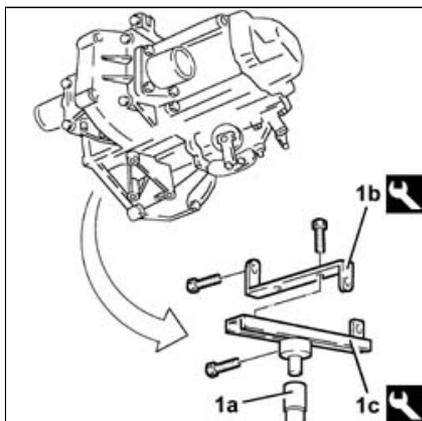


PANDA 1.1 manual gearbox (5 speed) with differential - dismantle and rebuild - wash and check parts - replace synchronisers and internal controls if necessary 2110B20

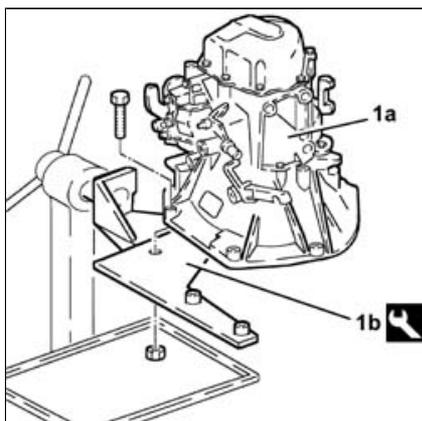
back to manual gearbox (5 speed) with differential - dismantle and rebuild - wash and check parts - replace synchronisers, inner controls, gears, shafts and bearings



Dismantling ([Reassembling](#))

1. Remove the hydraulic jack (1a) and the support tools (1b) and (1c) used for the removing-refitting operations from the gearbox and differential.

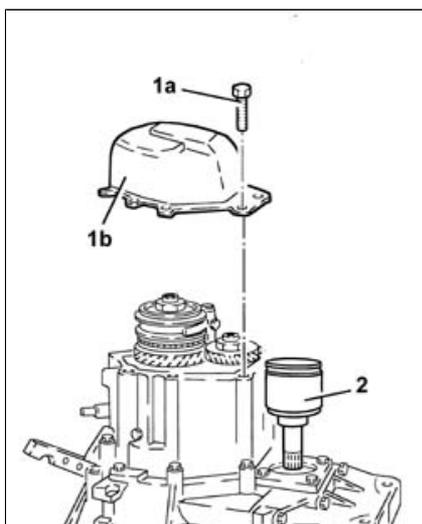
<input type="checkbox"/>	Name	Country
1b	Mount	1.870.689.000
<input type="checkbox"/>	Name	Country
1c	Gearbox mount	1.860.873.000



1. Fit the gearbox and differential (1a) on the overhaul stand using the tool (1b).

Two operators are needed for this operation.

<input type="checkbox"/>	Name	Country
-	Rotating stand	1.871.000.000
<input type="checkbox"/>	Name	Country
1b	Support	1.871.001.014



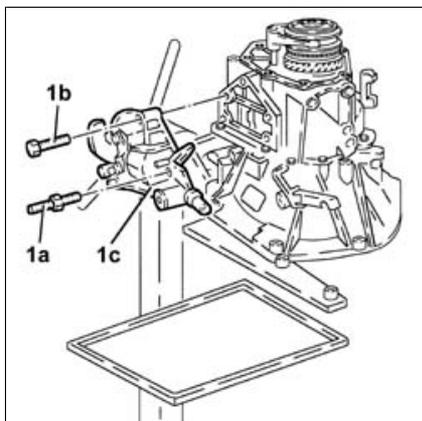
1. Undo the bolts (1a) and remove the gearbox rear cover (1b).

Use a drier to facilitate the removal of the sealant.

2. Remove the differential output shafts with external three-lobe joints.

Engage any gear using the gear selector/engagement lever.

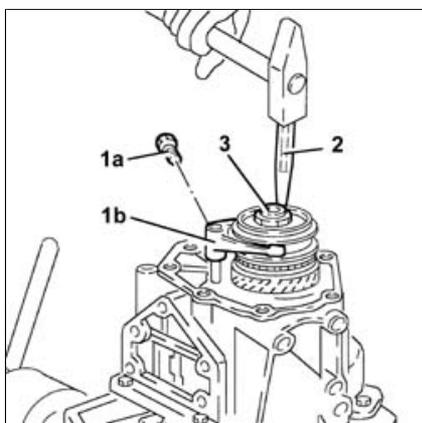
1. Undo the stud (1a) and the fixing bolts (1b), then remove the gear engagement unit cover (1c).



1. Undo the 5th speed selector fork (1b) bolt (1a).

Engage 5th speed pressing the selector fork on the main shaft.

 The simultaneous engagement of two gears will cause the gearbox shafts to lock.

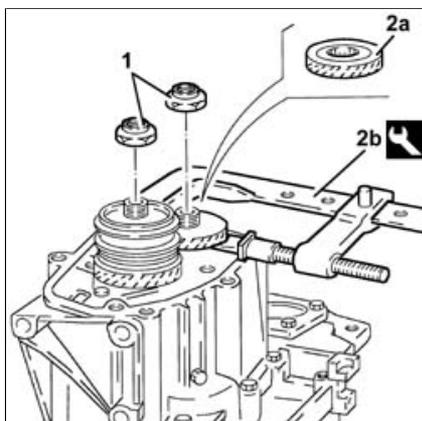


2. Remove the staking from the main and layshaft ring nuts using a suitable drift.

3. Loosen the main and layshaft ring nuts.

Place the selector fork for 5th speed in neutral.

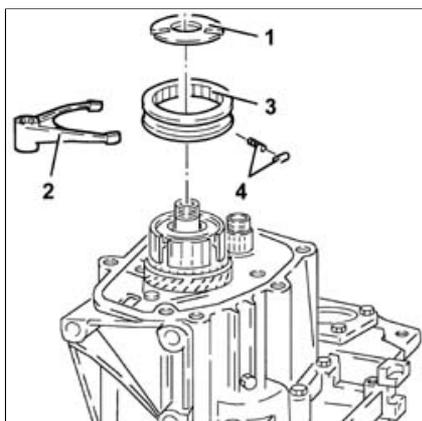
 Positioning the selector fork for 5th speed in neutral is necessary to prevent the synchronizer rollers from being lost.



