

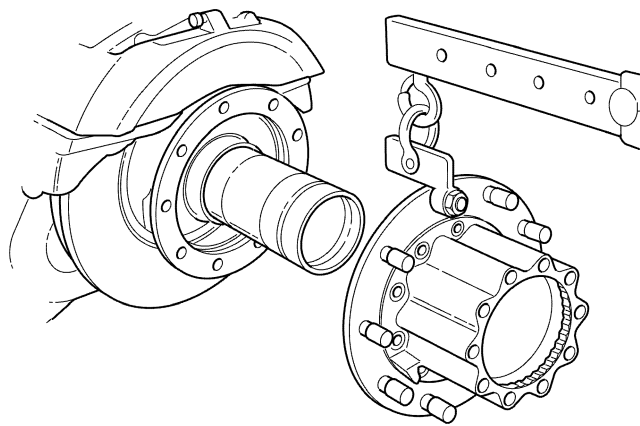
SCANIA

09:02-50

Issue 2.2 en-GB

Wheel hub on ADA1350 and ASA100X

Work description



1237/5

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Work description	General	3
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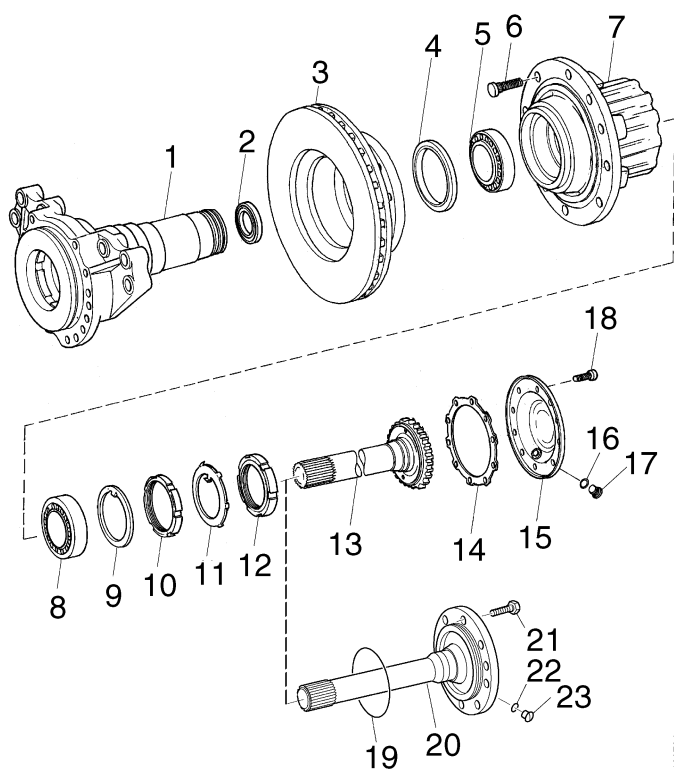
Work description

General

ADA1350 is a driving axle whereas ASA100X is a non-driving axle and is used as a centre axle on articulated buses.

The illustrations in the booklet show work on ADA1350 type 1, but work on ADA1350 type 2 and ASA100X is carried out in the same way.

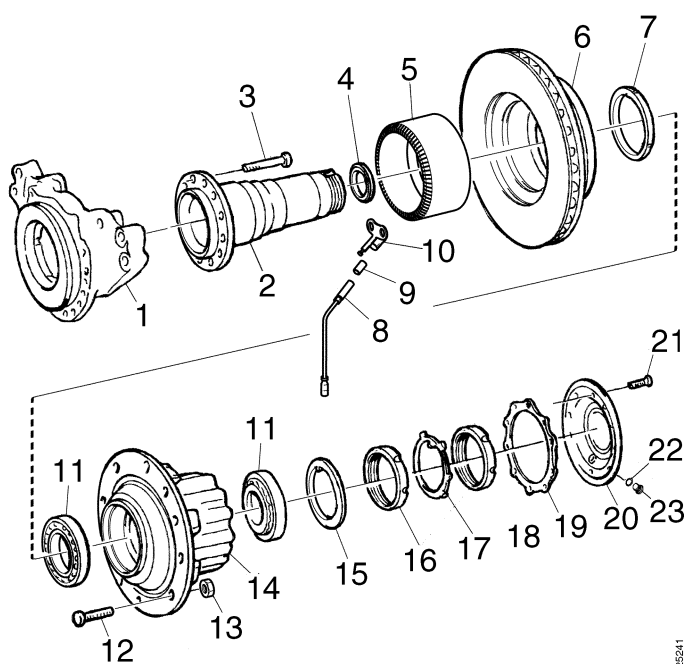
ADA1350 types 1 and 2



- 1 Axle tube
- 2 Axle tube seal
- 3 Brake disc
- 4 Inner seal
- 5 Inner bearing
- 6 Wheel bolt
- 7 Hub
- 8 Outer bearing
- 9 Thrust washer
- 10 Adjusting nut
- 11 Lock washer
- 12 Lock nut
- 13 Half shaft (type 1)
- 14 Seal (type 1)
- 15 Hub cover (type 1)
- 16 Sealing ring (type 1)
- 17 Screw plug (type 1)
- 18 Hub cover screw (type 1)
- 19 O-ring (type 2)
- 20 Half shaft (type 2)
- 21 Screw (type 2)
- 22 Sealing ring (type 2)
- 23 Screw plug (type 2)

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ASA100X

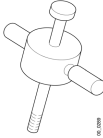
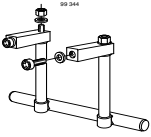
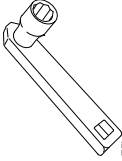

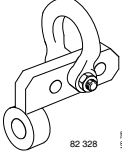


- 1 Brake bracket
- 2 Axle tube
- 3 Screw
- 4 Axle tube seal
- 5 Pulse wheel
- 6 Brake disc
- 7 Inner seal
- 8 Sensors
- 9 Socket
- 10 Holder
- 11 Bearing
- 12 Wheel bolt
- 13 Wheel nut
- 14 Hub
- 15 Thrust washer
- 16 Adjusting nut
- 17 Lock washer
- 18 Lock nut
- 19 Seal
- 20 Hub cover
- 21 Hub cover screw
- 22 Sealing ring
- 23 Screw plug

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Removing hubs

Special tools

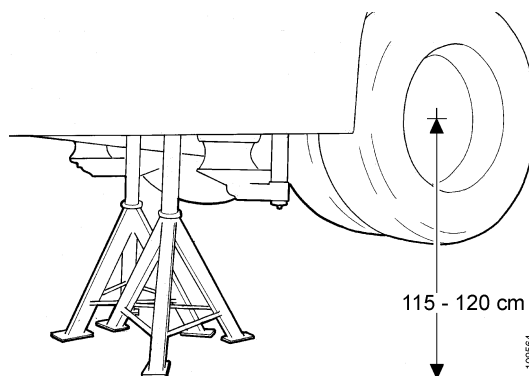
Number	Denomination	Illustration	Tool board
99 074	Impact setting tool		D1
99 344	Lifting tool		B2
99 358	Extension bar		
82 327	Socket		
82 328	Lifting tool		

- 1 Empty the air suspension.
- 2 Lift and place the bus on stands, with the centre of the hub 115-120 cm from the ground.

