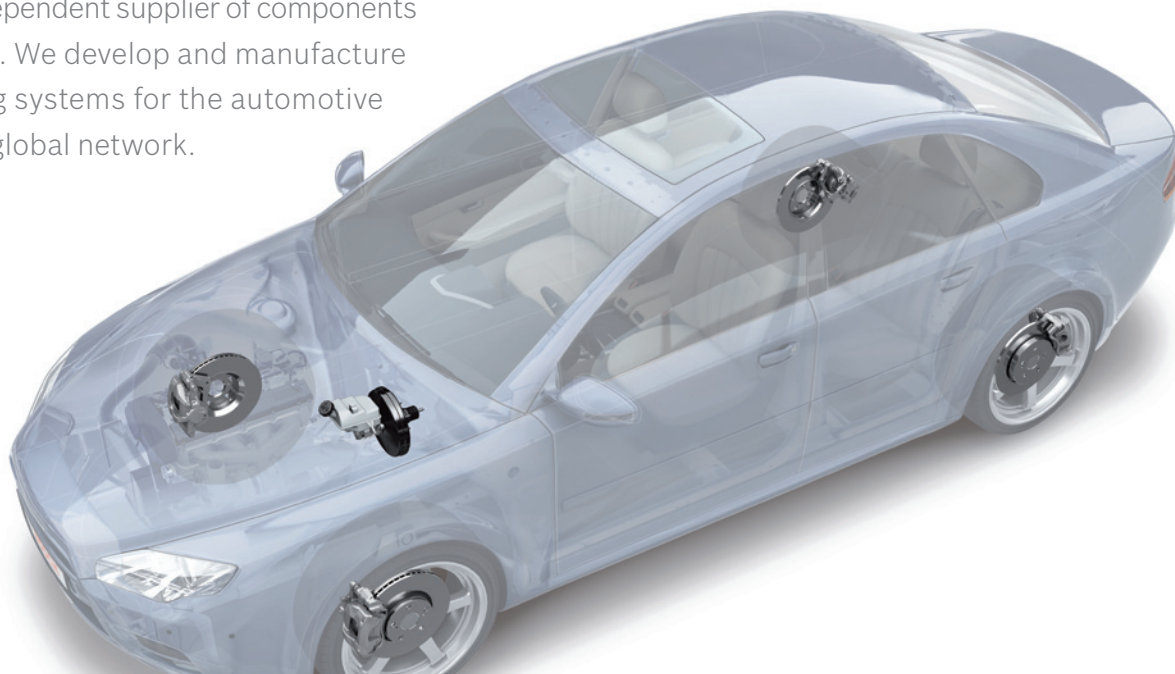
BOSCH

Invented for life



Chassis Systems Brakes: **We are your best partner worldwide**

Bosch Chassis Systems Brakes is a division of the world's largest independent supplier of components for motor vehicles. We develop and manufacture innovative braking systems for the automotive industry within a global network.



From components to full braking systems, our high-performance, high-quality range of products offers suitable solutions for all market requirements.

As a market leader in the field of brake actuation, we combine, on a worldwide basis, our experience with customers with our own comprehensive know-how in motor-vehicle engineering.

On the following pages you will see the detailed portfolio of our products for brake actuation:

- ▶ Brake boosters
- ▶ Mechanical brake-assist systems
- ▶ Brake master cylinders



Standardized design and processes guarantee **high quality worldwide**

Brake boosters from Bosch: less force required from the driver to achieve better pedal feel and greater comfort.

