



# CVJ: CONSTANT VELOCITY JOINTS

**NTN** 



With You

# WHAT IS A DRIVESHAFT?

An automotive driveshaft is responsible for transferring the engine's rotational power or torque through the transmission to the vehicle's axles. The driveshaft directs the rotational power to the front or rear wheels or to all four wheels if the vehicle is four-wheel drive. They are subject to high stresses during rotation.

Two constant velocity joints, one on the wheel side, the other on the differential side, allow the same rotational speed between input and output shafts, whatever the position and angle of the joints are in.

The size of the joints and the length of the driveshaft depend on the vehicle design and the torque levels to be transmitted from the transmission to the wheels.

## DIFFERENT TYPES OF PRODUCTS

NTN-SNR manufacture all types of classical joints, using a six ball design on the wheel side and differential side, on certain applications a tripod type joint can also be used on the differential side. NTN-SNR have developed and patented a range of eight ball joints (EBJ and EDJ) which are used by the Original Equipment Manufacturers (OEM). The design of these new products are attributed to the ever increasing requirements of the vehicle manufacturers and vehicle owners, comfort, reduction of CO<sub>2</sub> emissions and efficiency are the three main criteria in design and development.

### EBJ OUTBOARD (fixed joints)

**Composition:** an outer race with inner race, cage, steel balls and boot.

Compact design to fulfil customer's requirements, size, speed, load & envelope.

### EDJ INBOARD (Sliding joints)

**Composition:** an outer race, boot and tripod (or for ball joints: inner race, cage and balls)

Developed to allow for improved transmitted torque, limits vibrational issues, and reduces operating temperatures.



## PRESS CONNECTED SPLINE HUB JOINT (PCS HUB JOINT)

NTN-SNR's award at the Grands Prix Internationaux de l'Innovation Automobile at Equip'Auto show in 2015 was thanks to PCS (Press Connected Splines) Hub Joint technology. This joint allows us to make components a lot more compact, this helps decrease the driveshaft's weight leading to reduced energy consumption and CO<sub>2</sub> emissions.



## A LOOK AT THE COMPONENTS

The correct operation of a driveshaft depends on the quality of the joints, NTN SNR only uses OEM quality components in the manufacture of all its driveshaft's and CVJ's.

**WARNING! Nuts, bolts, pins, circlips etc. are not re-usable. Use of non-original components may prove dangerous as they are not OEM approved or tested.**

## NTN-SNR QUALITY

Vehicle owners demand more and more comfort, safety, fuel efficiency and reduced Co<sub>2</sub> levels in modern day vehicles. In parallel, vehicle manufacturers requests have become more and more technical: increased compactness and lightness, durability and greater efficiency.

So today NTN-SNR offers optimized products which satisfy all of these requirements.

With increasing sales of SUV and pick-up style vehicles and higher vehicle car parcs in developing countries the demand for Constant Velocity (CV) driveshaft's is increasing.

### DIFFERENT LEVELS OF QUALITY

- Parts from remanufacturing: used components are selected, reworked and reassembled. With a lower cost, these parts offer an uncertain level of performance in terms of life duration and quality.
- Adaptable parts: developed for the aftermarket, these products offer variable degrees of quality and performance, due to the technical characteristics of these products not always being within the vehicle manufacturers specifications.
- OEM parts: they are the only parts that respect the vehicle manufacturers requirements and specifications. This is the market segment targeted by NTN-SNR with its CVJ products.

### THE DRIVESHAFT IS A SAFETY CRITICAL COMPONENT



# THE RANGE OF CVJ PRODUCTS FOR THE AFTERMARKET

## NTN-SNR OFFERS A RANGE OF THREE CVJ PRODUCTS:

- Driveshaft kits
- Outboard wheel side joint kits
- Outboard and inboard boot kits

## A DRIVESHAFT KIT (DK) INCLUDES:

- The complete assembled driveshaft,
- Components for assembly like nuts, bolts, clips ...

Assembled in our plants the driveshaft is complete and ready to fit.



