



DAMPER

CRANKSHAFT PULLEY

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NTN® **SNR**®



With You

THE PRODUCT

What is a damper? What is its role?

A damper pulley, commonly known as a crankshaft pulley, is a pulley mounted at the front end of the crankshaft. It drives the accessory belts, which in turn drive the alternator, air conditioning compressor, power steering pump, water pump etc.

Modern engines produce a large amount of torsional vibration in the crankshaft. The simple pulley has a damping effect on crankshaft stresses. The pulley filter absorbs vibrations that arise due to the a-cyclical nature of the engine.

The latest generation of diesel engines also emits low frequencies. These may significantly reduce the lifespan of the accessory drive system. To overcome this, a pulley filter with a double rubber insert is used to help reduce these low frequency vibrations.



NON-COMPLIANT COPIES Safety conscious!

Some manufacturers offer «indestructible» damper pulleys, a quality that does not apply to the crankshaft or the engine. The various metal parts are actually one single piece. In fact, a rubber seal is cast in a groove formed directly on the part.

This type of part does not comply in any way with the specifications of the manufacturer. Unfiltered versions tend to result in vibrations and are generally greater in weight compared to the original part, which in turn jeopardise the strength of other engine parts, in particular the crankshaft twisting or breaking.



Original product

Non-compliant copy

THE DIFFERENT TYPES OF DAMPER

THE “STOP - START” ENGINE PULLEY

More advanced technically to withstand many consecutive starts. However, standard damper versions are mounted on some vehicles. *Eg: DPF359.09 => C3 1,6 Hdi*

THE DOUBLE PULLEY OR PULLEY FILTER

Mounted on a number of diesel engines, this is the most technically complicated product. It is made of 7 to 8 metal parts and 2 rubber inserts. *Eg: DPF359.03*

THE SINGLE-BLOCK PULLEY OR DAMPER

Widely used on diesel and petrol engines. It consists of 3 parts, 2 metal (iron, steel or aluminum) and a rubber ring that connects the metal parts together. *Eg: DPF358.24*

THE SINGLE-BLOCK PULLEY

This type of pulley is still used in some applications but is losing prominence, particularly with the arrival of Stop -start petrol engines. *Eg: DPF355.05*



DPF359.09



DPF359.03



DPF358.24



DPF355.05

A GROWING MARKET for Crankshaft pulleys

In the past 5 years the crank shaft pulley has seen strong sales growth based on:

- **Awareness** of the need to change this part
- **Increases in vehicles equipped** with a damper or pulley filter (compared to single block)
- The growing number of vehicles that may sustain damage due to ever increasing stresses (multiplication of drive items such as Stop – Start functions, Downsizing of petrol engines)

Currently, nearly 95% of sales are for diesel engines

Why change the damper pulley?

SAFETY

Pulley deterioration can result in a crankshaft failure.

COMFORT

Pulley deterioration causes noise and vibrations that are unpleasant for the driver.

SIMPLIFICATION AND COST REDUCTION

Changing your timing belt kit?

Take the opportunity to change the damper pulley to reduce future labour costs and reduce the time the car is off the road.



Why NTN-SNR recommends also changing the bolts?

OBSERVATION

During the original installation or replacement of the damper the mechanic applies high tightening torques as well as rotation angles for certain applications.

- Renault Laguna 1.9dCi: $2\text{daN.m}+115^\circ$ = NTN-SNR prod. *ref: DPF355.08*
- BMW 3 Series 318d: $10\text{daN.m}+150^\circ$ = NTN-SNR prod. *ref: DPF350.01*

CONSEQUENCES

- The screws are pushed to their elastic limit
- They expand or deform following manufacturer's data
- They have to be changed, especially when a rotation angle is applied



What are the risks of using the same bolts?

- **Failure** of the pulley or screws (excessive play)
- **Failure** of the screw causing damage to the damper, drive belts, etc.

NTN-SNR strongly recommends changing the screws along with the damper, especially when rotation angles are applied. This is why NTN-SNR offers a full range of damper kits, including the screws required to meet this need.

FOCUS ON THE NTN-SNR DAMPER PULLEY RANGE

With nearly 200 products in the range NTN-SNR offer one of the largest ranges on the market today, including

- Over 140 individual products
- 60 damper kits with screws and washers. A double benefit for the garage owner
 1. Repairs are in compliance with the manufacturers recommendations.
 2. The mechanic saves time because all the necessary products are in the same product reference and all contained in same box.

True to its policy of quality products, and to its premium supplier positioning, NTN-SNR has opted to provide screws and washers of original quality.

Why choose the NTN-SNR damper range?

- The range includes the largest number of OE parts
- Quality of products offered by NTN-SNR: They are original or original-quality products tested and inspected by our quality department. In fact, NTN-SNR is particularly sensitive to the concept of 'original'. For us it is a guarantee of your safety!
- Quality of expertise with a single vendor (simplifying legal responsibility).
- A simplification of purchases with one contact for the full engine range (Accessories, Timing).
- NTN-SNR: Original Equipment Manufacturer of engine timing parts for such manufactures as VAG, Mercedes, Toyota and Hyundai.

NTN-SNR also takes care of storage

Specific packaging has been developed with a separate a compartment for the screws to prevent damage to either the screws or the pulley.

