MANUAL TRANSMISSION AND CLUTCH 16B
(MT-75/4x4)
(Sierra and Escort)

Index

0392

Manual transmission oil filler capacity		1,2 litres
Transfer box oil filler capacity		0,5 litres
Manual transmission oil level		0 to 5 mm below lower edge of oil level check plug
Transfer box oil level		18 mm below lower edge of oil level check plug
Manual transmission fluid	Ford Specification	ESD-M2C186-A
Transfer box fluid	Ford Specification or optionally	SQM-2C9010-B SQM-2C9010-A, ESD-M2C166-A
Grease ..	Ford Specification ESD-M1C220-A	For input shaft splines and clutch release bearing sliding surface on guide sleeve ("Microlube" SC-261 supplied by Messrs Klüber)
	Ford Specification SM-1C1021	Sealing lips of radial oil seals of: - Output flange - Driveshaft to front axle - Selector shaft ball sleeve
	MOLYKOTE FB 180	Annulus/planetary gear carrier thrust washer
Oil	ATF Shell Donax TM	Shim between planetary gear carrier and drive plate
		Plain bearing in short output shaft to guide planetary gear carrier
Thread locking compound	Loctite 242	Output flange nut
		Bolts of bearing housing in transfer box
Thread locking paint	Z115 Blue	Two bolts securing transfer box housing to rear transmission housing
Sealer	Ford Specification ESK-M4G242-A	Front transmission housing to rear transmission housing
	Ford Specification ESK-M4G242-A	Transfer box to rear transmission housing

NOTE: All the running and sliding surfaces of transmission components for which no particular lubrication requirements are specified should be oiled with the appropriate transmission fluid.

Annulus end float in relation to planetary gear carrier	0,5 to 0,7 mm

1290

TECHNICAL DATA (cont'd) MT-75/4x4

Tightening Torques

	Escort RS Cosworth Nm	Sierra Cosworth '90 Nm
Cylinder block flange bolts in transmission housing	29 to 41	41 to 58
Transmission housing flange bolts in sump	41 to 58	41 to 58
Gearshift support bracket to transfer box and to rear transmission housing	21 to 29	21 to 29
Transmission crossmember to transmission mounting	52 to 65	50 to 70
Transmission crossmember to floor assembly	21 to 28	20 to 26
Starter motor retaining bolts	29 to 41	58 to 78
Starter motor wiring to starter motor - M6	5 to 6	-
Starter motor wiring to starter motor - M8	5 to 7	-
Driveshaft to front differential assembly drive flange	34 to 46	30 to 40
Torx studs in transmission output flange	70 to 90	70 to 90
Driveshaft to transmission output flange (nuts)	67 to 83	70 to 85
Driveshaft to rear axle	57 to 75	57 to 75
Driveshaft centre bearing to floor assembly	18 to 23	18 to 24
Exhaust mounting bracket to transfer box	39 to 53	41 to 55
Left-hand middle exhaust mounting bracket to rear axle crossmember	21 to 28	45 to 56
Stabiliser bar brackets to side members	70 to 90	70 to 97
Oil filler/oil drain/oil level check plugs	30 to 40	23 to 32
Lower engine cover to side member	-	18 to 22
Front exhaust pipe to turbocharger	31 to 44	35 to 47
Front exhaust pipe to catalytic converter	36 to 49	35 to 47
Turbocharger heat shield to bulkhead/fender brackets	-	9 to 11
Turbocharger heat shield to bracket	9 to 11	-
Turbocharger heat shield to air cleaner casing	5 to 6	-
Turbocharger heat shield to threaded stud or thread stud to fender	20 to 26	-

0392

Tightening Torques

	Nm
Gearshift gate to transmission housing	8 to 11
Front transmission housing to rear transmission housing	20 to 27
Transmission mainshaft bearing retaining plate	20 to 27
Locking plate locking screw to transmission housing	18 to 25
Reverse gear idler shaft to transmission housing	28 to 36
Reversing light switch	10 to 14
Threaded plug of selector shaft locking mechanism	20 to 27
Clutch release bearing guide sleeve	230 to 270
Countershaft bearing housing	15 to 20 then undo 60°
Retaining bolt of locking plate for countershaft bearing housing	9 to 11
Transmission mainshaft nut (nut can only be used once)	500 ± 75
Bolts of oil baffle in transfer box	9 to 12
Carrier of ball bearing of chain driving sprocket	21 to 28
Output flange nut	90 to 115
Transfer box housing to rear transmission housing (bolts and nut)	20 to 27
Transmission crossmember to transmission housing	50 to 70
Front transmission housing (clutch bell housing) to engine	41 to 58
Crossmember to transmission housing	21 to 29
Nuts securing driveshaft to output flange	76 to 82

GENERAL DESCRIPTION MT-75/4x4

The modified MT-75/4x4 5-speed transmission is based on the unit fitted in the Sierra XR4x4 until now. The following major modifications have been made for its fitment in the Sierra Cosworth 4x4:

- Flanged connection between transmission, engine and sump (2 longer flange bolts)
- Vent hole for the double-lipped radial oil seal in the transfer box (any damage to the radial oil seal is indicated by oil escaping from the vent hole).
- Gear ratios identical to those of the MT-75/4x4 transmission fitted with the Sierra 2,9 litre V6 engine.

For further information and details of the changes refer to publication CG 7330D 12/89 entitled 'Sierra Cosworth 4x4' in the series 'Product Training for Technicians'.

Operations 16 114 0 and 16 337 0 have been modified accordingly for the Escort RS Cosworth. Otherwise, this section applies to the Sierra Cosworth and the Escort RS Cosworth.
For details of the differences between the Sierra and the Escort refer to publication CG 7458D 2/92 introducing the 'Escort RS Cosworth'.

These training publications must not be used for service repairs as only the Service Microfiche is undated as necessary.

Checking the oil level in the transfer box:

Insert the workshop fabricated dipstick (see Fig.A) into the oil filler hole - the dipstick must lie flat on the thread in the oil filler hole and the tip of the dipstick must be in contact with the housing. If the transmission is filled to the correct level, the tip of the dipstick must be covered with oil.

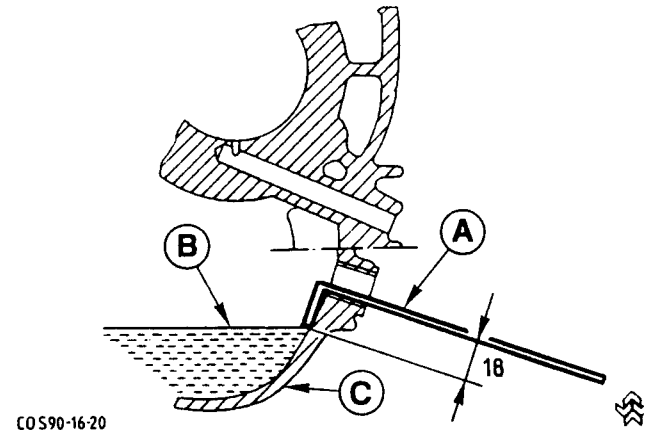
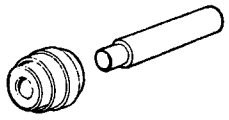
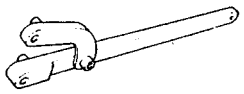
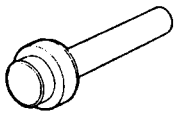
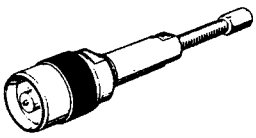
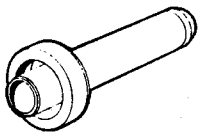
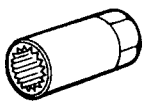
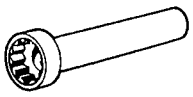
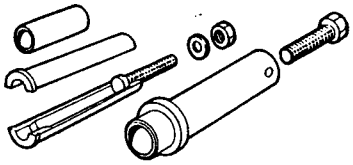


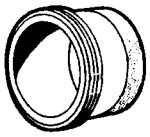
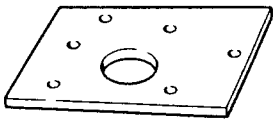
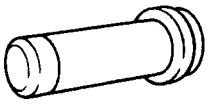
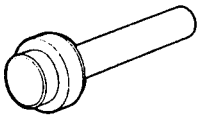
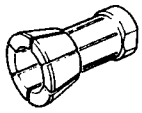
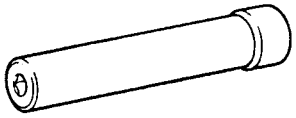
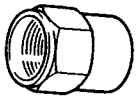
Fig.A. Checking transfer box oil level.
A - Dipstick (bent length of wire)
B - Transmission fluid
C - Transfer box housing

0392

Tool	Tool Name
 14-028	Transfer box oil seal installer
 15-030 A	Universal flange holding wrench
 15-036	Countershaft roller bearing installer
 15-050 A	Remover - basic tool (used in conjunction with Special Tool 16-050)
 15-058	Output flange oil seal installer (used in conjunction with Special Tool 16-043)
 15-064	Installer
 15-073	Input shaft socket wrench
 16-040	Guide sleeve socket wrench
 16-041	Transmission housing remover and installer

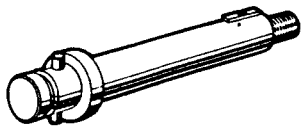
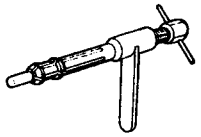
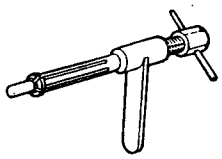
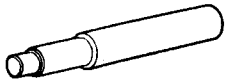
0392

SPECIAL SERVICE TOOL RECOGNITION (cont'd)

