

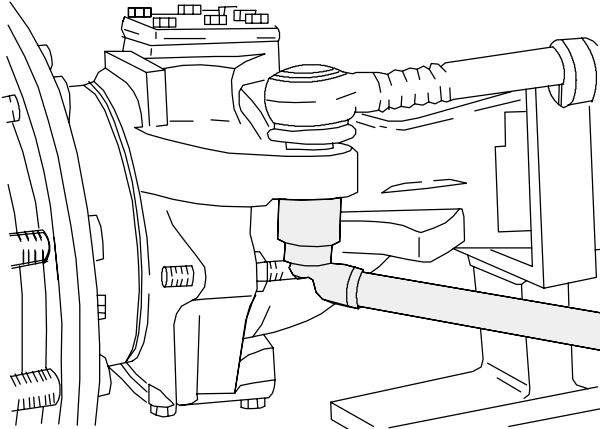
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## Drive shafts

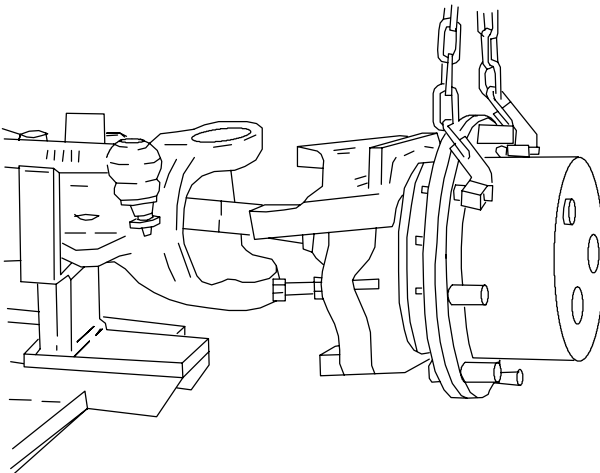
### Reconditioning drive shafts

#### Changing outer oil seal and ball bearing.

1. Raise the tractor front end and place axle stands under the tractor. Drain the oil from the hub.

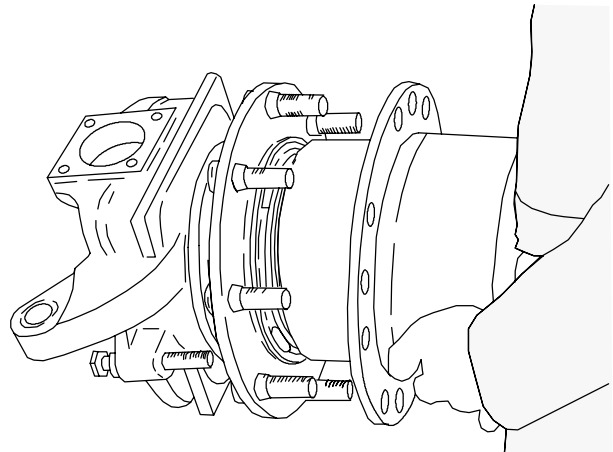


2. Disconnect the tie rod from the steering arm.

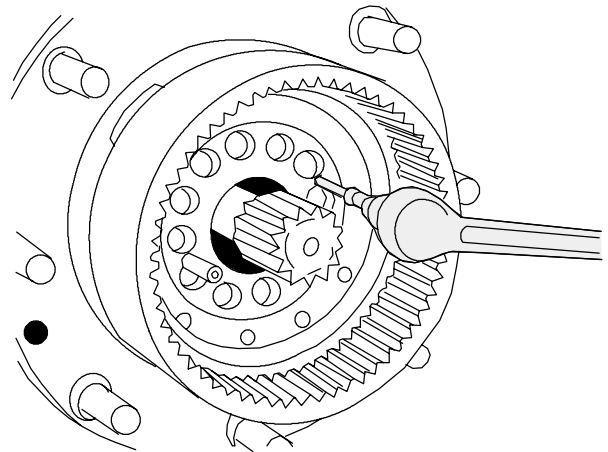


3. Support the hub with a suitable hoist and remove the king pins. Carefully pull out the hub from the axle housing; the drive shaft will also be loosened.

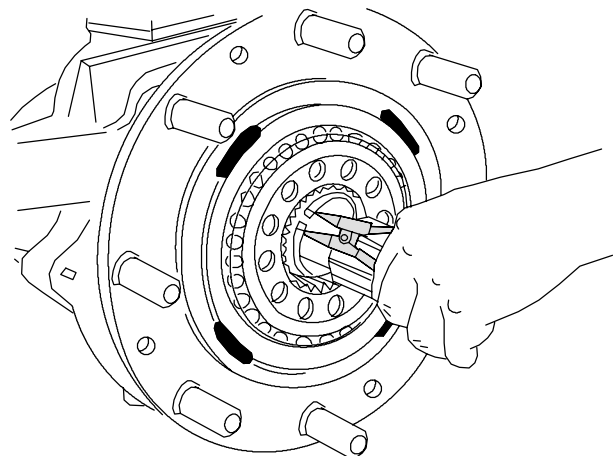
**Note!** Do not damage the drive shaft inner oil seal. King pins can be removed by using a standard extractor e.g. Kukko 22



4. Unscrew the planetary gear housing screws and pull the planetary gear unit out from the hub

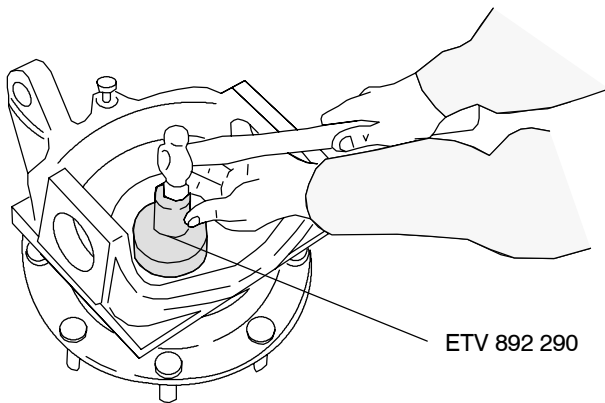


5. Unscrew the ring gear attaching bolts and pull out the ring gear using puller screws (M8).



6. Remove the drive shaft circlip and spacer ring and knock out the drive shaft from the hub.

7. Pry out the drive shaft outer seal from the hub. Remove the ball bearing circlip and the bearing. Fit a new bearing; push it right home against the bottom of the housing and fit the circlip.

