4.1 - General instructions on how to demount the axle or its parts

The unit has been built according to normal mechanical construction techniques.

Before beginning the disassembling operations, first drain off the oil and check for any metallic residuals.

Never use pointed metal objects to separate stiffly mounted parts or to remove bearings, the cardan flange or similar parts.

Always use pullers or special wrenches suited to such operations.
Use the special tools indicated in chapter 7.

Before beginning the dismantling operations, first thoroughly clean all outer surfaces and when all parts have been completely dismantled, clean all oil residuals from the parts. When the axle is to be completely overhauled, or when extensive maintenance work must be carried out, it is advisable to send the entire unit to the manufacturer.

This chapter deals with the disassembling of the axle parts subjected to wear. The axle should be safely placed on a suitable support when it is completely removed from the vehicle.

CAUTION !!!

Check that the supports are adequately strong. The axle weighs approximately 1450 kg (3200 lbs).

CAUTION !!!

Only autorized worker can make any work on the axle. Working director has to put on the instrument panel a plate with written "Machine maintenance work in progress" and remove the ignition key. Danger of life!

Before taking off the wheel it's recommended to deflate them.

4.2 - Disassembly of the wheel hub

- Check that the supports of the machine are adequate, perfectly vertical, positioned in the right places and on a leveled ground.
- Unscrew the plug pos.2 fig.4.1 and the bottom screw of the planetary spider pos.1. Let the oil exit in a 10 litres (3 gal) container.

Note: never allow used oil to pollute the environment. Give it to the relative organizations authorized to dispose of such products.

- Screw three of those screws into the extraction holes to disassembly the planetary reduction.

CAUTION !!!

The planetary gears assembly weighs approx. 50 kg (110 lb). Use a proper supporting mean.

- To disassembly the wheel hub remove screws pos.7 fixing the bell pos.5 and use them as extractors in the three holes pos.9.
- Take off the bell (it wieghs about 30 kg-65 lb).

CAUTION !!!

Disassembly the wheel hub only if really necessary. After this disassembly the metal seals must be replaced because used seals cannot be mounted with the security of oil tightness.

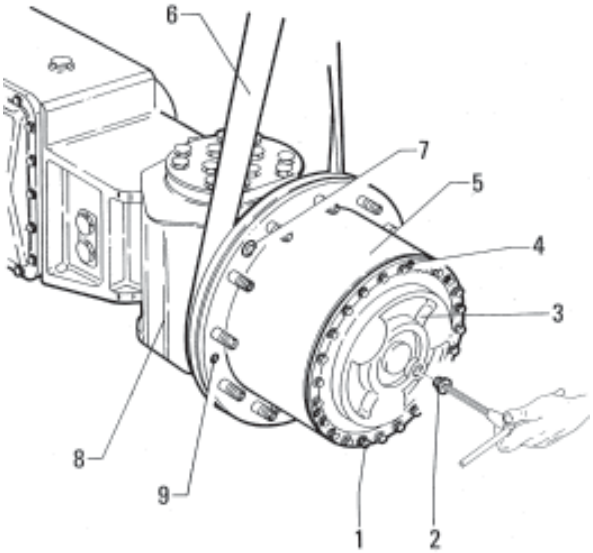


Fig. 4.1

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7.1 - Assy's drawing and driving torques

7.1.1 - Central unit section

In fig.7.1 is represented the central unit along with the screws torque values.