Tool	Tool Name
 16-041-01	Adaptor - for removing front transmission housing (used in conjunction with Special Tool 16-041)
 16-041-02	Adaptor - for removing transmission mainshaft
 16-043 A	Adaptor - for output flange oil seal (used in conjunction with Special Tool 15-058)
 16-044	Guide sleeve oil seal installer
 16-050	Countershaft roller bearing inner ring remover (used in conjunction with Special Tool 15-050 A)
 16-051	Transmission mainshaft nut socket wrench
 16-052	Mounting bracket (used in conjunction with Special Tool 21-023)
 16-053	Transmission mainshaft installer
 16-054	Double-lipped radial oil seal installer

0392

SPECIAL SERVICE TOOL RECOGNITION (cont'd)

Tool	Tool Name
 21-023	Universal spindle - for fitting transmission to assembly stand (used in conjunction with Special Tool 16-045)
 21-036 A	Selector shaft ball sleeve extractor (use with spindle 21-037 B)
 21-037 B	Selector shaft ball sleeve extractor (only use spindle)
 21-044 A	Selector shaft ball sleeve installer
 21-051	Transfer box oil seal extractor

PROPRIETARY TOOLS

Double hexagon socket wrench, 30 mm across flats (e.g. "Hazet 900TZ-30", "Snap on SM30", "Stahlwille 51SW-30")

Torx socket wrench (e.g. "Hazet E11 deep", "Stahlwille 50 TX E11")
17 mm hexagon socket - countershaft bearing housing
Three-legged puller - output flange - output shaft ball bearing
Internal extractor - countershaft roller bearing
Separating tool
Steel rule
Depth gauge

WORKSHOP FABRICATED TOOLS

Bent length of wire to check oil level in transfer box.

0392

16 111 C VISCOUS CONTROL - DIFFERENTIAL - CHECK

SPECIAL SERVICE TOOLS REQUIRED: NONE

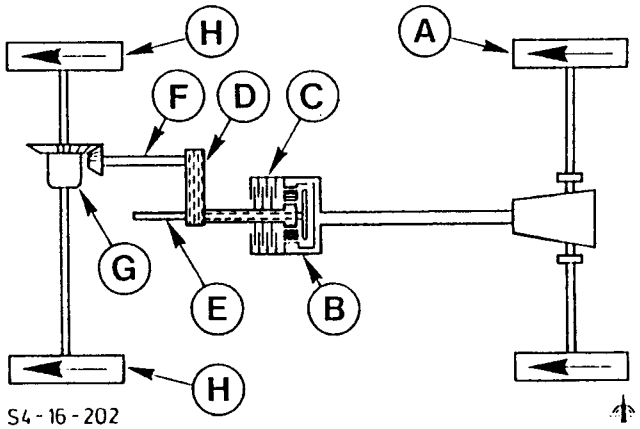


Fig.1. Schematic of viscous coupling check.

1. Bring the transmission up to normal operating temperature. Drive the rear wheels of the vehicle onto the rolling road, Fig.2.

Fig.1. Schematic of viscous coupling check.
A - Rear wheels driven by rolling road
B - Epicyclic gear
C - Viscous coupling
D - Drive chain in transfer box
E - Transmission mainshaft
F - Driveshaft to front axle
G - Front axle box
H - Freely rotating front wheels

2. Select neutral and release the handbrake.

3. Raise the front wheels of the vehicle clear of the ground using a workshop jack.

4. Rotate the rollers of the rolling road to simulate a road speed of 5 km/h.

5. If both front wheels rotate, this means that the viscous coupling in the transfer box is in order. If the front wheels do not turn, replace the viscous coupling.

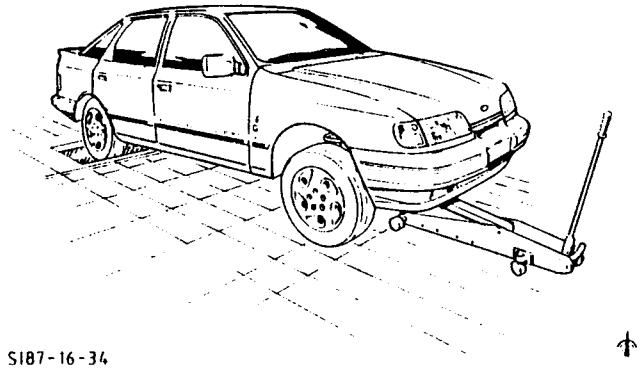


Fig.2. Front wheels of vehicle raised clear of the ground with rear wheels on rolling road (Sierra '87 4x4 shown).

16 114 0 TRANSMISSION ASSEMBLY - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS REQUIRED: NONE

To Remove

1. Disconnect the battery earth cable.

Sub operations 2 to 6 apply to Sierra only:

2. Pull the gear lever knob vertically upwards off the gear lever, Fig.1 (A). Prise off the cover plate. Unclip the electric window switches and disconnect the two multiplugs from the electric window switches, Fig.1 (B, E).

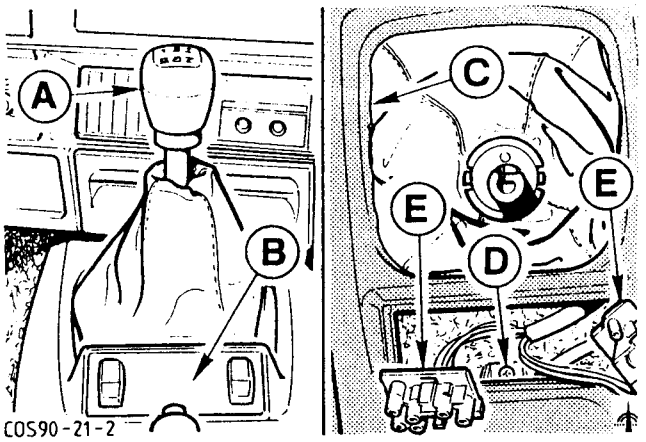


Fig.1. Gear lever with gaiter retaining frame.
A - Gear lever knob
B - Cover plate
C - Retaining frame
D - Retaining frame retaining screw
E - Multiplugs of electric window switches

3. Disconnect the retaining frame from the console (1 screw), Fig.1 (C, D).

4. Pull the outer gear lever gaiter up inside out, cut the cable tie and pull off the gaiter, Fig.2 (A, B).

Fig.2. Gaiters and noise damping pad retaining frame.
A - Outer gaiter
B - Cable tie
C - Inner gaiter
D - Noise damping pad retaining frame
E - Retaining screws
F - Noise damping pad

5. Pull off the inner gear lever gaiter, Fig.2 (C).

6. Remove the retaining frame of the noise damping pad with the pad (4 screws), Fig.2 (D, E, F). Place a suitable block under the clutch pedal.

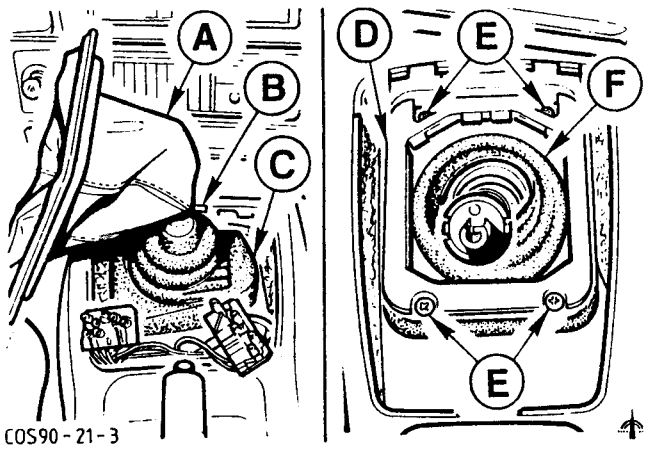


Fig.2. Gaiters and noise damping pad retaining frame.

0392

7. Sierra only:
Unclip the multiplug of the HEGO sensor from the turbocharger heat shield and disconnect it, Fig.3 (B).

Fig.3. Turborcharger heat shield.
A - Retaining bolt
B - HEGO sensor multiplug
C - Heat shield clips
D - Retaining nut

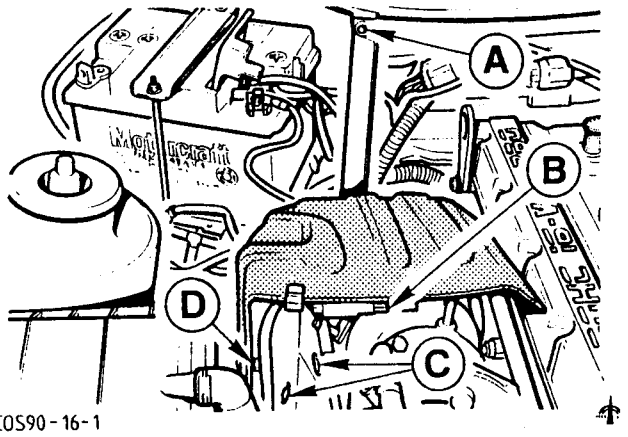


Fig.3. Turbocharger heat shield.
(Sierra shown)

8. Sierra only:
Detach the turbocharger heat shield and bracket from the bulkhead (1 bolt) and from the bracket on the fender (1 nut). Withdraw the heat shield from the lower clips and remove it, Fig.3 (A,C,D).