1. Completely undo the ring nuts for the main and layshafts.

2. Remove the 5th speed driven gear (2a) using the tool (2b).

C	Name	Country
2b	Extractor	1.840.005.400



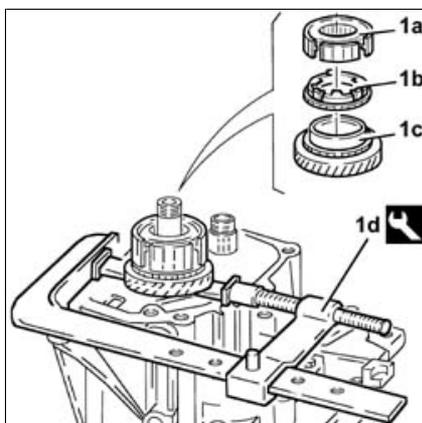
1. Remove the roller and spring retaining flange for the 5th speed synchronizer.

2. Remove the 5th speed engagement fork.

3. Remove the 5th speed engagement sleeve.

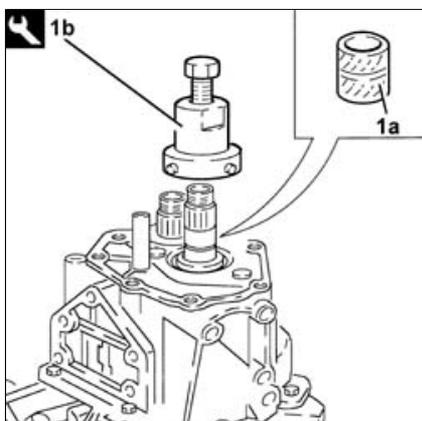
4. Remove the springs and rollers for the 5th speed hub.

1. Remove the hub for the 5th speed sliding sleeve (1a), the 5th speed synchronizer (1b) and the 5th speed drive gear (1c), using the tool (1d).



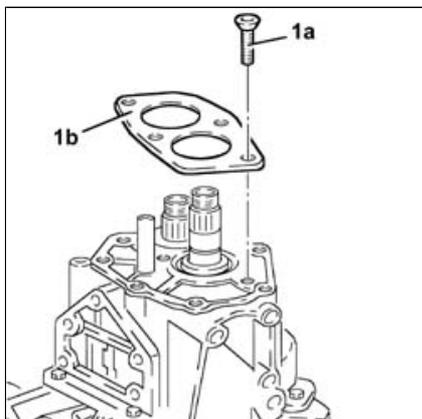
C	Name	Country
1d	Extractor	1.840.005.400

1. Remove the bush for the 5th speed drive gear (1a) using the tool (1b).



C	Name	Country
1b	Extractor	1.845.057.000

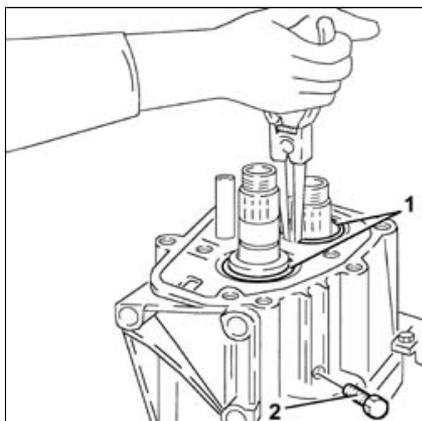
1. Undo the bolts (1a) and remove the rear bearing retaining plate (1b).



1. Remove the rear bearing circlips.

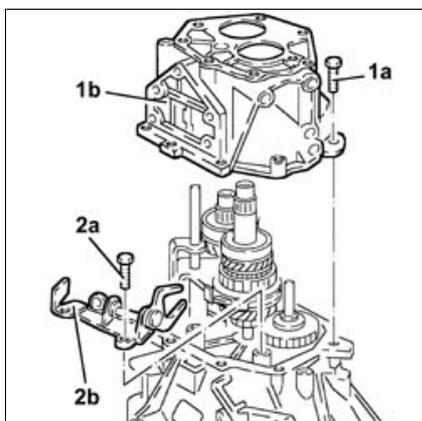
 To facilitate the fitting of the circlips, place them with their openings at the front.

2. Undo the reverse idler gear shaft bolt.

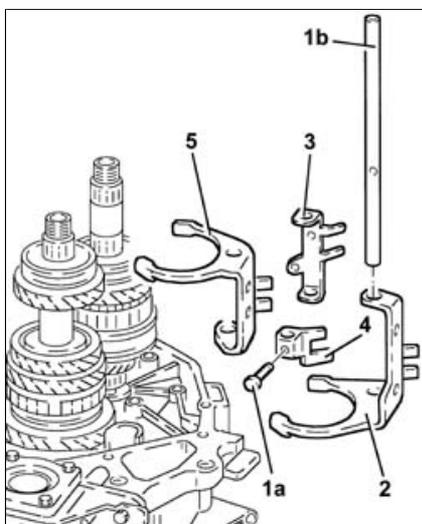


1. Undo the bolts (1a) and remove the gearbox casing (1b).

2. Undo the bolts (2a) and remove the support and reverse gear lever and fork (2b).



1. Undo the bolt (1a) and release the gear engagement fork guide rod (1b).

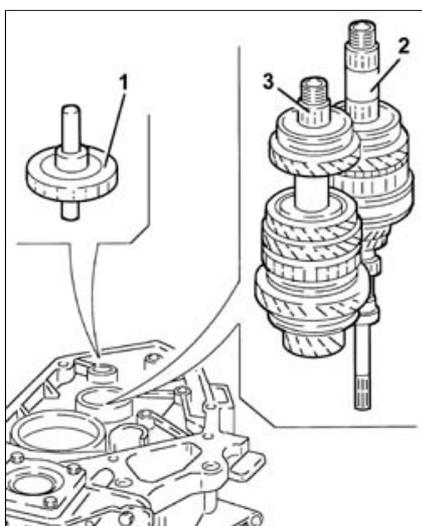


2. Remove the 3rd -4th speed engagement fork.

3. Remove the reverse gear engagement fork control lever.

4. Remove the 5th speed selector fork control lever.

5. Remove the 1st -2nd speed engagement fork.



1. Remove the reverse idler gear.

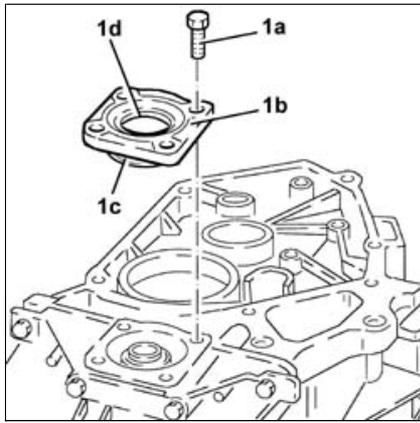
2. Remove the main shaft assembly.

