

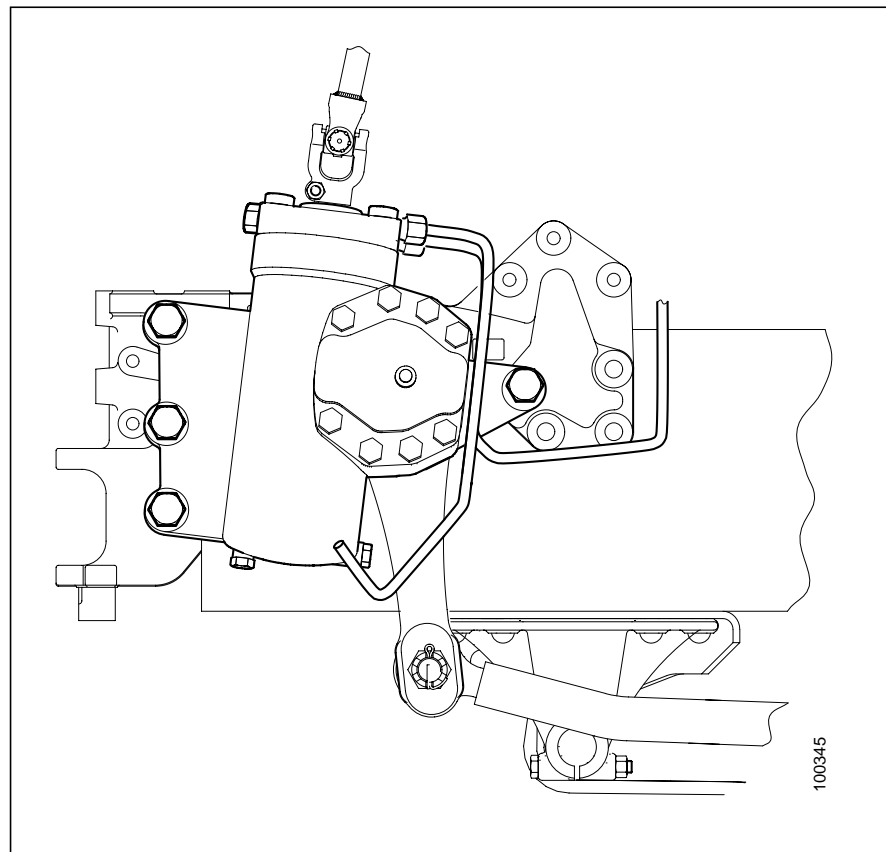
SCANIA

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Issue 1 en

Removing and fitting steering gear on T truck

Work description



Work description

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Important information

Steering gear end position limitation

Scania's steering gear assemblies have hydraulic end position limitation for reducing steering gear oil pressure and thus the torque when the wheels are approaching their end positions.

End position limitation is set when fitting a new steering gear assembly on a truck with preset wheel lock angle.

If the input shaft on an unmounted steering gear assembly - or steering gear assembly removed from the drag link - is turned more than 1.5 turns from the centre position, the basic end position limitation set at the factory could be altered.

If this occurs, end position limitation will have to be set manually (TAS) by means of a special adjusting screw and locknut in the side of the steering gear housing or by means of a new self-adjusting set screw (ZF).

For further information, see the instructions in the Service Manual, group 13.

Cleanliness - of utmost importance when doing any work involving the steering gear

Damage to steering gear components and seals is caused mainly by contaminants in the hydraulic system.

It is therefore important to ensure that the hydraulic system is free from contaminants before fitting the steering gear in place on the truck.

Observe the utmost cleanliness when working on the steering gear and hydraulic system.

Removing the steering gear

- 1 Tip the bonnet up.

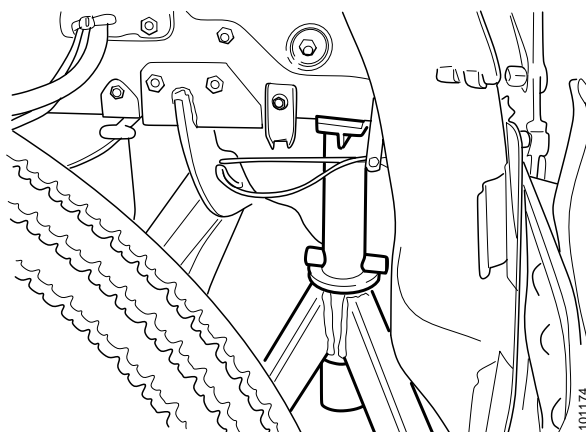


WARNING!

On trucks with air suspension on the front axle, the frame must be supported on stands and the front air bellows evacuated.

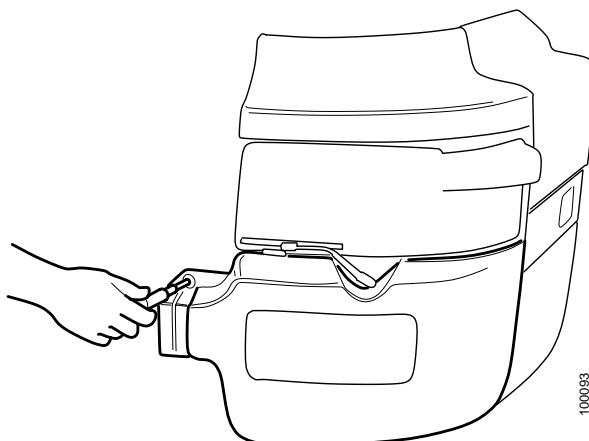
Do not position axle stands under the front torque rod brackets.