9. Escort only:
Disconnect the multiplug from the HEGO sensor and unclip the wiring, Fig.4.

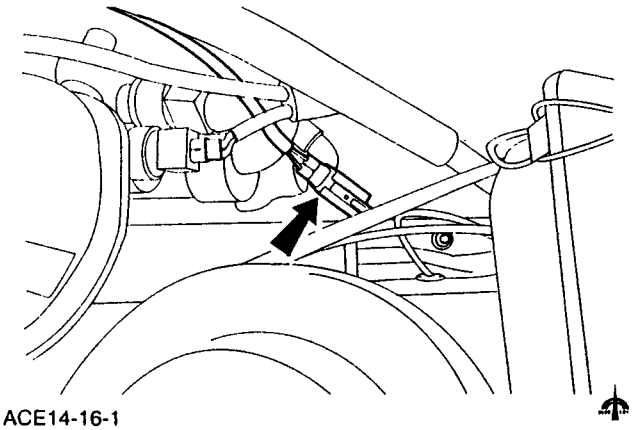


Fig.4. HEGO sensor multiplug.
(Escort shown)

10. Escort only:
Detach the turbocharger heat shield from the bracket, air cleaner casing and fender (2 bolts, 1 nut in the wheelhouse), Fig.5.

Fig.5. Turbocharger heat shield fixture.
(Escort shown)
A - Bolts
B - Nut in wheelhouse

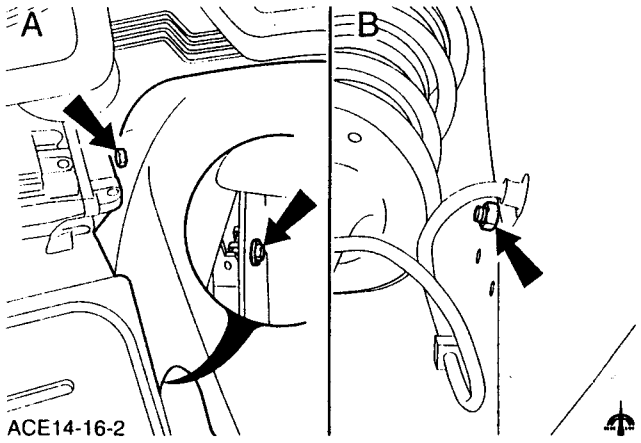


Fig.5. Turbocharger heat shield fixture.
(Escort shown)

0392

11. Disconnect the front exhaust pipe from the turbocharger (3 nuts), Fig.6.

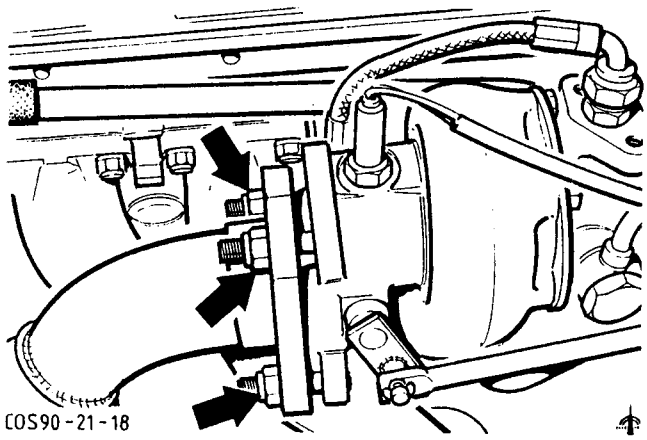


Fig.6. Nuts securing front exhaust pipe to turbocharger.

12. Raise the vehicle.

13. Sierra only:
Detach the lower engine cover from the side members and the front axle/engine crossmember (6 bolts), Fig.7.

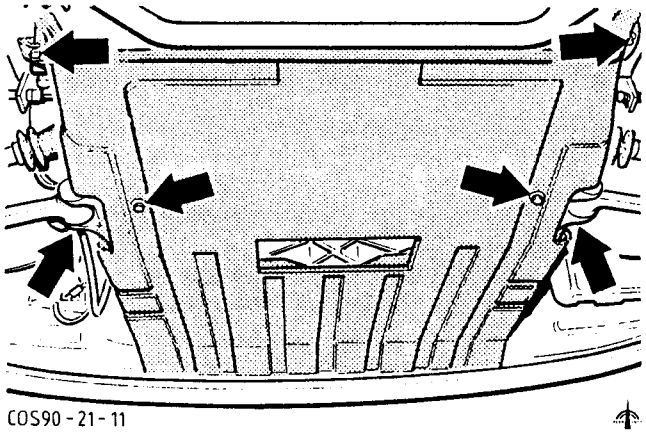


Fig.7. Retaining bolts of lower engine cover. (Sierra shown)

14. Escort only:
Detach the lower engine cover from the side members (4 bolts) and the body (5 bolts), Fig.8.

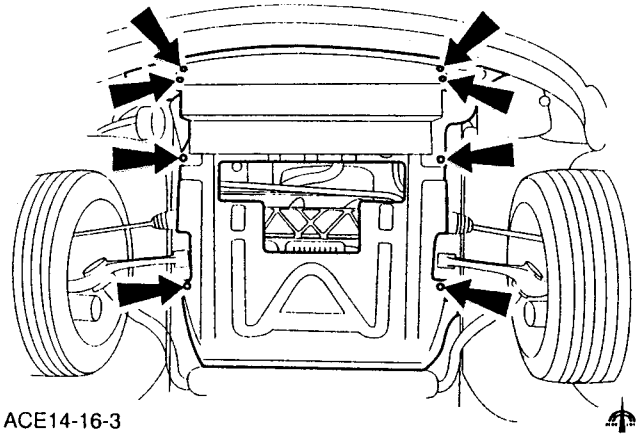


Fig.8. Retaining bolts of lower engine cover. (Escort shown)

0392

15. Disconnect the stabliser bar brackets from the side members on the left and right-hand sides (4 bolts), Fig.9.

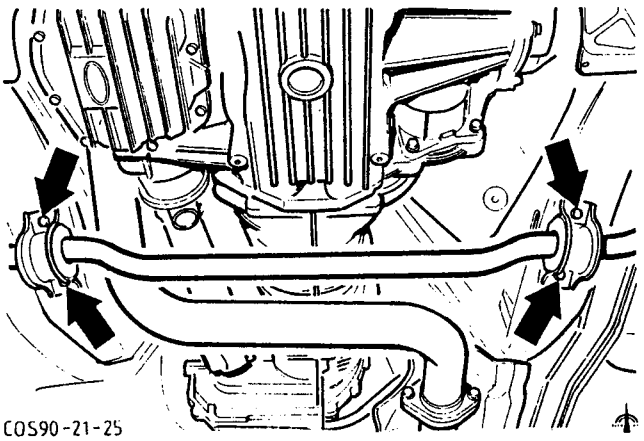


Fig.9. Retaining bolts of stabiliser bar brackets.

16. Sierra only:
Remove the exhaust system complete, Fig.10:

- Unscrew the left hand middle exhaust mounting bracket from the rear axle crossmember (2 bolts).
- Release the exhaust system from the front, middle right and rear mountings and remove it.

Fig.10. Exhaust system mountings.
(Sierra shown)
A - Rear
B - Middle left (bolted)
C - Front
D - Middle right
(Exhaust system removed for clarity)

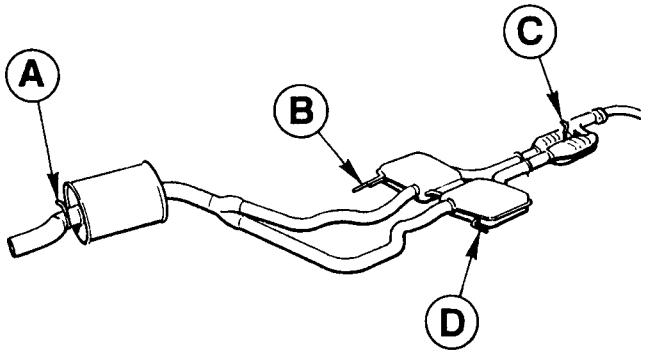


Fig.10. Exhaust system mountings.
(Exhaust system removed for clarity)
(Sierra shown)

17. Escort only:
Detach the exhaust system complete, Fig.11:

- Disconnect the exhaust system at the front flange (2 bolts).
- Detach the left-hand middle exhaust mounting bracket from the rear axle crossmember (2 bolts).
- Unhook the exhaust system for the front, right-hand middle and the two rear mountings and remove it.
- Remove the front exhaust pipe.

Fig.11. Exhaust mountings.
(Exhaust system removed for clarity)
(Escort shown)
A - Rear
B - Left-hand middle - bolted
C - Front
D - Flange
E - Right-hand middle

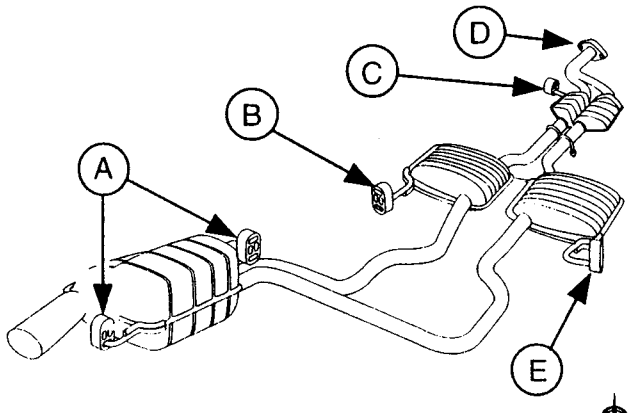


Fig.11. Exhaust mountings.
(Exhaust system removed for clarity)
(Escort shown)

0392

18. Detach the exhaust mounting bracket from the transfer box (1 bolt).

19. Release the exhaust system heat shield from the floor assembly (7 clips), Fig.12.

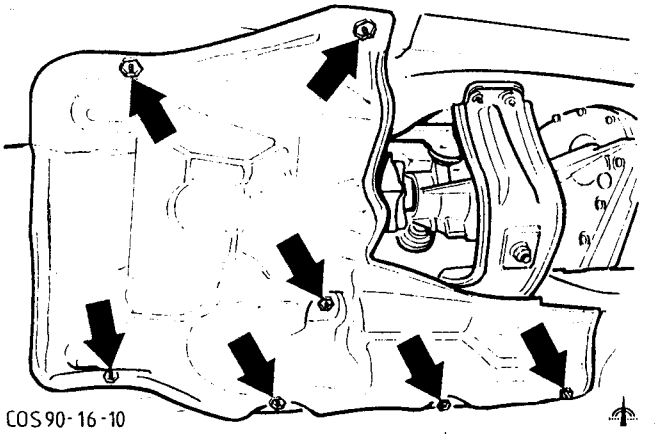


Fig.12. Heat shield fixture.