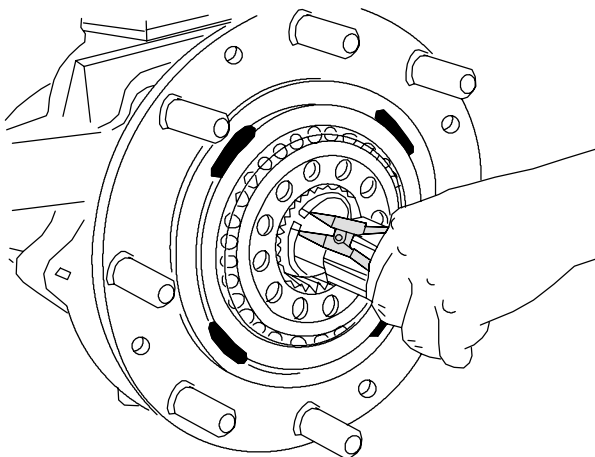


8. Oil the new seal and fit it into the place against the circlip.

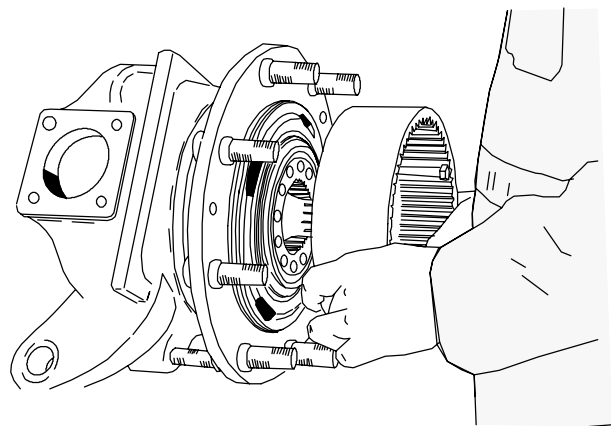
**N.B.** Tool ETV 892290 can be used when fitting the seal. Apply sealing compound Loctite 290 to the outer side of the seal.

9. Fill the space between the seal lips with universal grease. If necessary change the oil seal wear ring on the drive shaft. Apply sealing compound Loctite 290 to the inner side of the wear ring.

**N.B.** Heat the wear ring to 80° C before fitting; heating makes it easier to fit onto the shaft.

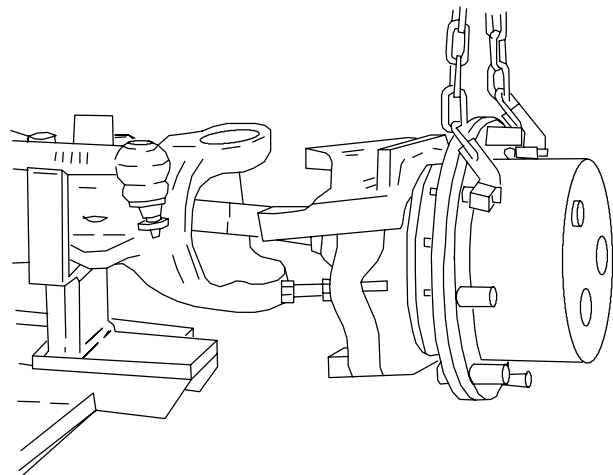


10. Wrap thin plastic film round the drive shaft splines (sun gear) and push carefully into the hub. Fit the drive shaft spacer ring and circlip..



11. Fit the ring gear and tighten bolts evenly to **75 Nm**. Apply locking fluid Loctite 242 to threads.

12. Check the planetary gear housing o-ring and change if necessary. Apply universal grease to the o-ring. Attach the housing to the hub. Tighten the screws to a torque of **70 Nm**.

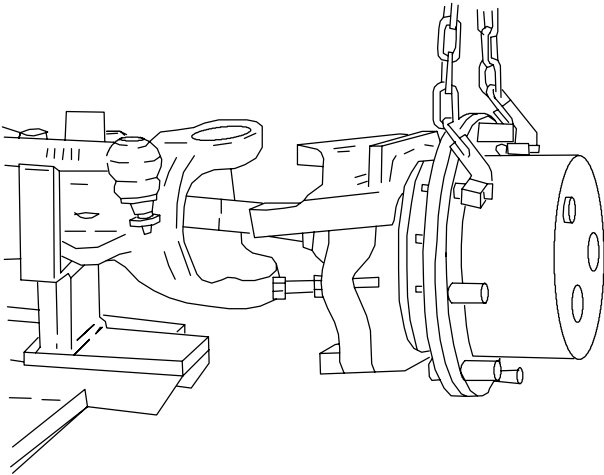


13. Fit the hub on the axle housing and push the drive shaft carefully into the housing, avoiding damage to the drive shaft inner oil seal. Push the drive shaft until its splines slide into the splines in the differential.

14. When the drive shaft is fully home the hub is attached to the axle by means of the king pins. Replace the same shims under the upper king pin, which were removed. Tighten the king pins to **120 Nm**.

