






Chapter 7 Part A: Manual transmission

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Degrees of difficulty

Easy , suitable for novice with little experience		Fairly easy , suitable for beginner with some experience		Fairly difficult , suitable for competent DIY mechanic		Difficult , suitable for experienced DIY mechanic		Very difficult , suitable for expert DIY or professional	
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Specifications

General

Type.	Manual, five forward speeds and reverse. Synchromesh on all forward speeds
Designation:	
1124 cc and 1360 cc models.	MA
1580 cc and larger-engined models.	BE3
Transmission code:	
H1A (1124 cc) and KDY (1360 cc) engines.	CB 04 or CB 60
HDZ (1124 cc) engine.	CB 06 or CB 62
K2D (1360 cc) engine.	CB 05 or CB 61
KDX (1360 cc) engine.	CB 60
B4A and BDY (1580 cc) engines.	CJ 84
D6E and DKZ (1905 cc) engines.	CJ 85
LFZ (1761 cc) engine.	CL 34 or CJ 84
RFX (1998 cc 8-valve) engine.	CL 35 or CJ 85
RFY (1998 cc 16-valve) engine.	CL 46

Note: Refer to Chapter 2 for further information on engine code identification

Ratios (typical)

Transmission code CB:	
1st	3.417 : 1
2nd	1.810 : 1
3rd	1.276 : 1
4th	0.975 : 1
5th	0.767 : 1
Reverse.	3.583 : 1
Final drive.	4.286 : 1
Transmission codes CJ and CL:	
1st	3.455 : 1
2nd	1.850 : 1
3rd	1.360 : 1
4th	1.069 : 1
5th	0.865 : 1
Reverse.	3.333 : 1
Final drive.	3.750 : 1

Lubrication

Recommended oil.	Total transmission BV 75/80W
Capacity.	2.0 litres
Recommended gearchange linkage grease.	Esso Norva 275 or Total Multis G6

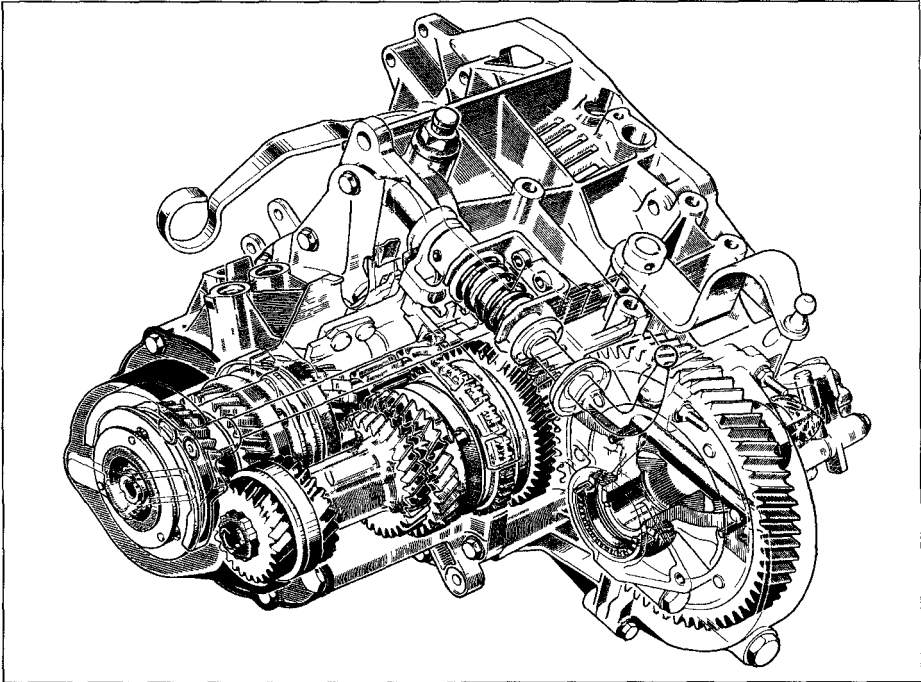
Torque wrench settings	Nm	lbf ft
MA transmission - 1124 cc and 1360 cc models		
Gearchange selector rod pivot bolts. . . . .	.17	13
Selector lever mounting bracket nuts. . . . .	.17	13
Oil filler/level plug. . . . .	.25	18
Oil drain plug. . . . .	.25	18
Clutch release bearing guide sleeve bolts. . . . .	.12	9
Reversing light switch. . . . .	.25	18
Left-hand engine/transmission mounting:		
Mounting bracket-to-transmission nuts. . . . .	.18	13
Mounting bracket-to-body bolts. . . . .	.25	18
Centre nut. . . . .	.38	28
Engine-to-transmission unit fixing bolts. . . . .	.35	26
Roadwheel bolts. . . . .	.90	66
BE3 transmission -1580 cc and larger-engined models		
Gearchange linkage bellcrank pivot bolt. . . . .	.28	21
Oil filler/level plug. . . . .	.22	16
Oil drain plug. . . . .	.35	26
Clutch release bearing guide sleeve bolts. . . . .	.12	9
Reversing light switch. . . . .	.25	18
Left-hand engine/transmission mounting:		
Mounting bracket-to-body bolts. . . . .	.25	18
Mounting stud. . . . .	.50	36
Centre nut. . . . .	.80	59
Engine-to-transmission unit fixing bolts. . . . .	.50	37
Clutch cable bracket retaining bolts ("pull-type" clutch only). . . . .	.18	13
Roadwheel bolts. . . . .	.90	66

1
General information

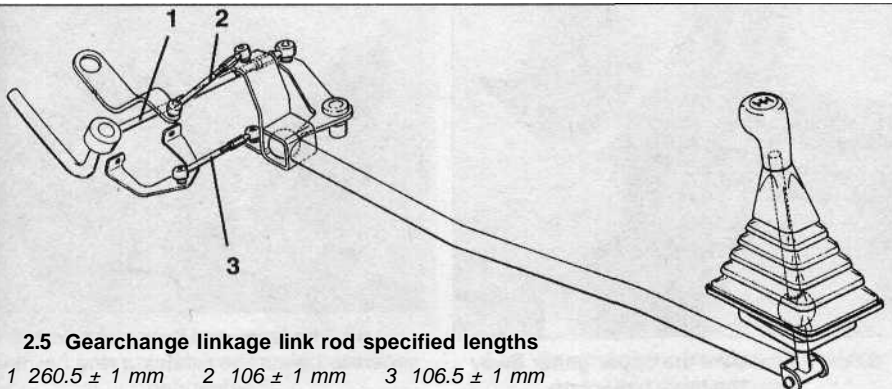
- 1 The transmission is contained in a cast-aluminium alloy casing bolted to the engine's left-hand end, and consists of the gearbox and final drive differential - often called a transaxle.
- 2 Drive is transmitted from the crankshaft via the clutch to the input shaft, which has a splined extension to accept the clutch friction plate, and rotates in sealed ball-bearings. From the input shaft, drive is transmitted to the output shaft, which rotates in a roller bearing at its right-hand end, and a sealed ball-bearing at its left-hand end. From the output shaft, the drive is transmitted to the differential crownwheel, which rotates with the differential case and planetary gears, thus driving the sun gears and driveshafts. The rotation of the planetary gears on their shaft allows the inner roadwheel to rotate at a slower speed than the outer roadwheel when the car is cornering.
- 3 The input and output shafts are arranged side by side, parallel to the crankshaft and driveshafts, so that their gear pinion teeth are in constant mesh. In the neutral position, the output shaft gear pinions rotate freely, so that drive cannot be transmitted to the crownwheel (see illustration).
- 4 Gear selection is via a floor-mounted lever and selector rod mechanism. The selector rod causes the appropriate selector fork to move its respective synchro-sleeve along the shaft, to lock the gear pinion to the synchro-hub.