## THE OUTBOARD JOINT KIT (OJK) IS PRE-ASSEMBLED AND INCLUDES:

- The outboard outer race assembled (with inner race, cage and balls, ASB® ring and dust cover).
- Components for assembly such as nuts, bolts, clips
- Corresponding boot kit with bands, circlips and grease,
- And the retaining ring for the differential side



## THE OUT BOARD BOOT KIT (OBK) CONTAINS:

- The boot, boot clips circlips grease, nuts and washers

## THE INBOARD BOOT KIT (IBK...) CONTAINS:

- The boot, boot clips, springs, caps and retaining nuts and bolts where required.



## PART NUMBERING SYSTEM

**Driveshaft kit:** DKcc.nnn\*

**Outboard wheel side joint kit:** OJKcc.nnn

**Wheel side boot kit:** OBKcc.nnn

**Differential side boot kit:** IBKcc.nnn

\* Where "cc" is the carmaker code and "nnn" a sequential number of the kit

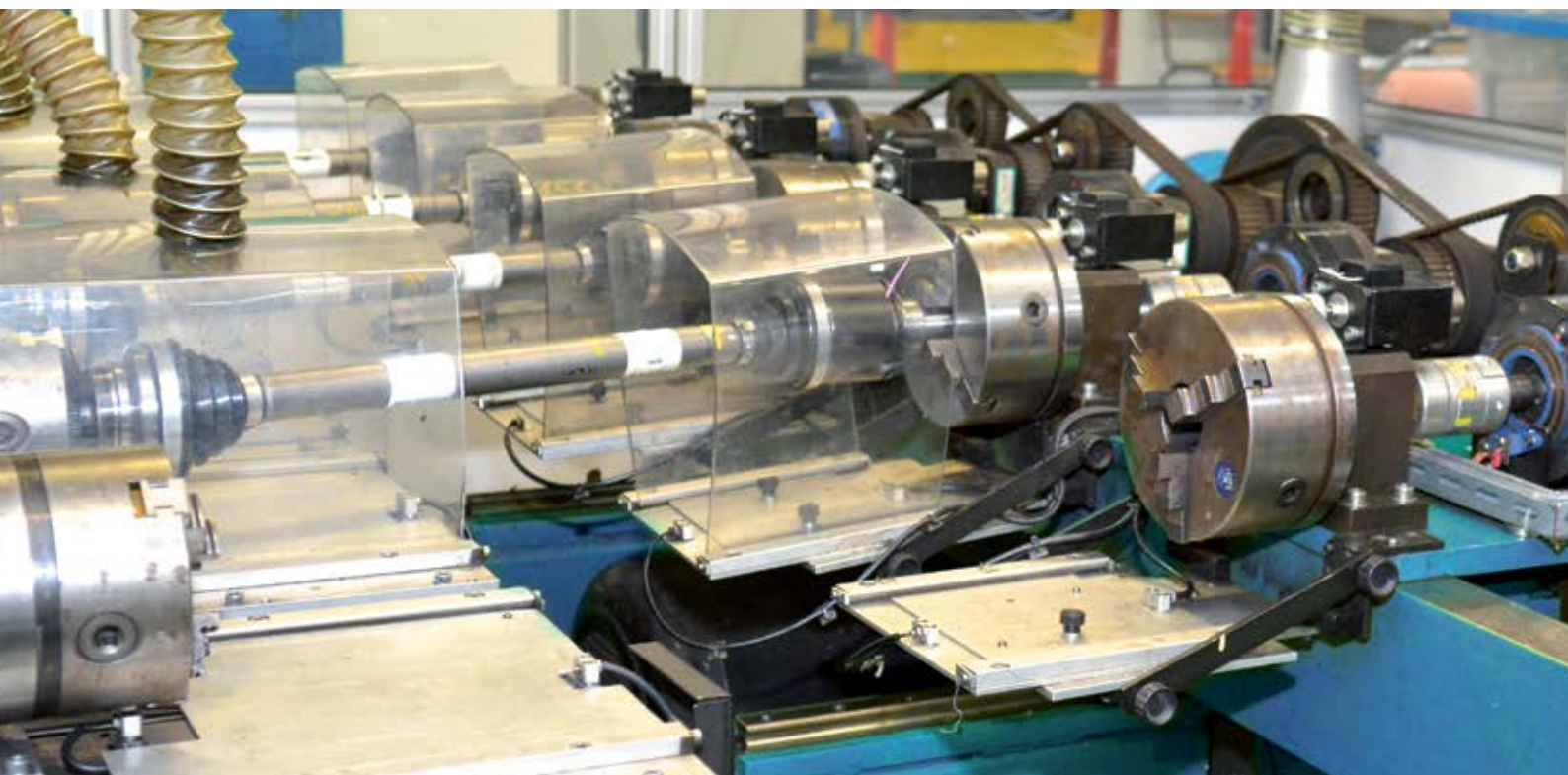
## TESTING AND MAINTENANCE

NTN-SNR conducts bench tests with their test centres, in accordance with internal & customers' requirements. A complete driveshaft goes through many different tests:

- Durability and fatigue tests are carried out on the complete driveshaft as well as the outboard and inboard joints, links shafts (tubular or solid) tripods, splines and welded joints
- Static or quasi-static strength tests (a vehicle being driven up a curb with the steering on full lock)
- Abuse tests, important for vehicle manufacturers (this test simulates the clutch being released far too quickly causing wheel spin)
- Noise vibration harshness (NVH): this test is seldomly carried out by OEM driveshaft manufacturers, however the test makes sure the driveshaft is acoustically correct, this helps to keep noise levels and vibration at a minimum in the vehicle. NTN-SNR's skilled technicians routinely conduct these tests to help maintain the high quality of our CVJ products

As the boots are the most sensitive components of the driveshaft, several kinds of test are carried out to make sure they perform correctly:

- Durability and extreme temperatures resistance tests (from  $-40^{\circ}\text{C}$  to  $+135^{\circ}\text{C}$  in some applications this can be  $+165^{\circ}\text{C}$ ),
- Dilation tests to measure the deformation of the boot due to grease centrifugation