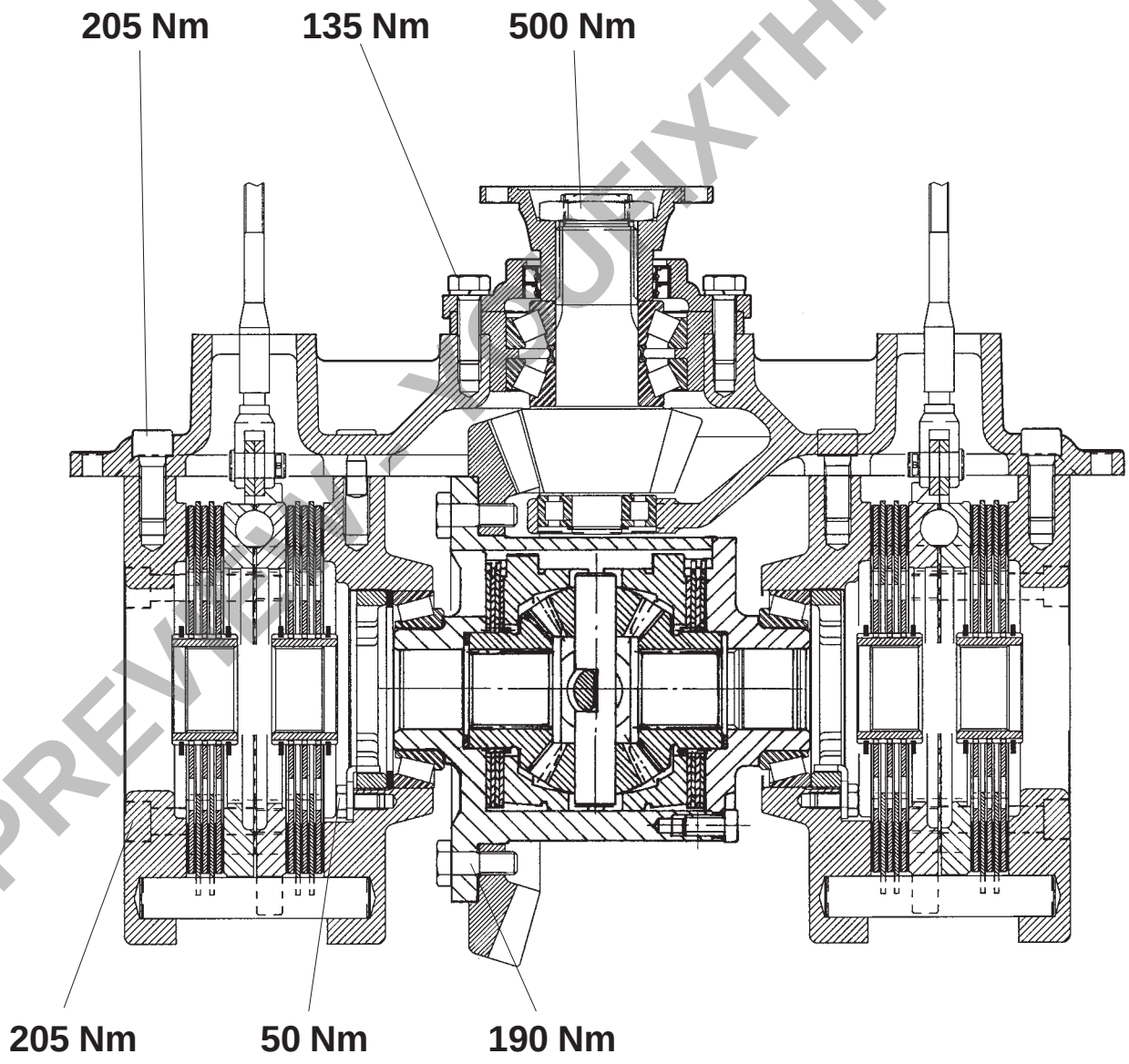


Fig. 7.1

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3.1 - Foreword

Regular routine maintenance and correct use are essential if each component is to be long-lasting.

Only use genuine OMCI spare parts to prevent the guarantee from becoming void and to ensure reliable and long-lasting operation.

CAUTION !!!

The cleaning, lubricating and servicing operations to which the axle and all its other components must be subjected must only be carried out when the engine is off, the vehicle locked in a safety position, with the ignition key removed from the control panel and in the possession of the maintenance worker.

When the unit is to be subjected to extensive maintenance operations and overhaul, it must be disassembled with adequately strong tools and equipment in order to prevent the operator from being injured.

3.2 - Tests conducted by the Manufacturer

The unit you have purchased has been subjected in our workshop to an operational test able to guarantee perfect functionality of the equipment in question. The torque value, noise level during operation and seal retention are all measured during the test.