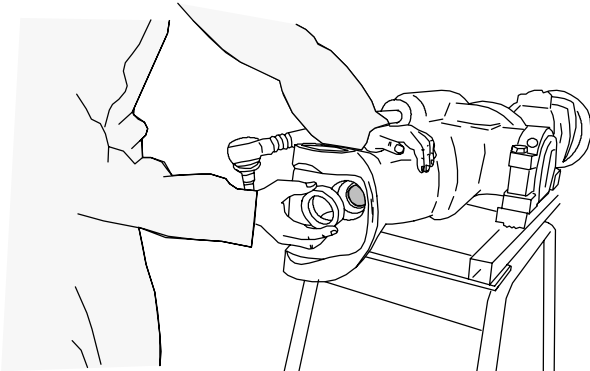
15. Connect the tie rod to the steering arm (**160 Nm**). Fill the hub with oil and fit the front wheel (**550 Nm**). Test run the tractor and check for possible leakages

## Changing inner bearing bushing and oil seal



1. Remove the hub and the drive shaft.
2. Remove the old oil seal from axle housing.
3. Check the bearing bushing behind the seal. If the bush has to be changed tap it into the axle housing by using the drift ET 894010. Fit the new bush into its place with the same drift. Grease the bushing with universal grease.

**N.B.** The old bushing can be removed from the axle housing through the cover which is fitted on the front side of the housing.

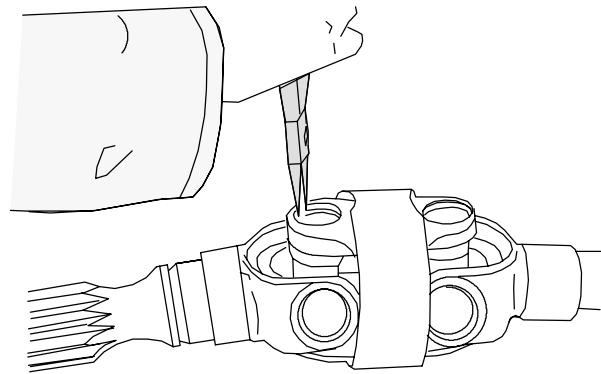


4. Apply sealing compound Loctite 290 to the outer side of the new oil seal. Oil the seal and fit it carefully in place using tool ETV 893730 with the all-purpose handle. Fill the space between the seal lips with universal grease.

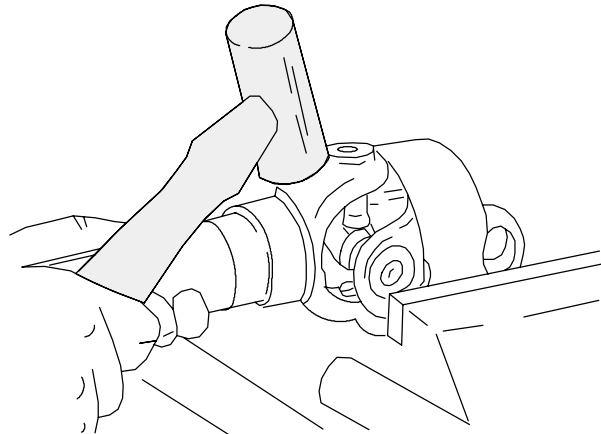
5. Fit the drive shaft and the hub onto the axle housing

## Reconditioning double universal joint

1. Remove the drive shaft.



2. Remove the cross journal snap-rings (8 pcs).



3. Secure the joint in a vice and tap either side of the fork shank to remove the bushings. Remove all the bushings in the same way; this will also free both cross journals.

**N.B.** There are bearing needles in the bushing. The needles can be kept in position with grease.

## 62. Powered front axle

~~2.1.2004~~

Model

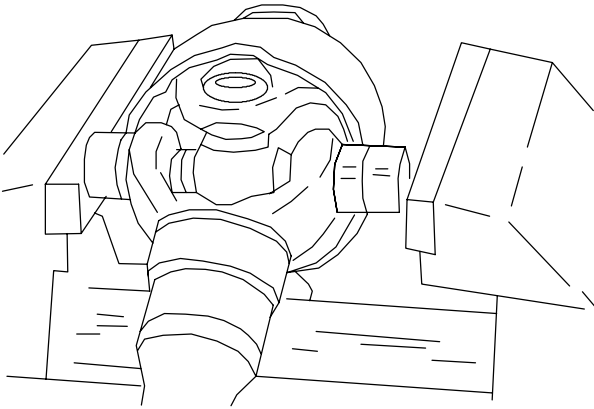
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4. Fit the bushings as shown in the figure above. When the bushings are in place the snap-rings can be fitted.

5. Fit the drive shaft.

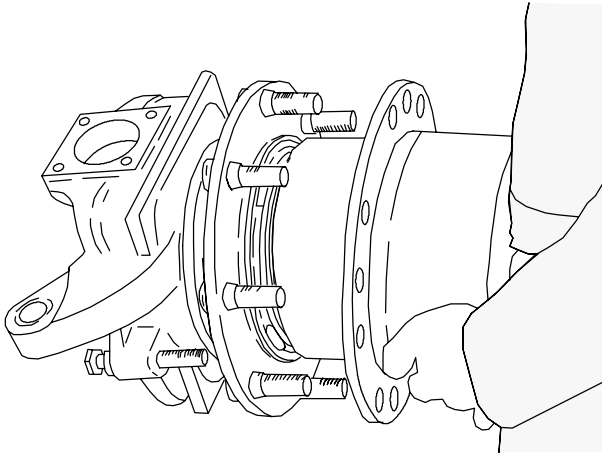
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## Hub reduction gear

