



BOSCH

Invented for life

Drive technology

For reliable power transmission in the engine:
powerful, resilient and durable



Drive technology

Overview

In daily use, **Bosch drive technologies** deliver maximum performance – despite high mechanical, chemical, and thermal loads. Timing belts, V-belts, ribbed V-belts, tensioner and idler pulleys, torsional vibration dampers and overrunning alternator pulleys are designed for the particularly high resilience and long service life they stand out for.

Technology for excellent power transmission:

Replacing drive components on time has by now become a standard task for automotive workshops. It is the only way to ensure efficient power transmission. In addition, fixed replacement intervals also prevent potential damages. For their quick and safe replacement, Bosch also provides complete sets such as timing-belt and water-pump kits. The range is complemented by additional individual components of the accessory drive (FEAD: Front End Accessory Drive). Its main components include ribbed V-belts, tensioner and idler pulleys as well as accessories.

Perfectly equipped with regular servicing:




Bosch supplies workshops with anything needed for regular complete servicing and to carry out tasks in an efficient manner:

- ▶ Broad range of timing belts, V-belts, ribbed V-belts, tensioner and idler pulleys, torsional vibration dampers and overrunning alternator pulleys
- ▶ Outstanding quality meeting the demanding requirements of vehicle manufacturers



Main drive Program



	Timing belts	Timing belt kits	Water pump kits
	Synchronised power transmission with low noise and high safety throughout the entire service life: Bosch timing belts.	Vehicle-specific kits – complete, including all required components – ensure powerful and synchronous power transmission throughout the complete service life.	Vehicle-specific kits – complete, including all required components as well as the coolant pump powered by the timing belt – ensure powerful and synchronous power transmission throughout the entire service life.
Scope of application			
Advantages at a glance	<ul style="list-style-type: none"> ▶ High operation safety ▶ High comfort ▶ Outstanding power transmission ▶ Cords with high longitudinal stability 	<ul style="list-style-type: none"> ▶ Quick and professional replacement ▶ Safe and space-saving installation ▶ High reliability 	<ul style="list-style-type: none"> ▶ Quick and professional replacement ▶ Safe and time-saving installation ▶ High reliability

ESI[tronic] software



ESI[tronic] diagnostic software supports during the replacement of timing belt and water pump kits. Vehicle-specific advices save valuable time to the workshop and prevents assembly errors.

Timing belts

Product details

Synchronised power transmission with low noise and high safety throughout the entire service life: **Bosch timing belts.**



NEW!

Advantages at a glance

- ▶ Engine-specific rubber compound and belt design **for high operation safety**
- ▶ Quiet running **for high comfort**
- ▶ Engine-specific tooth profile **for outstanding power transmission**
- ▶ **Cords with high longitudinal stability** due to usage of fiberglass
- ▶ **Outstanding protection of the teeth** due to a polyamide cover fabric



Belts in oil

Timing belts featuring a new technology
Compared to chain drives, oil-bath-driven timing belts feature significantly reduced friction losses. This results in reduced fuel consumption and CO₂ emissions. Additional advantages compared to the chain drives used so far:

- ▶ Increased engine performance
- ▶ Reduced pollutant emissions
- ▶ Smooth engine operation
- ▶ Reduced noise level

Timing belt kits

Product details

Vehicle-specific kits – complete, including all required components – ensure powerful and synchronous long-term power transmission.



Advantages at a glance

- ▶ **Quick and professional replacement** thanks to perfectly matched components tested according to with the same specifications as original equipment
- ▶ **Safe and time-saving installation** thanks to vehicle-specific installation instructions in ESI[tronic] M
- ▶ **Particularly high reliability** due to comprehensive functional and endurance tests of all components





Water pump kits



Water pump kits contain all required components – including the coolant pump. They ensure durable and synchronous power transmission.

Accessory drive Program



	V-belts	Ribbed V-belts
Scope of application		

Open-flanked and toothed Bosch V-belts have been developed for universal application in compact drive designs.




Single and double ribbed Bosch V-belts are used in vehicles equipped with a vast array of options as standard.

Advantages at a glance

- ▶ Safety, reliability and a long service life
- ▶ Oil- and heat-resistance
- ▶ Ideal for drives with multiple grooves

- ▶ High operating safety and performance
- ▶ High bending strength
- ▶ Outstanding power transmission



	Tensioner and idler pulleys	Torsional vibration dampers	Overrunning alternator Pulleys
Scope of application			

Tensioner pulleys work dynamically adjusting the belt tension particularly well to the respective operating condition and in line with the engine load. Idler pulleys guide the belt thus absorbing part of the load placed on the drive system.

