2020

ASSEMBLING General *Rules*

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Warning

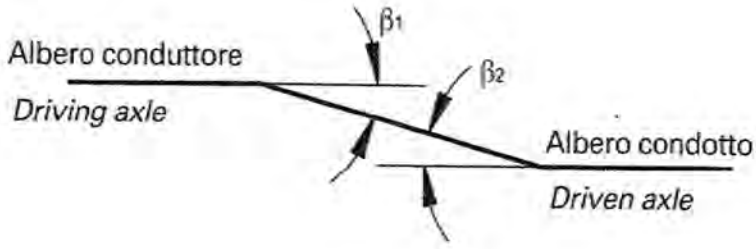
Whatever stated below must be considered only as general instructions for executing of operations concerning assembling, disassembling and doing maintenance of drive shafts assemblies.

Italgiunti SRL shall not be liable, either directly or indirectly, for what has been indicated. Whoever will carry out the operations described will do it taking upon itself the whole responsibility of the consequences of his behavior. Assembly, disassembly and maintenance operations must be done only by trained and qualified personnel.

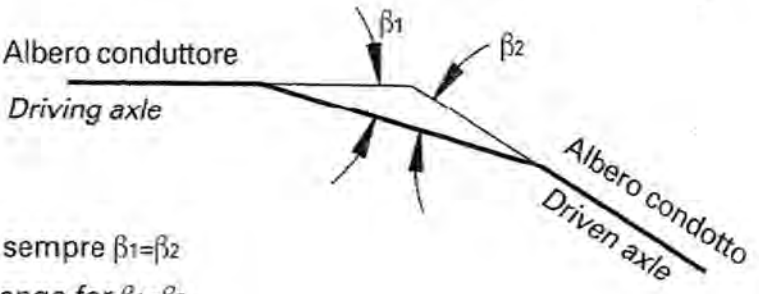
Drive shafts are also parts that can cause damages to persons or things during their duty. Even if they are currently dimensioned and installed. Therefore users must take all the necessary precautions in order to prevent and avoid such damages, by installing, if necessary, specific protections.

Checking the correct installation.

The main reason for using drive shafts is to guarantee the constant-velocity transfer of motion. The non-observance of this condition normally causes vibrations and failures. In order to guarantee the constant-velocity transfer, transmissions must be arranged constructionally and according to planning, as shown in the following diagrams.



Disposizione a Z
Z Arrangement



Assicurare sempre $\beta_1=\beta_2$
Always arrange for $\beta_1=\beta_2$

Disposizione a W
W Arrangement

Handling driveshafts

The wrong handling of drive shafts, especially impacts and shocks, may cause serious damages to them and compromise the correct duty. Drive shafts must always be handled horizontally but if you need to deviate from this position, all precautions must be taken in order to avoid their coming out.

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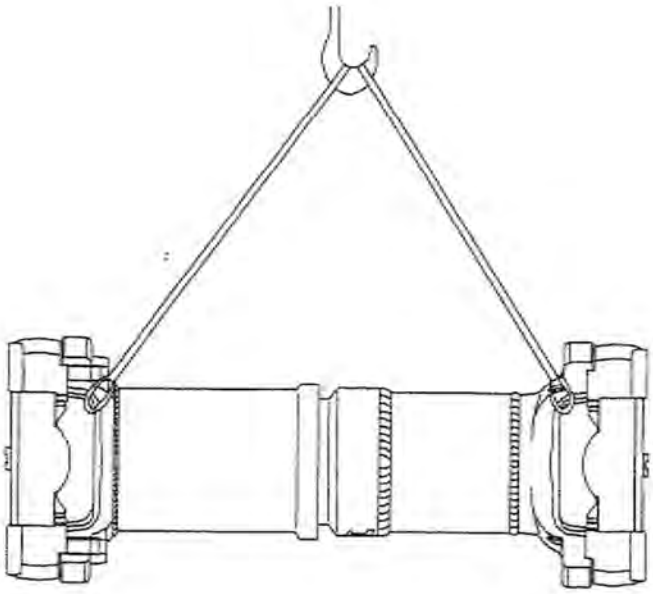