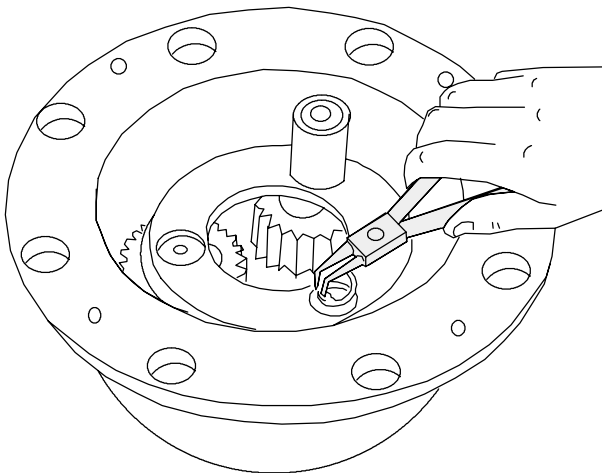
### Repairing planetary gear

### Changing planetary pinion roller bearings

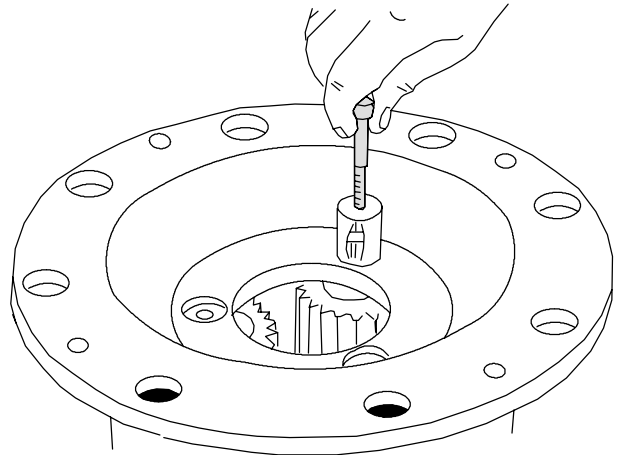
1. Raise the front end of the tractor and support the tractor frame. Remove the front wheel on the side requiring repair. Drain the oil from the hub.



2. Unscrew the planetary gear housing screws and pull the housing off the axle.



3. Remove the planetary pinion shaft circlips.



4. Pull off the shafts using a screw (M8). The fit is not particularly tight.

5. To remove the gears, first move two from the outside, after which the third one can be removed through the middle. Remove all the gears in the same way.

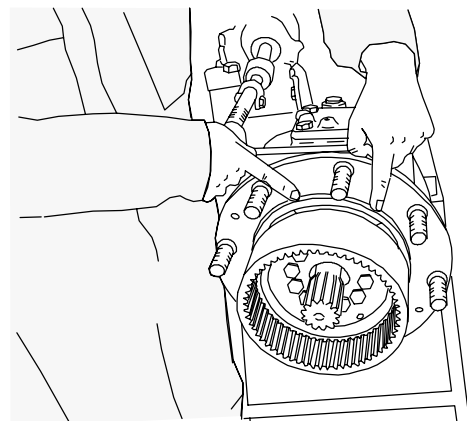
6. Remove the old bearing rollers from the gears.

7. Fit new bearing rollers (rollers are changed as a complete set) and apply grease to the rollers so that they are held in place on the gears. Fit the outer spacer rings against the rollers.

8. First fit the two gears carefully through the middle hole of the retainer and position them against the housing. Then fit the third gear into place through the middle hole.

**N.B.** Check that the rollers and spacer rings are correctly positioned before fitting the pins.

9. Push the pins into place and fix them with circlips.

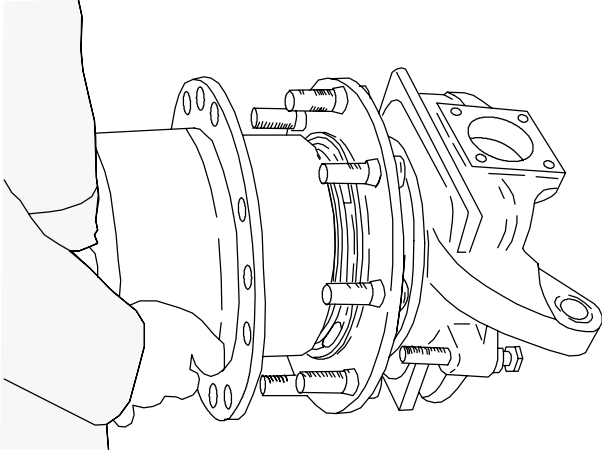


10. Check the o-ring on the planetary gear housing and change if necessary. Fit the planetary gear onto the steering knuckle and tighten the bolts to **70 Nm**.

11. Fit the front wheel (**550 Nm**). Fill the hub with oil and test-run the tractor.

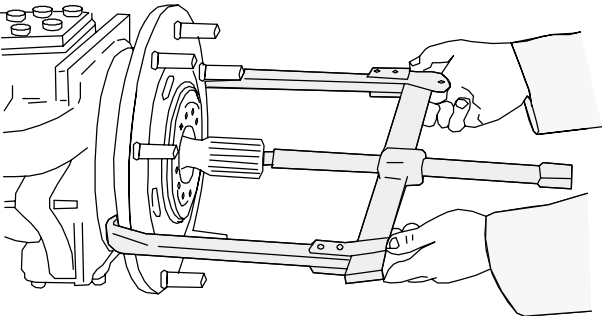
## Changing wheel bearing and hub oil seal

1. Raise the front end of the tractor and support it with sturdy trestles. Remove the front wheel from the side to be repaired. Drain the oil from the hub.