3.3 - Routine inspections

Strictly comply with the below listed instructions, according to the indicated frequencies, in order to maintain the characteristics and reliability of the various mechanisms.

After the first 100 work hours

- Change the oil in the wheel hubs and in the central section of the axle.
- Check that the wheel bolts are sufficiently torqued. See chapter 7.

Every 500 work hours

- Check all the oil levels.
- Change the oil in the wheel hubs.
- Check that the wheel bolts are sufficiently torqued. See chapter 7.
- Grease the pivot fig.3.3, the cardan joint fig.3.4 and the coupling bar fig.3.5 (see par.3.7).

Every 1000 work hours

- Change the oil in the central section of the axle.
- Adjust the tightness of the wheel bearings. If these fail to comply with the assembly instructions in assemblies section, provide to adjust or change wheel bearing.

Note: if the vehicle remains at a standstill for a long period of time, always carry out the various manoeuvres every 4-6 months in order to lubricate all gears or parts in the axle, thereby preventing the formation of rust.

After every 5000 work hours

- Check the structural components for rust, since this could jeopardize the operative reliability of the axle itself: housing, spindles, hubs.

After every 10000 work hours

- Completely overhaul the axle, replacing all seals, retaining rings, oil seal and, if necessary, the bearings.
  In these cases, it is advisable to send the entire axle to the manufacturer for overhaul and replacement of any parts as may be worn.

3.4 - Checking and changing of the oil

Before beginning the various operations, thoroughly clean the filling, draining and level inspecting zones. Park the vehicle on flat ground, locking it position with the parking brake and wedges under the wheels.

CAUTION !!!

Label all controls to signal that there is an operation; remove the ignition key and give it to the maintenance chief.

Make sure that the oil is at normal running temperature since it must be changed when hot.

Note: the characteristics of the oil used in the axle are able to ensure that the hydraulic system operates correctly at temperatures of between -10°C and 40°C (14-104°F).

Contact the manufacturer if the operative temperatures are different.

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6.1 - Assembly of the differential unit

Pre-assemble the differential unit in the following way before definitive assembly:
- Cover each shaft of planet gear spider pos.4 fig.6.1 with molykote grease.
- Insert into the half differential housing pos.5 the friction discs and steel discs. Start with a steel disc. Alternate steel and friction discs.
- Insert in the half-housing pos.5 the thrust ring pos.8 and the sun gear with its washer.
- Install the spider pos.4 with the four planetary gears and the relative thrust washers pos.3.
- Position the upper side gear pos.1, cover with grease its thrust washer.
- Mount the thrust ring pos.2, and friction and steel discs pos.9.
- Fit the second half-casing pos.6, paying attention to match the “A” marks on the half-casings.
- Mount the bolts pos.10, applying Loctite 262 and tightening to the torque indicated in chapter 7.
- Check that the differential gears are free to turn.

6.1.1 - Assembly of the bevel ring gear

- Clean and dry the bevel ring gear pos.6 fig.6.1 and the corresponding copling surface on the half-casing.
- Apply a continuous thread of Loctite 262 on the contact surfaces
- Mount the bevel gear it on the casing.
- Mount the bolts with Loctite 262 and tighten them to the torque indicated in chapter 7.
- If possible heat the bearings pos.7 fig.6.2 to about 80°C (176°F) and install them in the unit.

6.2 - Assembly and installation of the pinion unit

To simplify all overhaul and remounting operations, the unit has been built so that the center distance of the bevel pinion normally requires no adjustment. On the other hand, it will be necessary to adjust the two taper bearings pos.2 and 3 fig.6.5.
- Mount bearings flange pos.2 fig.6.3 on the shaft of pinion pos.3, setting spacer pos.1 between the bearings.
- Mount the cardan shaft coupling flange pos.5 and nut pos.4, tightening to the torque indicated in chapter 7.
- When the unit is mounted and without oil seals, check that the bearings are correctly adjusted: they must be without play and must turn with a maximum torque of 2 Nm. If this is not the case, work on spacer pos.1 until obtaining the right adjustment. To reduce the torque increase the spacer and viceversa.