Since the synchro-hubs are splined to the output shaft, this locks the pinion to the shaft, so that drive can be transmitted. To ensure that gear-changing can be made quickly and quietly, a synchro-mesh system is fitted to all forward gears, consisting of baulk rings and spring-loaded fingers, as well as the gear pinions and synchro-hubs. The synchro-mesh

cones are formed on the mating faces of the baulk rings and gear pinions.
5 Two different manual transmission units are used on the models covered in this manual; 1124 cc and 1360 cc models have the "MA" transmission, whereas 1580 cc and larger-engined models are fitted with the "BE3" unit.



1.1
Cutaway view of the BE3 manual transmission



2 Gearchange linkage - general information and adjustment



1 If a stiff, sloppy or imprecise gearchange leads you to suspect that a fault exists within the linkage, first dismantle it completely, and check it for wear or damage as described in Section 3. Reassemble it, applying a smear of the special grease to all bearing surfaces.

2 If this does not cure the fault, the car should be examined by an expert, as the fault must lie within the transmission itself. There is no adjustment as such in the linkage.

3 On 1580 cc and larger-engined models, note that, while the length of the link rods can be altered as described below, this is for initial setting-up only, and is not intended to provide a form of compensation for wear. If the link rods have been renewed, or if the length of the originals is incorrect, adjust them as follows.

Link rod adjustment - 1580 cc and larger-engined models

4 Firmly apply the handbrake, then jack up the front of the vehicle and support it on axle stands. Access to the link rods is poor, but they can be reached both from above and below the vehicle.

5 Working in (or under) the engine compartment, measure the length of each link rod, and compare this to the length specified (see illustration). Note the measurements

given are the distances between the centre points of the link rod balljoints, and not the total length of the rod.

6 If adjustment is necessary, slacken the locknut, then carefully lever the relevant link rod off its balljoint on the transmission unit. Turn the end of the rod until the specified distance between the link rod balljoint centres is obtained, then press the disconnected end of the rod firmly back onto its balljoint and securely tighten the link rod locknut.

7 Once all link rod lengths are correctly set, check that all gears can be selected, and that the gearchange lever returns properly to its correct at-rest (neutral) position.

3 Gearchange linkage - removal and refitting



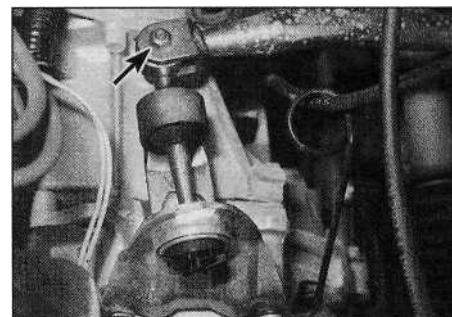
Removal

1 Firmly apply the handbrake, then jack up the front of the vehicle and support it on axle stands.

1124 cc and 1360 cc models

2 Slacken and remove the nut and washer, then withdraw the pivot bolt from each end of the selector rod. Disengage the rod from gearchange lever and selector lever, and remove it from underneath the vehicle (see illustration).

3 Undo the two nuts securing the selector lever mounting bracket to the transmission



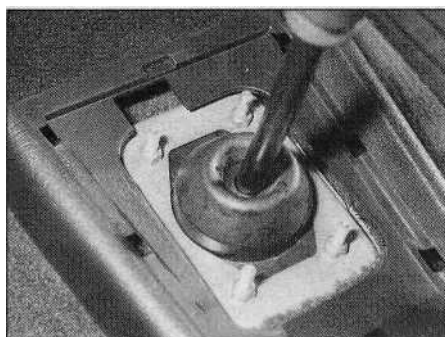
3.2 Transmission selector lever arrangement - 1124 cc and 1360 cc models. Selector rod pivot bolt (arrowed)

housing, then remove the bracket and lever assembly from the transmission.

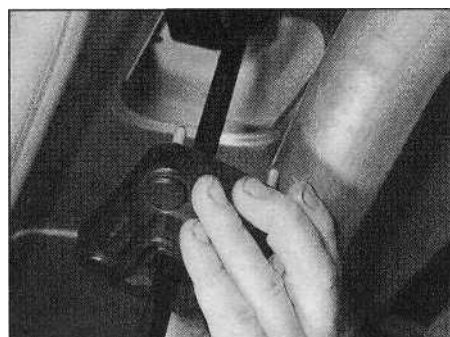
4 Inspect all the linkage components for signs of wear or damage, paying particular attention to the selector lever balljoint, and renew worn components as necessary. If necessary, remove the gearchange lever as follows.

5 Where a leather gaiter is fitted to the lever, carefully prise the gearchange lever trim panel out from the centre console, then release the pop fastener and velcro strip, and remove the gaiter. Where a rubber gaiter is fitted, pull the knob from the gearchange lever. Prise the gearchange lever trim panel out from the centre console and remove the gaiter; alternatively, undo the two retaining screws securing the small centre console to the floor, and remove the gaiter and console assembly from the vehicle (as applicable). Undo the four retaining nuts, then lower the gearchange lever out of position and remove it from underneath the vehicle (see illustrations).

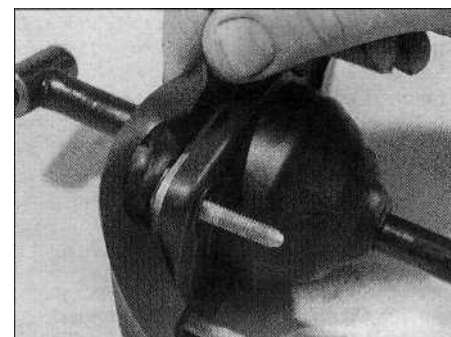
6 Peel back the lower gaiter from the base of the gearchange lever, then disengage the lever mounting plate, and slide the upper gaiter up the lever to gain access to the gearchange lever pivot ball. Examine the lever components for signs of wear or damage, paying particular attention to the rubber gaiters, and renew components as necessary. The lever can be separated from its baseplate after the retaining ring has been undipped (see illustrations).