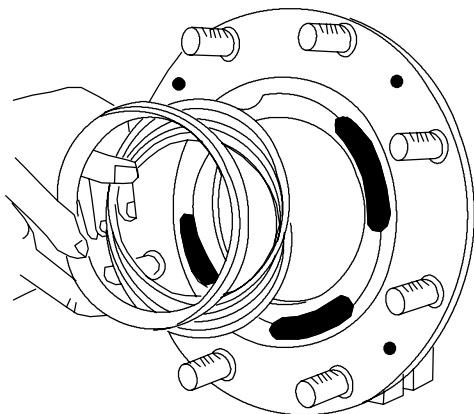
2. Unscrew the planetary gear housing screws and remove the housing from the axle.

3. Unscrew the ring gear attaching screws; pull off the ring gear with aid of two screws (M8).

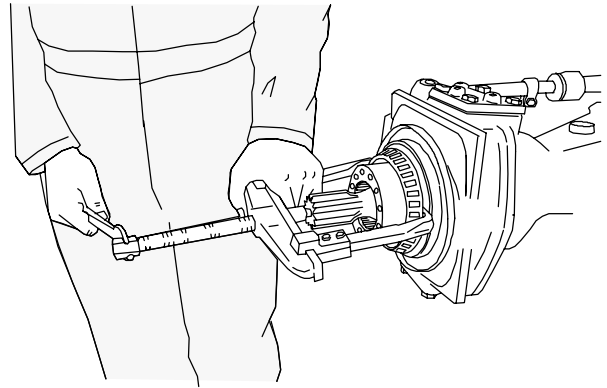


4. Pull off the wheel attaching flange using a puller; this action releases the outer bearing of the wheel.

5. Use a drift to tap out the wheel bearing outer races. Fit new outer races.

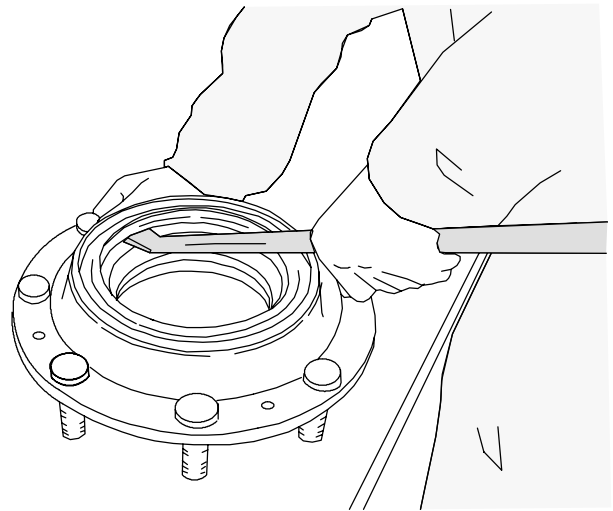


**Important:** to ensure that the wheel bearing has the correct preload replace the same shims under the outer race of the outer wheel bearing.

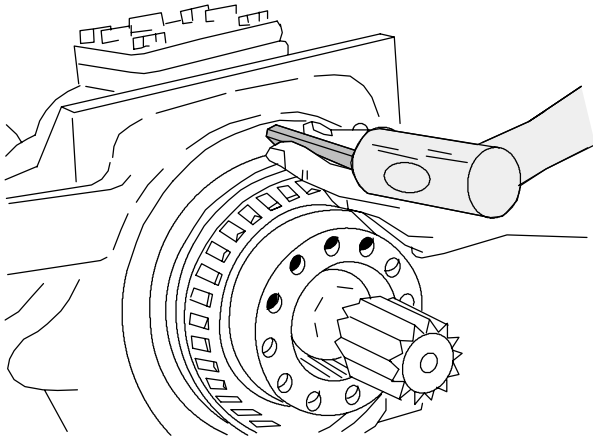


6. Remove the inner bearing from the steering knuckle using an extractor. When the bearing is changed it can be removed by attaching a puller behind the rollers.

7. Heat the new inner bearing (80 °C) and push it fully home onto the knuckle. Oil the bearing rollers.

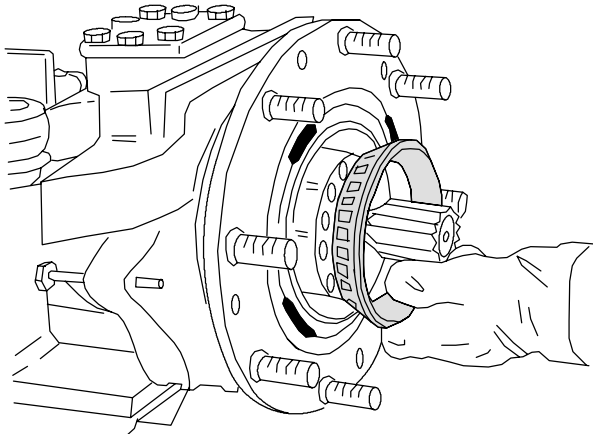


8. Change hub oil seal if necessary (ETV 894 020). It can be removed by tapping it through the holes in the opposite side. Fit the dust seal ring. Fill the space between the lips of the seal with universal grease.

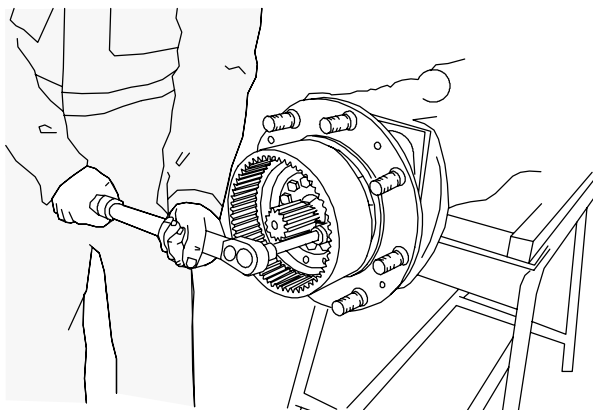


10. If you change the dust-cover apply sealing compound Loctite 290 to the rear side. Fix the dust-cover with six equidistant clips of the drift punch.