- 2 On trucks with air suspension on the front axle, the front axle must be supported on stands, see also group 0 General information.

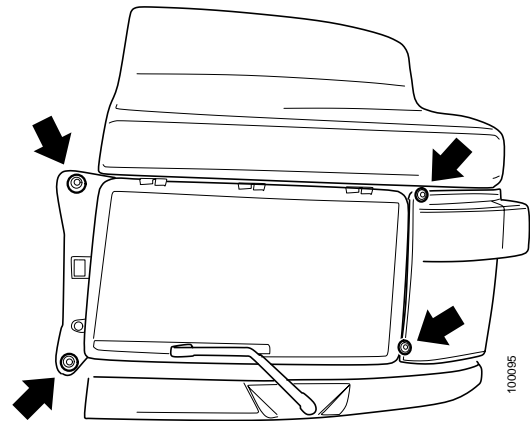


- 3 On trucks with plastic bumper:
Remove the bumper's corner cover in front of the steering gear

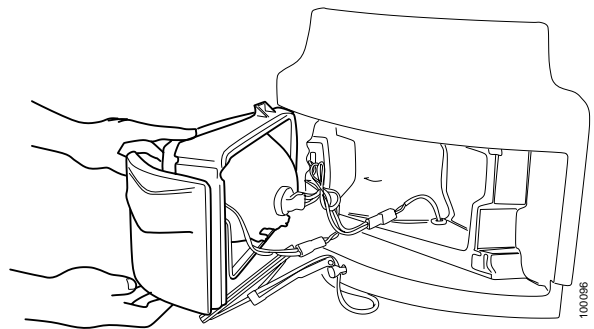
On trucks with steel bumper:
Remove the cover plate by the boarding step.



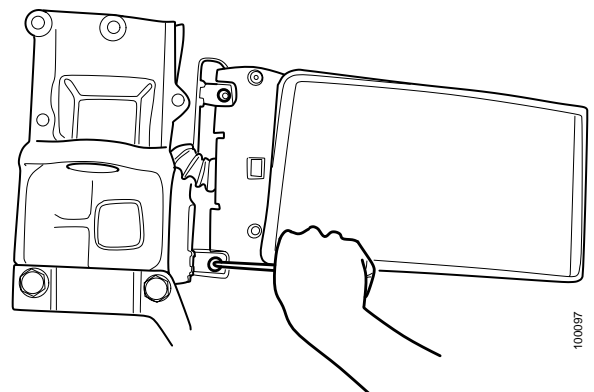
- 4 Undo the lamp unit retaining screws.



- 5 Withdraw the lamp unit and unplug the electrical connectors.

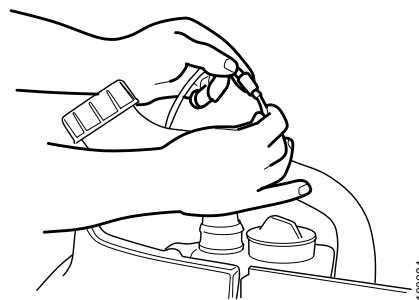


- 6 Undo the hinge screws and remove the lampunit.

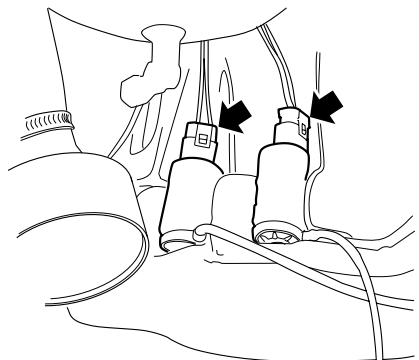


7 LHD trucks:

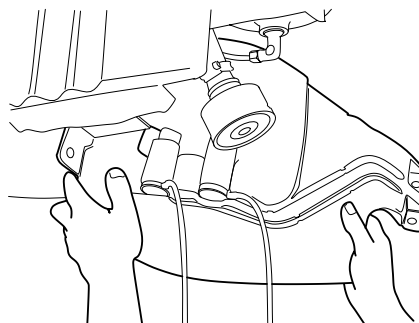
- Remove the cover from the washer fluid reservoir and snip the cable ties round the cables at the top of the reservoir.
- Detach the headlamp and windscreen washer tubing at the points where it is joined.
- Plug the tubing so that washer fluid does not run out.



- Unplug the electrical connections from the washer reservoir pumps.

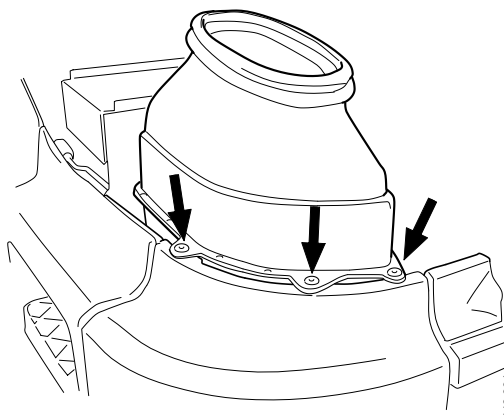


- Remove the reservoir retaining screws and lower the reservoir.