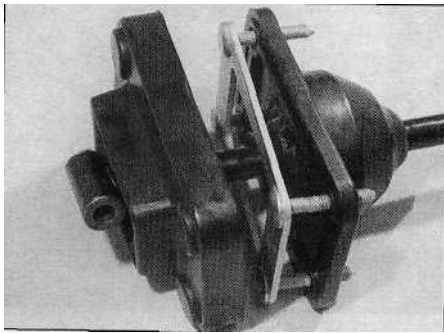
3.5a Slacken and remove the four retaining nuts ...



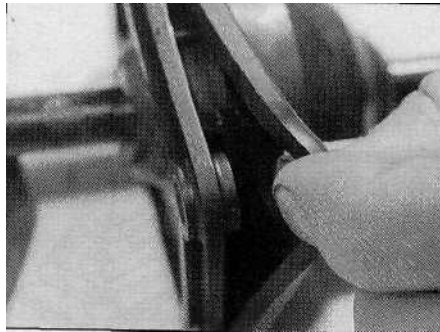
3.5b ... then remove the gearchange lever from underneath the vehicle



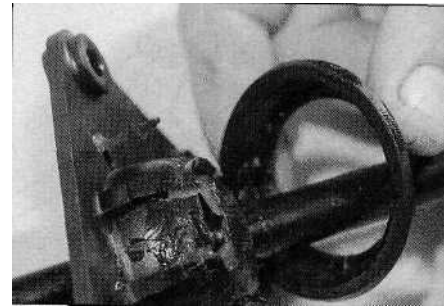
3.6a Peel back the lower gaiter ...



3.6b ... then disengage the mounting plate...



3.6c ... and peel the upper gaiter away from the lever baseplate



3.6d The lever and baseplate can be separated once the retaining ring has been undipped

1580 cc and larger-engined models

7 Slacken and remove the nut, and withdraw the pivot bolt securing the selector rod to the base of the gearchange lever.

8 Using a flat-bladed screwdriver, carefully lever the three link rods off their balljoints on the transmission (**see illustration**). Disengage the selector rod from the bellcrank pivot, and remove it from underneath the vehicle.

9 Undo the two retaining screws, and unclip the heat shield from the top of the steering gear assembly.

10 Carefully prise the plastic cap off the bolt securing the gearchange linkage bellcrank to the subframe.

11 Slacken and remove the bellcrank pivot bolt and washer, then manoeuvre the bellcrank and link rod out from under the vehicle, and recover the spacer and pivot bushes from the centre of the bellcrank.

12 Inspect all the linkage components for signs of wear or damage, paying particular attention to the pivot bushes and link rod balljoints, and renew worn components as necessary. If necessary, the gearchange lever can be removed and inspected as described above in paragraphs 5 and 6.

Refitting

1124 cc and 1360 cc models

13 Refitting is a reversal of the removal procedure, noting the following points:

(a) *Before refitting, apply a smear of the*

special grease (see Specifications) to the selector lever and rod pivots.

(b) *Ensure the gearchange lever rubber gaiters are correctly seated before refitting the lever assembly to the vehicle.*

(c) *Tighten the selector rod pivot bolts and the selector lever bracket nuts to the specified torque.*

1580 cc and larger-engined models

14 Refitting is a reversal of the removal procedure, noting the following points:

(a) *Before refitting, check and if necessary adjust the link rod lengths as described in Section 2.*

(b) *Apply a smear of the special grease (see Specifications) to the gearchange lever pivot ball, the link rod balljoints and the bellcrank ball and pivot bushes.*

(c) *Ensure the gearchange lever rubber gaiters are correctly seated before refitting the lever assembly to the vehicle.*

(d) *Tighten the bellcrank pivot bolt to the specified torque, and ensure the link rods are securely pressed onto their balljoints.*

4 Oil seals - renewal

Driveshaft oil seals

1 Chock the rear wheels, apply the handbrake, then jack up the front of the car

and support it on axle stands. Remove the appropriate front roadwheel.

2 Drain the transmission oil as described in Chapter 1.

3 Slacken and remove the three nuts securing the balljoint to the lower suspension arm, then withdraw the bolts and free the balljoint from the arm. Discard the nuts - new ones must be used on refitting.

Right-hand seal

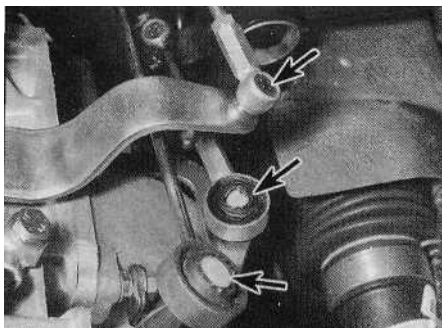
4 Loosen the two intermediate bearing retaining bolt nuts, then rotate the bolts through 90° so that their offset heads are clear of the bearing outer race.

5 Carefully pull the swivel hub assembly outwards, and pull on the inner end of the driveshaft to free the intermediate bearing from its mounting bracket.

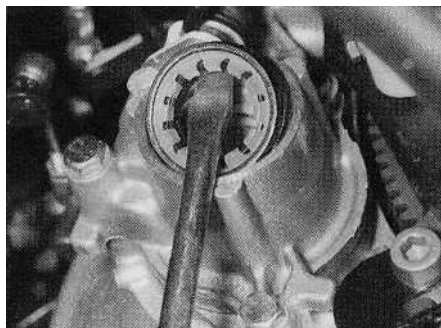
6 Once the driveshaft end is free from the transmission, slide the dust seal off the inner end of the shaft, noting which way around it is fitted, and support the inner end of the driveshaft to avoid damaging the constant velocity joints or gaiters.