11. Fit the wheel attaching flange onto the knuckle. It should be pushed fully home so that the outer race of the bearing is against the bearing rollers.



12. Heat up the outer bearing (80°C) and push it fully home against the outer race. Oil the bearing.



13. Fit the ring gear and tighten the screws to **75 Nm**. Apply locking fluid Loctite 242 to the threads.

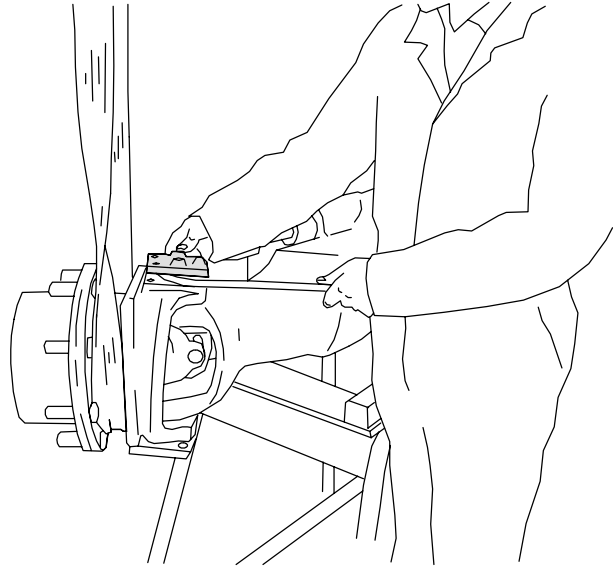
14. Check the condition of the o-ring on the planetary gear housing and change it if necessary. Grease the o-ring. Fit the planetary gear housing and tighten the screws to **70 Nm**.

15. Fit the front wheel, tighten to **550 Nm** and fill the hub with oil. Test-run the tractor.

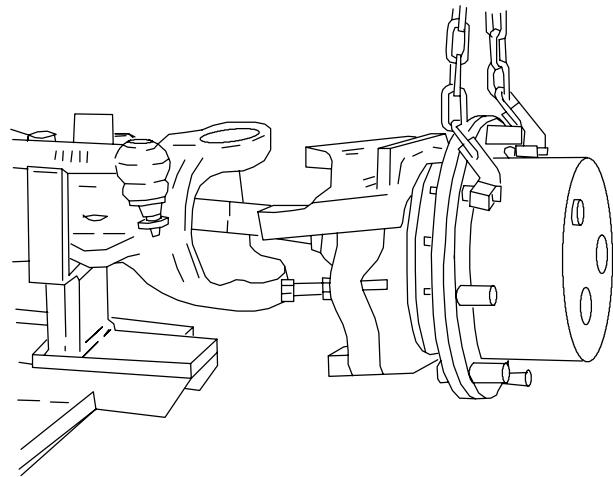
## Changing steering knuckle bearings

1. Raise the tractor front end and support it with sturdy trestles. Remove the front wheel from the side to be repaired.

2. Disconnect the tie rod from the steering arm.

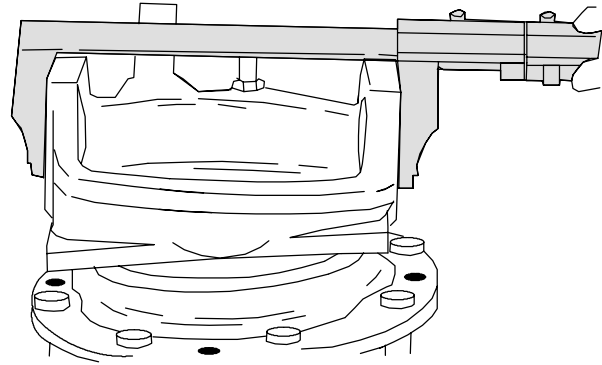
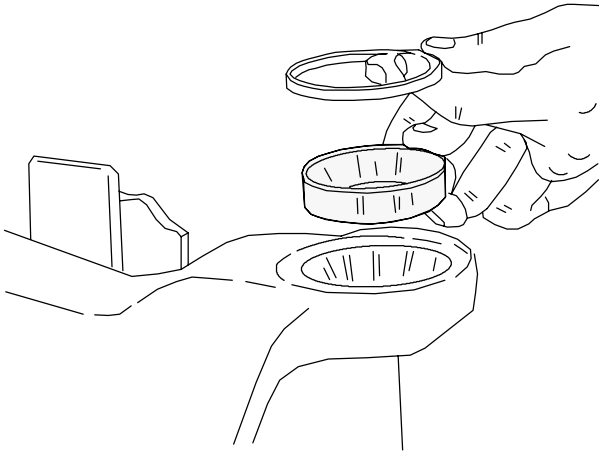