Crankshafts cause vibrations and rotational irregularities transmitted to the whole drive system via pulleys and belts – thus straining all units. **Bosch torsional vibration dampers** eliminate any vibrations thanks to their integrated rubber track thus protecting the belt and all of the units.

The requirements of modern engines' belt drives are extremely high. **Bosch overrunning alternator pulleys** thus work particularly accurately and safely. Bosch offers these thoroughly produced high-performance parts on the after-market of the same quality as the original equipment supplied.

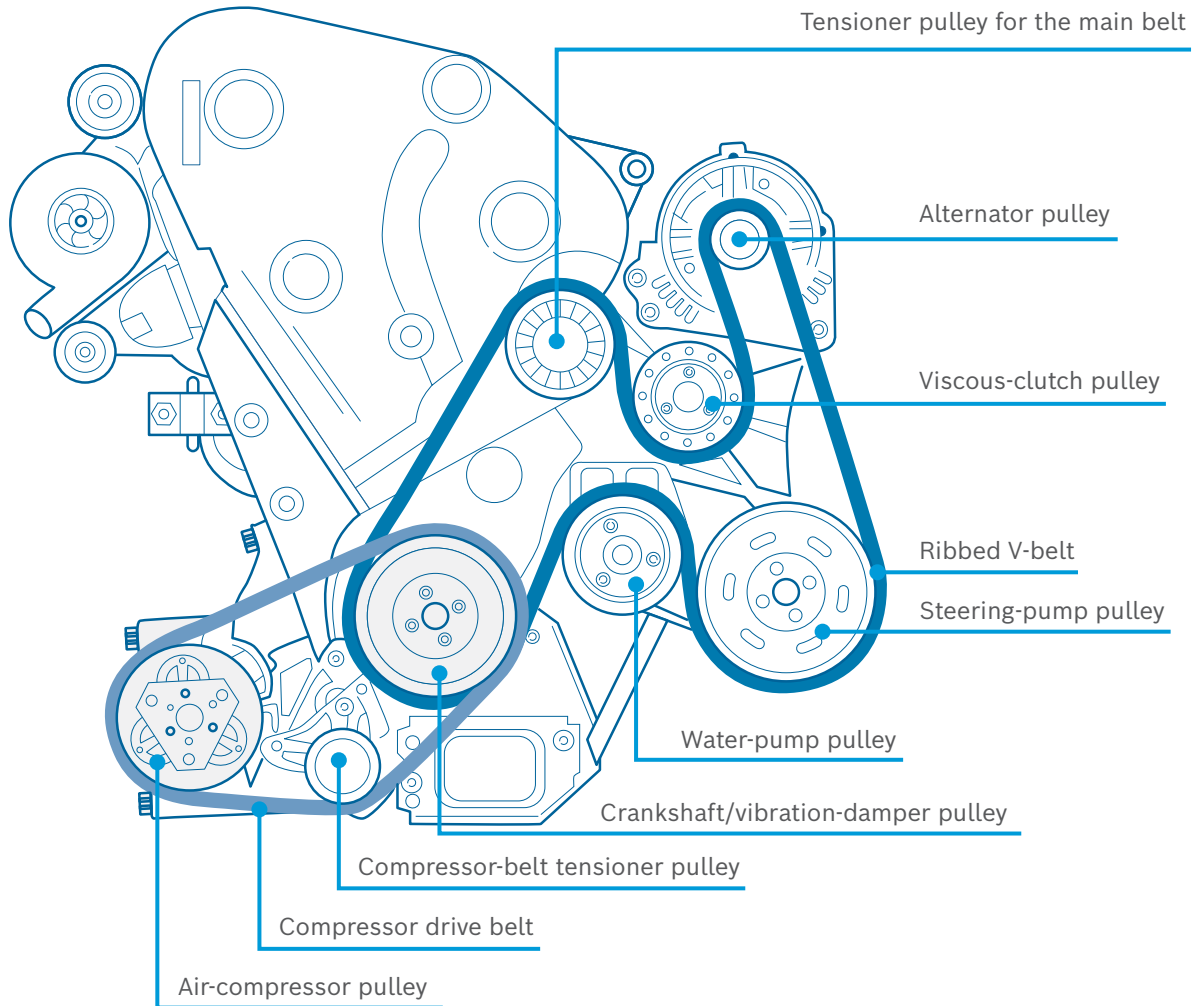
Advantages at a glance

- ▶ Reduce noise
- ▶ High mileage
- ▶ Long durability and service life

- ▶ Increase the driving comfort
- ▶ Increase the service life of the belt and the other components of the belt drive
- ▶ Outstanding workshop support