3. Remove the layshaft assembly.

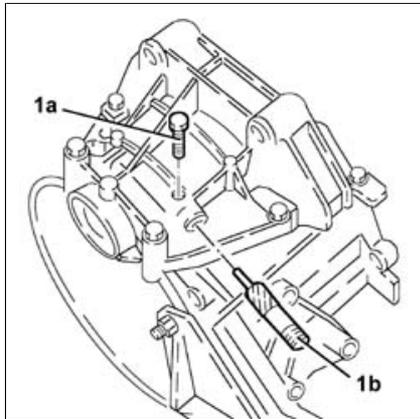
1. Undo the bolts (1a) and remove the differential casing cover (1b) complete with gasket (1c) and oil seal (1d).



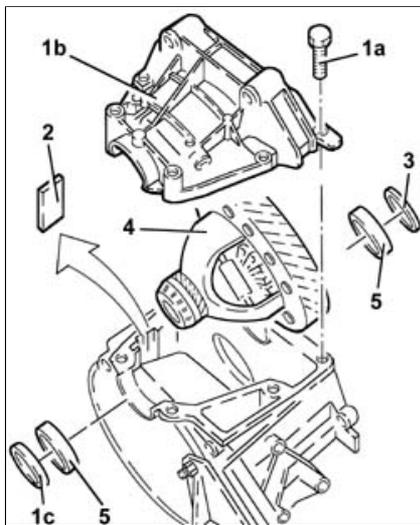
The gasket and the seal should always be replaced.



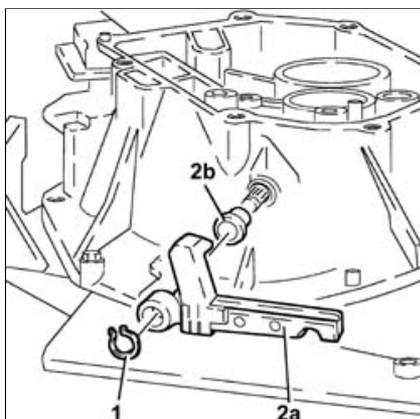
1. Undo the bolt (1a) and remove the speedometer idler gear (1b).



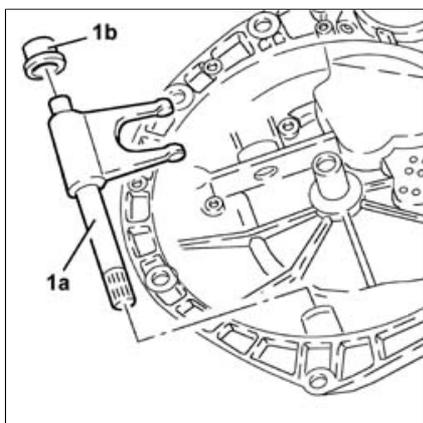
1. Undo the bolts (1a) and remove the manual gearbox and differential support (1b) complete with oil seal.



2. Remove the magnet.
3. Remove the differential bearing pre-loading scraper ring.
4. Remove the differential assembly.
5. Remove the differential bearing outer races.



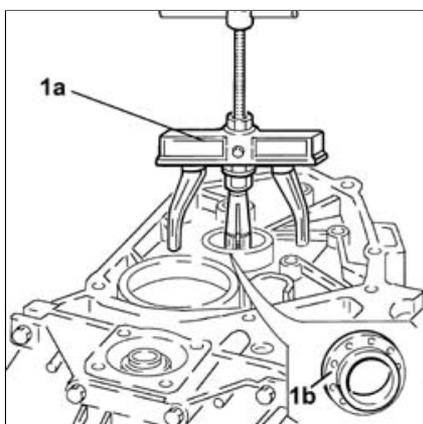
1. Remove the clutch thrust bearing outer linkage circlip.
2. Remove the outer linkage (2a) and the bush (2b) for the clutch thrust bearing.



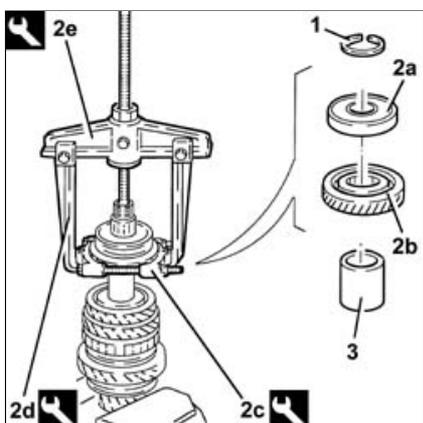
1. Remove the inner linkage (1a) and the bush (1b) for the clutch thrust bearing.



Replace the inner and outer bushes each time the clearance for the thrust bearing control shaft is excessive.



1. Remove the staking and, using a universal extractor (1a), remove the main shaft oil seal (1b) from the manual gearbox and engine support.



Proceed with dismantling the layshaft.

1. Remove the bearing circlip.

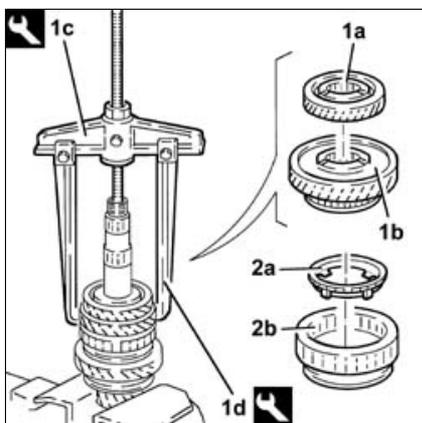
2. Remove the rear bearing (2a) and the 4th speed driven gear (2b) using the tools (2c), (2d) and (2e).

<input type="checkbox"/>	Name	Country
2c	Extractor	1.840.005.002
<input type="checkbox"/>	Name	Country
2d	Clamps	1.840.005.301
<input type="checkbox"/>	Name	Country
2e	Extractor	1.842.133.000

3. Remove the spacer between the 3rd and 4th speed driven gears.

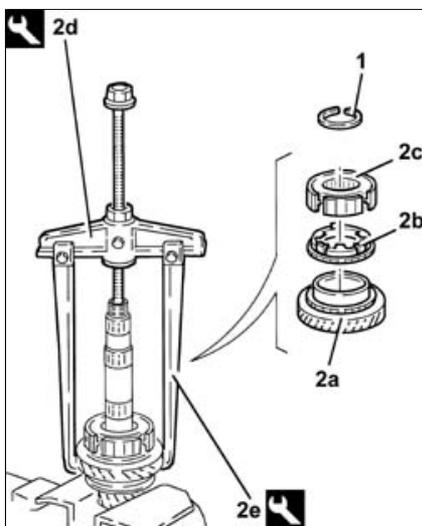
1. Remove the 3rd speed driven gear (1a) and the 2nd speed driven gear (1b) using the tools (1c) and (1d).