7 Carefully prise the oil seal out of the transmission, using a large flat-bladed screwdriver (**see illustration**).

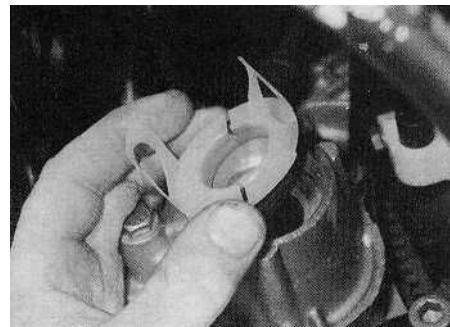
8 Remove all traces of dirt from the area around the oil seal aperture, then apply a smear of grease to the outer lip of the new oil seal. Fit the new seal into its aperture, and drive it squarely into position using a suitable tubular drift (such as a socket) which bears only on the hard outer edge of the seal, until it



3.8 On 1580 cc and larger-engined models, disconnect the three gearchange linkage link rods (arrowed) from their transmission balljoints



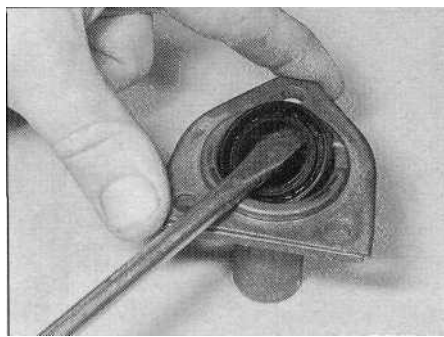
4.7 Use a large flat-bladed screwdriver to prise the driveshaft oil seals out of position



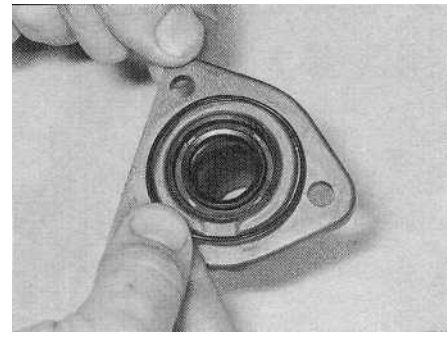
4.8a Fit the new seal to the transmission, noting the plastic seal protector ...



4.8b ... and tap it into position using a tubular drift



4.22 Removing the input shaft seal from the guide sleeve



4.25a Fit a new O-ring/gasket (as applicable)...

abuts its locating shoulder. If the seal was supplied with a plastic protector sleeve, leave this in position until the driveshaft has been refitted (**see illustrations**).

9 Thoroughly clean the driveshaft splines, then apply a thin film of grease to the oil seal lips and to the driveshaft inner end splines.

10 Slide the dust seal into position on the end of the shaft, ensuring that its flat surface is facing the transmission.

11 Carefully locate the inner driveshaft splines with those of the differential sun gear, taking care not to damage the oil seal, then align the intermediate bearing with its mounting bracket, and push the driveshaft fully into position. If necessary, use a soft-faced mallet to tap the outer race of the bearing into position in the mounting bracket.

12 Ensure the intermediate bearing is correctly seated, then rotate its retaining bolts back through 90° so that their offset heads are resting against the bearing outer race, and tighten the retaining nuts to the specified torque. Remove the plastic seal protector (where supplied), and slide the dust seal tight up against the oil seal.

13 Align the balljoint with the lower arm, and fit the three retaining bolts. Fit new retaining nuts to the bolts, and tighten them to the specified torque setting.

14 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

15 Refill the transmission with the specified

type and amount of fluid/oil, and check the level using the information given in Chapter 1.

Left-hand seal

16 Pull the swivel hub assembly outwards and withdraw the driveshaft inner constant velocity joint from the transmission, taking care not to damage the driveshaft oil seal. Support the driveshaft, to avoid damaging the constant velocity joints or gaiters.

17 Renew the oil seal as described above in paragraphs 7 to 9.

18 Carefully locate the inner constant velocity joint splines with those of the differential sun gear, taking care not to damage the oil seal, and push the driveshaft fully into position. Where fitted, remove the plastic protector from the oil seal.

19 Carry out the operations described above in paragraphs 13 to 15.

Input shaft oil seal

20 Remove the transmission as described in Section 7.

21 Undo the three bolts securing the clutch release bearing guide sleeve in position, and slide the guide off the input shaft, along with its O-ring or gasket (as applicable). Recover any shims or thrustwashers which have stuck to the rear of the guide sleeve, and refit them to the input shaft.

22 Carefully lever the oil seal out of the guide using a suitable flat-bladed screwdriver (**see illustration**).

23 Before fitting a new seal, check the input

shaft's seal rubbing surface for signs of burrs, scratches or other damage, which may have caused the seal to fail in the first place. It may be possible to polish away minor faults of this sort using fine abrasive paper; however, more serious defects will require the renewal of the input shaft. Ensure that the input shaft is clean and greased, to protect the seal lips on refitting.

24 Dip the new seal in clean oil, and fit it to the guide sleeve.

25 Fit a new O-ring or gasket (as applicable) to the rear of the guide sleeve, then carefully slide the sleeve into position over the input shaft. Refit the retaining bolts and tighten them to the specified torque setting (**see illustrations**).

26 Take the opportunity to inspect the clutch components if not already done (Chapter 6). Finally, refit the transmission as described in Section 7.

Selector shaft oil seal

1124 cc and 1360 cc models

27 On 1124 cc and 1360 cc models, to renew the selector shaft seal, the transmission must be dismantled. This task should therefore be entrusted to a Citroen dealer or transmission specialist.

1580 cc and larger-engined models

28 Park the car on level ground, apply the handbrake, then jack up the front of the vehicle and support it on axle stands. Remove the left-hand front roadwheel, and unclip the access cover from the centre of the wheel arch liner.

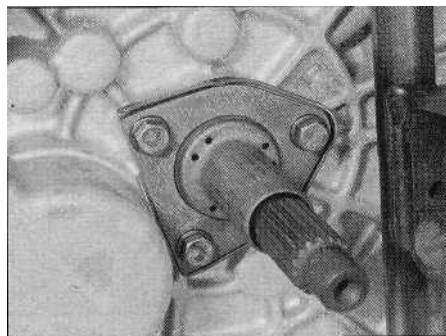
29 Using a large flat-bladed screwdriver, lever the link rod balljoint off the transmission selector shaft, and disconnect the link rod.

30 Carefully prise the selector shaft seal out of the housing, and slide it off the end of the shaft (**see illustrations**).

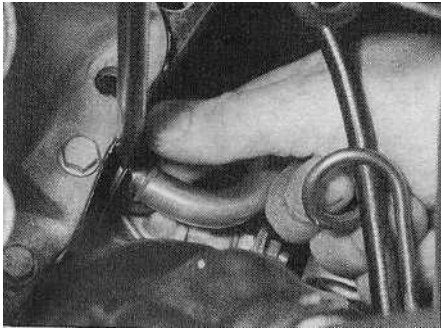
31 Before fitting a new seal, check the selector shaft's seal rubbing surface for signs of burrs, scratches or other damage, which may have caused the seal to fail in the first place. It may be possible to polish away minor faults of this sort using fine abrasive paper; however, more serious defects will require the renewal of the selector shaft.



4.25b ... refit the guide sleeve over the input shaft...