Note: a preload exceeding 2 Nm will cause the unit to excessively heat until the bearings finally seize.

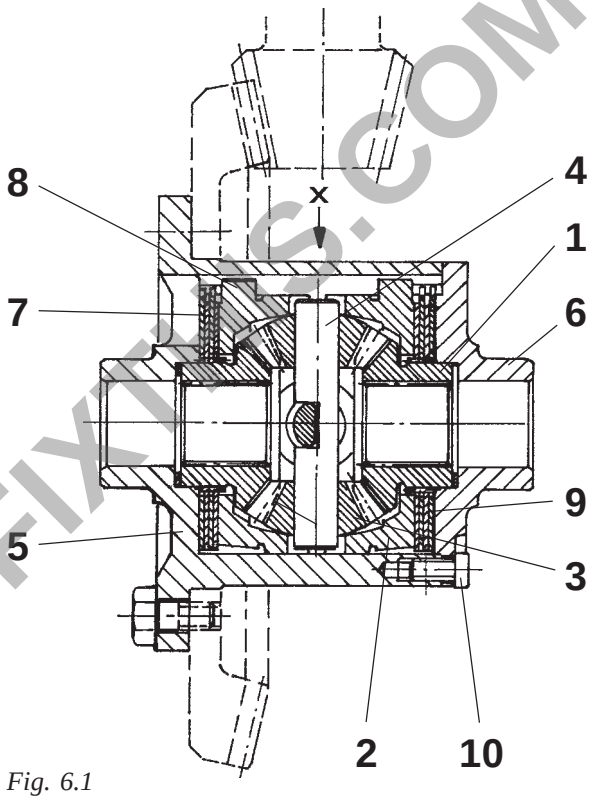


Fig. 6.1

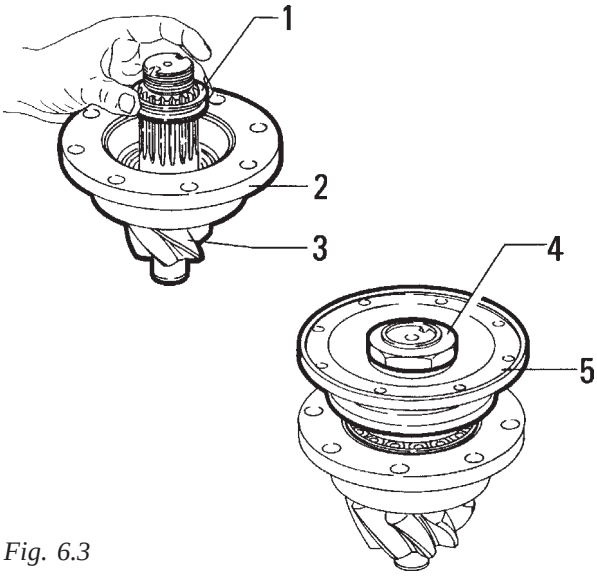


Fig. 6.3

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7.1.3 - Wheel hub section

In fig. 7.2 is represented the constructional drawing of the wheel hub along with the screws torque values.