<input type="checkbox"/>	Name	Country



1c	Extractor	1.840.005.002
<input type="checkbox"/>	Name	Country
1d	Clamps	1.840.005.303

2. Remove the 2nd speed synchronizer ring (2a) and the 1st and 2nd speed sliding sleeve (2b).
 Keep the pre-synchronizer mountings for the 1st and 2nd speed hub.

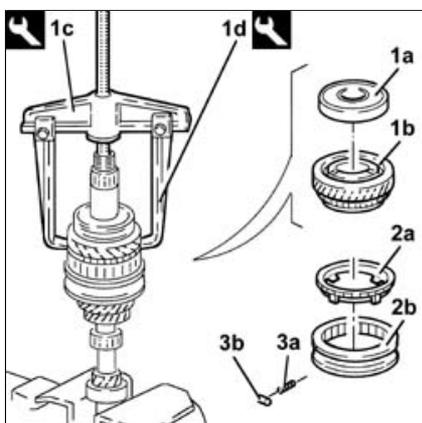


1. Remove the hub circlip.
 2. Remove the 1st speed driven gear (2a), the 1st speed synchronizer ring (2b) and the hub for the 1st and 2nd speed sliding sleeve (2c) using the tools (2d) and (2e).

<input type="checkbox"/>	Name	Country
2d	Extractor	1.840.005.002
<input type="checkbox"/>	Name	Country
2e	Clamps	1.840.005.306

 For the removal of the layshaft front bearing, see - [2110B32 manual gearbox \(5 speed\) with differential - dismantle and rebuild - wash and check parts - replace synchronisers, inner controls, gears, shafts and bearings](#)

Proceed with the dismantling of the main shaft.



1. Remove the rear bearing (1a) and the 4th speed drive gear (1b) using the tools (1c) and (1d).

<input type="checkbox"/>	Name	Country
1c	Extractor	1.840.005.200
<input type="checkbox"/>	Name	Country
1d	Clamps	1.840.005.103

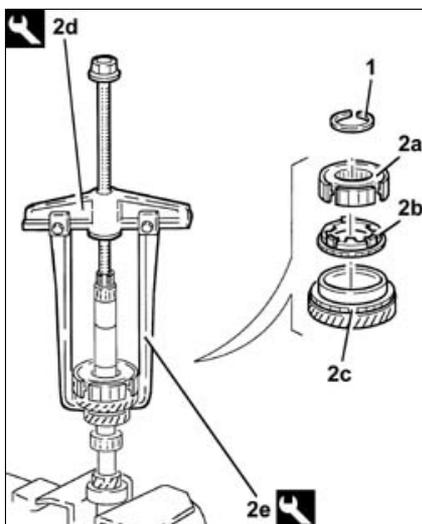
2. Remove the 4th speed synchronizer ring (2a) and the 3rd and 4th speed sliding sleeve (2b).

3. Keep the springs (3a) and the rollers (3b) for the 3rd and 4th speed hub.

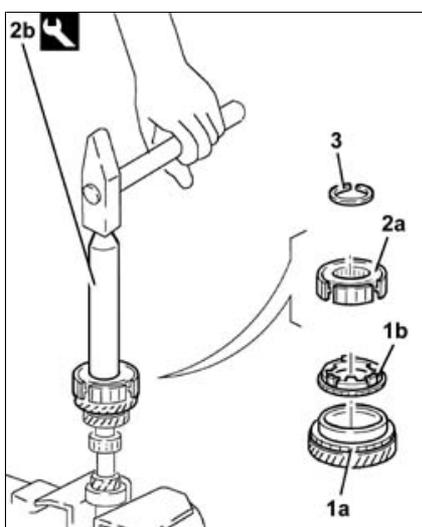
1. Remove the hub circlip for the 3rd and 4th speed sliding sleeve.

2. Remove the hub for the 3rd and 4th speed sliding sleeve (2a), the 3rd speed synchronizer (2b), the 3rd speed drive gear (2c), using the tools (2d) and (2e).

<input type="checkbox"/>	Name	Country



2d	Extractor	1.840.005.001
<input type="checkbox"/>	Name	Country
2e	Clamps	1.840.005.303

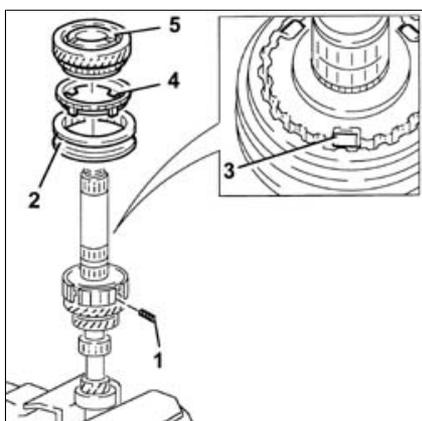


Reassembling ([Dismantling](#))

Proceed with washing and checking the condition of all the components.
 Proceed with the reassembly of the main shaft, following the instructions given below.
 Lubricate the parts concerned using transmission fluid before fitting.

1. Fit the 3rd speed drive gear (1a) and the 3rd speed synchronizer (1b).
2. Fit the 3rd and 4th speed sliding sleeve hub (2a) using the tool (2b).

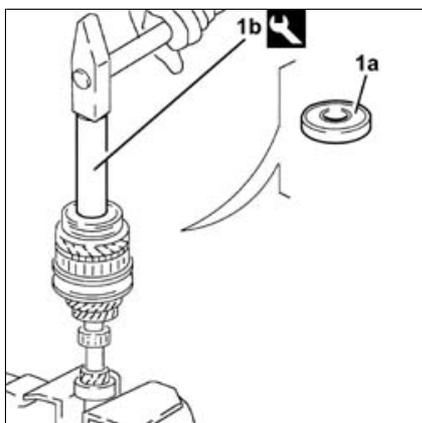
<input type="checkbox"/>	Name	Country
2b	Drift	1.870.152.000



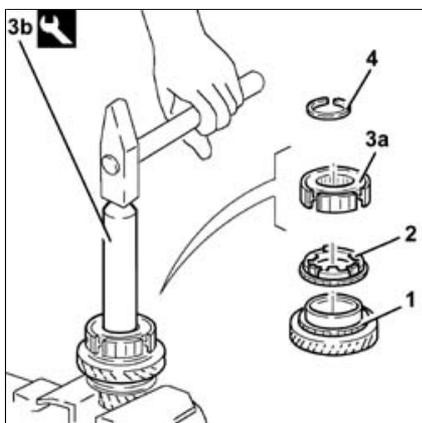
1. Fit the springs on the 3rd and 4th speed sliding sleeve hub.
 2. Fit the 3rd and 4th speed sliding sleeve.
-  The references on the sleeve should coincide with the springs.
3. Fit the rollers between the springs and the notches in the 3rd and 4th speed sliding sleeve.
 4. Fit the 4th speed synchronizer ring.
- Place the 3rd and 4th speed sliding sleeve in neutral to prevent losing the springs and rollers.
5. Fit the 4th speed drive gear.