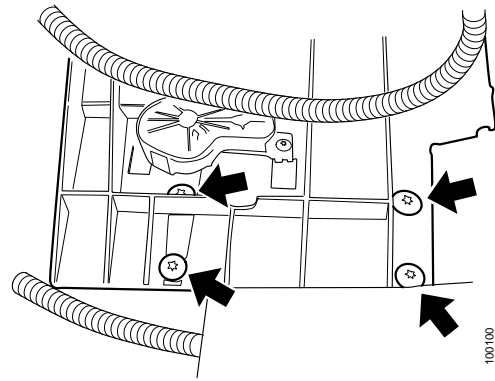


8 RHD truck:

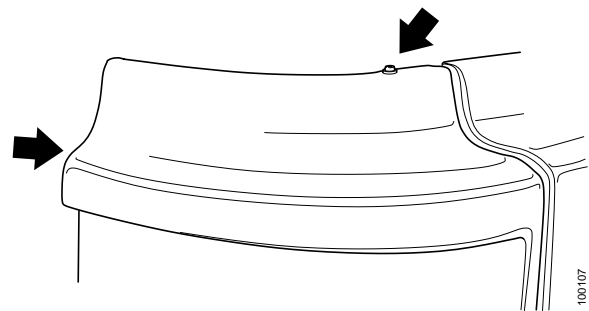
- Snip the cable ties round the cables behind the headlamp housing.
- Remove the air intake pipe to the air filter housing.
- Remove the lower part of the air filter housing.



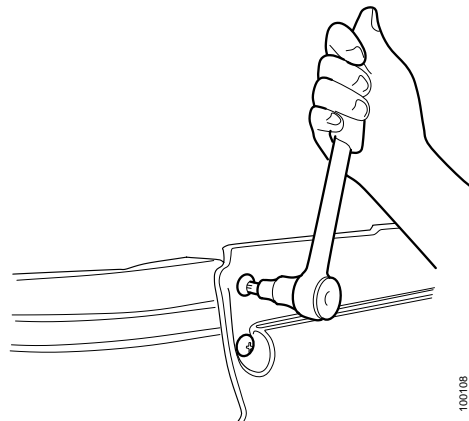
- 9 Remove the screws from the lamp unit cover from underneath.



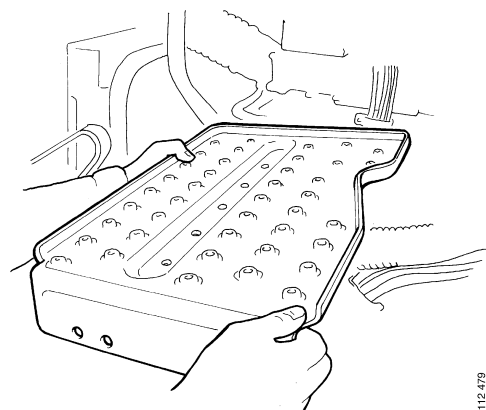
- 10 Undo the screws in the outside of the cover and remove same. Tip the bonnet back slightly to make removal of the cover easier.



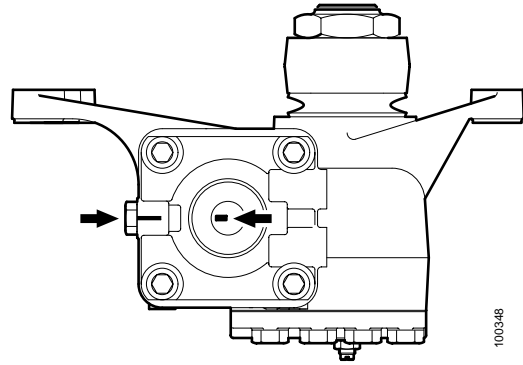
- 11 Remove the corner plate located behind it.



- 12 Remove the catwalk.



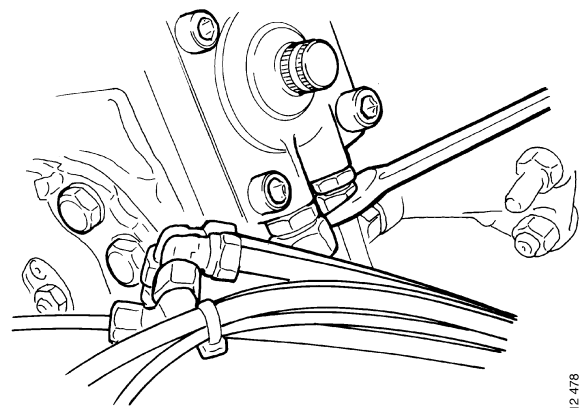
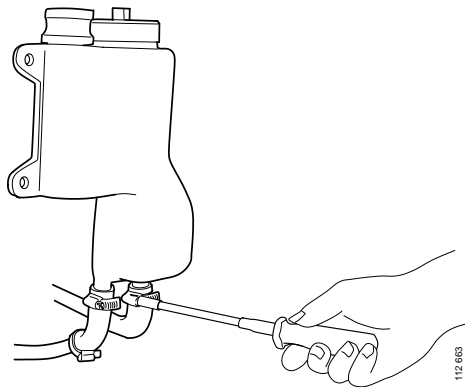
- 13 Set the wheels in the straight-ahead position and remove the input shaft from the steering gear assembly. Remove the universal joint from the steering gear input shaft.