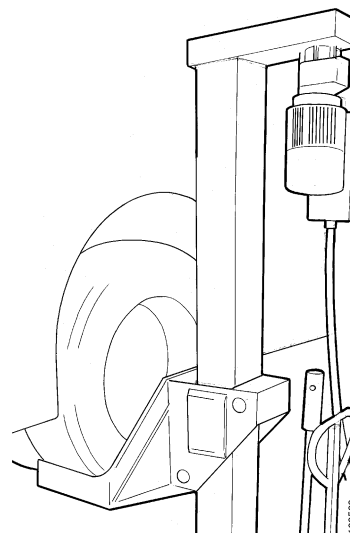


WARNING!

To place the bus safely on stands, refer to booklet 00:00-50 Lifting and supporting on stands.



- 3 Release the parking brake and remove the wheels. Use a vehicle lift.

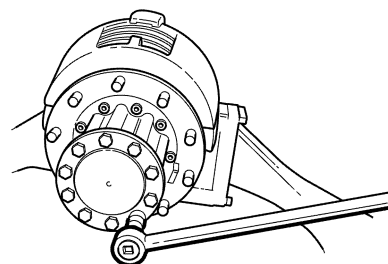


- 4 Apply the parking brake.
- 5 ADA1350 type 2:

Remove the half shaft retaining screws and drain the oil from the hub. Use a suitable container.

ADA1350 type 1 and ASA100X:

Remove the hub cover and drain the oil from the hub. Use a suitable container.



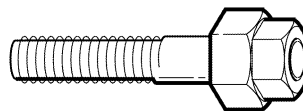
- 6 Pull out the half shaft.

ADA1350 type 2:

Make an adapter as shown in the illustration. Use impact setting tool 99 074 and an adapter.

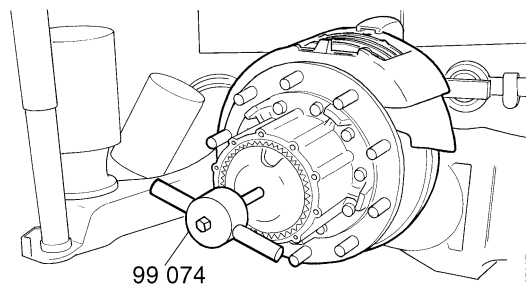
ADA1350 type 1:

Use impact setting tool 99 074.



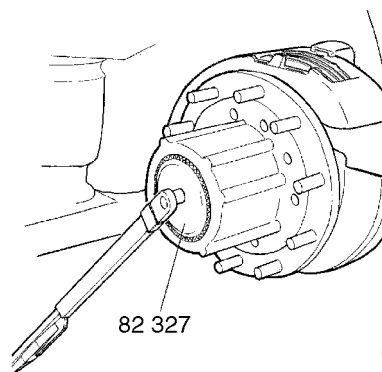
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Weld an M10 nut centred onto the head of an M12 screw.



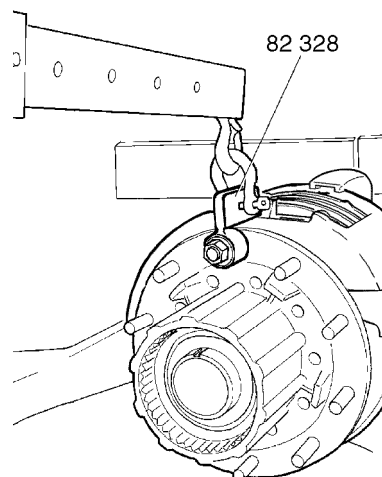
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- 7 Remove the screws holding the hub to the brake disc.
- 8 Tap off the nut locking.
- 9 Remove the hub nuts. Use socket 82 327.



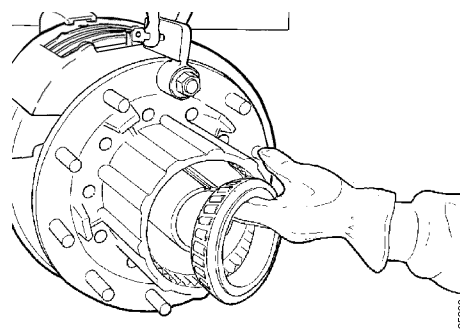
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- 10 Fit lifting tool 82 328 in the hub and suspend it using the workshop crane.

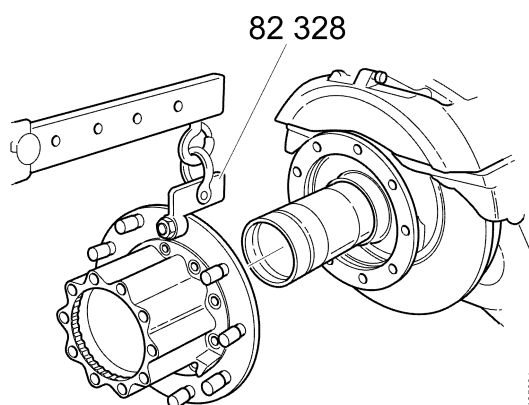


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- 11 Remove the thrust washer and the outer bearing.



- 12 Pull the hub off the shaft. Use lifting tool 82 328 and the workshop crane.



Fitting hubs

Specifications

Tightening torque

Outer hub nut	1,200 Nm
Inner hub nut	850 Nm
Hub cover screws (ADA1350 type 1 and ASA100X)	46 Nm
Screws, half shaft to hub	420 Nm
Screws, brake disc to hub	300 Nm

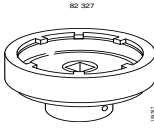
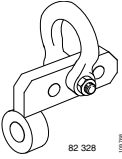
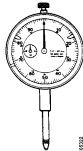
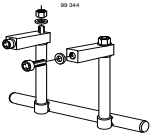
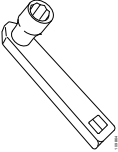
Permitted play

Bearing play	0.01-0.05 mm
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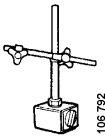

Others

Fluid volume, hub	0.7 litres
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Special tools

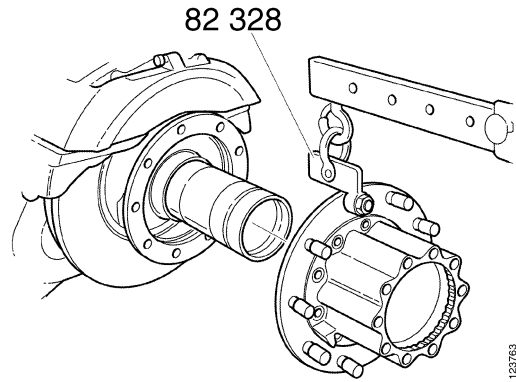
Number	Denomination	Illustration	Tool board
82 327	Socket		
82 328	lifting tool		
98 075	Dial gauge		D2
99 344	lifting tool		B2
99 358	Extension bar		

Other tools

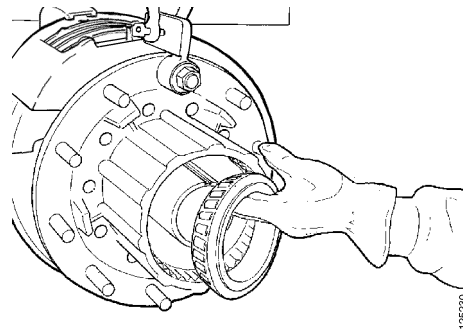
Number	Denomination	Illustration	Tool board
587 250	Indicator stand		
587 687	Torque wrench, 200-800 Nm		XB1

- 1 Clean the inner seal contact surface against the axle tube and the hub contact surface against the brake disc.
- 2 Lift the hub into position. Use tool 82 328 and the workshop crane.