20. Unscrew the three driveshaft retaining nuts from the Torx studs on the output flange, Fig.13 (B), holding the Torx studs with a Torx socket wrench (see PROPRIETARY TOOLS).

    Unscrew the two centre bearing retaining bolts and remove them with the U-shaped washers, Fig.13 (A).

    Unscrew the four retaining bolts from the rear axle drive flange.

    Remove the driveshaft complete.

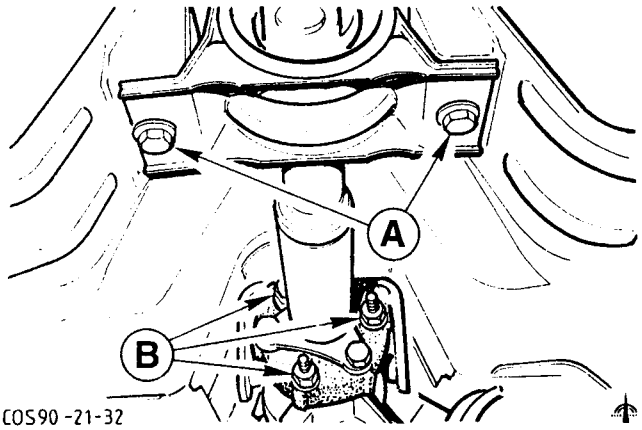


Fig.13. Driveshaft fixture.
A - Centre bearing bolts
B - Output flange nuts

21. Remove the driveshaft to the front axle (4 Torx bolts), Fig.14 (B).

NOTE: To prevent oil escaping, close the opening in the transfer box with a blind plug or, if available, a short length of shaft (old driveshaft), Fig.14 (A).

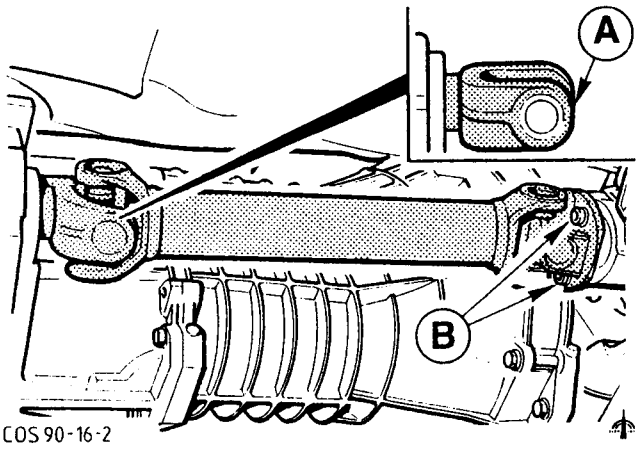


Fig.14. Driveshaft to front axle.
A - Short length of old driveshaft
B - Two retaining bolts (two concealed)

0392

22. Remove the plastic cap, unscrew the wiring (2 nuts) and remove it, Fig.15 (A).

23. Remove the starter motor (3 bolts), Fig.15 (B).

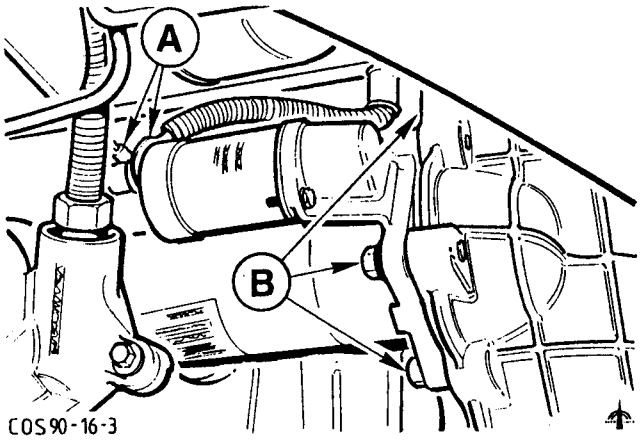


Fig.15. A - Starter motor wiring
B - Starter motor retaining bolts

24. Pull off the rubber gaiter over the clutch cable and disconnect the clutch cable from the clutch release lever, Fig.16.

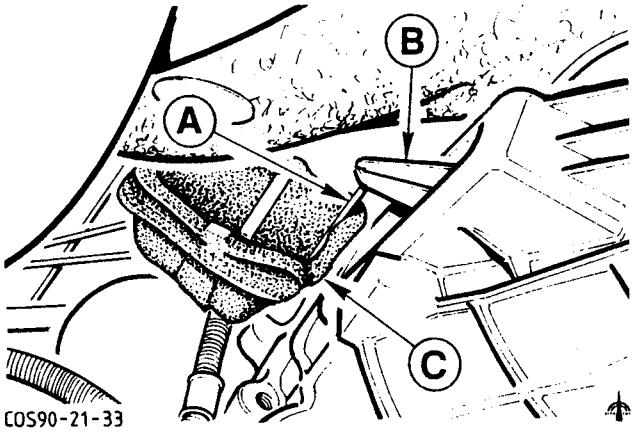


Fig.16. A - Rubber gaiter
B - Clutch cable
C - Clutch release lever

25. Support the transmission assembly on a jack. Unscrew the five transmission mounting/ crossmember retaining nuts and remove the transmission crossmember from the floor assembly, Fig.17.

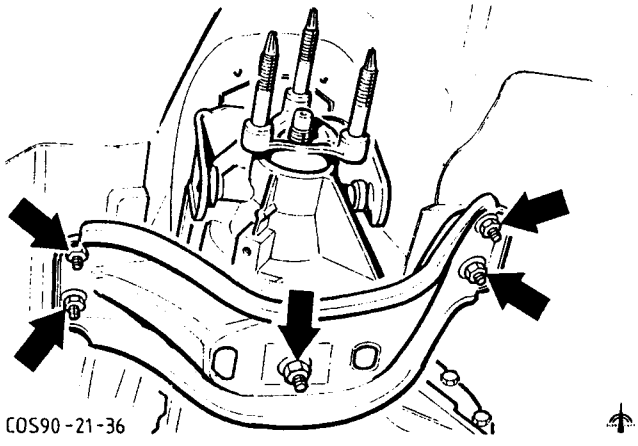


Fig.17. Transmission crossmember retaining nuts.

0392

26. Unscrew the gearshift support bracket from the transfer box and from the rear transmission housing (4 bolts, 2 shims). Prise out the retaining clip and withdraw the shift rod from the coupling, Fig.18.

Fig.18. Gearshift support bracket.
A - Retaining clip
B - Retaining bolts with shims
C - Shift rod
D - Left hand retaining bolt

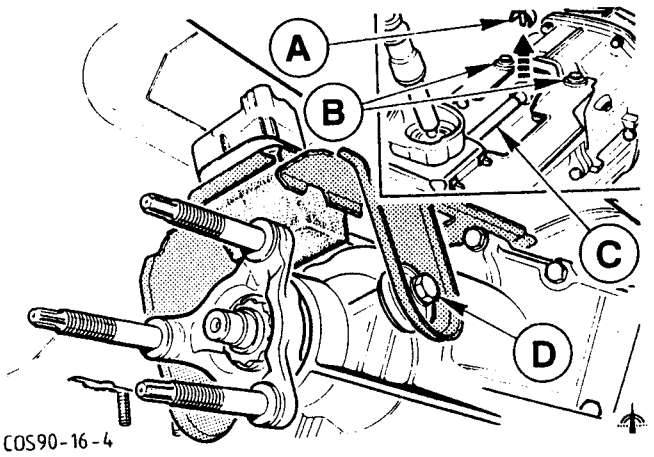


Fig.18. Gearshift support bracket.

27. Hold the gearshift support bracket in position by resting it on a length of bent steel rod, Fig.19.

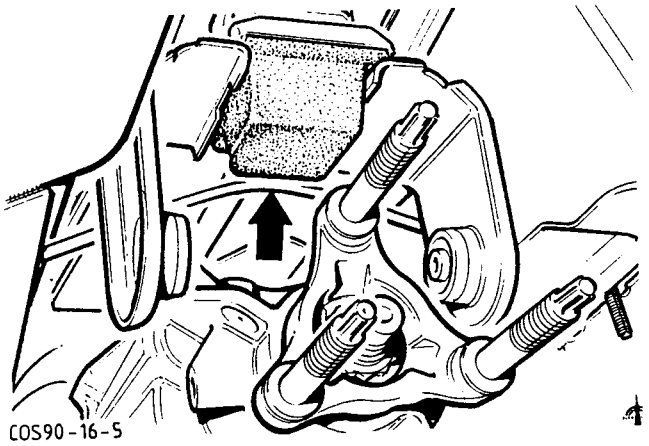


Fig.19. Gearshift support bracket resting on length of steel rod.