3. Support the hub with a hoist and remove the king pins by using extractor Kukko 22-1

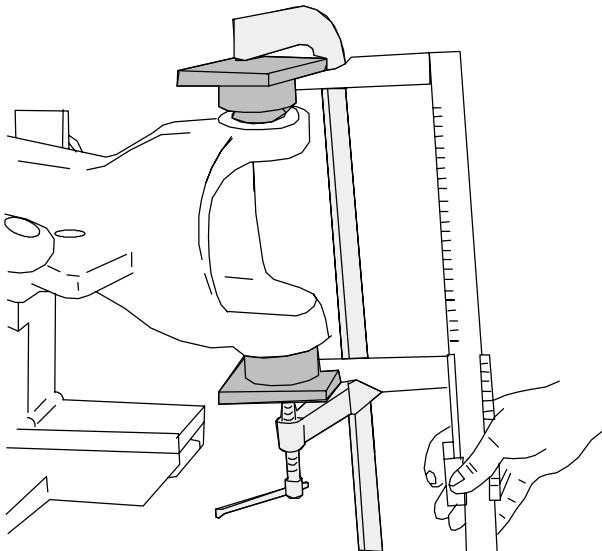


4. Pull the hub carefully off the axle housing; this releases the drive shaft.

**Note!** Do not damage the drive shaft inner oil seal if it is not being changed.



5. Change the outer races of the steering knuckle bearings. Apply compound Loctite 290 to the outer sides of the races. Apply grease to the bearing surface and fill the bearing location with grease. Fit the spacer rings in front of the races. Apply Loctite 290 to the spacer rings.
6. Remove the bearings from the king pins and fit new bearings. Grease bearing rollers. Fit new seals into the king pin holes inside the knuckle. Grease the seals.
7. Adjust the steering knuckle bearing preload as follows:



- Press the king pins into place using a screw clamp and measure the distance between the inner surfaces of the king pin cover (**measurement N e.g. 258,50 mm**)

- On the knuckle housing measure the distance between the surfaces as shown in the figure above (**measurement M e.g. 256,85**)
- Calculate the number of shims required (**measurement S**), taking into account the fact that the bearings are preloaded by **0,6 mm (measurement P)**.  
**S=N–M–P** (=258,50–256,85–0,6=1,05)
- 8. Fit the required number of shims under the upper king pin.
- 9. Fit the steering knuckle onto the axle housing.



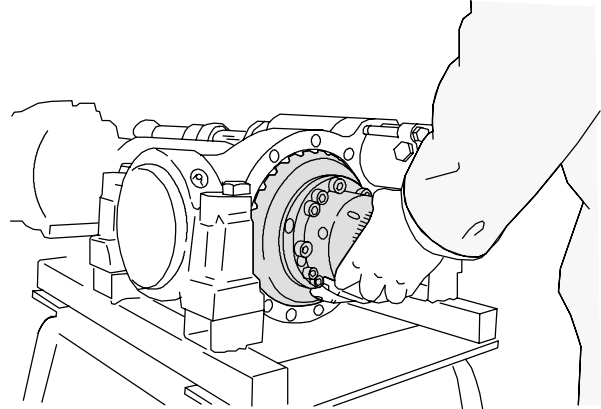
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## Differential

### Reconditioning differential

#### Changing pinion shaft seal (without removing the front axle)

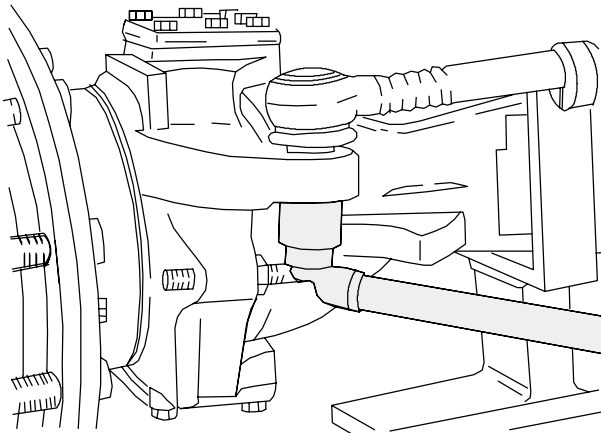
1. Drain the oil from the differential. Remove the protective shield and unscrew the propeller shaft front flange joint.
2. Unscrew the pinion shaft nut and remove the spacer ring and shims which are under the nut. Pull the drive flange off the shaft.
3. Pry out the oil seals and fit new seals (tool ETV 893600 can be used to facilitate fitting the seals). Fill the space between the lips of the seal with universal grease).
4. Check the drive flange o-ring and change if necessary. Grease the o-ring.
5. Fit the drive flange, shims (use the same shims) and the spacer ring onto the shaft. Tighten the nut to **250 Nm**. Connect the propeller shaft flange joint (**35 Nm**). Fit the protective shield.
6. Fill the differential with oil and test-run the tractor. Check for possible leakages.



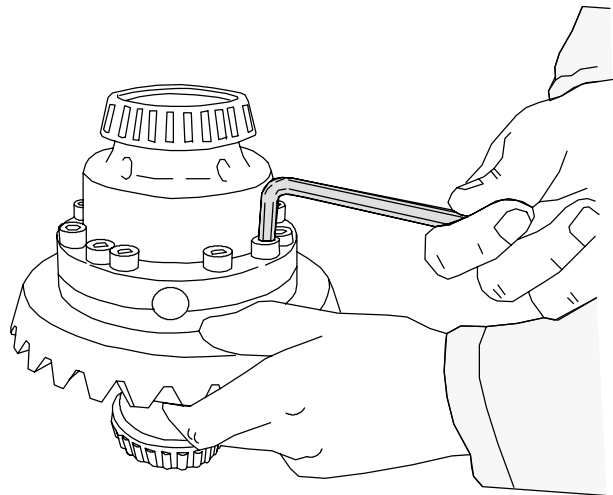
3. Pull the axle housing section apart once the bolts have been unscrewed. Remove the differential unit from the axle housing..