Note: Be careful not to damage the inner seal.

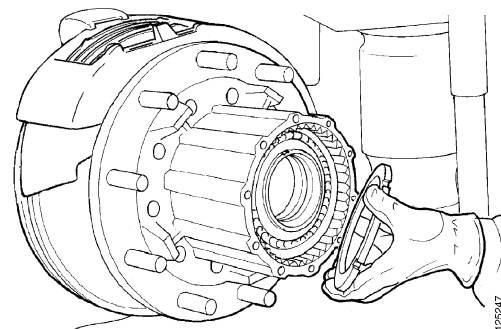


- 3 Oil and fit the outer bearing.

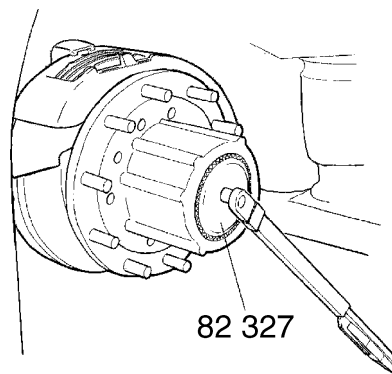


- 4 Fit the thrust washer and the inner nut (adjusting nut).

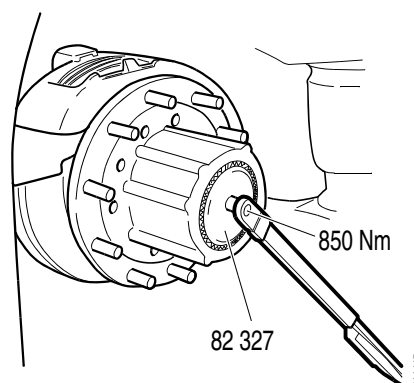
Note: The chamfer on the nut should face outwards.



- 5 Rotate the hub and tighten the nut, use socket 82 327. Tighten until the hub becomes hard to turn.

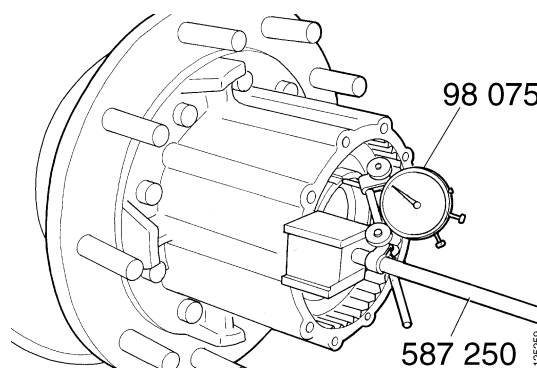


- 6 Clean thread-locking fluid from the brake disc screws.
- 7 Apply thread-locking fluid 561 200 to the screws and fit them. Tighten all screws to 20 Nm.
- 8 Tighten the screws diagonally to 300 Nm.
- 9 Settle the bearing by tightening the inner nut to 850 Nm. Use socket 82 327.
- 10 Release the parking brake.

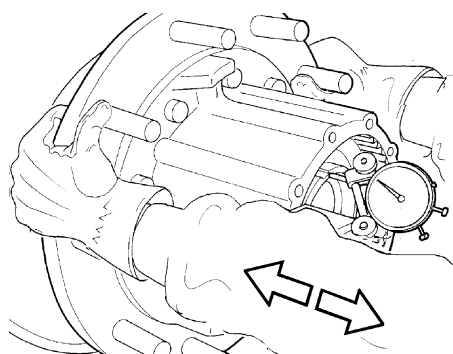


Adjusting the bearing play

- 11 Fit dial gauge 98 075 with indicator stand 587 250 between the hub and axle tube.



- 12 Undo the inner nut 120° - 150° and adjust the axial clearance to 0.15 mm. Rotate the hub several turns and tap it with a rubber mallet. Undo the nut at the same time. Pull the hub straight out and press it straight in to check the bearing play.

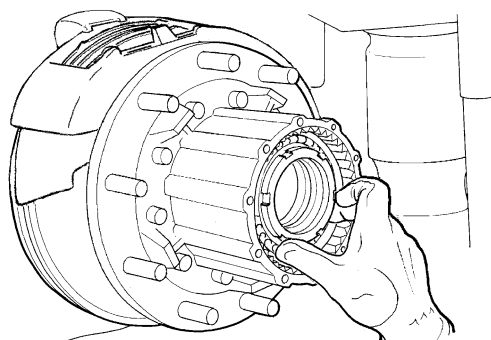


- 13 Rotate the hub at least five times and measure again.

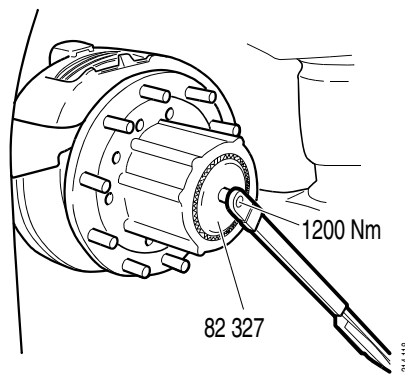
Note: The correct bearing play when adjusting is 0.15 mm.

- 14 Remove the dial gauge. Fit the lock washer and outer nut.

Note: The chamfer on the nut should face inwards.



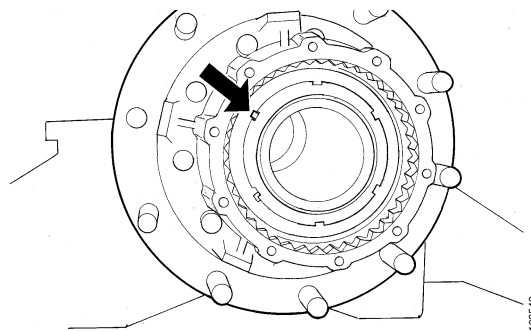
- 15 Tighten the outer nut to 1,200 Nm. Use socket 82 327.



- 16 Check the bearing play.

Note: The correct bearing play is 0.01-0.05 mm after tightening the outer nut.

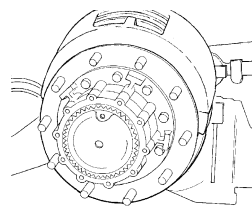
If the bearing play is incorrect, undo the outer nut. Reduce or increase the bearing play with the inner nut. Then repeat steps 14 and 15.



- 17 Lock the outer nut with the lock washer. If none of the lock washer flanges correspond with the grooves of the nut, tighten the nut to the nearest groove and lock.
- 18 If the axle tube seal has been removed, fit a new one. Refer to Renewing the axle tube seal.
- 19 Grease the axle tube seal.