28. Disconnect the multiplug from the reversing light switch, Fig.20.

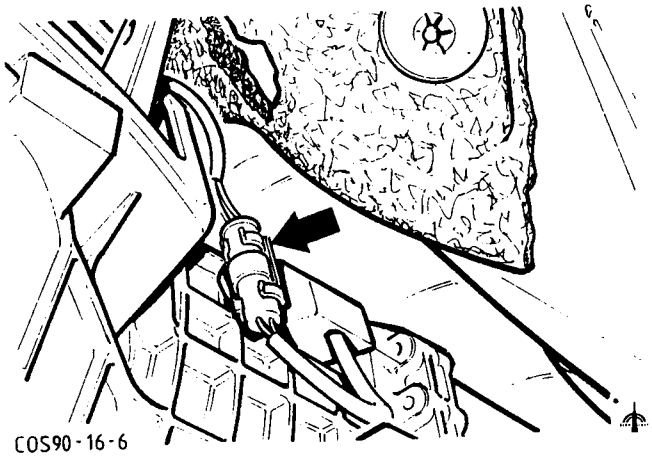


Fig.20. Multiplug of reversing light switch.

0392

29. Unscrew the transmission housing flange bolts from the cylinder block/sump (6 flange bolts) and remove the engine earth lead, Fig.21.

Fig.21. Transmission housing flange bolts in cylinder block/sump.
A - Left-hand side
B - Right-hand side
C - Earth lead

30. Unscrew the cylinder block flange bolts from the transmission housing (4 flange bolts) and remove the two positive lead brackets (Sierra) and the earth lead (Escort) Fig.22.

Fig.22. Cylinder block flange bolts in transmision housing.
A - Left-hand side
B - Right-hand side
C - Positive lead brackets

31. Separate the transmission from the engine.

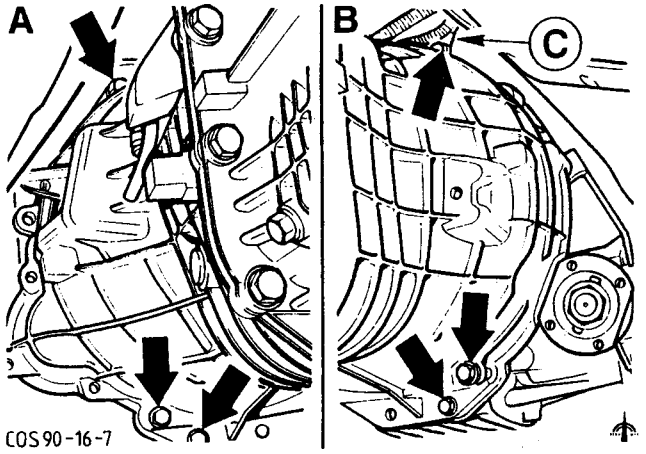


Fig.21. Transmission housing flange bolts in cylinder block/sump.

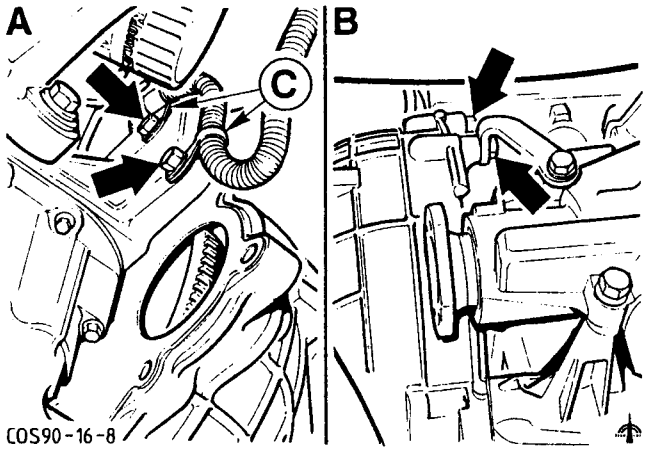


Fig.22. Cylinder block flange bolts in transmission housing. (Sierra shown)

To Install

NOTE: When installing, tighten the nuts and bolts to the torques specified in Technical Data. Renew all self-locking nuts that were removed.

32. If necessary, transfer the front transmission housing locating sleeves to the cylinder block.

33. Hold the clutch release lever in position and fix it with a rubber band.
Lightly grease the input shaft (see Technical Data for grease specification), Fig.23.

34. Locate the transmission in position on the jack. Bring the transmission flange into contact with the engine flange and insert the flange bolts, connecting the engine earth lead and the two positive lead brackets at the same time, Figs.21 and 22.

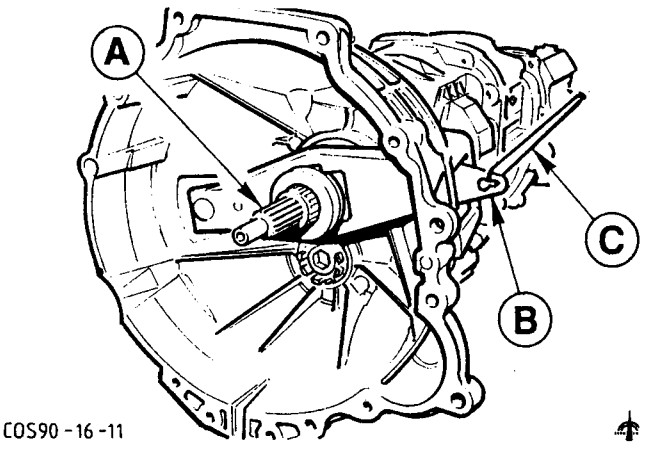


Fig.23. A - Input shaft splines
B - Clutch release lever
C - Rubber band

0392

35. Connect the multiplug of the reversing light switch, Fig.24.

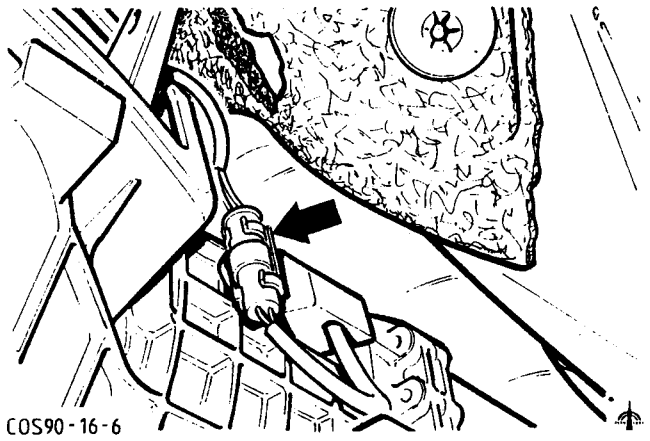


Fig.24. Multiplug of reversing light switch.

36. Remove the steel rod.

Position the gearshift support bracket on the transfer box, guide the shift rod into the coupling and secure it with the retaining clip. Secure the gearshift support bracket to the transfer box and to the rear transmission housing, Fig.25.

Fig.25. Gearshift support bracket.
A - Retaining clip
B - Retaining bolts with shims
C - Shift rod
D - Left-hand retaining bolt

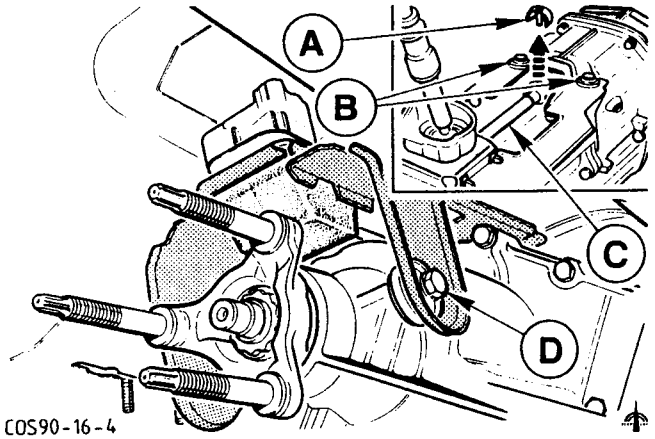


Fig.25. Gearshift support bracket.

37. Lift the transmission on the jack and secure the transmission crossmember to the transmission mounting and the floor assembly, Fig.26.

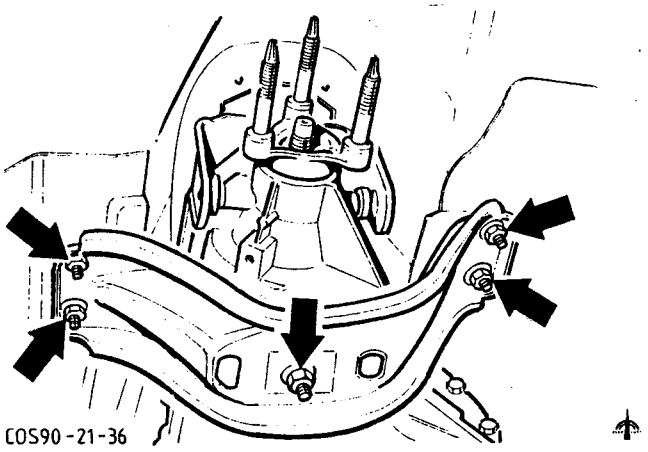


Fig.26. Transmission crossmember retaining nuts.

0392

38. Connect the clutch cable to the clutch release lever and refit the rubber clutch cable gaiter in the front transmission housing, Fig.27.