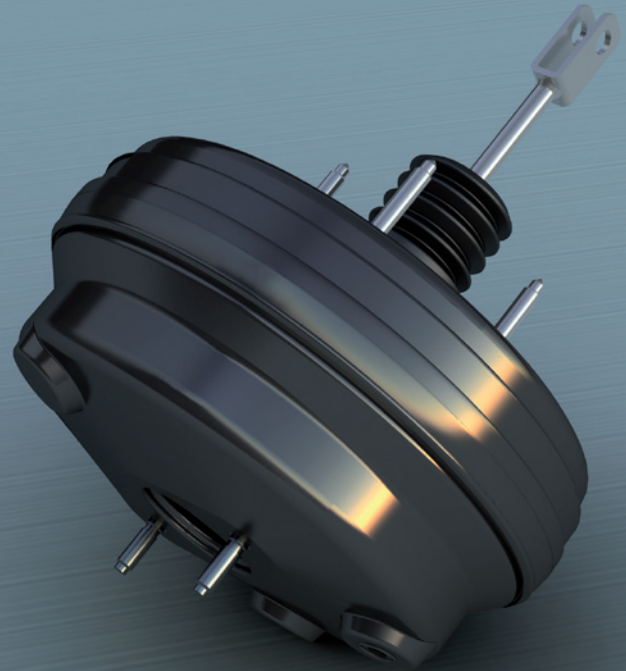
Conventional brake booster NOAH

The latest generation in the field of conventional vacuum brake boosters to meet high demands is called NOAH. It is fully compatible with our TMC8 brake master cylinder (see page 10). The used valve technology which has been standardized worldwide permits the modular integration of mechanical brake-assist systems. Thanks to the shorter closing path and the reduced amount of effort required from the driver, pedal feel and comfort have been enhanced.

NOAH is available in two versions: Single (scalable from 8" to 11") and Tandem (scalable from 7+8" to 10+10") in order to provide an adaptable and economical solution for all market segments. Thanks to its low weight, it also helps to save fuel.

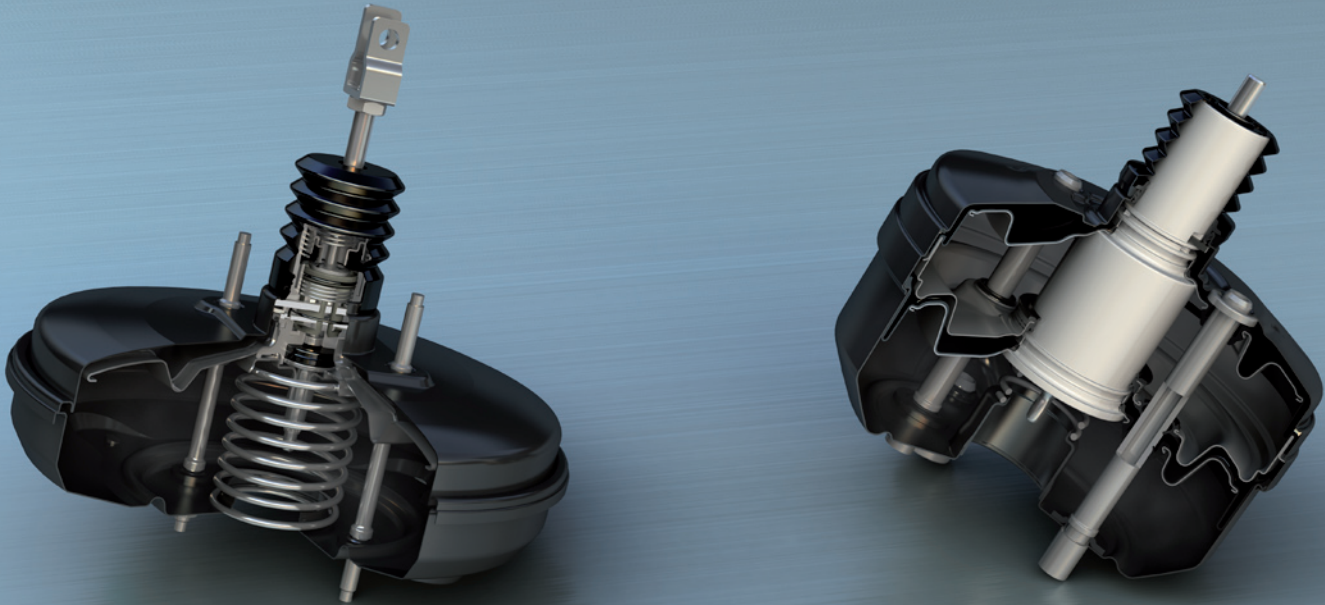
NOAH-v (value line)