1. Fit the rear bearing (1a) on the main shaft using the tool (1b).

<input type="checkbox"/>	Name	Country
1b	Drift	1.870.631.000



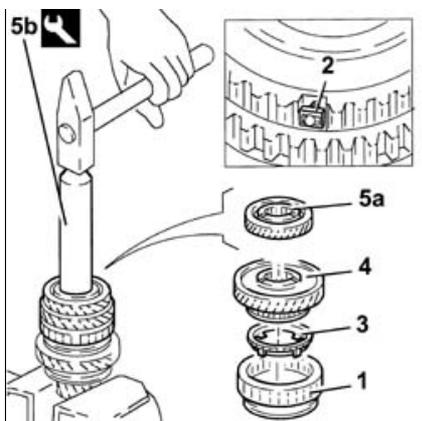
Proceed with the reassembly of the layshaft, following the instructions given below.



Lubricate the parts concerned using transmission fluid before fitting.

1. Fit the 1st speed driven gear.
2. Fit the 1st speed synchronizer ring.
3. Fit the 1st and 2nd speed sliding sleeve hub (3a) using the tool (3b).

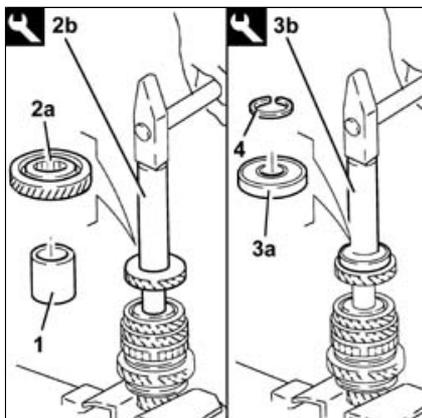
C	Name	Country
3b	Drift	1.870.152.000



4. Fit the 1st and 2nd speed sliding sleeve hub circlip.

1. Fit the 1st and 2nd speed sliding sleeve.
2. Fit the pre-synchronizer mountings in the notches in the 1st and 2nd speed sliding sleeve.
3. Fit the 2nd speed synchronizer ring. Position the 1st and 2nd speed sliding sleeve in neutral.
4. Fit the 2nd speed driven gear.
5. Fit the 3rd speed driven gear (5a) using the tool (5b).

C	Name	Country
5b	Drift	1.870.152.000



1. Fit the spacer between the 3rd and 4th speed driven gears.
2. Fit the 4th speed driven gear (2a) using the tool (2b).

C	Name	Country
2b	Drift	1.870.631.000

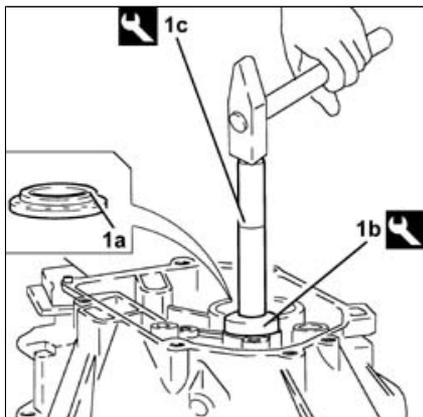
3. Fit the rear bearing (3a) using the tool (3b).

C	Name	Country

1b	Drift	1.870.631.000
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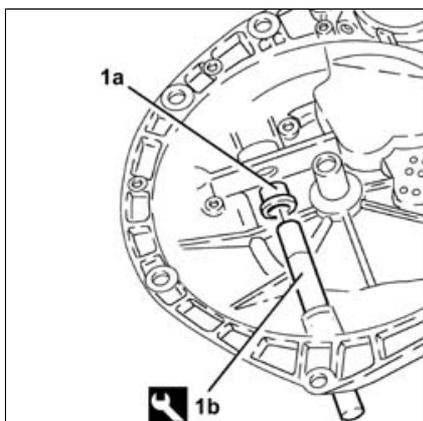
4. Fit the rear bearing circlip on the layshaft.

1. Fit the main shaft oil seal (1a) on the manual gearbox/engine support using the fitting tool (1b) together with the drift (1c).



<input type="checkbox"/>	Name	Country
1b	Fitting tool	1.870.796.000
<input type="checkbox"/>	Name	Country
1b	Grip	1.870.007.000

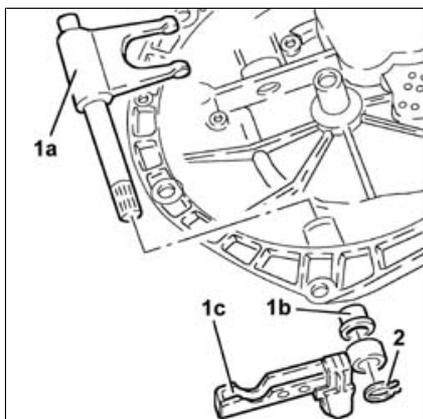
1. Fit the clutch thrust bearing linkage inner bush (1a) using the tool (1b).



<input type="checkbox"/>	Name	Country
1b	Fitting tool	1.870.633.000

1. Fit the inner linkage (1a), the outer bush (1b) and the outer linkage (1c) for the clutch thrust bearing.

2. Fit the clutch thrust bearing outer linkage circlip.

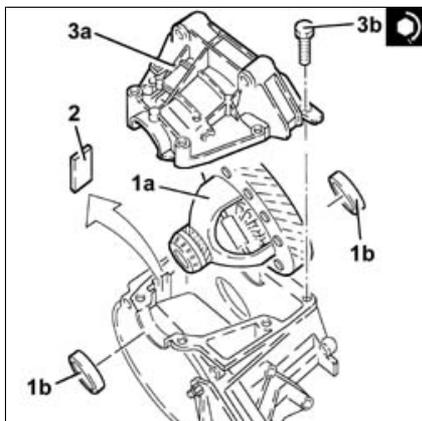


1. Fit the complete differential (1a) and differential bearing outer races (1b).

2. Fit the magnet.

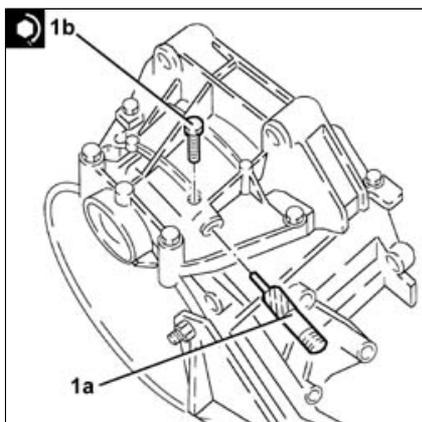
Apply the recommended sealant to the contact surfaces between the differential support and the gearbox casing.