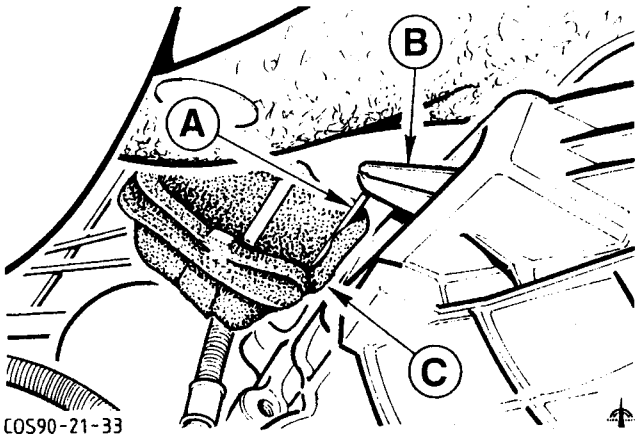


Fig.27. A - Rubber gaiter
B - Clutch cable
C - Clutch release lever

39. Fit the starter motor, Fig.28 (B).

40. Connect the starter motor wiring and the connector and fit the plastic cap over the starter motor terminal, Fig.28 (A).

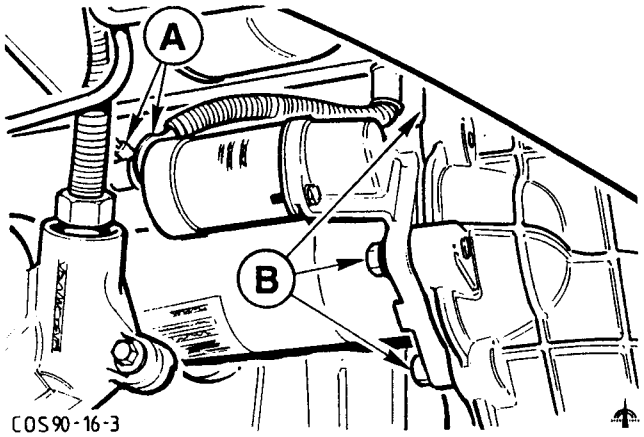


Fig.28. A - Starter motor wiring
B - Starter motor retaining bolts

41. Remove the blind plug or the length of old shaft from the transfer box. Insert the front driveshaft in the transfer box and secure it to the front axle drive flange, Fig.29.

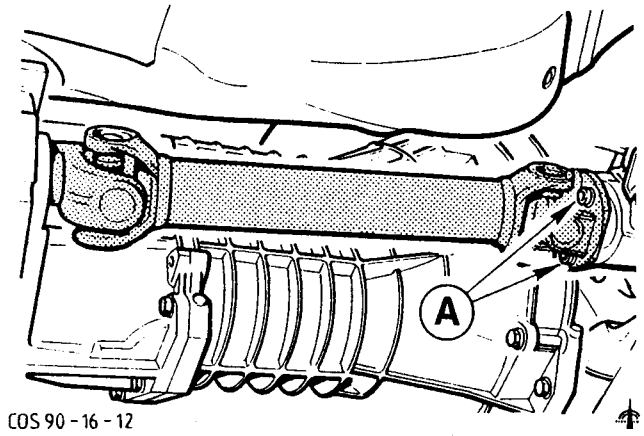


Fig.29. Front driveshaft.
A - Two retaining bolts (two concealed)

0392

42. Assemble the driveshaft to the rear axle if separated.

NOTE: When assembling, guide the master spline into the double groove, Fig.30.

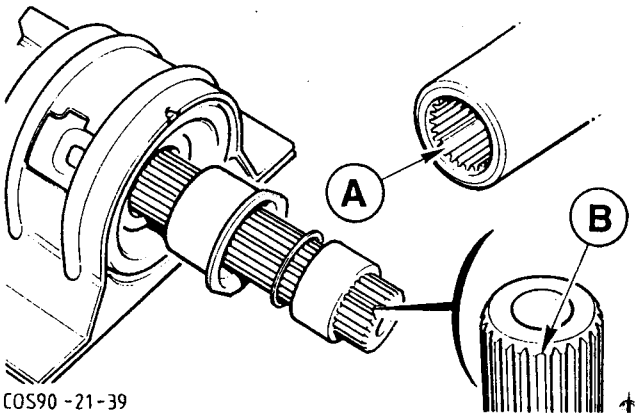


Fig.30. Driveshaft to rear axle separated.
A - Master spline
B - Double groove

43. Before fitting the rubber coupling of the driveshaft to the transmission output flange, check that the studs are seated securely in the transmission output flange. To do this, locate a torque wrench with a Torx socket (see PROPRIETARY TOOLS) on the Torx head and apply the specified torque in the tightening direction. Remove any studs which turn and refit them as follows:

- Clean the threaded holes in the transmission output flange, Fig.31 (C), and the threads of the studs, Fig.31 (A), to remove all traces of grease and dirt.
- Apply two drops of thread-locking compound (see Technical Data) offset at 180° on the flange-end thread of the stud, Fig.31 (B).
- Insert the stud and tighten it to the specified torque.

NOTE: The stud must be tightened completely within a maximum of 5 minutes of applying the thread-locking compound.

- Let the thread-locking compound harden for 30 minutes.

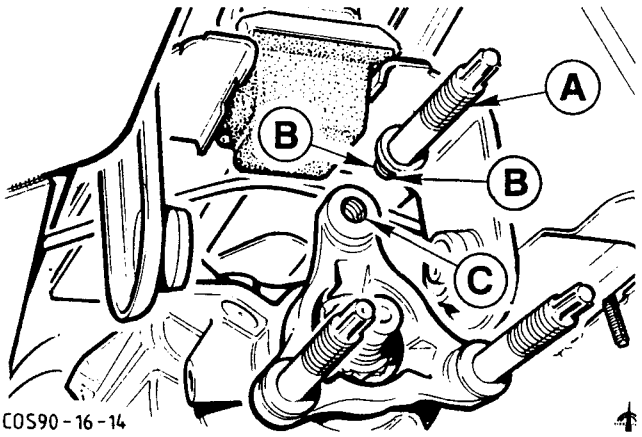


Fig.31. Transmission output flange with Torx studs.
A - Torx stud
B - Thread-locking compound
C - Threaded holes

0392

44. Locate the driveshaft in position. Fit the driveshaft to the transmission output flange using new nuts. Connect the driveshaft to the rear axle and fit the driveshaft centre bearing to the floor assembly, Fig.32.

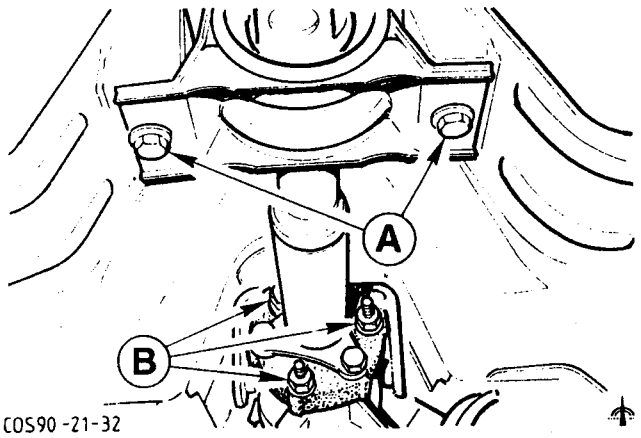


Fig.32. Driveshaft fixture.
A - Centre bearing bolts
B - Output flange nuts

45. Fit the exhaust system heat shield to the floor assembly, Fig.33.

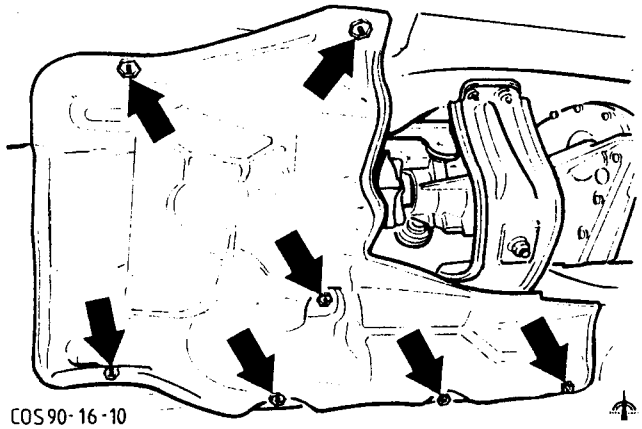


Fig.33. Heat shield fixture.

46. Fit the exhaust mounting bracket to the transmission box, Fig.34.

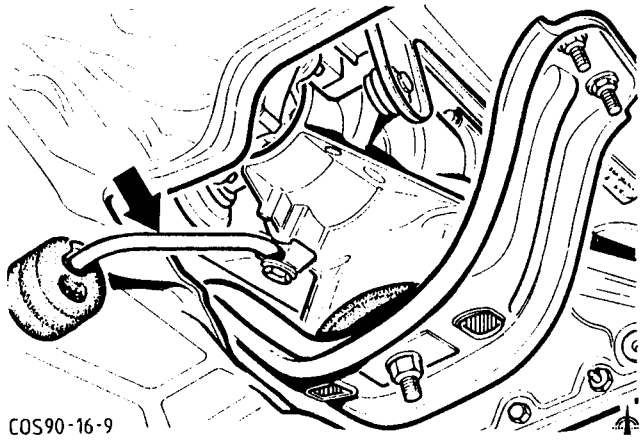


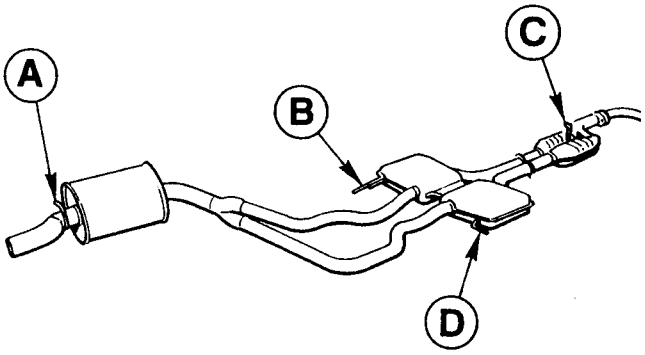
Fig.34. Exhaust mounting bracket on transfer box.