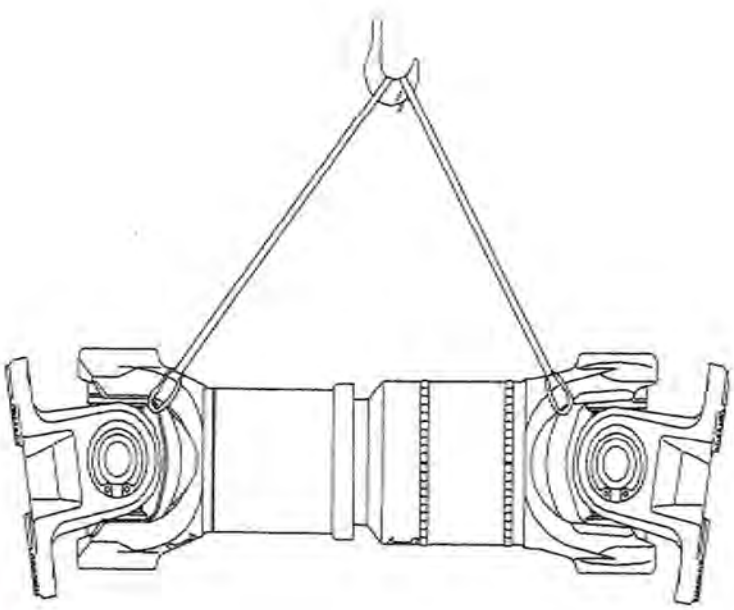

IF YOU HAVE TO SLING THEM,
FIXING MUST BE MADE AS SHOWN BELOW, BY USING PROPER ROPES .

- Do never grab the transmissions by the spiders!!
- Always make sure that drive shafts cannot fall or roll, no matter how they are rested.
- Do not rest its weight on the sealing section and do not rest weight s on the same area.
- Do not remove plates welded to adjust unbalance.

General assembly rules

The drive shafts components do not have to be tampered. During assembly operations take care of precautions for potential accidental falls or components movements.

Make sure of the right yoke position indicated by the specific alignment arrow' marks put on the shaft. Clean the surfaces, but also lubricants, rust, paint and dirt in general. Remove eventual securities placed against accidental slippage during the carriage.

During the assembly do not force with levers or other tools, above all in the universal joints area. Make sure of using clamping screws as prescribed (dimensions, quality levels, surface treatment) and the right bolts clamping moment. In this case it is necessary to use torque wrenches, doing the crossed clamping.

The rigid shafts have to be linked to minimum one floating flange. Both connecting flanges of tubes version with length compensation must be hardly fixed to groups shafts. In case of painting, make sure that the part where the splines' seal slides was not painted.

Do not break in any way the components of the driveshaft a sit has been supplied. In the assembly operations take all the precautions against accidental falls or relative movements of the components. Make sure that the position of the yokes is correct: it is indicated by special stamped alignment arrows.

Assembly instruction for round bearing type driveshaft

In order to assemble properly the driveshaft, the flange must be combined properly with the spigot on the companion flange located close to the gearbox or the axle and.
Check the flange plate and the companion flange plate and assure that no paint, dirt, rust or dents are visible. Fix together the flanges and assure the alignment of the holes, then fix the bolts with the torque wrench using the proper torque according the bolt dimension, please use specific data.

Assembly instruction for block bearing type driveshaft

For the assembly, first position the key and the centering of one bearing, then the key and the centering of the opposite bearing (FIG. 1).

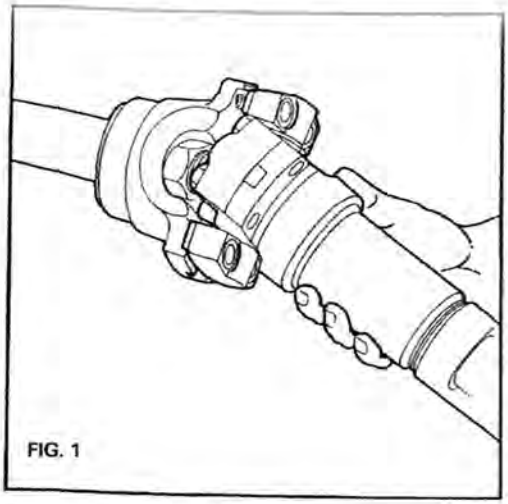
FIG. 1

Before inserting the screws, make sure that the bearings of the spider assembly have already got their final position. To assure this, use a light rubber or wooden hammer (FIG. 2).