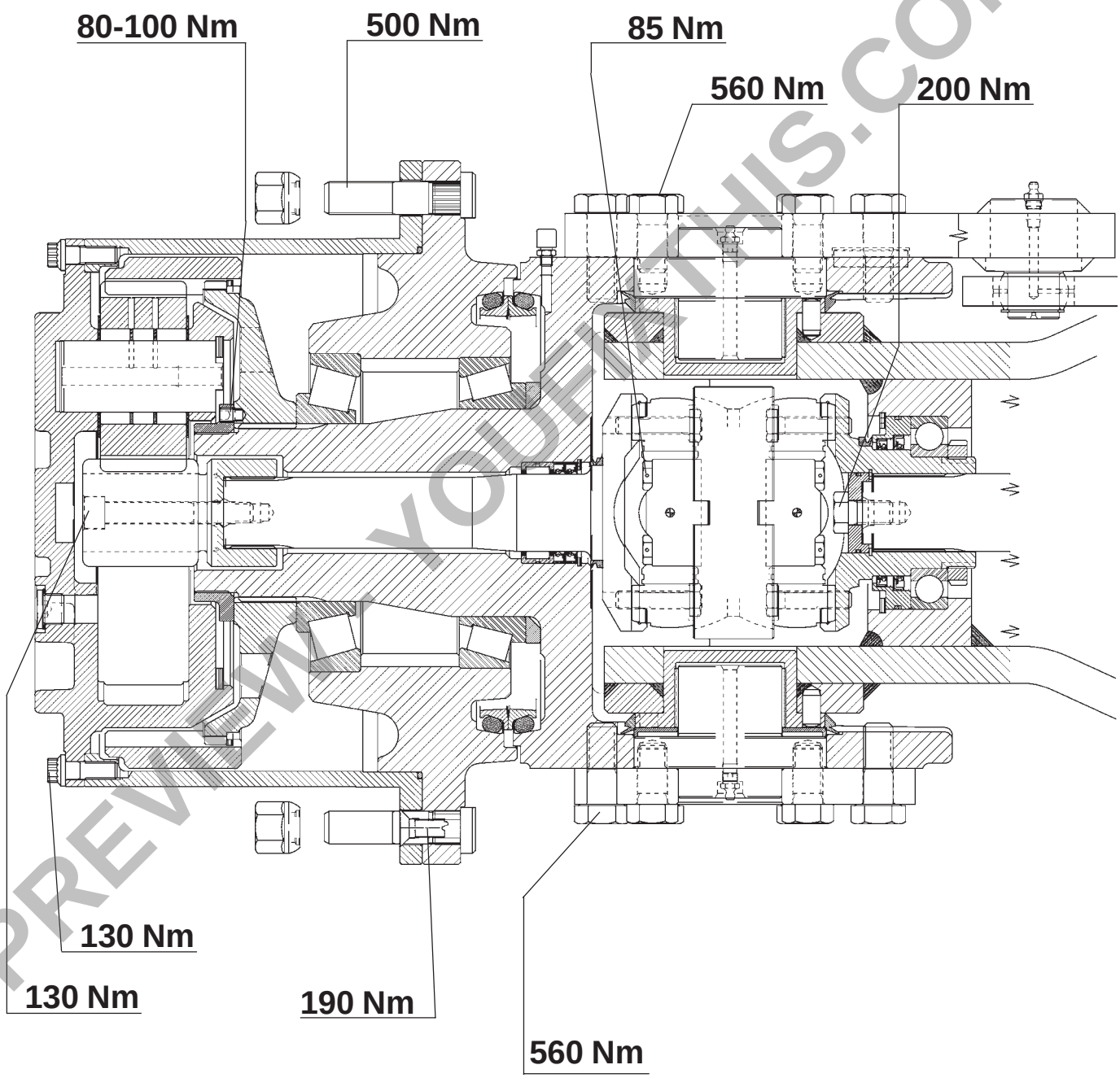


Fig. 7.2

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Fill up with oil identical to that in the axle (see par.3.5). Never mix different oils together since they could be incompatible. This could have harmful effects on certain elements in the unit or on its performances. In case of extended stop of the vehicle move the machine every six months in order to lubricate all gears or parts in the axle and prevent the formation of rust.

central section oil capacity	about 50 kg (110 lb)
wheel hub oil capacity	about 5 kg (11 lb)

3.4.1 - Checking and changing of the oil in the central section unit

CAUTION !!!

Oil temperature can be near 100°C (212°F). It is necessary to protect your hands.

- The oil level is correct when the oil reaches the edge of the plug pos.2 fig.3.1.
- To change oil remove the plug pos.1 fig.3.1; drain used oil completely in a container of 50-80 litres (15-20 gal) capacity, paying attention not to let oil dropping on the ground; mount the plug pos.1 and refill with new oil through plug pos.2 until the correct level is reached. Consult par.3.5 for the oil characteristics.

Note: never allow used oil to pollute the environment. Give it to the relative organizations authorized to dispose of such products.