20 Push in the half shaft.

On ADA1350 type 1, the hole in the half shaft must be between two of the hub cover screw holes.



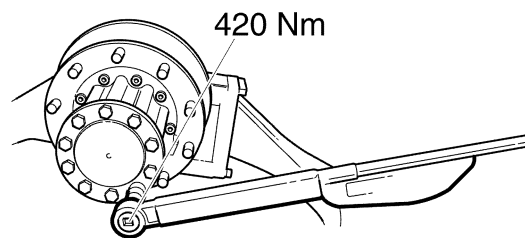
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21 ADA1350 type 2:

Tighten the half shaft flange screws to 420 Nm.

ADA1350 type 1 and ASA100X:

Fit the hub cap. Tighten the screws to 46 Nm. Make sure that the hole in the half shaft and the oil plug hole are aligned with one another.

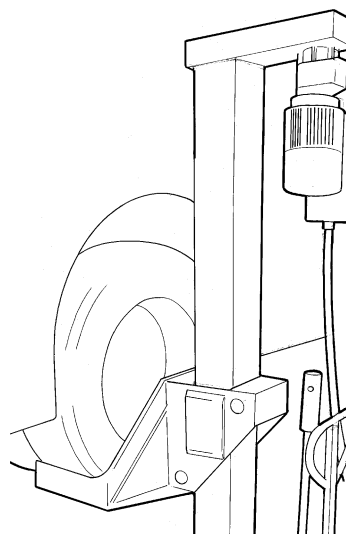


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22 Fill the hub with oil. Oil capacity is 0.7 litres. For oil grade, refer to 00:03-09.

23 Fit the wheels. Use a vehicle lift.

24 Lower the bus.

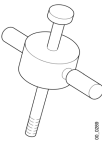
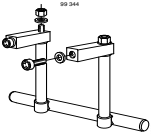
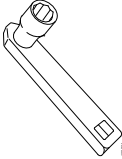
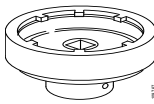
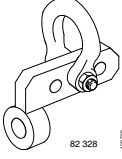
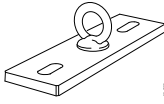
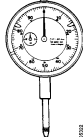


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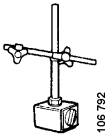

Renewing brake discs

Removing

Special tools

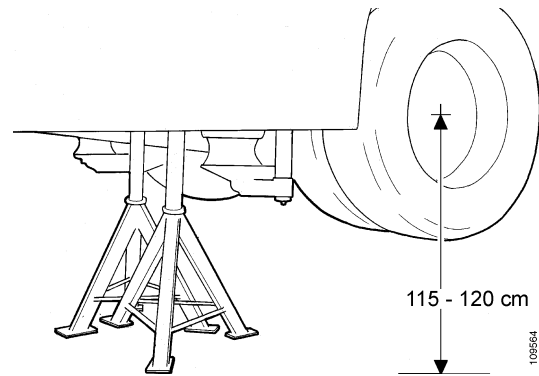
Number	Denomination	Illustration	Tool board
99 074	Impact setting tool		D1
99 344	lifting tool		B2
99 358	Extension bar		
82 327	Socket		
82 328	lifting tool		
99 167	lifting tool		AD/AS4
98 075	Dial gauge		D2

Other tools

Number	Denomination	Illustration	Tool board
587 250	Indicator stand		
587 687	Torque wrench, 200-800 Nm		XB1

Removing

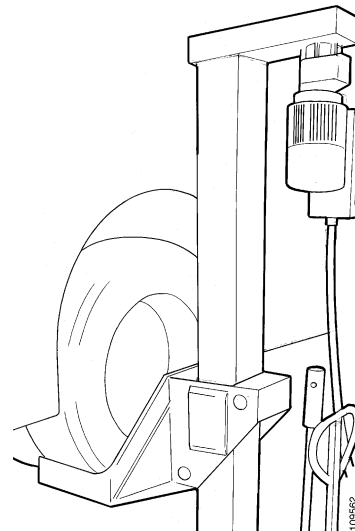
- 1 Undo the brake disc screws one half turn before you lift the bus.
- 2 Empty the air suspension.
- 3 Lift and place the bus on stands, with the centre of the hub 115-120 cm from the ground.



WARNING!

To place the bus safely on stands, refer to booklet 00:00-50 Lifting and supporting on stands.

- 4 Release the parking brake and remove the wheels. Use a vehicle lift.

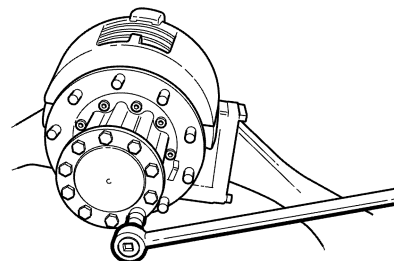


- 5 ADA1350 type 2:

Remove the half shaft retaining screws and drain the oil from the hub. Use a suitable container.

ADA1350 type 1 and ASA100X:

Remove the hub cover and drain the oil from the hub. Use a suitable container.



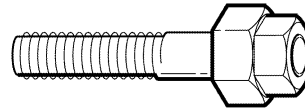
- 6 Pull out the half shaft.

ADA1350 type 2:

Make an adapter as shown in the illustration. Use impact setting tool 99 074 and an adapter.

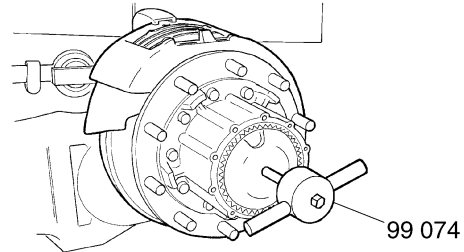
ADA1350 type 1:

Use impact setting tool 99 074.



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Weld an M10 nut centred onto the head of an M12 screw.

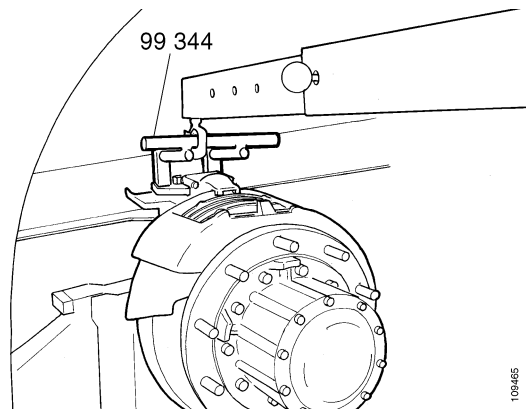


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- 7 Remove the brake chamber. To remove brake components, refer to Workshop manual main group 10, Disc brakes, Work description.

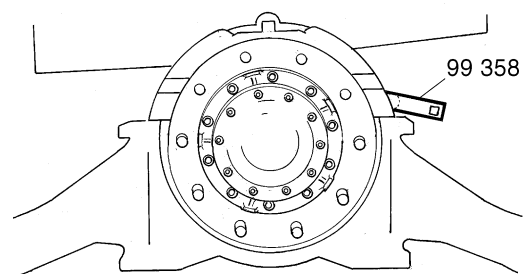
IMPORTANT! Cover the push rod hole with tape.