- ▶ Minimize the generation of noise
- ▶ Increase the service life of the whole belt drive system
- ▶ Withstand the extreme demands belt drives place on them

Accessory drive Technology



Over the last decades, the accessory drives of modern engines have become ever more sophisticated. The requirements placed on the individual accessory-drive components nowadays have become extremely high. Bosch high-performance components thus work highly accurate and safe.

Bosch accessory drive:

- ▶ V-belts
- ▶ Ribbed V-belts
- ▶ Overrunning alternator pulleys
- ▶ Torsional vibration dampers
- ▶ Tensioner and idler pulleys

V-belts

Product details

Open-flanked and toothed Bosch V-belts have been developed for universal application in compact drive designs.



Advantages at a glance

- ▶ **Safety, reliability and a long service life** thanks to high-quality materials
- ▶ **Oil- and heat-resistance** due to fiber-reinforced rubber compound
- ▶ **Ideal for drives with multiple grooves** due to precision-manufactured, identical V-belts

Ribbed V-belts

Product details

Single and double ribbed Bosch V-belts are used in comprehensively equipped vehicles as standard.



Advantages at a glance

- ▶ **High operating safety and performance** – ideal for high belt speeds due to the use of high-quality materials
- ▶ **High bending strength** due to the belt's fiber-reinforced rear side
- ▶ **Outstanding power transmission** due to perfectly fitting ribbed profile

Workshop tip



Besides standard belts, Bosch also provides special belts with high performances for modern vehicles. They are used for sophisticated start/stop applications, for instance. For particularly resilient tension members, these special belts are often equipped with aramid cords.

Tensioner and idler pulleys

Product details

Tensioner pulleys work dynamically adjusting the belt tension particularly well to the respective operating condition and in line with the engine load. **Idler pulleys** guide the belt thus absorbing part of the load placed on the drive system.



Advantages at a glance

- ▶ **Reduced noise** due to double-row bearings and patented damping mechanism
- ▶ **High mileage** thanks to patented design for accurate belt alignment and tensioning
- ▶ **Long durability and service life** due to effective protection against contamination – compound seal, chrome-silicon torsion spring and machine-processed drive pulleys made of steel

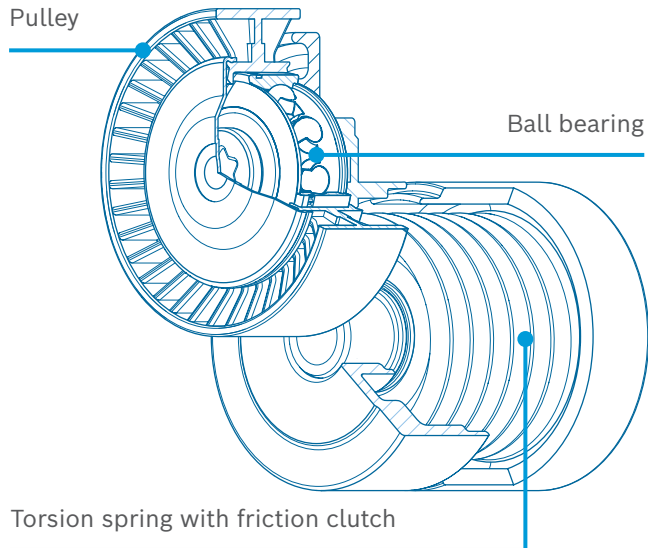
Workshop tip

Belt pulleys, pulleys and tensioning devices are to be protected against operating fluids such as oil, brake fluids, coolants, and fuels.