0392

47. Sierra only:
Fit the exhaust system complete, Fig.35:

- Attach the exhaust system to the rear, right-hand middle and front mountings.
- Fit the left-hand middle exhaust mounting bracket to the rear axle crossmember and attach the exhaust system to the mounting.

Fig.35. Exhaust mountings.
(Exhaust system removed for clarity)
(Sierra shown)
A - Rear
B - Left-hand middle
C - Front
D - Right-hand middle



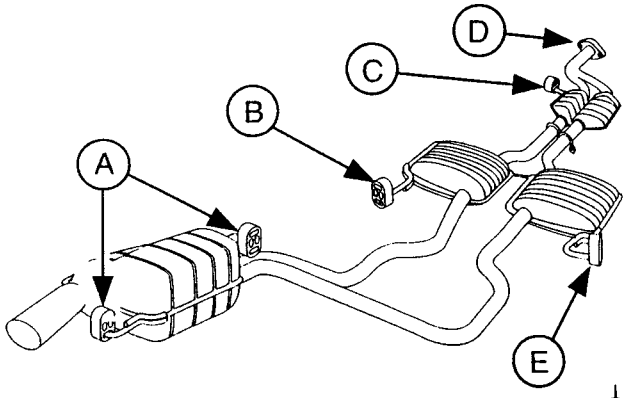
COS90-21-30

Fig.35. Exhaust mountings.
(Exhaust system removed for clarity)
(Sierra shown)

48. Escort only:
Fit the exhaust system complete, Fig.36:

- Locate the front exhaust pipe in position.
- Attach the exhaust system to the 2 rear, right-hand middle and front mountings.
- Fit the left-hand middle exhaust mounting bracket to the rear axle crossmember and attach the exhaust system to the mounting.
- Connect the exhaust system at the flange.

Fig.36. Exhaust mountings.
(Exhaust system removed for clarity)
(Escort shown)
A - Rear
B - Left-hand middle
C - Front
D - Flange
E - Right-hand middle

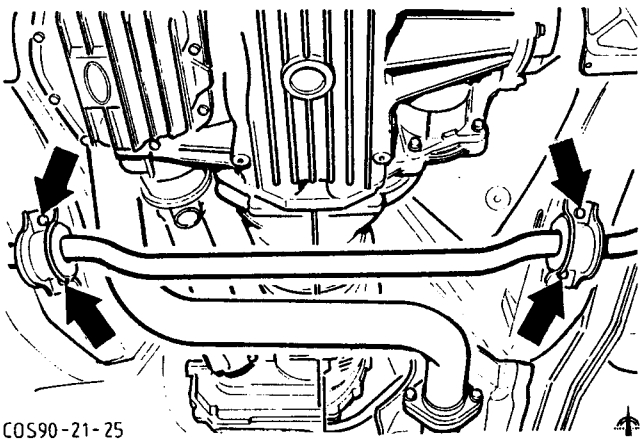


ACE14-16-4

Fig.36. Exhaust mountings.
(Exhaust system removed for clarity)
(Escort shown)

49. Fit the stabiliser bracket to the side member on the left and right-hand sides, Fig.37.

NOTE: Make sure the rubber bushes are seated correctly.



COS90-21-25

Fig.37. Retaining bolts of stabiliser bracket.

50. Escort only:
Fit the lower engine cover to the side members and the body, Fig.38.

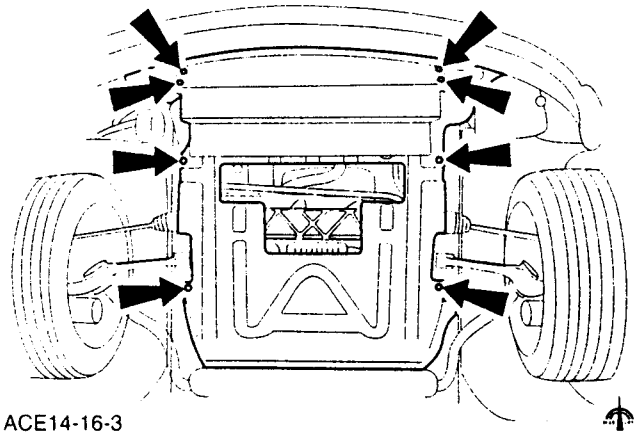


Fig.38. Retaining bolts of lower engine cover. (Escort shown)

51. Sierra only:
Fit the lower engine cover to the side members and the front axle/engine crossmember, Fig.39.

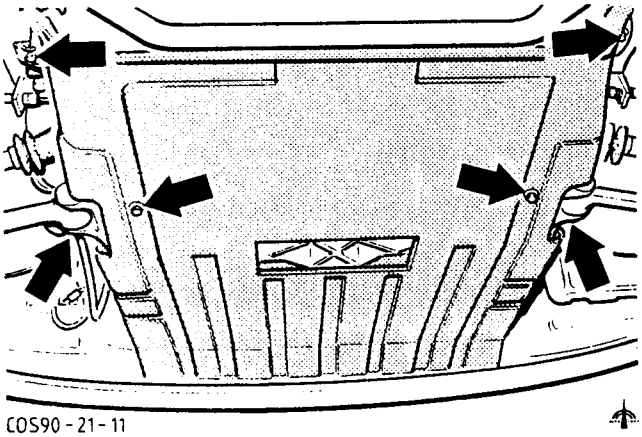


Fig.39. Retaining bolts of lower engine cover. (Sierra shown)

52. Check the oil levels in the transfer box and the transmission and top up as necessary (see Technical Data for quantity and speicfication), Fig.40.

NOTE: To check the oil level in the transmission box take a length of wire 3 mm in diameter and bend 18 mm over at right angles. Insert the wire in the oil level check hole. The end of the wire must point vertically downwards and touch the housing. If the oil level is correct, the end of the wire must be wet with oil.

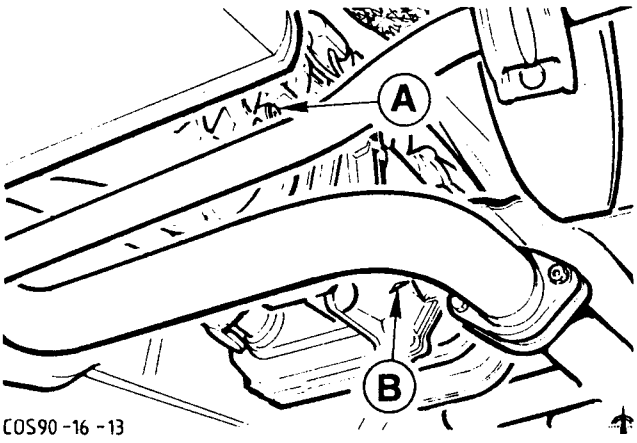


Fig.40. Oil level check plugs.
A - Transmission
B - Transfer box

0392

54. Connect the front exhaust pipe to the turbocharger, Fig.41.

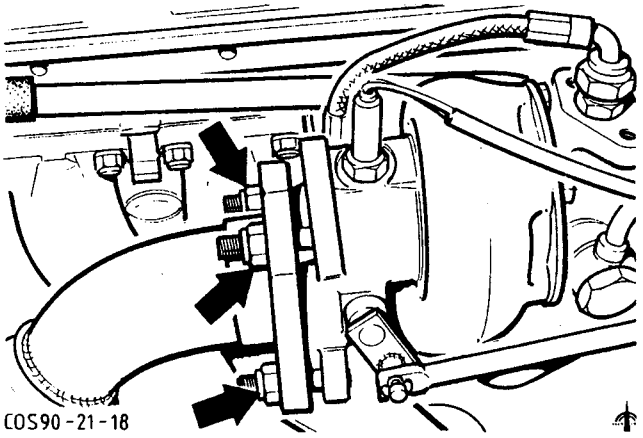


Fig.41. Front exhaust pipe to turbocharger retaining nuts.

55. Sierra only:
Locate the turbocharger heat shield in position and engage it in the 2 lower clips.

Secure the turbocharger heat shield and bracket to the bulkhead and to the bracket on the fender, Fig.42 (A,C,D).

Fig.42. Turbocharger heat shield.
A - Retaining bolt
B - HEGO sensor multiplug
C - Heat shield clips
D - Retaining bolts

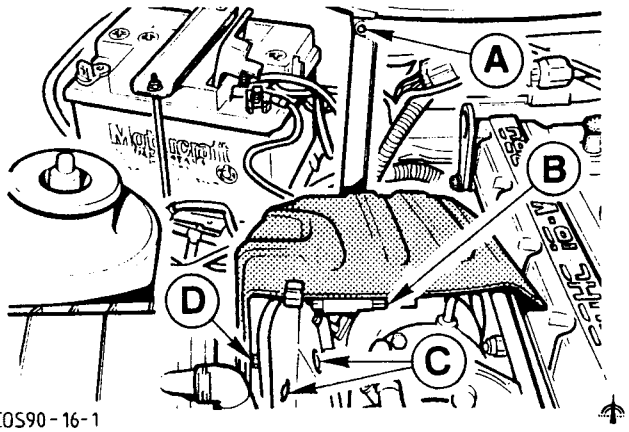


Fig.42. Turbocharger heat shield. (Sierra shown)