The NOAH-v is a product specifically intended for the growing markets such as China, India or Eastern Europe. It offers a cost-favorable alternative that fulfills the requirements of these emerging markets.



Easy application Reduced weight

Direct power transfer via the Tie Rod permits optimized design plus increased performance.



Brake booster Tie Rod

The innovative Tie Rod technology of our new vacuum brake booster Tie Rod offers a number of advantages in comparison with conventional brake boosters. There is a considerable reduction in the installation space required, which contributes among other things to improved behavior under crash conditions. The new Tie Rod technology has permitted a reduction in weight of around 10 %. The higher stiffness of the Tie Rod additionally reduces the pedal travel when a full brake application is made, thus providing greater safety and comfort.

Tie Rod is available as a Single (scalable from 9" to 11") or Tandem version (scalable from 7+8" to 10+10").

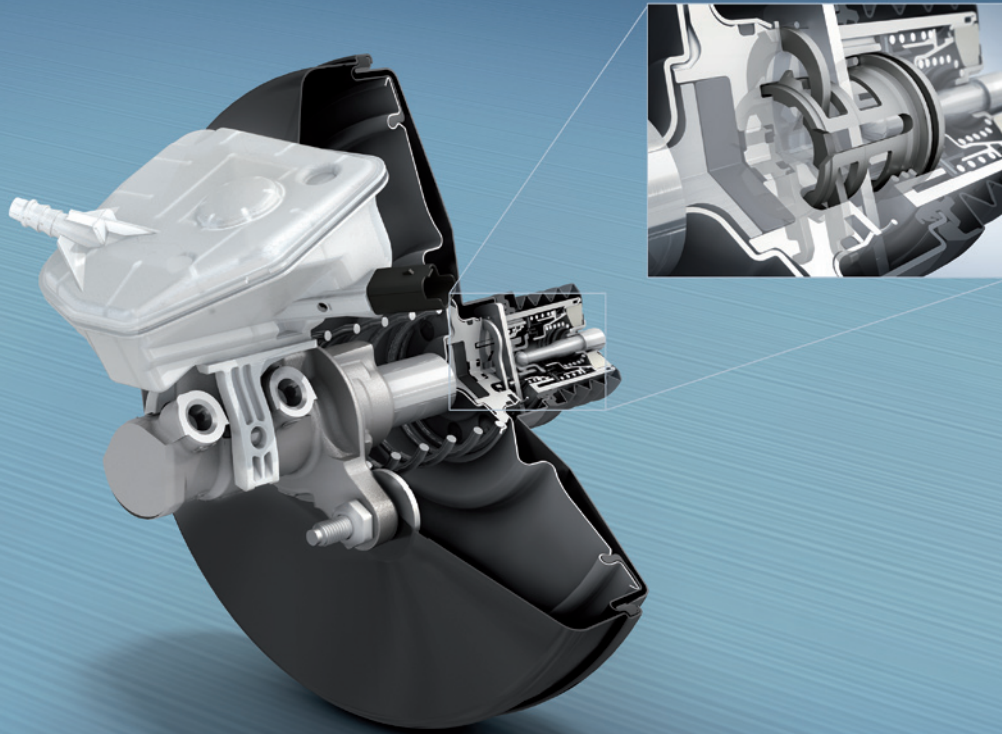
Brake booster Through Bolt

The design of the vacuum brake booster Through Bolt is very similar to the Tie Rod's one. It offers consequently the same benefits with regard to weight reduction, crash behavior and greater safety and comfort. The sole but important difference is in the case of Through Bolt that the solid tie rod is replaced by a tube with a continuous bolt used for the fixation of the booster through the engine compartment. Hence, the customer saves time and money during the assembly as far as there is one operation less to be accomplished.