- ▶ Cool down engine to ambient temperature
- ▶ Replace all components of a belt drive system
- ▶ Avoid misalignment, axial offset and skewed positions and observe specified tightening torque

Tensioner and idler pulleys

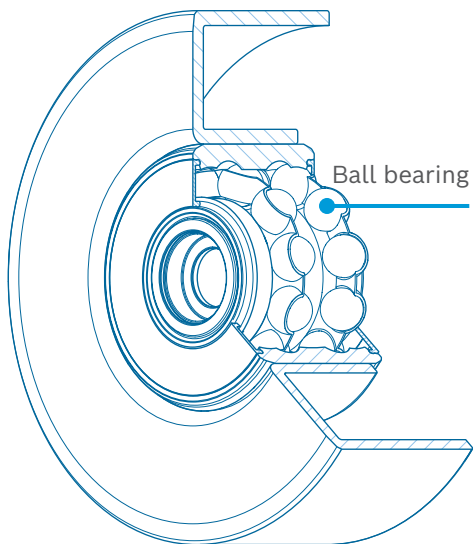
Technology



Tensioner pulleys neutralize changes in tension within belt drives. This includes short-term changes caused by temperature and load variations as well as long-term changes as a result of wear.

Effective design:

- ▶ Tensioner pulley with outer ring made of steel or plastic
- ▶ Single/double-row grooved ball bearings
- ▶ Torsion spring generating the pretension



Idler pulleys provide precise guidance for the belt – depending on the position of the driven belt pulley. In addition, they increase the wrap-around angle in case higher outputs are to be transmitted.

Effective design:

- ▶ Single/double-row grooved ball bearings with enlarged grease reservoir
- ▶ Outer ring made of steel or plastic (polyamide), flat or grooved

Torsional vibration dampers

Product details

Crankshafts cause vibrations and rotational irregularities transmitted to the whole drive system via pulleys and belts – thus straining all units. Bosch torsional vibration dampers eliminate any vibrations thanks to their integrated rubber track thus protecting the belt and all of the units.



Advantages at a glance

- ▶ **Increase the driving comfort** due to higher operational smoothness and reduced noise generation
- ▶ **Increase the service life of the belt and the other components of the belt drive** preventing vibrations and slip
- ▶ **Extensive workshop support** due to large range of Bosch torsional vibration dampers perfectly geared to Bosch drive belts

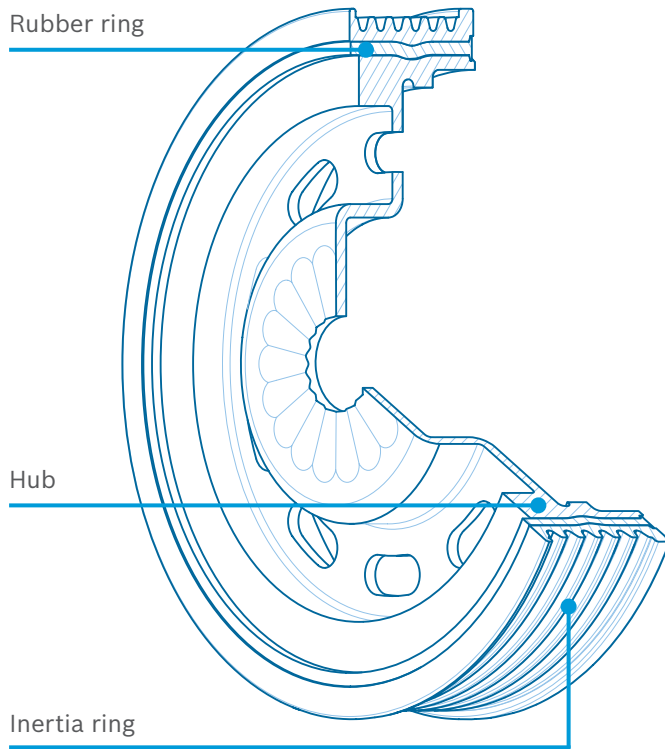
Workshop tip

Fluttering ribbed V-belts, uneven tensioners, increased engine noise generation and vibrations indicate a defective damper.

The torsional vibration dampers should be checked at major inspections. Check the crankshaft pulley for tears, detachments, bursts and deformation of the elastomer track. Some belt pulleys feature indicators providing information on the degree of wear.

Torsional vibration dampers

Technology



Torsional vibration dampers absorb the crankshaft vibrations by means of an elastomer element located between their inner and outer rings.

Torsional vibration damper isolators provide additional isolation of the belt drive by means of a second rubber track. Rotational irregularities of the crankshaft are thus not even forwarded to the auxiliary drive. This results in a significant relief for all components of the accessory drive.

Effective design:

- ▶ Rotating flywheel stabilizing the belt drive
- ▶ Elastomer coupling absorbs the torsional vibrations preventing them from being passed on to the outer ring
- ▶ Dampening of rotational vibrations due to slide bearings



Installation parts

Check if the bolts can be reused!