3.4.2 - Checking and changing of the oil in the wheel hubs

CAUTION !!!

Oil temperature can be near 100°C (212°F). It is necessary to protect your hands.

- To check oil level rotate the hub fig.3.2 until the plug pos.2 reaches the middle line of the axle; remove the plug and check if the oil reaches the edge of the hole. If necessary add oil (with oil of the same type) through that hole.
- To change the oil turn the hub fig.3.2 until plug reaches the lowest position; unscrew the plug and the lowest screw pos.1: allow the used oil to completely drain out in a container of 10 litres (3 gal) capacity; position the hole in the middle line of the axle; mount the screw pos.1 with silicone and fill with new oil of the same type of the old one until the oil touches the edge of the hole; mount the plug. For oil characteristics refer to par.3.5.

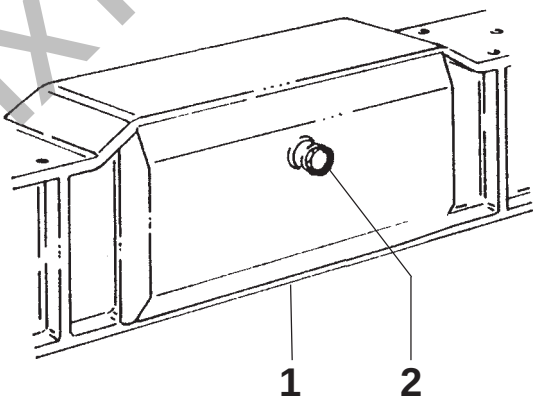


Fig. 3.1

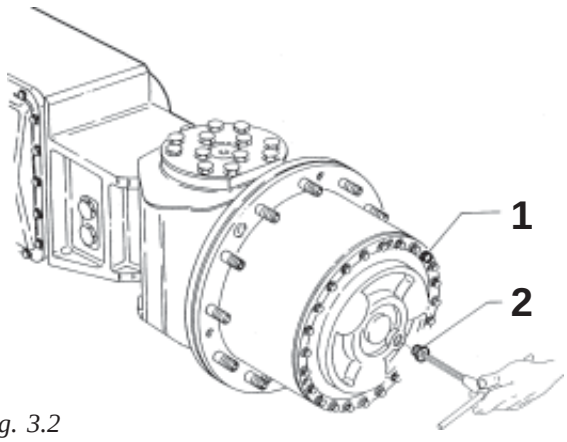


Fig. 3.2

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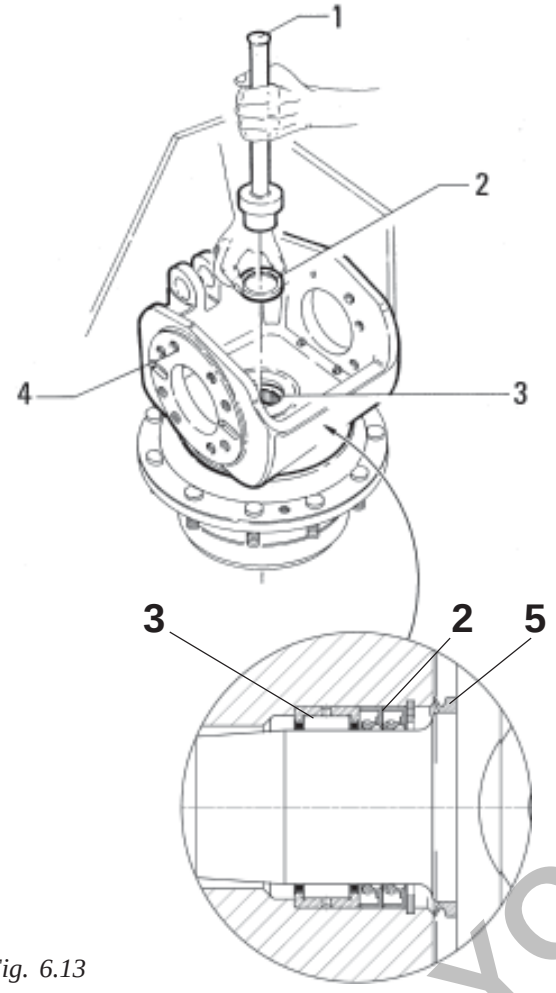


Fig. 6.13

CAUTION !!!