<input type="checkbox"/>	Type	Component	Name	Qty.
-	Sealant	GEARBOX DIFFERENTIAL MOUNT	LOCTITE 573	-



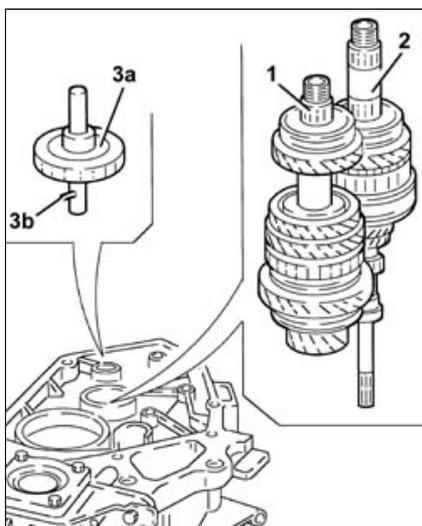
3. Fit the manual gearbox differential casing support (3a), then tighten the bolts (3b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
3b	Bolt	GEARBOX DIFFERENTIAL MOUNT	M8	2
<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
3b	Bolt	GEARBOX DIFFERENTIAL MOUNT	M10	3.5



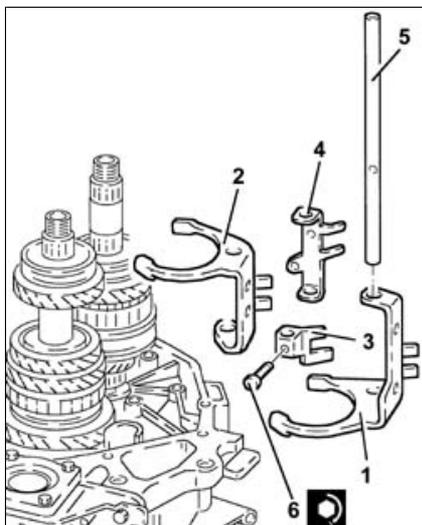
1. Fit the speedometer idler gear (1a) and tighten the bolt (1b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
1b	Bolt	GEARS	M6	0.5



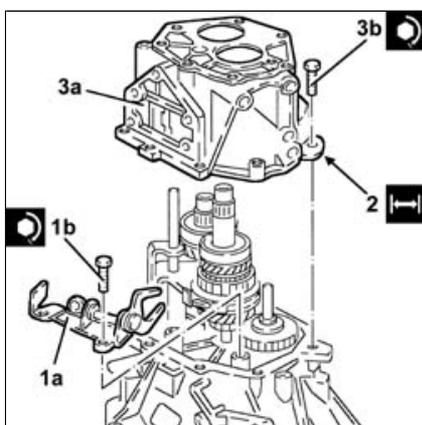
1. Fit the layshaft assembly.
2. Fit the main shaft assembly.
3. Fit the reverse idler gear (3a) inserting the pin (3b) in the special housing in the casing.

1. Fit the 3rd - 4th speed engagement fork.
2. Fit the 1st - 2nd speed engagement fork.
3. Fit the 5th speed engagement fork bracket.
4. Fit the reverse gear engagement fork bracket.
5. Fit the gear engagement fork guide rod in its housing.



6. Tighten the bolt for the 5th speed engagement fork bracket to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
6	Bolt	5th ^a speed selector fork	M6	1.2



1. Fit the reverse gear engagement lever and fork support (1a) and tighten the bolts (1b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
1b	Bolt	GEARBOX INTERNAL LINKAGE	M8	1.5

2. Apply the recommended sealant to the contact surfaces between the gearbox casing and the bellhousing.

<input type="checkbox"/>	Type	Component	Name	Qty.
-	Sealant	GEARBOX GEAR CASING	LOCTITE 573	-

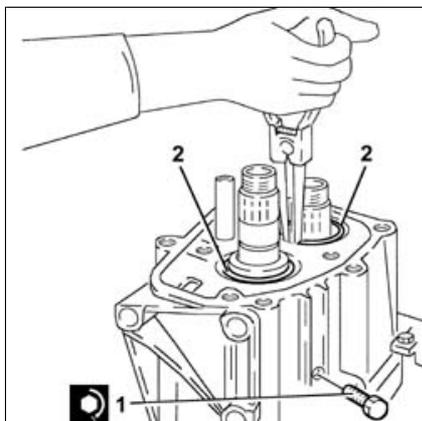
3. Fit the gearbox casing (3a) and secure it tightening the bolts (3b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
3b	Bolt	GEARBOX GEAR CASING	M8	(Support side) 2

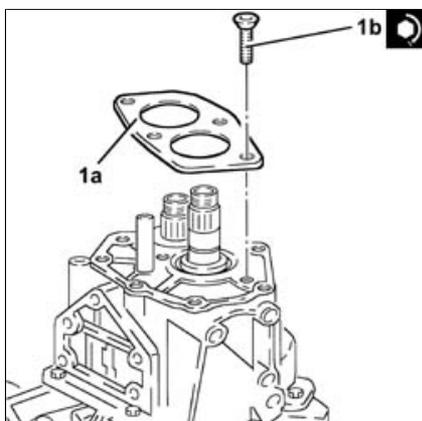
1. Tighten the reverse idler gear shaft bolt to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
1	Bolt	REVERSE IDLER	M8	2.6

2. Fit the rear bearing circlips.

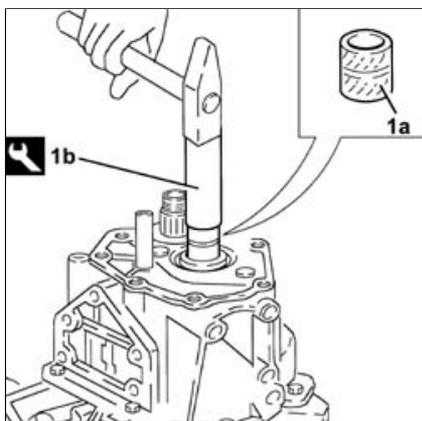


To facilitate the fitting of the circlips, place them with their openings at the front.