Two different sizes of boxes have been created in order to optimize space whilst the kit is being stored

Parts storage

The pulley kit must be stored in the special packaging to protect it from external damage and moisture.

Avoid all contact with oil, acid or moisture (due to risk of rubber deterioration).



INSPECTION AND REPLACING!

Damper pulleys are subjected to the significant stresses and wear and therefore need to be checked regularly and changed when ever damage is found.



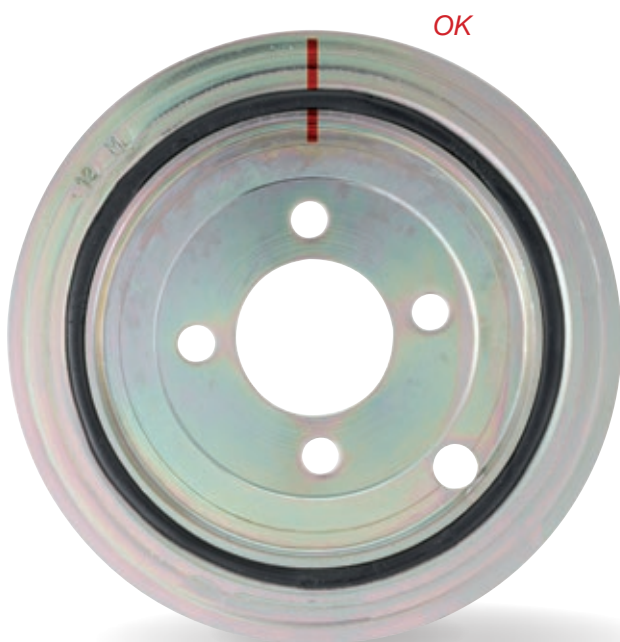
Faulty damper

What symptoms would the driver notice?

- The driver feels unusual vibrations inside the cabin
- A whistling accessory belt may be heard
- Unusual noises or knocking from the engine

Dynamic Inspection for single blocks!

- I. When the engine is turned off and cool, mark from the edge to the centre of the damper.
- II. Start the engine and operate the various electrical equipment (air conditioning, power steering, turning the steering wheel etc).
- III. Stop the engine. Inspect the marks on the pulley. The marks made must return to their initial positions. Otherwise, the damper must be replaced because the rubber insert no longer fulfills its role.



Visual inspection every 60,000 km

Check for any of the following problems

- Cracks splits and fissures in the rubber
- Swelling of the rubber due to oil contamination
- Deformation of rubber
- Cracks in the hub or in the metal tightening area
- A separation of the different sections of the damper
- The presence of splits on the drive belt



Replacing the damper pulley

- **Replace the damper** alongside the timing kit (at an average of between 90,000 and 120,000 km)
- **Use appropriate tools** (for example Hazet kit, Ref 1789 N-1 or equivalent)
- **Change the screws and washers**
- **Adhere to the manufacturer's recommended torques and rotation angles**
- **Always replace the accessory belt**
- **Check the other parts of the accessory system** (alternator, roller tensioner...)
- **Never start the engine without the accessory belt**

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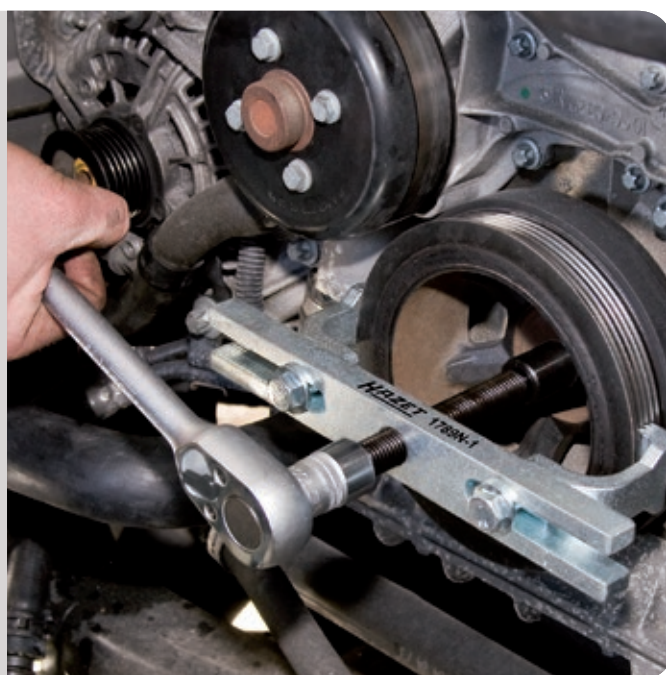
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HAZET
Geniales Werkzeug

a strong partnership!

HAZET kit

The use of appropriate tools is required. We recommend the HAZET kit, Ref. 1789 N-1, for removing the damper. It contains 3 extractors that are specially adapted for engine areas with restricted access.





NOT JUST DAMPERS!

NTN-SNR offers a wide range of products for the engine and makes the most of its role as OEM to provide customers with quality products.



ACCESSORY ROLLERS and OVER-RUNNING PULLEYS



ACCESSORY BELT



ACCESSORY KITS



COMPLETE TIMING RANGE



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