- 14 Removing the fluid reservoir and piping:

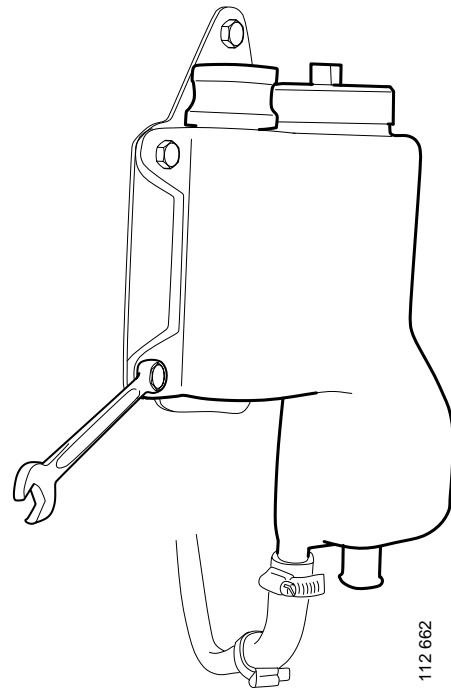
LHD trucks:

- Place a suitable receptacle under the fluid reservoir.
- Thoroughly clean the steering gear valve housing and detach the delivery and return lines from the steering gear.
- Detach the thick hose (suction line) from the fluid reservoir.



- Remove the fluid reservoir with bracket and connected return line.

IMPORTANT! Fit protective covers over the open connections.

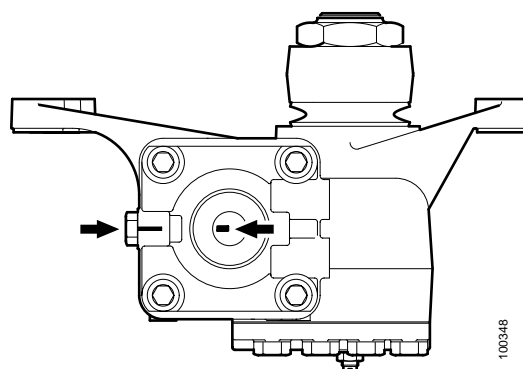


15 RHD truck:

- Place a suitable receptacle under the truck.
- Thoroughly clean the steering gear valve housing and detach the delivery and return lines from the steering gear. Detach the lines from the unions on the right-hand frame member.
- Remove the lines.
- Detach the return and suction lines from the fluid reservoir on the left-hand side of the truck.
- Remove the fluid reservoir for cleaning and filter changing.

IMPORTANT! Fit protective covers over the open connections.

- 16 Check that the mark on the steering gear input shaft points straight forward and is opposite the mark on the valve housing when the wheels are in the straight-ahead position.



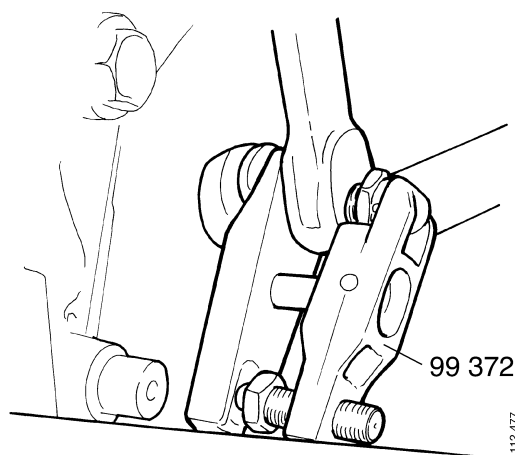
- 17 Remove the split pin and unscrew the castle nut a few turns from the drag link ball joint.

- 18 Pull the ball joint out of the drop arm, using puller 99 372 as follows:

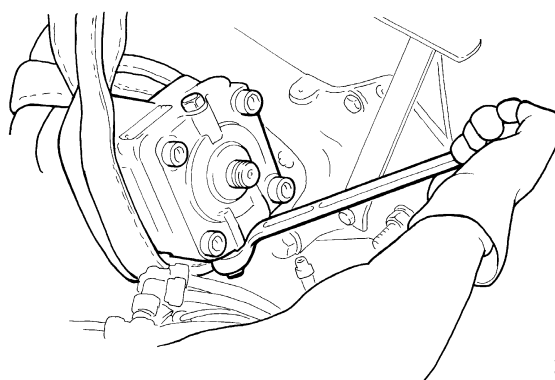
- Tension the puller.
- Lightly tap the tool at the ball joint screw, using a copper hammer.

Repeat this until the drag link comes loose.