- 8 Secure lifting tool 99 344 on the brake caliper. Hold up the brake caliper with the workshop crane.



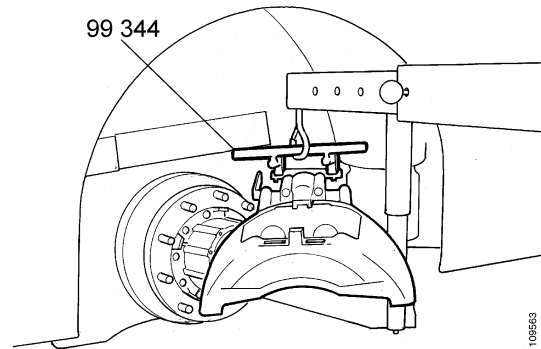
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- 9 Remove the brake caliper screws. Use extension bar 99 358.

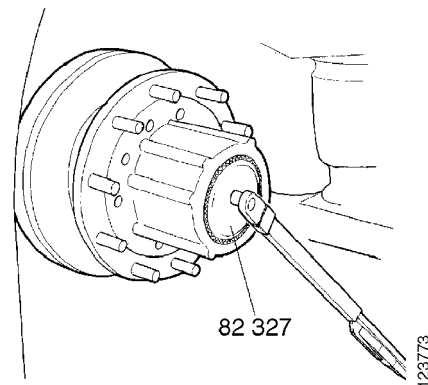


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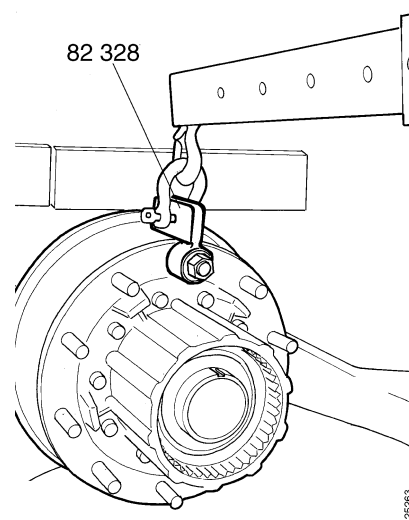
- 10 Lift off the brake caliper. Use lifting tool 99 344 and the workshop crane.
- 11 Tap off the nut locking.



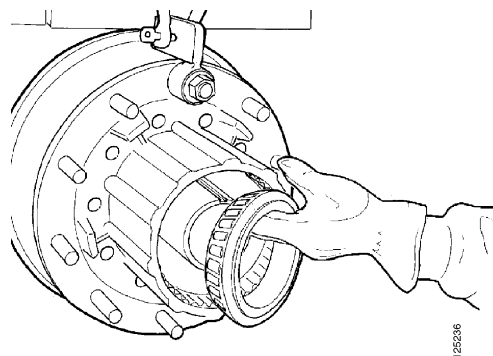
- 12 Remove the nuts. Use socket 82 327.



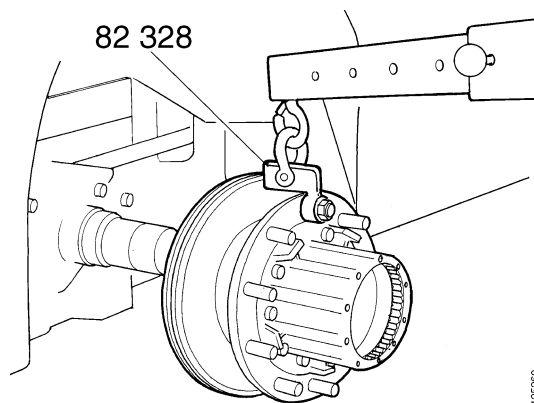
- 13 Fit lifting tool 82 328 in the hub and suspend it using the workshop crane.



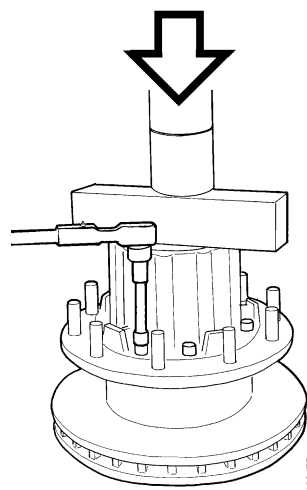
- 14 Remove the thrust washer and the outer bearing.



- 15 Pull the hub off the shaft. Use lifting tool 82 328 and the workshop crane.



- 16 Fit the hub with the brake disc in a press and lock it with the press.

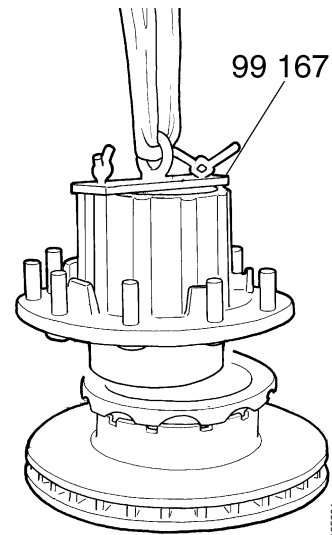


- 17 Remove the screws holding the brake disc.
- 18 Fit lifting tool 99 167 and lift off the hub.

Note: The hub weighs approximately 40 kg.

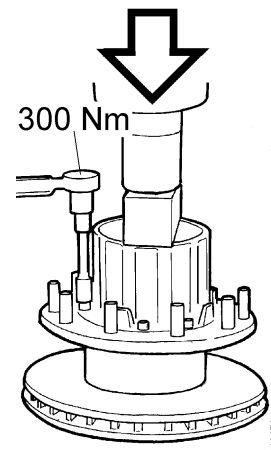
- 19 Clean the brake disc contact surfaces on the hub.
- 20 Clean thread-locking fluid from the screws.
- 21 Renew the brake disc.

Note: The brake disc weighs approximately 30 kg.



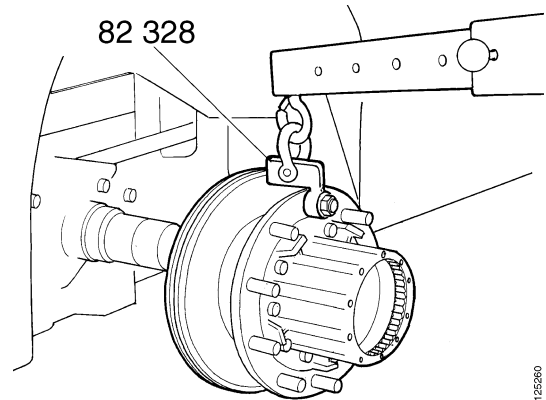
Fitting

- 1 Lift the hub into position. Use lifting tool 99 167.
- 2 Apply thread-locking fluid 561 200 to the screws and fit them. Tighten all screws to 20 Nm.
- 3 Tighten the screws to 300 Nm.