ESI[tronic] 2.0 provides information on which bolts are to be used one time only. For several applications bolts are available at Bosch. The vehicle-specific installation parts can also be purchased at the authorized workshop.

Overrunning alternator pulleys

Product details

The requirements of modern engines' belt drives are extremely high. Bosch overrunning alternator pulleys thus work particularly accurately and safely. Bosch offers these thoroughly produced high-performance parts on the aftermarket of the same quality as the original equipment supplied.



Benefits at a glance

- ▶ **Overrunning alternator pulleys minimize the generation of noise** – they reduce belt vibrations, tensioning forces and paths
- ▶ **The service life of the whole belt drive system is increased** preventing belt slip and flatterring
- ▶ **Overrunning alternator pulleys withstand the extreme demands belt drives place on them** – they feature a high operational accuracy and safety.

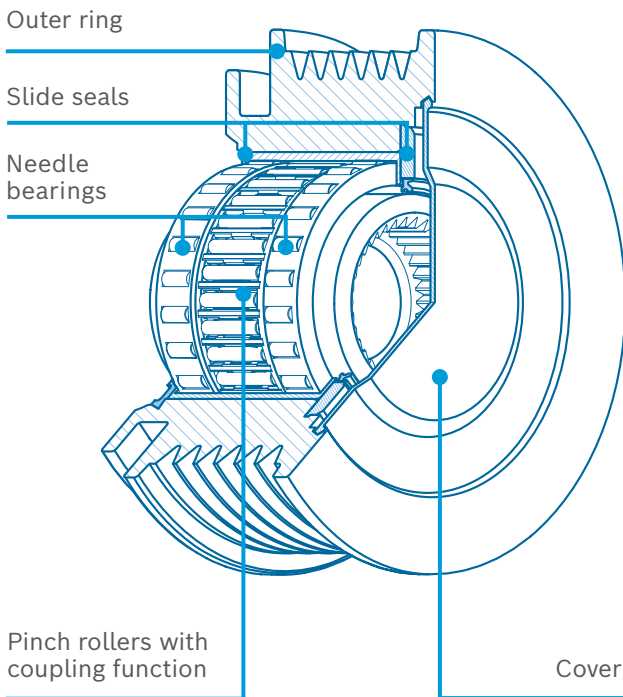
Workshop tip

Wear on one of the components increases the risk of failure of other ones accordingly. Checking the complete system shows if other parts need to be replaced (ribbed V-belts, tensioner/idler pulleys or torsional vibration dampers) can be identified at once.



Overrunning alternator pulleys

Technology



Overrunning alternator pulleys compensate the rotational irregularities of the crankshaft as far as possible thus minimizing the vibrations at the accessory drive.

Overrunning alternator pulleys use a combination of accurately produced pinch rollers and springloaded needle bearings ensuring safe operation of overrunning and locking functions.

Effective design:

- ▶ Outer ring with poly-V profile serves as pulley for the ribbed V-belt
- ▶ Double-mounted overrunning unit
- ▶ An inner ring
- ▶ Two seals (slide seal)
- ▶ Front cover protecting against water and dirt



Installation instructions

ESI[tronic] software provides information on how to replace the alternator pulleys of several vehicles at the component instructions for Bosch alternators. Additional notes on testing, removal and installation are issued via technical information sheets.



ESI[tronic] software for diagnostics and services

Bosch offers workshops with the ESI[tronic] software a suitable solution for the effective and efficient vehicle diagnostics for repair and service work.

Advantages:

- ▶ Easy handling
- ▶ Standardized systematic
- ▶ Extensive vehicle coverage
- ▶ Modular setup



Driven by efficiency

Bosch technologies are used worldwide in almost all vehicles. People, and assuring their mobility, is what we are focused on.

Therefore, we have dedicated the last 125 years of pioneering spirit and expertise in research and manufacturing to achieving this.

We continue to work on our unique combination of solutions for spare parts, diagnostic devices, workshop equipment and services:

- ▶ Solutions for efficient vehicle repairs
- ▶ Innovative workshop equipment and software
- ▶ One of the world's most comprehensive range of new and replacement parts
- ▶ Large network of wholesale customers, for quick and reliable parts supply
- ▶ Competent hotline support
- ▶ Comprehensive educational and training offers
- ▶ Targeted sales and marketing support

For additional information, please visit:

boschaftermarket.com

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drives us**

Robert Bosch GmbH
Automotive Aftermarket

Auf der Breit 4
76227 Karlsruhe
Germany

boschaftermarket.com



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