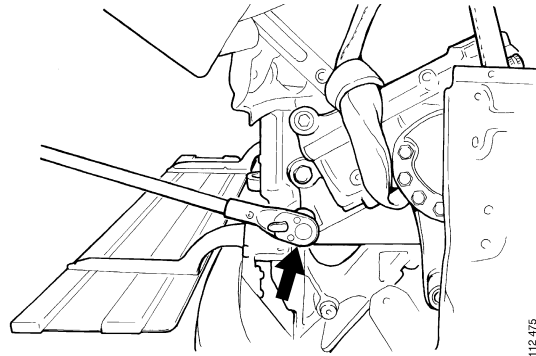
- 19 Remove the left-hand union from the steering gear.



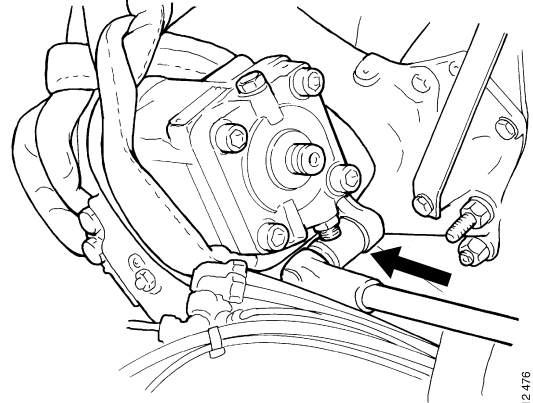
- 20 Position a workshop hoist and place lifting straps round the steering gear.



21 Remove the steering gear retaining bolts.

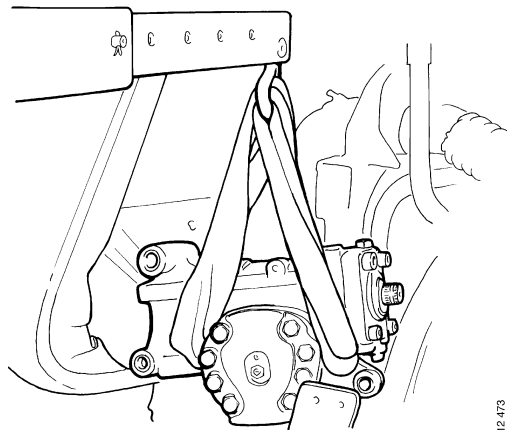


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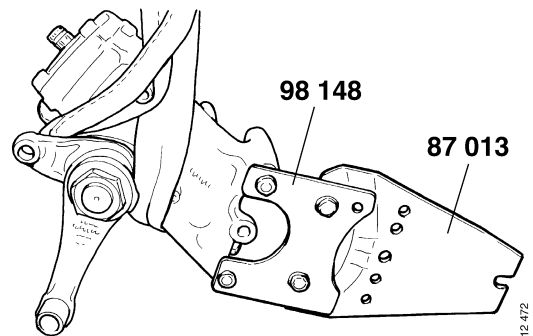
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22 Lift up and remove the steering gear.



112 473

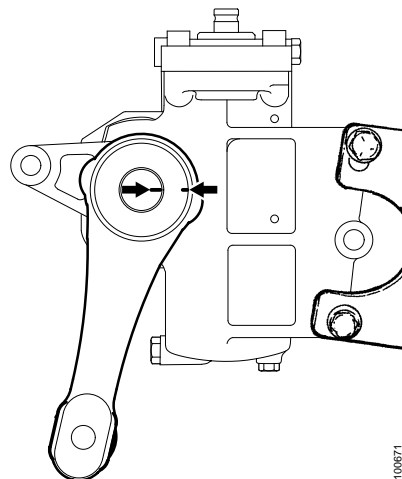
23 Clean the steering gear and mount it in universal stand 587 692 with fixtures 87 013 and 98 148.



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Transferring the drop arm and unions to a new steering gear assembly

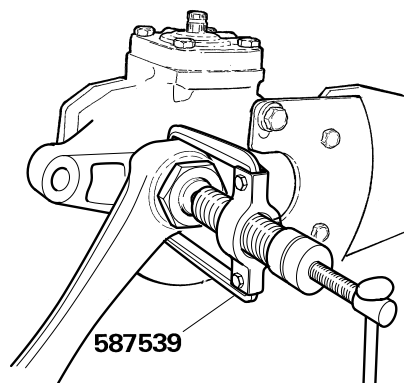
- 1 Hold the drop arm securely and remove the nut using a nut runner.
- 2 Check that the drop arm is marked opposite the mark on the sector shaft. If the mark is unclear, make a mark with a centre punch. Screw the nut back on the sector shaft three turns.



- 3 Pull off the drop arm using puller 587 539 as follows:

- Tension the puller.
- Hold the puller and tap the drop arm round its attachment to the sector shaft using a copper hammer.

Repeat this until the drop arm comes loose.



WARNING!