4.25c ... and secure it in position with its three retaining bolts



4.30a On 1580 cc and larger-engined models, use a large flat-bladed screwdriver to prise the selector shaft seal out of position ...

32 Apply a smear of grease to the new seal's outer edge and sealing lip, then carefully slide the seal along the selector rod. Press the seal fully into position in the transmission housing.

33 Reconnect the link rod to the selector shaft, ensuring that its balljoint is pressed firmly onto the shaft. Lower the car to the ground.

5 Reversing light switch - testing, removal and refitting



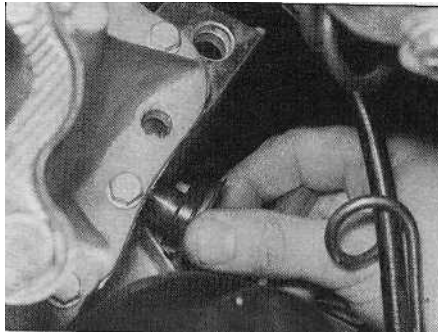
Testing

1 The reversing light circuit is controlled by a plunger-type switch that is screwed into the top of the transmission casing. If a fault develops in the circuit, first ensure that the circuit fuse has not blown.

2 To test the switch, disconnect the wiring connector, and use a multimeter (set to the resistance function) or a battery-and-bulb test circuit to check that there is continuity between the switch terminals only when reverse gear is selected. If this is not the case, and there are no obvious breaks or other damage to the wires, the switch is faulty, and must be renewed.

Removal

3 On some 1580 cc and larger-engined models, to improve access to the switch, it



4.30b ... then slide the seal off the shaft

may be necessary to remove the air intake duct(s) as described in the relevant Part of Chapter 4. It may also be necessary to remove the metal plate from the top of the transmission; the plate is retained by one of the transmission to engine unit bolts, and by a second bolt securing the plate to the top of the transmission housing.

4 Disconnect the wiring connector, then unscrew it from the transmission casing along with its sealing washer (see illustration).

Refitting

5 Fit a new sealing washer to the switch, then screw it back into position in the top of the transmission housing and tighten it to the specified torque setting. Reconnect the wiring connector, and test the operation of the circuit. Refit any components removed for access.

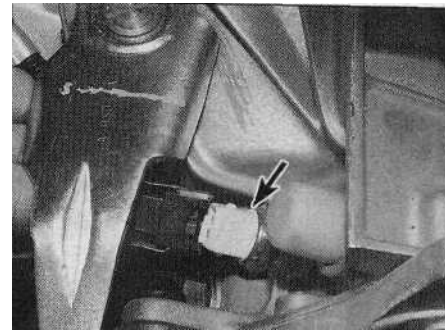
6 Speedometer drive - removal and refitting



Removal

1 Chock the rear wheels, firmly apply the handbrake, then jack up the front of the car and support it on axle stands. The speedometer drive is situated on the rear of the transmission housing, next to the inner end of the right-hand driveshaft.

2 Pull out the speedometer cable retaining



5.4 Disconnecting the wiring connector from the reversing light switch (arrowed)

pin, and disconnect the cable from the speedometer drive. Where necessary, disconnect the wiring connector from the speedometer drive.

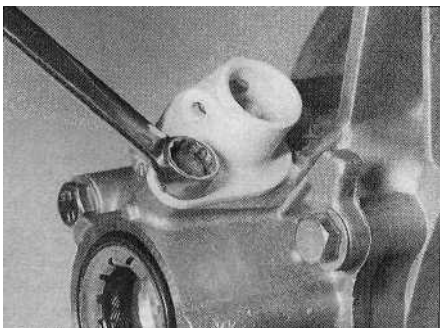
3 Slacken and remove the retaining bolt, along with the heat shield (where fitted), and withdraw the speedometer drive and driven pinion assembly from the transmission housing, along with its O-ring (see illustrations).

4 If necessary, the pinion can be slid out of the housing, and the oil seal can be removed from the top of the housing. Examine the pinion for signs of damage, and renew if necessary. Renew the housing O-ring as a matter of course.

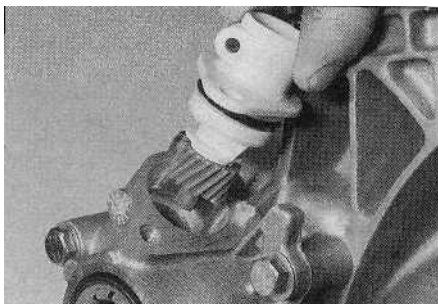
5 If the driven pinion is worn or damaged, also examine the drive pinion in the transmission housing for similar signs.

6 On 1124 cc and 1360 cc models, to renew the drive pinion, the transmission unit must be dismantled and the differential gear removed. This task should therefore be entrusted to a Citroen dealer or a transmission specialist.

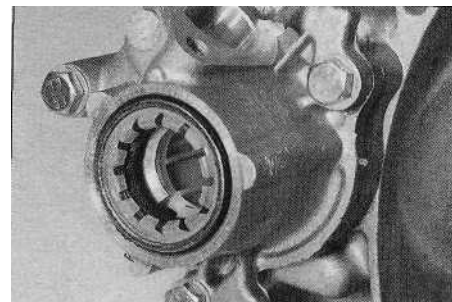
7 On 1580 cc and larger-engined models, to remove the drive pinion, first disengage the right-hand driveshaft from the transmission, as described in paragraphs 1 to 7 of Section 4. Undo the three retaining bolts, and remove the speedometer drive housing from the transmission, along with its O-ring. Remove the drive pinion from the differential gear, and recover any adjustment shims from the gear (see illustrations).



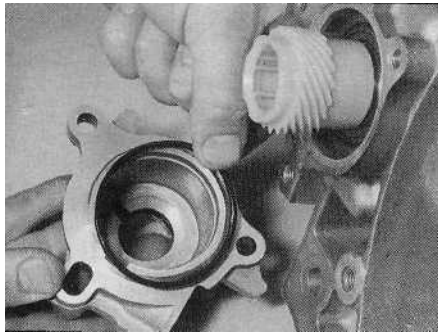
6.3a Slacken and remove the retaining



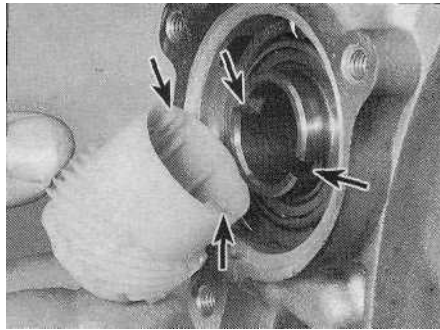
6.3b ... then withdraw the speedometer drive from the transmission (transmission removed for clarity - type BE3 shown)



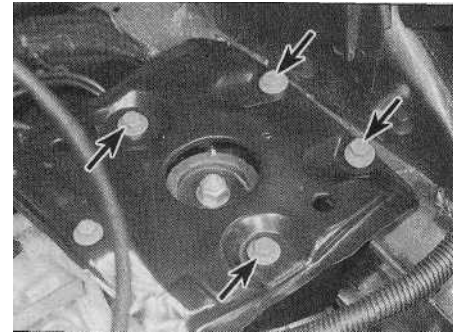
6.7a On 1580 cc and larger-engined models (BE3 transmission), undo the three retaining bolts ...