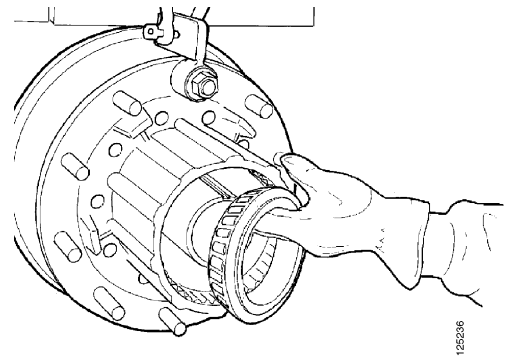


- 4 Clean the seal contact surface on the axle tube.
- 5 Lift the hub into position. Use tool 82 328 and the workshop crane.

Note: Be careful not to damage the inner seal.

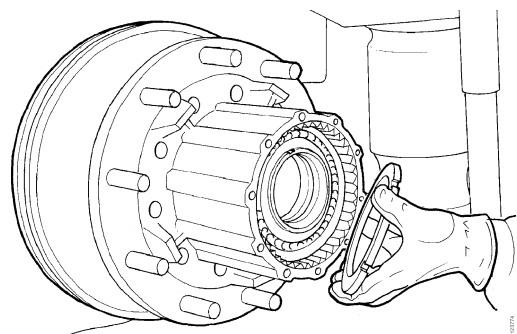


- 6 Oil and fit the outer bearing.

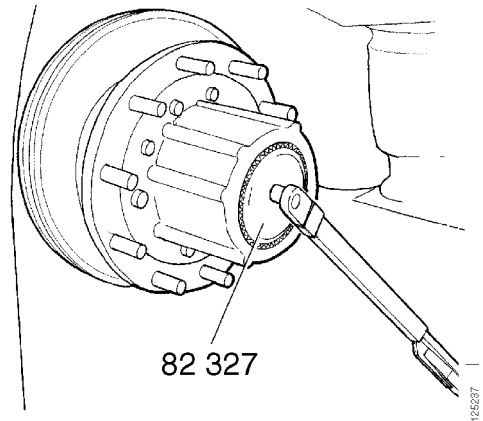


- 7 Fit the lock washer and adjusting nut.

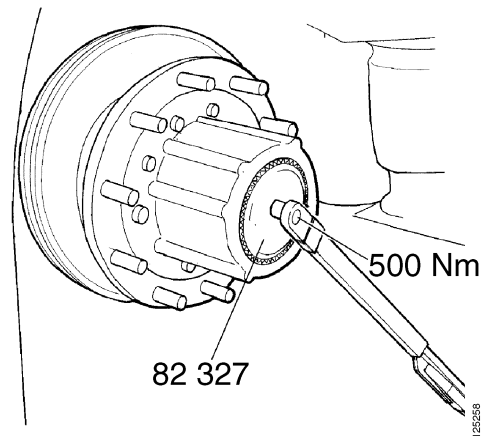
Note: The chamfer on the adjusting nut should face outwards.



- 8 Rotate the hub and tighten the adjusting nut until the hub becomes hard to turn. Use socket 82 327.

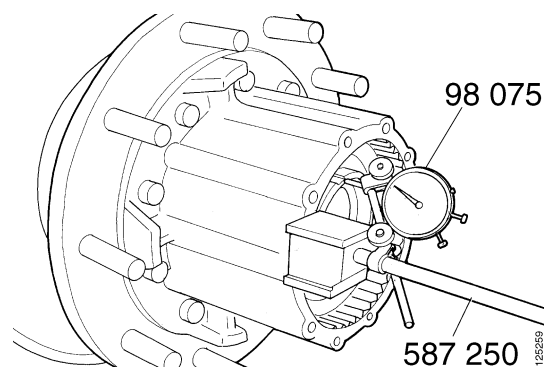


- 9 Settle the bearing by tightening the inner nut to 500 Nm. Use socket 82 327.

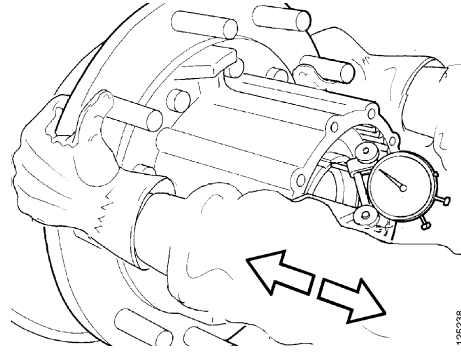


Adjusting the bearing play

- 10 Fit dial gauge 98 075 with indicator stand 587 250 between the hub and axle tube.



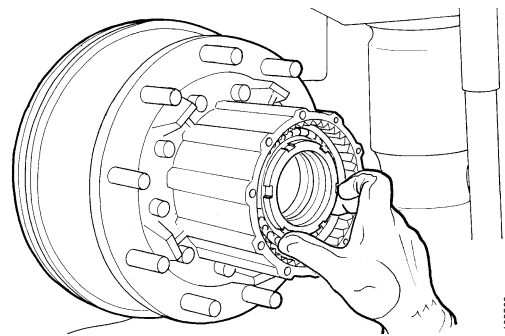
- 11 Undo the inner nut 120° - 150° and adjust the axial clearance to 0.15 mm. Rotate the hub several turns and tap it with a rubber mallet. Undo the nut at the same time. Pull the hub straight out and press it straight in to check the bearing play.



- 12 Rotate the hub at least five times and carry out the measurement again.

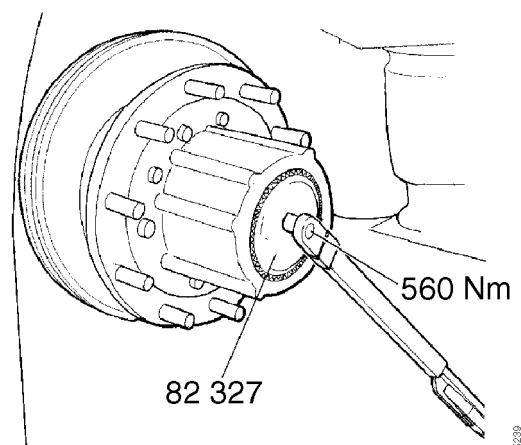
Note: The correct bearing play when adjusting is 0.15 mm.

- 13 Remove the dial gauge. Fit the lock washer and outer nut.



Note: The chamfer on the nut should face inwards.

- 14 Tighten the outer nut to 560 Nm, use socket 82 327.

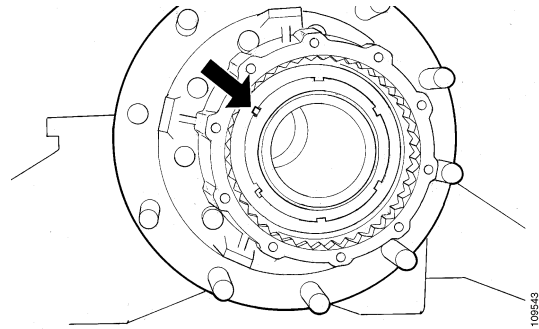


15 Check the bearing play.

Note: The correct bearing play is 0.01-0.05 mm after tightening the outer nut.

If the bearing play is incorrect, undo the outer nut. Reduce or increase the bearing play with the inner nut. Then repeat steps 13 and 14.

16 Lock the outer nut with the lock washer. If none of the lock washer flanges correspond with the grooves of the nut, tighten the nut to the nearest groove and lock.