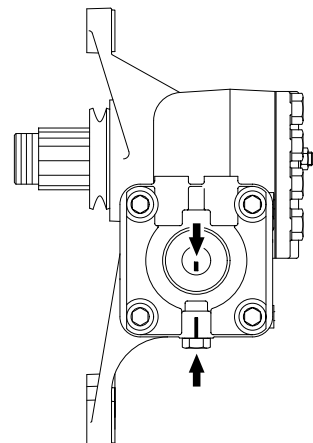
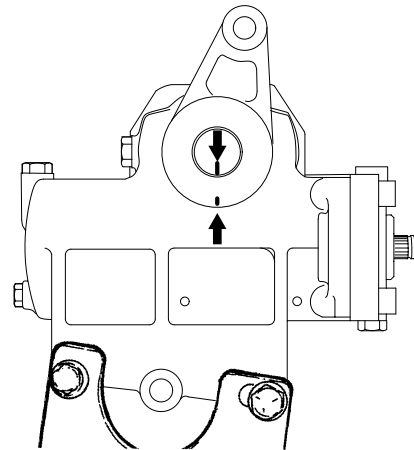
Do not stand in front of the puller. It comes off and could cause injury.

- 4 Remove the unions and plug the openings in the valve housing.
- 5 Remove the steering gear and mount the new component in the fixture.

IMPORTANT! Check that the steering gears have the same part number on the type plates.

- 6 Clean the unions and fit them in the valve housing. Plug the unions.
- 7 Mount the steering gear with its connections facing up. Set the centre position of the steering gear as follows:
 - Turn the input shaft so that the mark on the sector shaft is aligned with the mark on the steering gear housing.
 - The mark on the input shaft should then be aligned with the mark on the valve housing.
- 8 Fit the drop arm in accordance with the drop arm - sector shaft marks.

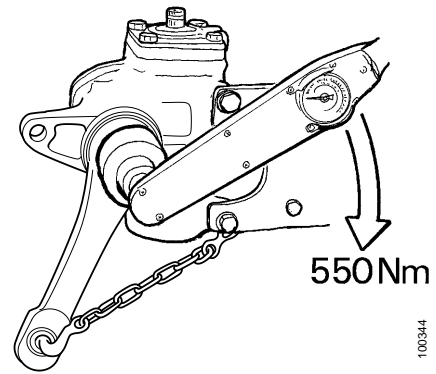
IMPORTANT! The slightest change to the correct position of the drop arm will result in an incorrect centre position on the truck.



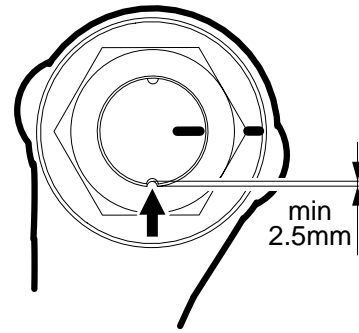
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- 9 Place the steering gear with the input shaft facing up. Fit the new nut and tighten it to 550 Nm.

IMPORTANT! Secure the drop arm with a chain to prevent the piston from affecting end position limitation.



- 10 Secure the nut by upsetting its flange at least 2.5 mm against the groove in the sector shaft.



Changing the fluid filter

Damage to steering gear components and seals is caused mainly by contaminants in the hydraulic system.

Strict standards of cleanliness must therefore be observed when working on the steering gear and its hydraulic system.

Always change the fluid and fluid filter after dismantling or changing the steering gear.

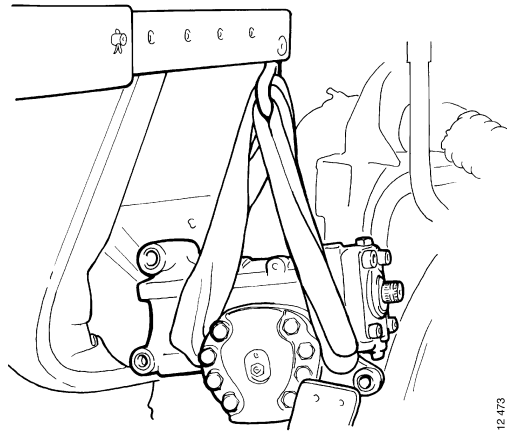
Carefully follow the instructions given below:

- 1 Remove the return line from the fluid reservoir (LHD truck).
- 2 Take the filter out of the fluid reservoir after it has been removed. If the filter is changed without removing the reservoir there will always be a risk of contaminants getting into the hydraulic system.
- 3 Clean the reservoir inside and out.
- 4 Fit a new filter.
- 5 Clean the return line using compressed air and connect it to the reservoir (LHD truck).
- 6 Prevent dirt from getting into the hydraulic system when the lines are connected.
- 7 Fill with fresh fluid. Use receptacles that are completely clean.

Note: Never refill with used fluid.

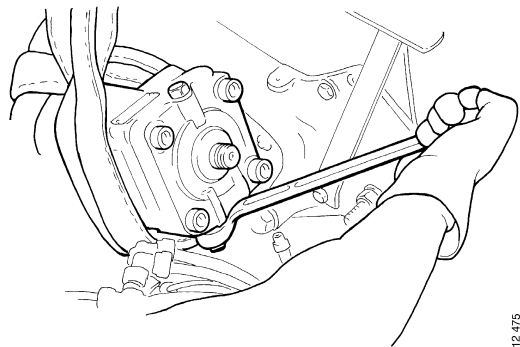
Fitting the steering gear

- 1 Use lifting straps and a workshop hoist.