6.7b ... and remove the housing, O-ring and drive pinion from the transmission (shown with transmission removed for clarity)



6.8 On refitting, ensure the drive pinion dogs are correctly engaged with the gear slots (arrowed)



7.3a Undo the four retaining bolts ...

Refitting

8 On 1580 cc and larger-engined models, where the drive pinion has been removed, refit the adjustment shims to the differential gear, then locate the speedometer drive on the gear, ensuring it is correctly engaged in the gear slots (**see illustration**). Fit a new O-ring to the rear of the speedometer drive housing, then refit the housing to the transmission and securely tighten its retaining bolts. Inspect the driveshaft oil seal for signs of wear, and renew if necessary. Refit the driveshaft to the transmission, using the information given in Section 4.

9 On all models, apply a smear of grease to the lips of the seal and to the driven pinion shaft, and slide the pinion into position in the speedometer drive.

10 Fit a new O-ring to the speedometer drive and refit it to the transmission, ensuring that the drive and driven pinions are correctly engaged.

11 Refit the retaining bolt and the heat shield (where fitted), and tighten the bolt. Where necessary, reconnect the wiring connector to the speedometer drive.

12 Apply a smear of oil to the speedometer cable O-rings, then reconnect the cable to the drive, and secure it in position with the rubber retaining pin. Lower the vehicle to the ground.

7 Manual transmission - removal and refitting

Removal

1 Chock the rear wheels, then firmly apply the handbrake. Jack up the front of the vehicle, and securely support it on axle stands. Remove both front roadwheels.

2 Drain the transmission oil as described in Chapter 1, then refit the drain and filler plugs, and tighten them to their specified torque settings.

3 Remove the battery and battery tray as described in Chapter 5. Slacken and remove the battery support tray retaining bolts, then free the wiring from its retaining clips on the edge of the tray, and remove the tray (**see illustrations**).

4 Where necessary, to improve access to the top of the transmission unit remove the air cleaner housing and/or intake duct (as applicable) as described in Chapter 4.

5 Remove the starter motor as described in Chapter 5.

6 Fully slacken the clutch cable locknut and adjuster nut, then free the inner and outer cable end fittings from the mounting bracket

and release lever. Release the cable from any relevant retaining clips, and position it clear of the transmission.

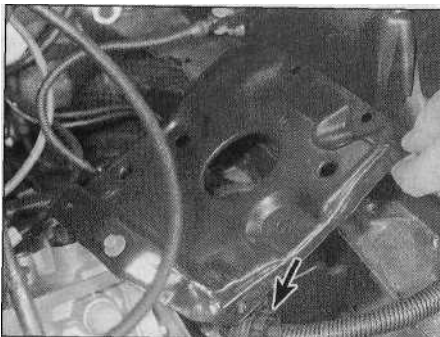
7 Disconnect the wiring connector from the reversing light switch and, where necessary, the speedometer drive housing. Undo the retaining bolts, and disconnect the earth straps from the top of the transmission housing (**see illustration**). Free the wiring from any relevant retaining clips, and position it clear of the transmission unit.

8 On 1124 cc and 1360 cc models, slacken and remove the nut and washer, then withdraw the pivot bolt and disconnect the selector rod from the transmission lever. Where necessary, undo the bolt securing the exhaust front pipe to its transmission mounting bracket.

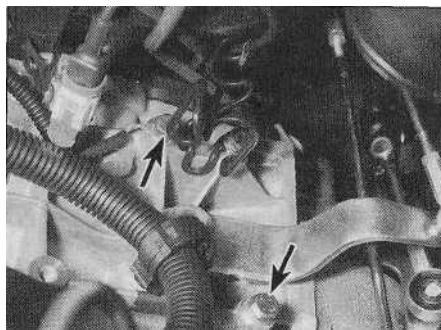
9 On 1580 cc and larger-engined models, using a flat-bladed screwdriver, carefully lever the three gearchange mechanism link rods off their respective balljoints on the transmission (**see illustration**). Position the rods clear of the transmission unit.

10 On models with power steering, undo the nuts securing the power steering pipe to the underside of the transmission, and free the pipe from its retaining studs (**see illustrations**).

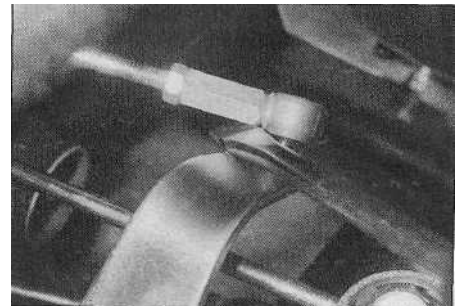
11 On 1580 cc and larger-engined models,



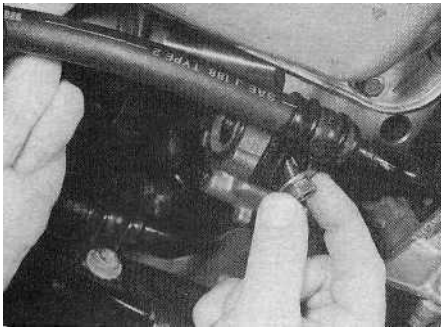
7.3b ... and remove the battery support tray. Note the wiring retaining clip (arrowed)



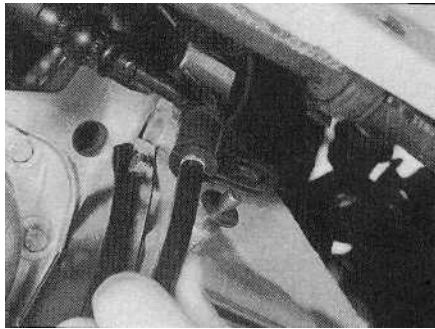
7.7 Slacken and remove the bolts (arrowed) and disconnect the earth straps from the transmission - BE3 transmission shown



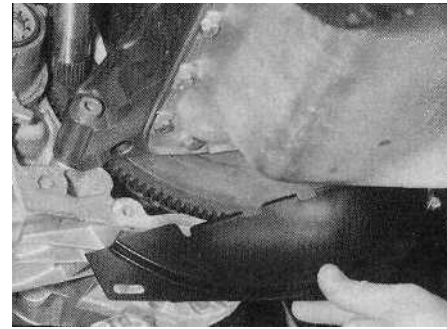
7.9 On 1580 cc and larger-engined models (BE3 transmission), carefully lever the gearchange link rods off their transmission balljoints using a large flat-bladed screwdriver



7.10a On models with power steering, undo the retaining nuts ...