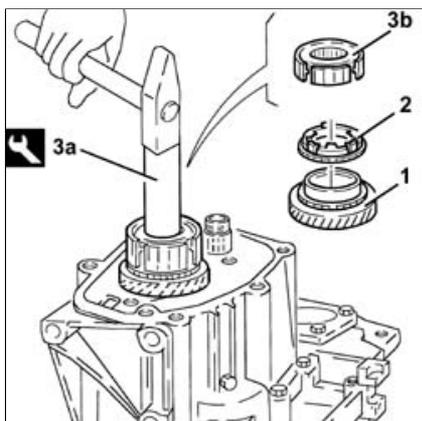
1. Fit the rear bearing retaining plate (1a) and secure it tightening the bolts (1b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
1b	Bolt	Main layshaft and rear bearing retaining plate....	M8	2



1. Fit the bush (1a) for the 5th speed drive gear using the tool (1b).

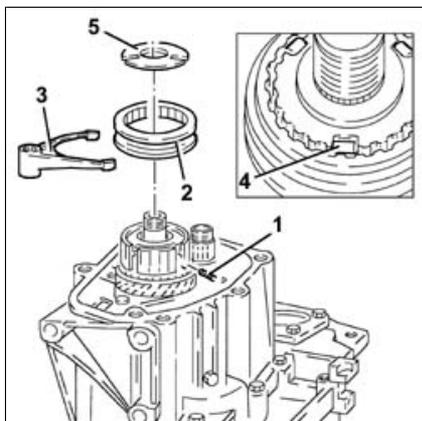
<input type="checkbox"/>	Name	Country
1b	Drift	1.870.631.000



1. Fit the 5th speed drive gear.
 2. Fit the 5th speed synchronizer oil seal.
 3. Using the tool (3a), fit the hub for the 5th speed sliding sleeve hub (3b) with the splining for the oil facing towards the gear.

<input type="checkbox"/>	Name	Country
3a	Drift	1.870.631.000

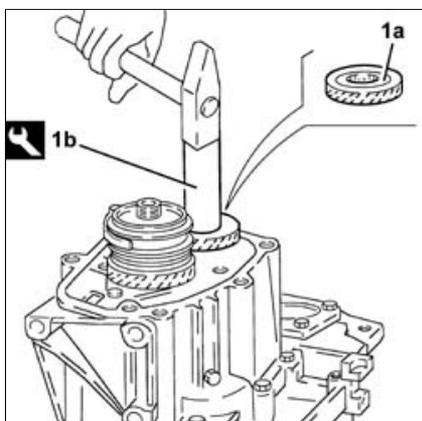
1. Fit the springs on the 5th speed sliding sleeve hub.
 2. Fit the 5th speed sliding sleeve.



The notches in the sleeve should be aligned with the springs.

3. Fit the 5th speed engagement fork.
4. Fit the rollers between the springs and the notches for the 5th speed sliding sleeve.
5. Fit the 5th speed synchronizer roller and spring retaining plate.

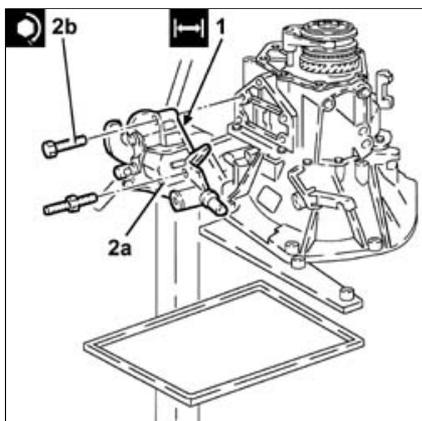
Place the 5th speed sliding sleeve in neutral to prevent losing the springs and rollers.



1. Fit the 5th speed driven gear (1a) on the layshaft using the tool (1b).

C	Name	Country
1b	Drift	1.870.631.000

Fit the ring nuts for the main and layshafts without tightening them.



1. Apply the recommended sealant to the contact surfaces between the gearbox casing and the gear engagement assembly cover.

C	Type	Component	Name	Qty.
1	Sealant	M/D GEARBOX SPEED ENGAGEMENT UNIT COVER	LOCTITE 573	-

2. Fit the gear engagement assembly cover (2a) and tighten the bolts (2b) the recommended torque.

C	Fastening	Component	Ø	Value (daNm)
2b	Bolt	M/D GEARBOX SPEED ENGAGEMENT UNIT COVER	M6	2

Engage any gear using the gear selector/engagement lever.

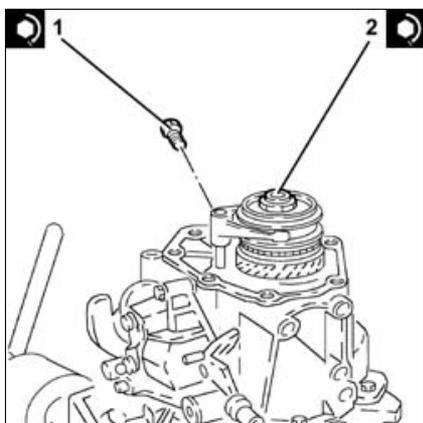
Engage 5th speed by pressing the main shaft selector fork.



The simultaneous engagement of two gears will cause the gearbox shafts to lock.

1. Tighten the 5th speed selector fork bolt to torque.

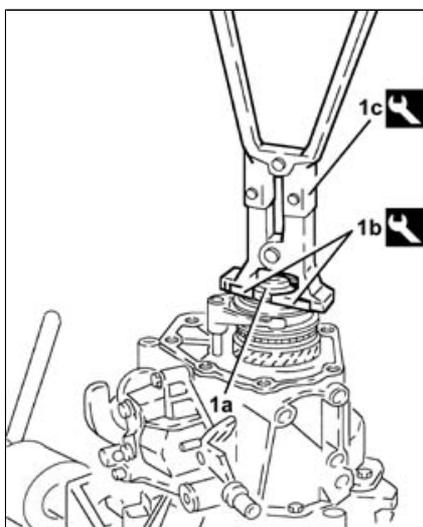
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<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
1	Bolt	5th ^a speed selector fork	M6	1.2

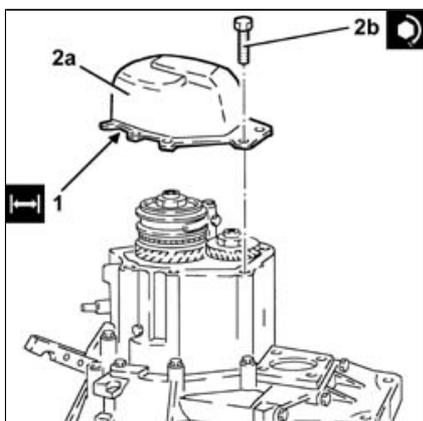
2. Tighten the ring nuts securing the main and layshaft gears to torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
2	Ring nut	GEAR SHAFTS	M20	11.8