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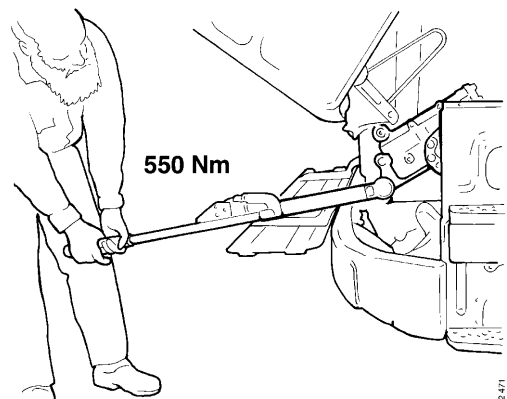
- 2 Remove the left-hand union on the steering gear.



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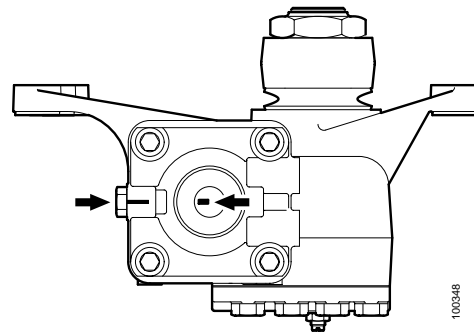
- 3 Bolt the steering gear to the truck. Tighten the steering gear retaining bolts to 550 +/- 60 Nm.

- 4 Fit the union.

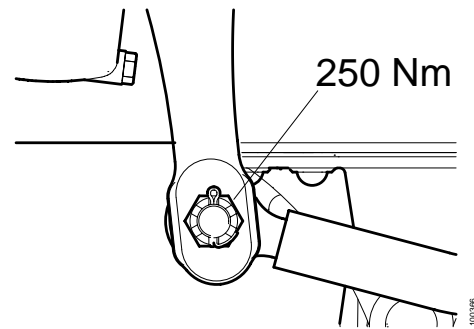


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- 5 Check that the steering gear is in the centre position.



- 6 Fit the drag link to the drop arm. Tighten the castle nut to 250 Nm and then additionally to the nearest hole. Secure with a new split pin.



- 7 Fitting the fluid reservoir and lines:

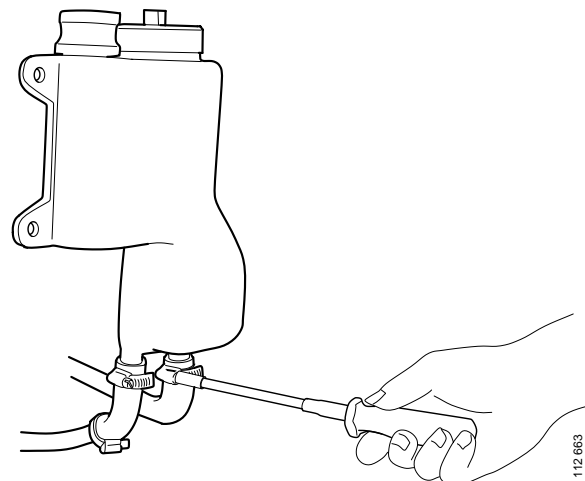
LHD truck:

- Fit the oil reservoir and bracket on the steering gear.
- Connect the return line to the steering gear.
- Connect the suction line to the reservoir.
- Tighten the hose clips well.

RHD truck:

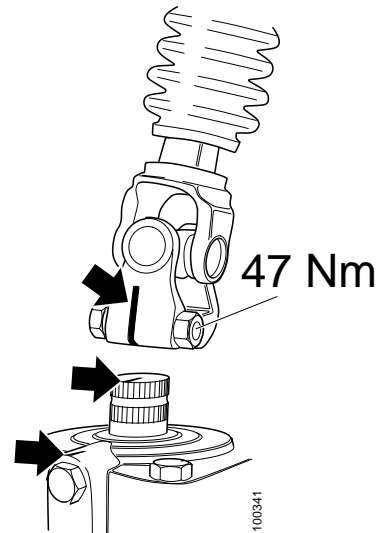
- Fit the oil reservoir.
- Connect the return and suction lines to the reservoir.
- Tighten the hose clips well.
- Fit the lines to the steering gear.

- 8 Connect the delivery and return lines to the steering gear.



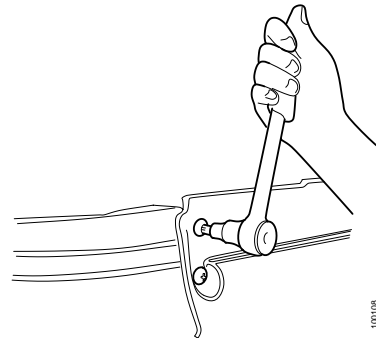
- 9 Fit the universal joint with clamping groove in line with the mark on the valve housing. Fit the clamp bolt and tighten it to 47 Nm.

Note: Fit a new locknut.