The oil seals are metallic rubber and rubber mounted. After disassembling it's impossible to mount them with thier micro grooves in the previous configuration. We recommend to change the oil seals of the wheel hubs whenever you disassebly them. The assembly of seals pos.5. and 8 fig.6.14 is delicate. Mount them without lubricating the O-ring and follow the prescriptions in the next paragraph.

The metal seal edges are sharpened like a knife, pay attention! The oil seal working surfaces must be perfectly clean and well lubricated.

- The oil seal surfaces must be perfectly clean and well lubricated.
- Mount the wheel hub pos.9 fig.6.14. It weighs about 60 kg (132 lb). Postion it with care without damaging the surfaces of the oil seal.
- Mount the bearing pos.10, the crown pos.13 with its crown holder pos.12 fixed by the retaining ring pos.11.
- Make paint marks corresponding to the holes for the grub screw that stops the ring nut to control their positions. Grease the threads of the spindle and ring nut.
- Mount the ring nut pos.14 and tighten it with the special wrench OMCI No.3 (see chapter 7) until the wheel hub turn under a torque of about 30-35 Nm (corresponding to 17-20 kg on the dynamometer as shown in fig.6.17).

6.7 - Assembly of the wheel hub.

- Position the piece pos.4 fig.6.14 with the spindle upright. Mount the ring pos.6 with the chamfer downwards, the bearing pos.7 and the half metallic seal pos.5

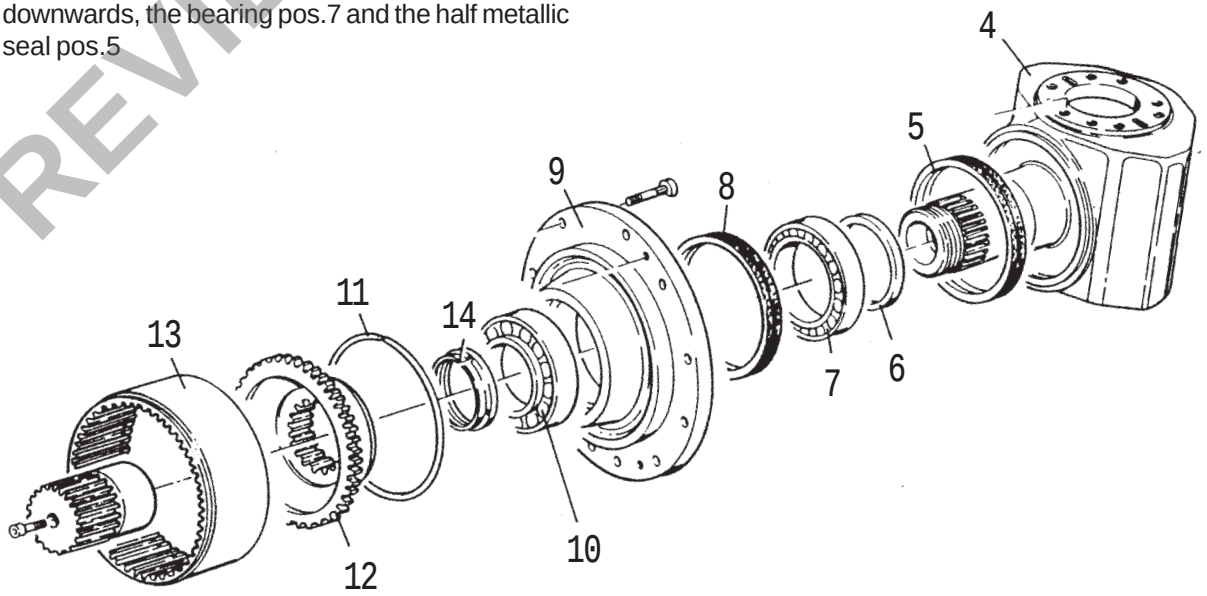


Fig. 6.14

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