Through Bolt is available as a Single (scalable from 9" to 11") or Tandem version (scalable from 7+8" to 10+10").

Brake-assist systems from Bosch for more comfort and shorter braking distances

A choice can be made from two brake-assist systems: EVA or SPR, which can both be combined with NOAH, Tie Rod and Through Bolt still enhancing the safety.



Mechanical brake-assist system EVA

The mechanical brake-assist system EVA identifies an emergency braking maneuver by high pedal speed. EVA then supports the driver to achieve the required ABS pressure level as quickly as possible and thus permits maximum vehicle deceleration in critical situations.

Depending on the driver's reaction, this can shorten the braking distance by up to 60%. EVA thus makes an active contribution to the safety of the vehicle occupants and the protection of pedestrians.

Dual Rate: Spring Reaction (SPR)

The SPR Dual Rate function is fitted to a threshold of pressure according to the specifications of the customer. It offers a reduction of the effort to obtain more assistance.

Depending on the driver's reaction, a reduction of the required pedal force of up to 60% is possible. In addition to this added comfort, the braking distance can be shortened by up to 30%.

Brake master cylinders from Bosch **to save space and increase safety**

With its standardized design, optimized length and weight, the TMC8 can be combined with the brake boosters NOAH, Tie Rod and Through Bolt.

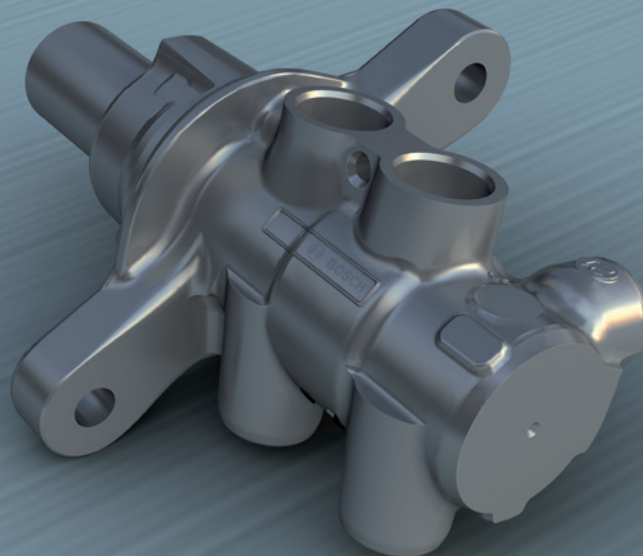
Tandem brake master cylinder TMC8

The TMC8 is the latest generation of tandem master cylinders from Bosch. 30% shorter and around 20% lighter than a conventional master cylinder, it not only saves space in the engine compartment but also helps to save fuel. Its fixed seals and plunger pistons permit a high flow rate even at low temperatures, which is of great importance for good ESP® performance.

The TMC8 is a modular system that is scalable from 19 to 33 mm and thus provides a suitable solution for the requirements of every customer.

TMC8-v (value line)

The TMC8-v is a product specifically intended for the growing markets such as China, India or Eastern Europe. It offers a cost-favorable alternative that fulfills the requirements of these emerging markets.



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We at Bosch Chassis Systems Brakes are constantly looking for new solutions in order to increase the comfort and the performance, to optimize the package and to reduce the weight. Our R & D departments are also working on innovative solutions to help you further reduce CO₂ emissions, for instance via regenerative braking systems for hybrid vehicles.

Beside our product portfolio for brake actuation, the range of products offered by Bosch Chassis Systems Brakes also includes foundation products such as brake discs and disc-brakes, drum brakes and parking brakes.