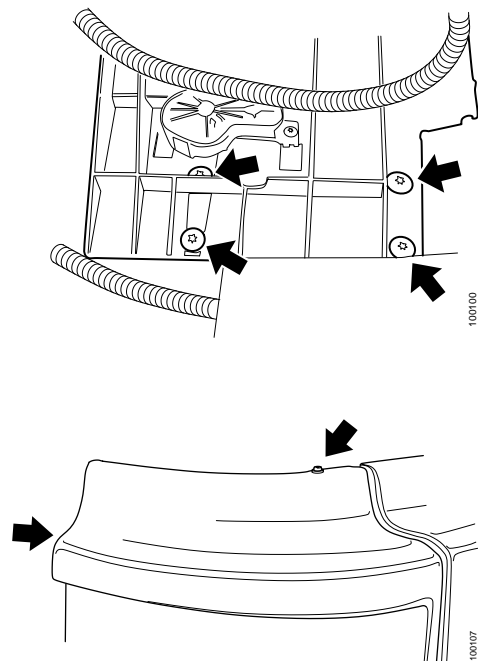


- 10 Fit the corner plate.

- 11 Fit the catwalk.

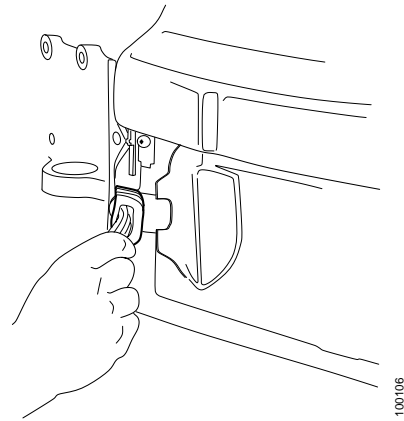


- 12 Fit the cover for the lamp unit.



13 Fit the cable lead-in.

14 Fit the lamp unit. Tighten the hinge screws.
Plug in the leads and attach the washer hose.
Tighten the lamp unit retaining screws.

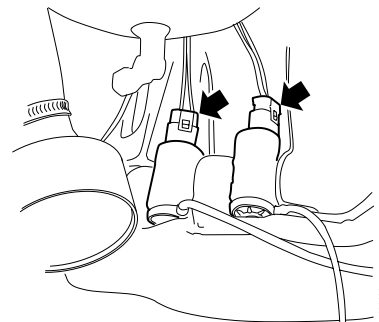


15 LHD truck:

- Fit the washer fluid reservoir.



- Connect the electric leads to the washer fluid pumps.
- Attach the tubing for the headlamp and windscreen washer fluid.
- Fit cable ties round the cables on the top of the washer fluid reservoir.

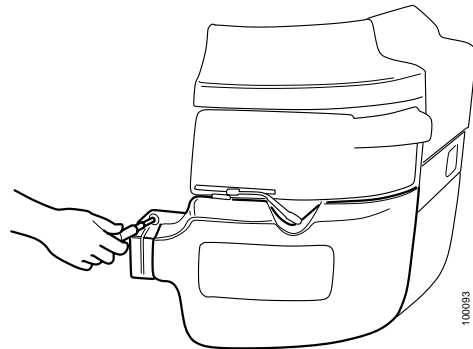


16 RHD truck:

- Fit cable ties round the cables behind the headlamp cover.
- Fit the air intake pipe to the air filter housing.

17 On trucks with plastic bumper: Fit the bumper corner cover.

On trucks with steel bumper:
Fit the cover plate by the boarding step.



18 Fill the reservoir almost to the top with power steering fluid

IMPORTANT! Use clean vessels.

19 Bleed the system.

Bleeding the hydraulic system

- 1 Check that the fluid reservoir is full.
- 2 Start the engine and run it at idling speed.
Do not turn the steering wheel.
- 3 Stop the engine after 5 seconds.
- 4 Repeat this until the fluid level stabilizes.

IMPORTANT! Keep the fluid level well up in the reservoir. If the level drops so low that air is sucked into the pump, foaming of the fluid will occur.

- 5 With the engine running at idling speed, slowly turn the wheels to full left and right lock. In a repaired or new steering gear, end position limitation is now functional.
- 6 Check the fluid level with the engine switched off.

Slowly turn the wheels to full left and right lock a number of times.

- 7 Check for leakage in the hydraulic system and take the necessary action if any leaks are found-

Check the hose clips on the fluid reservoir.

- 8 Check the fluid level. It should be at the MAX line on the dipstick.

Specifications

General data

Part number (type plate)	1 353 048/049	1 353 057
Gear ratio	18.6:1	23.4:1
Steering wheel turns (lock to lock)	4.9 turns	6.2 turns
Torque	6650 Nm at 150 bar	
Oil capacity	3.8 litres	
Type of fluid	See Workshop Manual, group 0	
Weight (excl. drop arm)	46 kg	

Tightening torques

Nut, drop arm - steering gear	550 Nm, then securing of joint
Retaining bolt for steering gear	550 +/-60 Nm
Clamp bolt in universal joint	47 Nm
Castle nut, drag link - drop arm	250 Nm and on to the nearest hole, then securing of the joint

Special tools

Designation	Part No.	Tool board
Puller for drag link	99 372	AM2
Fixtures on universal stand 587 692:		
Fixture	87 013	
Fixture	98 148	A
Puller for drop arm	587 539	