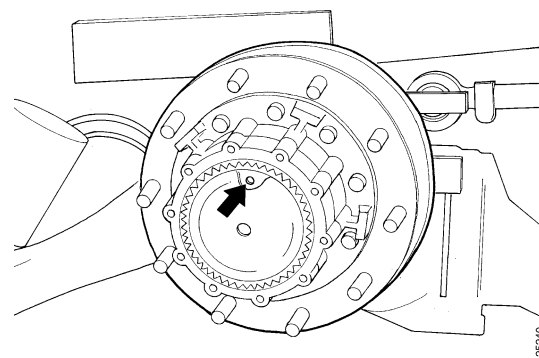


17 If the axle tube seal has been removed, fit a new one. Refer to Renewing the axle seal.

18 Grease the axle tube seal.

19 Push in the half shaft. Applies to ADA1350.

Note: On ADA1350 type 1, the hole in the half shaft must be between two of the hub cover screw holes.

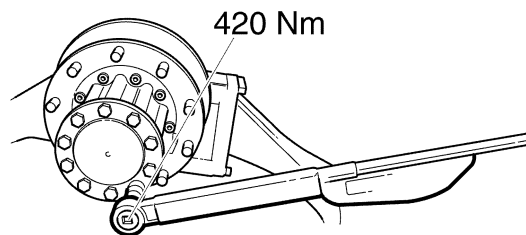


20 1350 type 2:

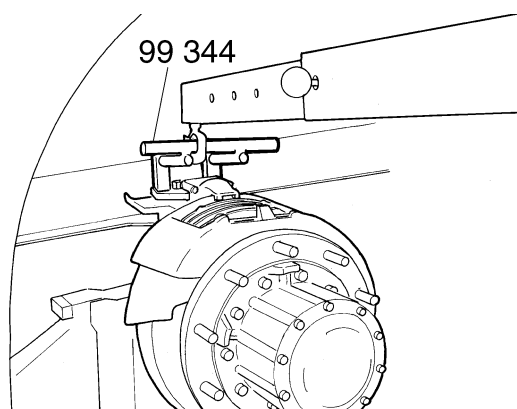
Tighten the half shaft flange screws to 420 Nm.

ADA1350 type 1 and ASA100X:

Fit the hub cap. Tighten the screws to 46 Nm. Make sure that the hole in the half shaft and the oil plug hole are aligned with one another.

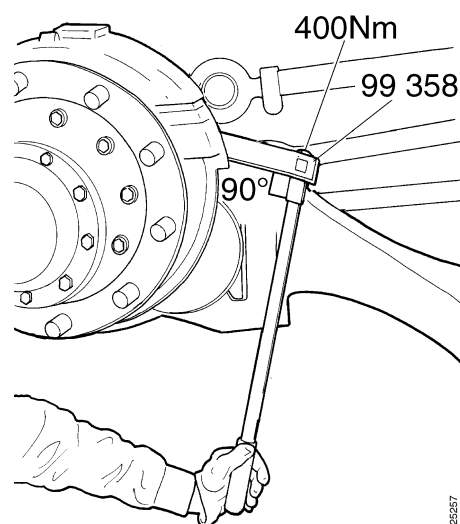


21 Fit the brake caliper. Use lifting tool 99 344.

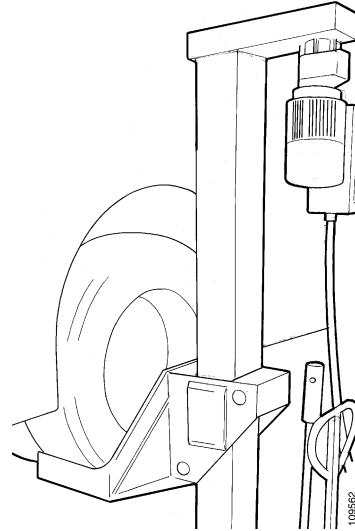


22 Tighten the brake caliper screws to 400 Nm. Use extension bar 99 358.

Note: Make sure that there is a right-angle (90°) between extension bar 99 358 and the torque socket to obtain the correct torque.

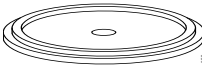
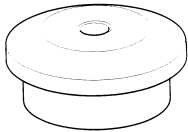

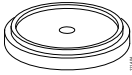


- 23 Fit the brake chamber. Tighten the screws to 180 Nm.
- 24 Fill the hub with oil. Oil capacity is 0.7 litres. Oil grade, refer to booklet 00:03-09.
- 25 Fit the wheels. Use a vehicle lift.
- 26 Lower the bus.

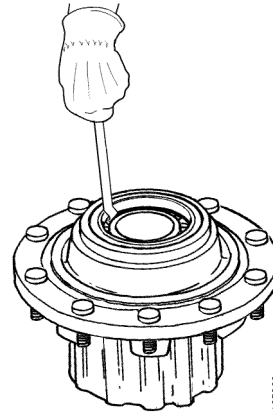


Renewing bearings

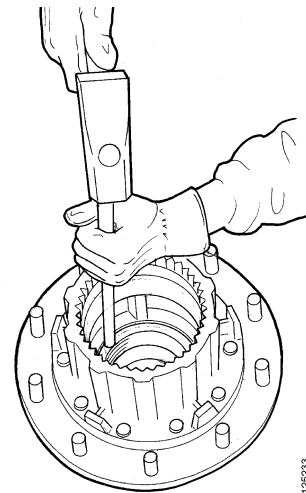
Special tools

Number	Denomination	Illustration	Tool board
82 325	Pressplate	 82 325	
87 445	Press drift	 87 445	AD/AS2
98 645	Press drift	 98 645	G1
98 778	Press drift	 98 778	AD/AS2

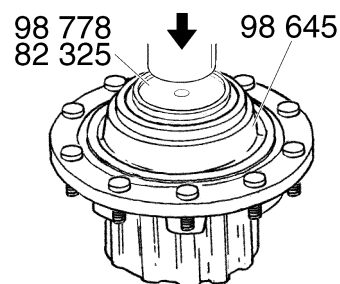
- 1 Remove the hub as described in Removing hubs.
- 2 Remove the sealing ring with a lever or the equivalent.



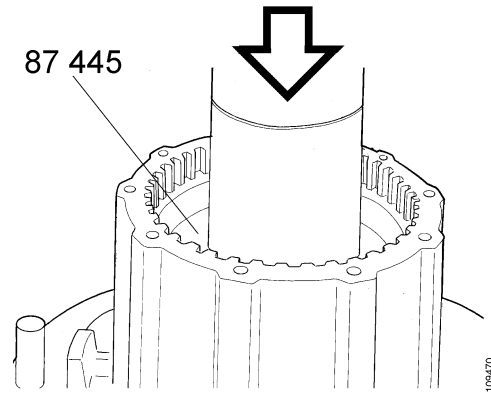
- 3 Knock out the races and clean the hub.



- 4 Place the hub in a press. Press on the inner bearing outer race with press drift 98 645 and pressplate 82 325. On ASA100X, use press drift 98 778 instead of pressplate 82 325.