7.10b ... and free the power steering pipe from its mountings on the underside of the transmission



7.11 On 1580 cc and larger-engined models, remove the flywheel lower cover plate

undo the retaining bolts, and remove the flywheel lower cover plate (where fitted) from the transmission (**see illustration**).

12 Withdraw the rubber retaining pin, disconnect the speedometer cable from the drive housing, and free it from any relevant retaining clips (**see illustrations**).

13 Slacken and remove the three nuts securing the balljoint to the left-hand lower suspension arm, then withdraw the bolts and free the balljoint from the arm. Discard the nuts - new ones must be used on refitting. Repeat the procedure on the right-hand side.

14 Release the inner end of the right-hand driveshaft from the transmission, as described in paragraphs 4 to 6 of Section 4.

15 To release the left-hand driveshaft inner constant velocity joint from the transmission, pull the swivel hub assembly outwards and withdraw the joint from transmission, taking great care not to damage the driveshaft oil seal. Support the driveshaft, to avoid damaging the constant velocity joints or gaiters.

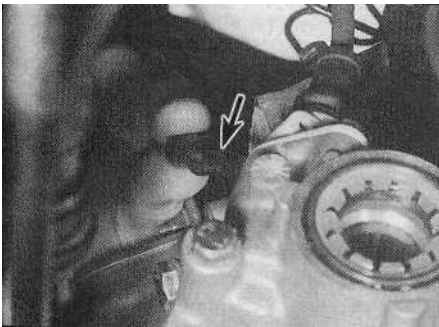
16 Place a jack with a block of wood beneath the engine, to take the weight of the engine. Alternatively, attach a couple of lifting eyes to the engine, and fit a hoist or support bar to take the engine weight.

17 Place a jack and block of wood beneath the transmission, and raise the jack to take the weight of the transmission.

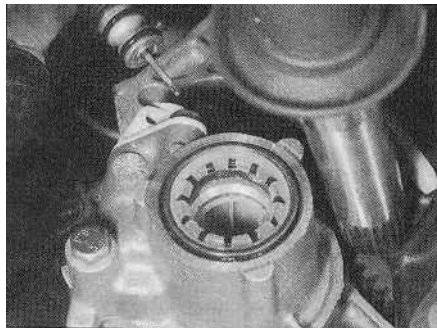
18 Slacken and remove the centre nut and washer from the left-hand engine/transmission mounting. Undo the two bolts securing the mounting bracket assembly to the vehicle body, and remove the mounting bracket assembly (**see illustrations**).

19 On 1124 cc and 1360 cc models, undo the three retaining nuts and remove the mounting plate from the top of the transmission.

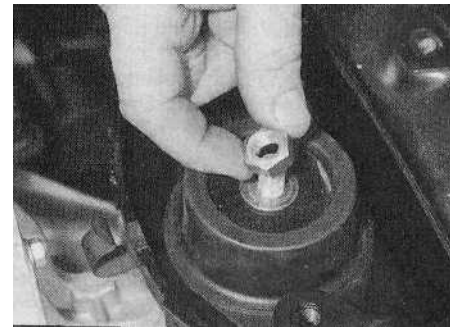
20 On 1580 cc and larger-engined models, slide the spacer off the mounting stud, then unscrew the stud from the top of the transmission housing and remove it along with its washer. If the mounting stud is tight, a universal stud extractor can be used to unscrew it (**see illustrations**).



7.12a Withdraw the rubber retaining pin (arrowed)...



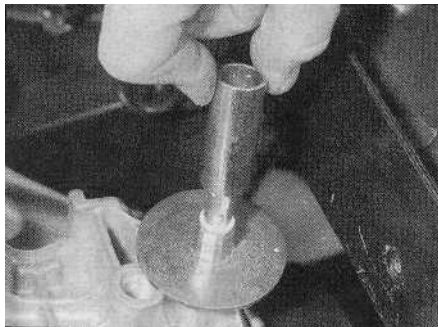
7.12b ... and disconnect the speedometer cable from the transmission - BE3 transmission shown



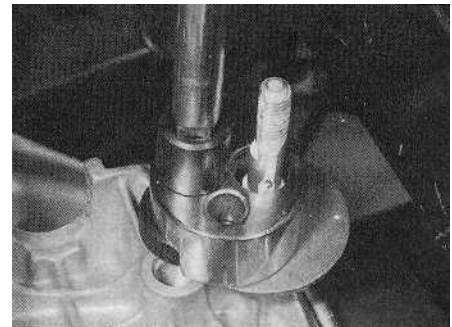
7.18a Remove the centre nut and washer from the left-hand mounting ...



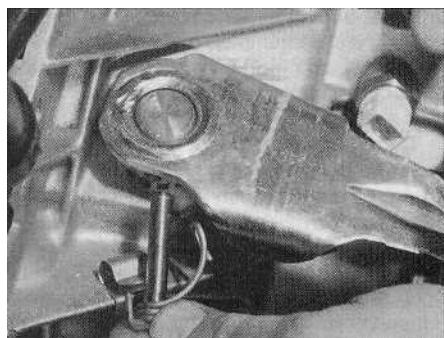
7.18b ... then undo the two retaining bolts and remove the mounting bracket assembly



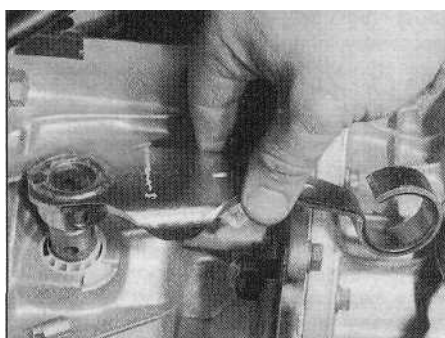
7.20a On 1580 cc and larger-engined models, slide the spacer off the mounting stud ...



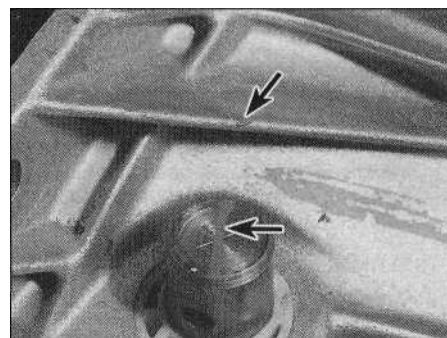
7.20b ... and unscrew the mounting stud. If the stud is tight, use a universal stud extractor to unscrew it



7.21a On models with a "pull-type" clutch, withdraw the retaining pin ...