1. Stake the ring nuts (1a) securing the main and layshaft 5th speed gear using the tools (1b) and (1c).

<input type="checkbox"/>	Name	Country
1b	Pair of heads	1.874.140.005
<input type="checkbox"/>	Name	Country
1b	Pliers	1.874.140.001



1. Apply the recommended sealant to the contact surfaces between the gearbox rear cover and the gearbox casing.

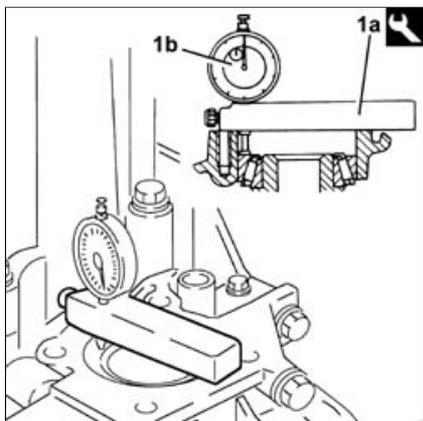
<input type="checkbox"/>	Type	Component	Name	Qty.
1	Sealant	GEARBOX REAR COVER	LOCTITE 573	-

2. Fit the gearbox rear cover (2a) and secure it tightening the bolts (2b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value (daNm)
2b	Bolt	GEARBOX REAR COVER	M6	0.5

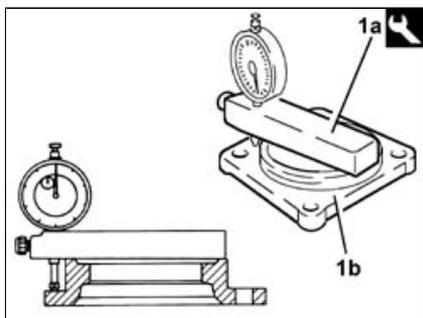
1. Position the tool (1a), complete with dial gauge (1b), on the differential flange support surface then position the pointer in contact with the conical roller bearing outer race.

<input type="checkbox"/>	Name	Country



1a	Support	1.895.655.000
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Zero the dial gauge with a pre-loading of 1 mm.

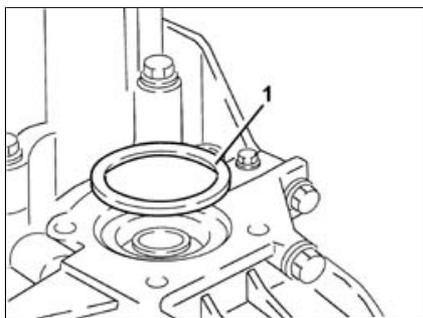


1. Position the tool (1a), complete with dial gauge on the differential flange (1b), as illustrated and measure the difference.

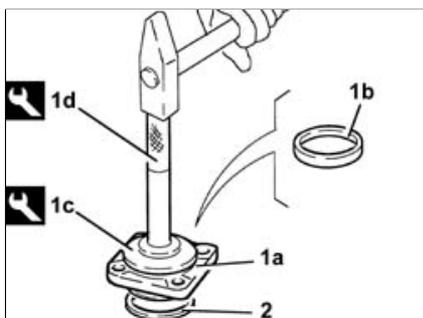
<input type="checkbox"/>	Name	Country
1a	Support	1.895.655.000

Calculate the size of the adjustment ring for pre-loading the differential bearings adding 0.12 mm to the difference measured.

0.12 mm corresponds to the interference for bedding in and the pre-loading of the differential bearings.



1. Place the differential bearing pre-loading adjustment shim of the size calculated or the next size up in the housing.



1. Fit the oil seal (1b) on the differential cover (1a) using the tools (1c) and (1d).

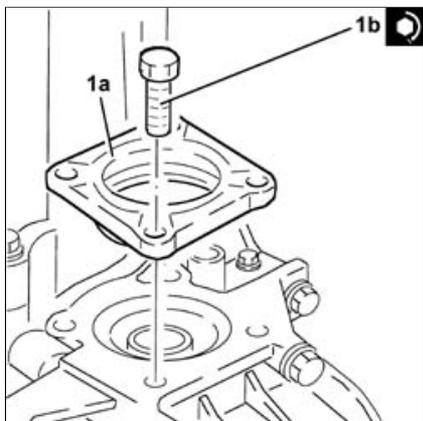
<input type="checkbox"/>	Name	Country
1c	Fitting tool	1.870.629.000
<input type="checkbox"/>	Name	Country
1d	Grip	1.870.007.000

2. Fit the gasket on the differential cover.

The oil seal and the gasket should always be replaced.

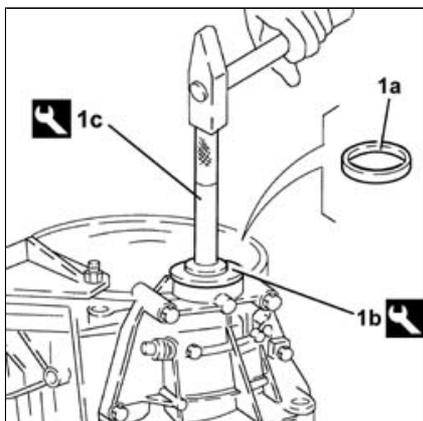
1. Fit the differential cover (1a) and tighten the bolts (1b) to the recommended torque.

<input type="checkbox"/>	Fastening	Component	Ø	Value
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				(daNm)
1b	Bolt	MAN G/BOX DIFF SEALING FLANGE/S	M8	2

1. Fit the gearbox casing differential support oil seal (1a) using the tools (1b) and (1c).



The oil seal should always be replaced.

<input type="checkbox"/>	Name	Country
1b	Fitting tool	1.870.630.000
<input type="checkbox"/>	Name	Country
1c	Grip	1.870.007.000

Fit the differential output shafts and outer three lobe joints.

Undo the fixings and remove the gearbox and differential from the tool.

Two operators are needed for this operation.

<input type="checkbox"/>	Name	Country
-	Support	1.871.001.014

Remove the support tool for the overhaul stand and place it back on the board.

Position the gearbox and differential on the tools used for the removal.

<input type="checkbox"/>	Name	Country
-	Mount	1.870.689.000
<input type="checkbox"/>	Name	Country
-	Gearbox mount	1.860.873.000