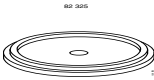
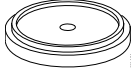


- 5 Oil and fit the inner bearing.
- 6 Clean the seal contact surface in the hub with alcohol.
- 7 Press in the seal. Refer to Renewing the inner seal.
- 8 Turn the hub and press in the outer bearing outer race, use press drift 87 445.

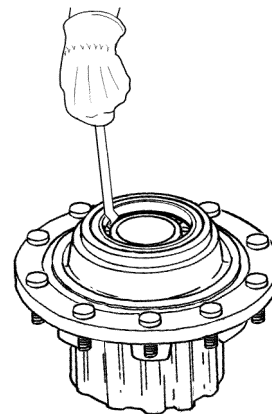


Renewing the inner seal

Special tools

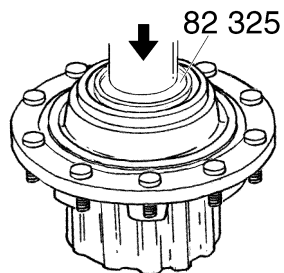
Number	Denomination	Illustration	Tool board
82 325	Pressplate		
98 778	Press drift		AD/AS2

- 1 Remove the hub as described in Removing hubs.
- 2 Remove the seal with a lever or the equivalent.
- 3 Clean the seal contact surface against the axle tube with alcohol.

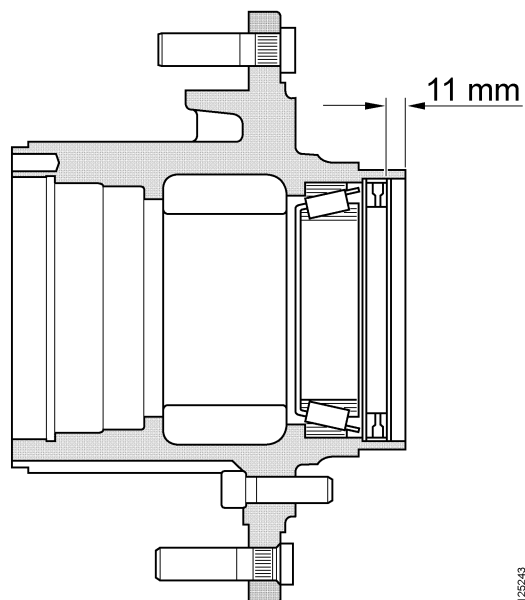


On driving axle, ADA1350

- 4 Press in seal with pressplate 82 325.
- 5 Check that the seal is pressed in evenly. Measure around it with a sliding caliper. It should be pressed in to a depth of 11 mm from the edge.



125242



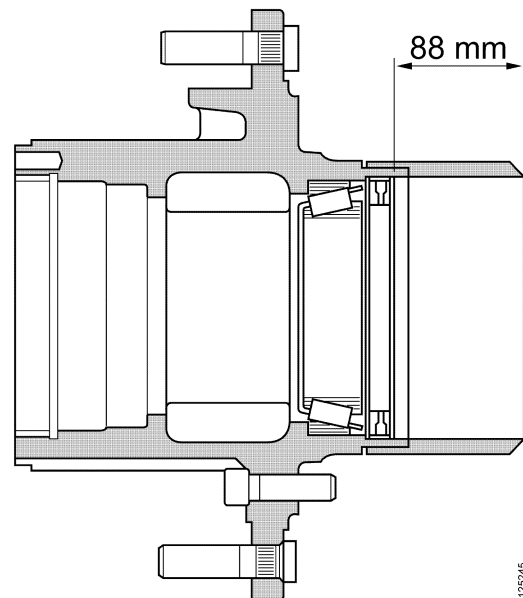
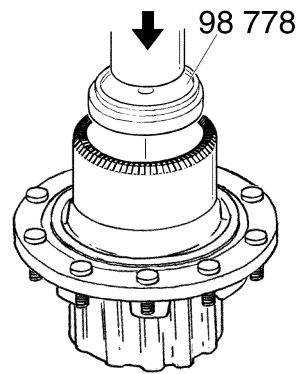
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Depth which seal is pressed in for driving axle.

On non-driving axle, ASA100X

Press in the seal with drift 98 778.

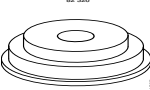
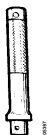
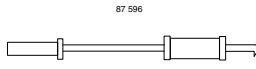
Check that the seal is pressed in evenly.
Measure around it with a sliding caliper. It
should be pressed in to a depth of 88 mm from
the edge.



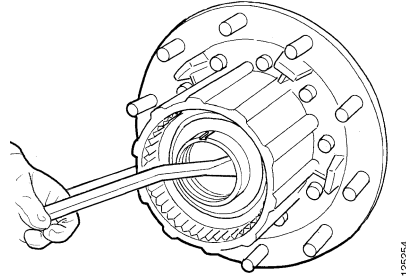
Depth which seal is pressed in for non-driving axle.

Renewing the axle tube seal

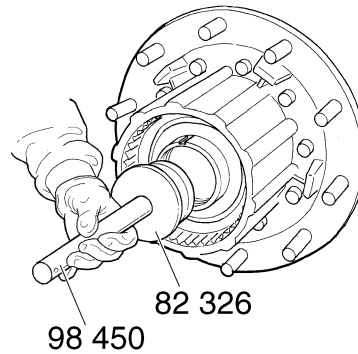
Special tools

Number	Denomination	Illustration	Tool board
82 326	Press drift		AD/AS4
98 450	Shank		AD/AS2
87 596	Slide hammer		D2

- 1 Remove the hub cover and the half shaft. Refer to Removing hubs, steps 5 and 6.
- 2 Remove the old axle tube seal. Use a lever or slide hammer 87 596.

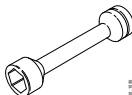
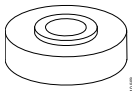


- 3 Clean the seal contact surface in the axle tube with alcohol.
- 4 Fit a new axle tube seal. Use drift 82 326 and handle 98 450. The sealing lips should face inwards. The axle tube seal position should be 13.5 mm into the axle tube.
- 5 Grease the axle tube seal.
- 6 Fit the half shaft and hub cover. Refer to Fitting hubs, steps 20-22.



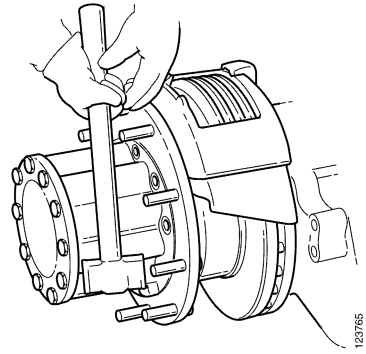
Renewing wheel bolts

Special tools

Number	Denomination	Illustration	Tool board
98 661	Torque wrench		MT1
98 582	Drift		AD2

Note: Hubs with aluminium rims have longer wheel bolts. To replace wheel bolts on these hubs, it is therefore necessary to remove the brake linings, undo the brake disc retaining screws and tilt the brake disc. Refer to *Renewing brake discs* and for removing brake linings, refer to booklet 10:02-10.

- 1 Tap out the wheel bolt with a copper sledge hammer.



- 2 Fit the new wheel bolt. Use tools 98 661 and 98 582.