7.21 b ... then remove the clutch release lever...



7.21c ... and make an alignment mark between the release fork shaft and transmission housing (arrowed)

21 On models with a "pull-type" clutch release mechanism (see Chapter 6), tap out the retaining pin or unscrew the retaining bolt (as applicable) and remove the clutch release lever from the top of the release fork shaft. This is necessary to allow the fork shaft to rotate freely, to disengage from the release bearing as the transmission is pulled away from the engine. Make an alignment mark across the centre of the clutch release fork shaft using a scribe, paint or similar, and mark its position relative to the transmission housing (see illustrations). Undo the retaining bolts, and remove the clutch cable bracket from the top of the transmission housing.

22 With the jack positioned beneath the transmission taking the weight, slacken and remove the remaining bolts securing the transmission housing to the engine. Note the correct fitted positions of each bolt, and the necessary brackets, as they are removed, to use as a reference on refitting. Make a final check that all components have been disconnected, and are positioned clear of the transmission so that they will not hinder the removal procedure.

23 With the bolts removed, move the trolley jack and transmission to the left, to free it from its locating dowels.

24 Once the transmission is free, lower the jack and manoeuvre the unit out from under

the car (see illustration). Remove the locating dowels from the transmission or engine if they are loose, and keep them in a safe place.

25 On models with a "pull-type" clutch, make a second alignment mark on the transmission housing, marking the relative position of the release fork mark after removal, noting the angle at which the release fork is positioned (see illustration 7.26a). This mark can then be used to position the release fork before refitting, to ensure that the fork correctly engages with the clutch release bearing as the transmission is installed.

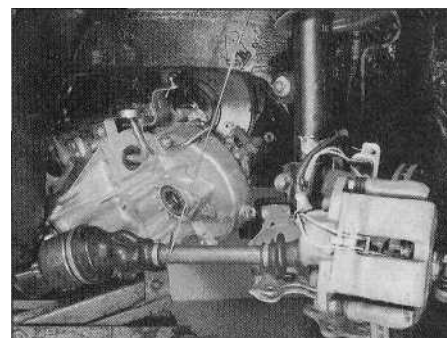
Refitting

26 The transmission is refitted by a reversal of the removal procedure, bearing in mind the following points:

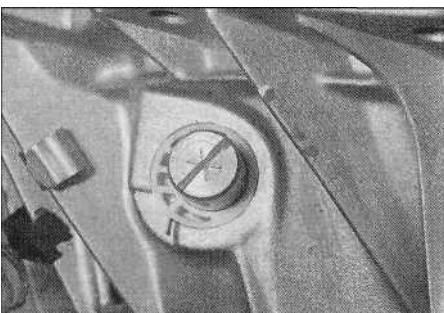
- (a) Apply a little high-melting-point grease to the splines of the transmission input shaft. Do not apply too much, otherwise there is a possibility of the grease contaminating the clutch friction plate.
- (b) Ensure the locating dowels are correctly positioned prior to installation.
- (c) On models with a "pull-type" clutch, before refitting, position the clutch release bearing so that its HAUT mark is at the top, and the BAS mark is at the bottom, and align the release fork shaft mark with the second mark made on the transmission housing (see illustrations).

This will ensure that the release fork and bearing will engage correctly as the transmission is refitted to the engine. If the bearing and fork are correctly engaged, the mark on the shaft should be aligned with the original mark made on the transmission housing. Ensure the release fork and bearing are correctly engaged before bolting the transmission onto the engine.

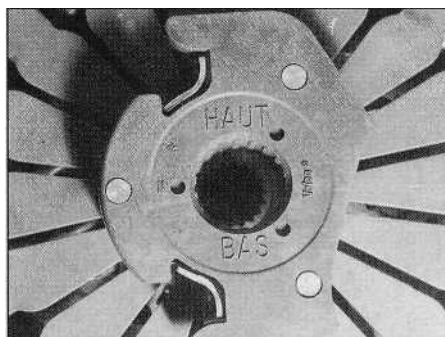
- (d) On 1580 cc and larger-engined models, apply thread-locking fluid to the left-hand engine/transmission mounting stud threads, prior to refitting it to the transmission (see illustration). Tighten the stud to the specified torque.



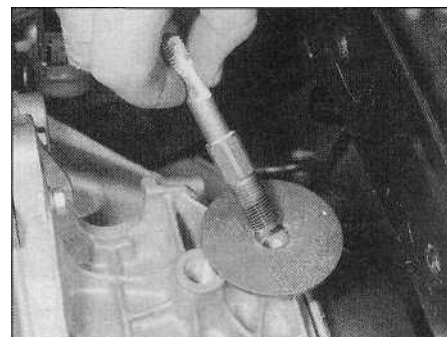
7.24 Removing the transmission from the vehicle



7.26a On models with a "pull-type" clutch, prior to refitting the transmission, align the release fork mark with the second mark made on removal...



7.26b ... and position the release bearing so that its HAUT mark is at the top, and the BAS mark at the bottom



7.26c On 1580 cc and larger-engined models, apply thread-locking fluid to the mounting stud threads

- (e) *Tighten all nuts and bolts to the specified torque (where given).*
- (f) *Renew the driveshaft oil seals and refit the driveshafts to the transmission, using the information given in Section 4.*
- (g) *On completion, refill the transmission with the specified type and quantity of lubricant, as described in Chapter 1.*

8 Manual transmission overhaul - general information

Overhauling a manual transmission unit is a difficult and involved job for the DIY home mechanic. In addition to dismantling and reassembling many small parts, clearances

must be precisely measured and, if necessary, changed by selecting shims and spacers. Internal transmission components are also often difficult to obtain, and in many instances, extremely expensive. Because of this, if the transmission develops a fault or becomes noisy, the best course of action is to have the unit overhauled by a specialist repairer, or to obtain an exchange reconditioned unit.

Nevertheless, it is not impossible for the more experienced mechanic to overhaul the transmission, provided the special tools are available, and the job is done in a deliberate step-by-step manner, so that nothing is overlooked.

The tools necessary for an overhaul include

internal and external circlip pliers, bearing pullers, a slide hammer, a set of pin punches, a dial test indicator, and possibly a hydraulic press. In addition, a large, sturdy workbench and a vice will be required.

During dismantling of the transmission, make careful notes of how each component is fitted, to make reassembly easier and more accurate.

Before dismantling the transmission, it will help if you have some idea what area is malfunctioning. Certain problems can be closely related to specific areas in the transmission, which can make component examination and replacement easier. Refer to the Fault finding Section at the end of this manual for more information.