#### Changing differential friction disc

1. Raise the front end of the tractor and support it with sturdy trestles. Drain the oil from the differential housing.

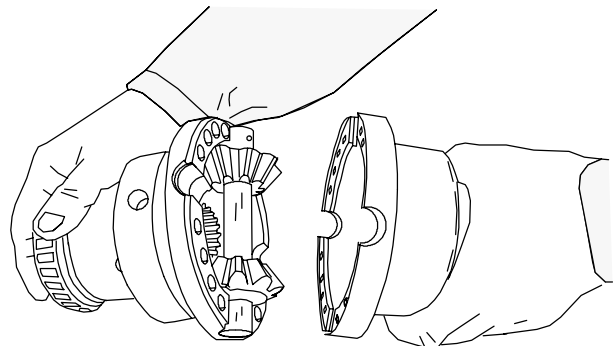


2. Disconnect the tie-rod from the steering arm on the side with the shorter axle section.

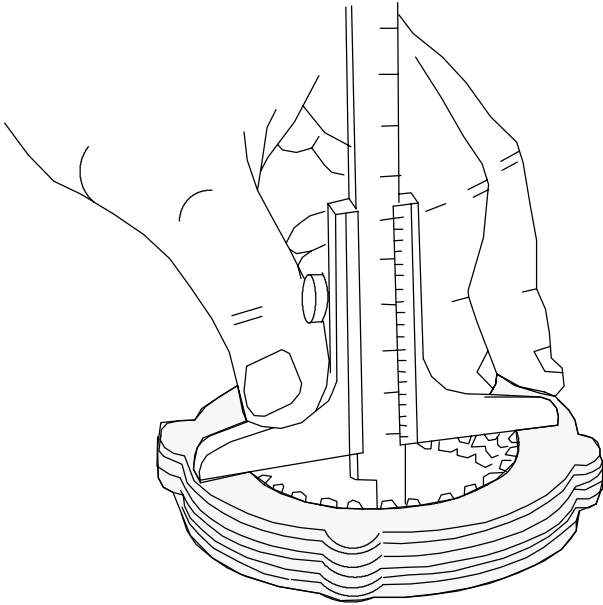


4. Unscrew the bolts holding the differential carrier. Knock off the crown wheel and remove the locking pins.

**N.B.** Mark the halves of the differential carrier to facilitate reassembling.



5. Open the carrier and remove the various components



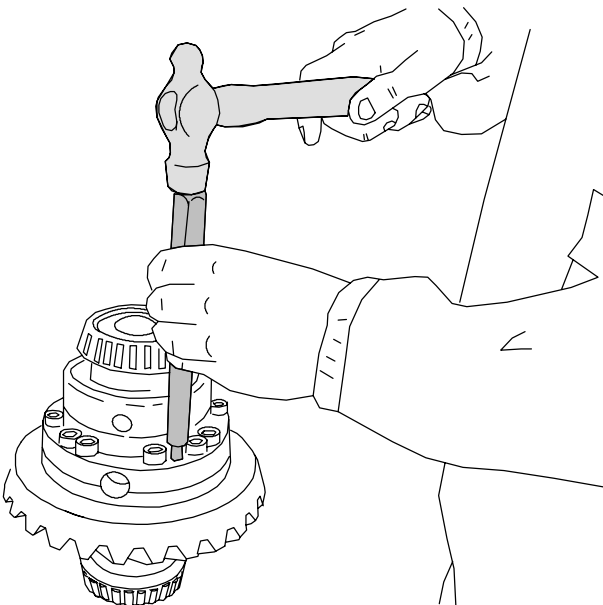
6. Check the friction disc for wear and change if necessary. Measure the total thickness of the set of discs. It should be in the range **14,51 – 14,69 mm**. Immerse the discs in oil before reassembling.

**N.B.** In the event of replacement, renew both the RH and LH pack. The thickest disc with internal teeth should be fitted with the smooth side against the differential side gear. Next fit friction disc and intermediate disc alternatively. The last disc should have external teeth.

7. Also check both differential pinions and side gears and change if necessary. Oil all parts.

**N.B.** The differential pinion shaft is locked by means of the locking pin. The diff. pinion thrust-washers are fitted so that the locking lugs engage in the grooves on the differential carrier.

8. Reassemble the differential and fit the carrier halves so that the marks are in the same places as they were before dismantling. Fit the crown wheel and tighten the screws to **70 Nm**.



9. Fit the locking pins. First fit the bigger pin and then the smaller pin inside with the split pointing towards the heads of the screws

10. Rotate the differential with the splined end of the drive shaft. The drive shaft should turn freely, without resistance.

11. Fit the differential unit into the housing and attach the bolted joint of the axle housing. Check the o-ring on the joint and apply grease to it. Tighten the screws to **190 Nm**.

12. Attach the tie-rod to the steering arm (**160 Nm**). Fill the differential housing with oil. Test-run the tractor.

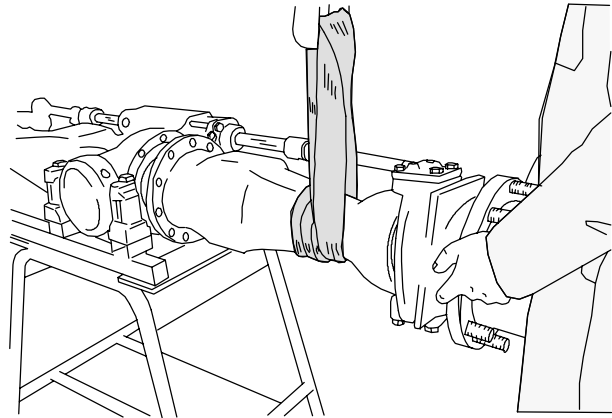
## Changing crown wheel/pinion shaft

**Note!** This operation is easier if the front axle is detached from the tractor. However this is not essential.

### Removing differential

1. Remove the front axle. Drain the oil from the differential housing.

2. Detach the tie-rod from the steering arm on the side with the shorter axle section.



3. Unscrew the bolted joint on the axle housing.

4. Remove the differential unit. Detach the old crown wheel. Fit a new crown wheel and tighten the screws to **70 Nm**.

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