## #SECURITYINSIDE

Driveshaft's that are not tested are not certified by the vehicle manufacturers, they do not meet or fulfil the vehicle manufacturers specifications. Untested or uncertified driveshaft's could be potentially dangerous.

A faulty or badly made driveshaft could suffer many problems such as the inner or outer joints failing. This may even lead to the loss of a vehicles wheel in certain situations.

### REPLACEMENTS

When a vehicle is serviced it is important that the driveshaft's are checked for:

- Abnormal knocking sounds when the steering is on full lock
- The general condition of the surfaces exposed to the environment (rust on shaft and joints)
- The condition of the clamping bands.
- The condition of the boots, check for cracks, holes, cuts and grease leakage.
- Backlash in the joints or excessive joint movement.



NTN-SNR recommends that the vehicle manufacturers service and fitting instructions are adhered too. The correct tools should always be used, NTN-SNR recommends the use of HAZET tools.

Reference Hazet 1847



Reference Hazet 1847-11



# WHY CHOOSE NTN-SNR CVJ PRODUCTS?

- As the 2<sup>nd</sup> largest CVJ manufacturer worldwide NTN-SNR is an established and respected manufacturer, with more than 100000 parts being manufactured daily in its own plants across 5 separate continents
- R&D partner and supplier to the worlds vehicle manufactures, NTN-SNR offers a large range of products for vehicle manufacturers throughout world such as Renault, Mercedes, Mini, Jeep, Opel, Nissan, Suzuki, Toyota, Dacia, Fiat, Alfa Romeo, Honda, Volkswagen, Ford, Land Rover, Volvo, BMW, Lotus...
- NTN-SNR offers products that are original certified quality, NTN-SNR offers innovation, PCS (Press Connected Splines) and eight ball CVJ , these joints offer greater safety, increased performance, reduced fuel consumption and a reduction of CO<sub>2</sub> emissions
- Technical support is available on NTN-SNR products via (TechScaN'R, TechInfos, etc...)
- All the OEM components are included in the kit, helping make any repair simple, quick and reliable

**The new CVJ range complements the CHASSIS range consisting of wheel bearings kits, brake disks with integral bearings, strut top bearings and suspension kits.**

**NTN-SNR BE CONFIDENT IN OUR QUALITY**





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