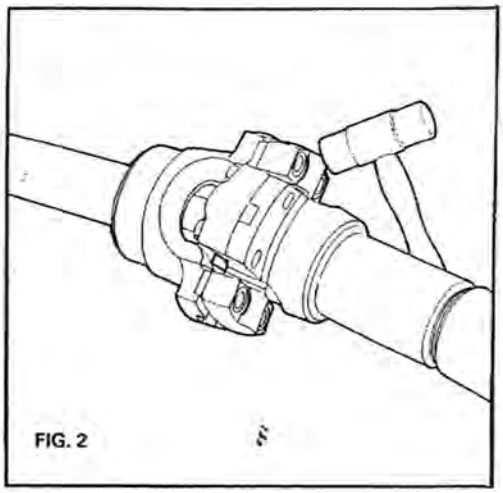
FIG. 2

Screws must have no trace of grease or dirt at all. We do not suggest using washers, either normal or elastic.

The metal wire soldered to the spiders' bearings serves to fix them during the handling and it does not have any effect on its functionality. It is not necessary therefore to remove it after the driveshaft has been assembled.

After having fixed the driveshaft on one end, go on by fixing the other end exactly in the same way.

Disassembly

Before disassembling the drive shafts, ensure all the necessary precautions in order to avoid the falling or the coming out of the pieces. During the disassembly operation, pay attention to the relative movements of the components. Refer to the recommendations concerning the handling and the assembly.

Maintenance

Lubrication of joints and sliding parts must be done using the lubricators (grease nipples) according the specific norms DIN 71412 and DIN 3404. Before lubrication, clean accurately the lubricators in order to avoid that dirt or particles comes in and get to the bearings.

If lubrication is done properly, the grease must coming out the seals of the bearing cups. The centre bearing of the fixed shafts must be re-greased according the proper grease fittings on the back. During the lubrication max pressure permitted is 15 bars – higher pressure can damage the rubber seals. Drive shafts can use also lube for life universal joints, these are maintenance free.

Lubrication instructions and frequency

All our shafts are supplied already greased and ready for the assembly. Using high quality U-joints we strictly follow the producer's indication about the grease, a special one for high performance and loads with dropping point at 240C°, **SHELL GADUS S3 V220C 2**. It's made with a high content of base oil viscosity.

This grease is **SHELL GADUS S3 V220C 2** is recommended for bearings working at high temperatures and under heavy loads. The grease must have a melting point of 185°C and a penetration grade 2, lithium soap based. Maximum lubrication pressure 15 bar.

Re-greasing time intervals: The re-greasing time intervals is depending on the type of vehicle, the mileage and the specific application (*working condition*). Consumption above the average and high temperature environment can cause a faster consumption of the grease. The cleaning of the driveshaft has different steps: dismounting the parts, washing the single parts, reassembling and greasing the parts.

In difficult external conditions, for example dirt / water / mud, maintenance intervals must be increased, modified accordingly. We suggest to use the above mentioned re-greased intervals for a longer and better duration of the driveshaft.

USE OF VEHICLE INSPECTION INTERVALS COMMERCIAL VEHICLES:

On road vehicles:

- Mix on road and Off road: 50.000 Km / 1 year
- Off road only: 30.000 Km / 1 year
- Earth moving machinery: 10.000 Km 50 hrs / working

Train or metro: 3.000 hrs / working Industrial application 500 hrs / working

Balancing

Balancing the driveshaft is extremely important, only for those application where the round per minutes is above 400-500 rpm a static balancing is accepted, every other application needs a dynamic balancing. Balancing according norms VDI2060 and accuracy G40 or G16.
Balancing plates are fixed with special machines electric welded on tubing or protection tube in long driveshaft using compensation tube; for short coupling usually extra material is removed according specific mechanical tools.

Safety precautions

A serious of fatal injury can occur: If lacking proper training If you fail to follow proper procedures and instructions If you do not use proper tools and safety equipment If you use incompatible driveshaft components If you use driveshaft components in a non-approved application Do not work on driveshaft (with or without a guard) when machinery is operating Rotating driveshaft can be dangerous You can snag clothes, skin, hair, hands, etc This can cause serious injuries or death.