56. Sierra only:
Connect the multiplug of the HEGO sensor and clip it to the turbocharger heat shield, Fig.42 (B).

57. Escort only:
Secure the turbocharger heat shield to the bracket, air cleaner casing and fender, Fig.43.

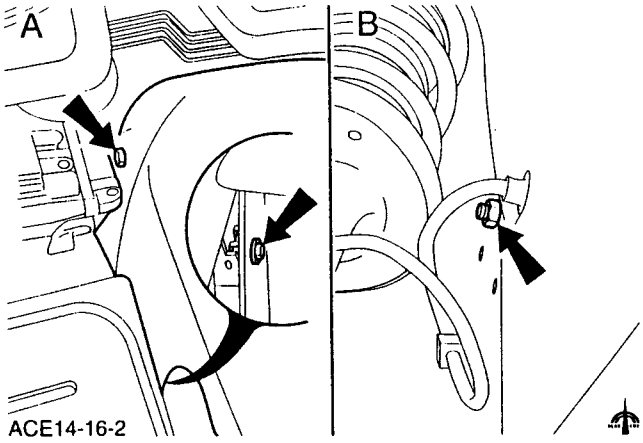


Fig.43. Turbocharger heat sheild fixture. (Escort shown)
A - Bolts
B - Nut in wheelhouse

0392

58. Escort only:
Connect the HEGO sensor multiplug and clip the wiring in place, Fig.44.

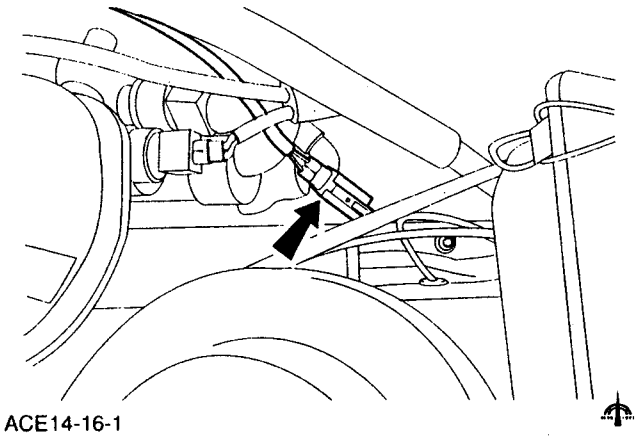


Fig.44. HEGO sensor multiplug. (Escort shown)

Sub-operations 59 to 63 apply to Sierra only:

59. Remove the support from under the clutch pedal. Slip the noise damping pad retaining frame and noise damping pad over the gear lever and secure them, Fig.45 (D, E, F).

Fig.45. Gaiters and noise damping pad retaining frame.
A - Outer gaiter
B - Cable tie
C - Inner gaiter
D - Noise damping pad retaining frame
E - Retaining screws
F - Noise damping pad

60. Slip the inner gear lever gaiter over the gear lever and pull it down onto the retaining frame, Fig.45 (C).

61. Fit the outer gear lever gaiter over the gear lever and pull it up inside out.

Secure the gaiter with a cable tie and refit it in position, Fig.45 (A, B).

62. Secure the retaining frame to the console, Fig.46 (C, D).

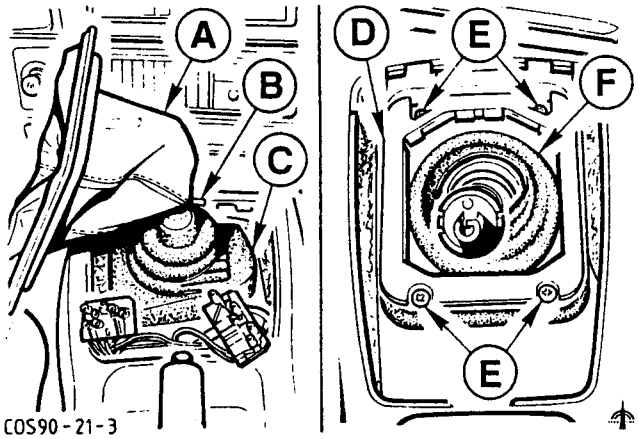


Fig.45. Gaiters and noise damping pad retaining frame.

Fig.46. Gear lever with gaiter retaining frame.
A - Gear lever knob
B - Cover plate
C - Retaining frame
D - Screw securing retaining frame
E - Multiplugs of electric window switches

63. Connect the two multiplugs of the electric window switches and clip the switches into place in the cover plate.

Insert the cover plate in the retaining frame and refit the gear lever knob, Fig.46 (A, B, E).

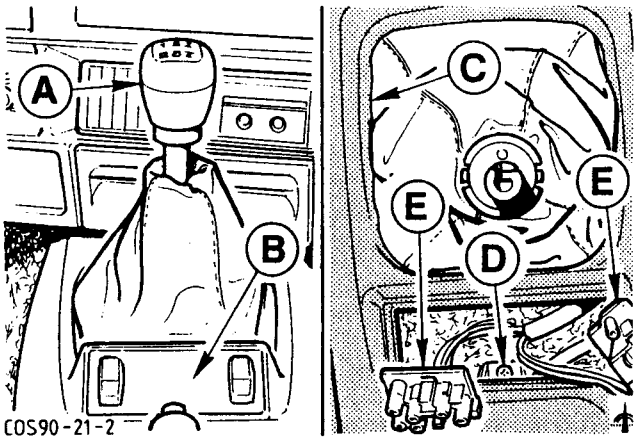


Fig.46. Gear lever with gaiter retaining frame.

56. Connect the battery earth cable.

0392

16 118 8 TRANSMISSION - OVERHAUL (MT-75/4x4)

SPECIAL SERVICE TOOLS REQUIRED:

Transfer box radial oil seal installer	14-028
Universal flange holding wrench	15-030-A
Counter shaft roller bearing installer	15-036
Remover (basic tool)	15-050
Output flange oil seal installer	15-058
Installer	15-064
Input shaft socket wrench	15-073
Guide sleeve socket wrench	16-040
Transmission housing remover and installer	16-041
Adaptor for front transmission housing	16-041-01
Adaptor for mainshaft removal	16-041-02
Adaptor for output flange oil seal	16-043-A
Guide sleeve oil seal installer	16-044
Roller bearing inner ring remover	16-050
Mainshaft nut socket wrench	16-051
Mounting bracket	16-052
Mainshaft installer	16-053
Installer for double-lipped radial oil seal	16-054
Universal spindle	21-023
Selector shaft ball sleeve extractor	21-036-A
Selector shaft ball sleeve extractor	21-037-B
Selector shaft ball sleeve installer	21-044-A
Transfer box radial oil seal extractor	21-051

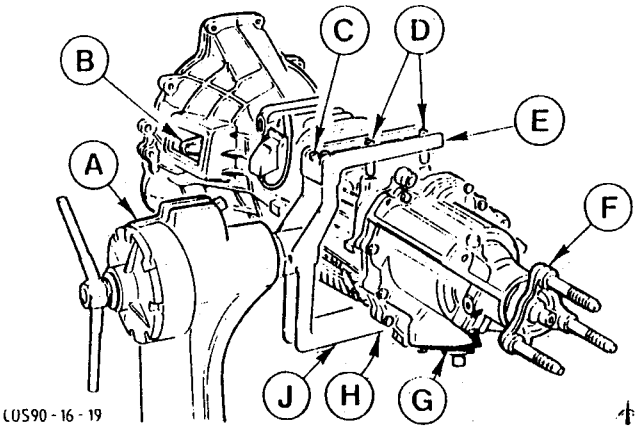


Fig.1. MT-75/4x4 transmission mounted on stand.
- A - Assembly stand
- B - Clutch release lever
- C - Mounting bracket connecting bolts
- D - Mounting bracket retaining bolts
- E - Upper part of mounting bracket
- F - Output flange
- G - Transmission mounting
- H - Clamp bolt of transmission mounting bracket
- J - Mounting bracket

To Dismantle

NOTE: When assembling, replace all the snap rings and circlips and fit replacements of the appropriate thickness so as to eliminate all end float. Refer to the Parts Microfiche for the selection of available snap rings and circlips. Replace all seals.
When assembling, tighten the nuts and bolts to the torques specified in Technical Data.
All running and sliding faces of transmission components and transfer box components for which no particular oil is specified must be lubricated with transmission fluid (for transmission components) or automatic transmission fluid (for transfer box components).

1. Fit the transmission on the assembly stand using mounting bracket 16-052 and universal spindle 21-023.

2. Remove the clutch release lever with the release bearing. Unbolt the transmission mounting (2 bolts), Fig.1. Remove the Torx studs from the output flange using a Torx socket wrench (see "PROPRIETARY TOOLS").

3. Unscrew the oil drain plug and the oil filler plug from the transmission. Drain off the transmission fluid. Unscrew the oil drain plug from the transfer box and drain off the automatic transmission fluid, Fig.2.

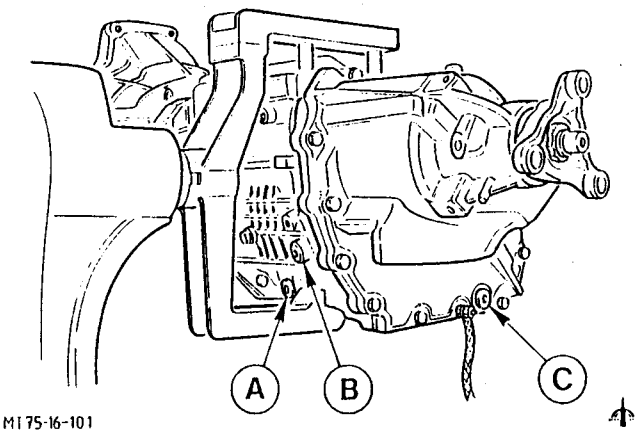


Fig.2. A - Transmission oil drain plug
B - Transfer box oil filler plug
C - Transfer box oil drain plug

4. Remove the output flange nut from the transmission mainshaft using a 30 mm double hexagon socket wrench (see Proprietary Tools). Hold the flange with Special Tool 15-030-A, Fig.3.

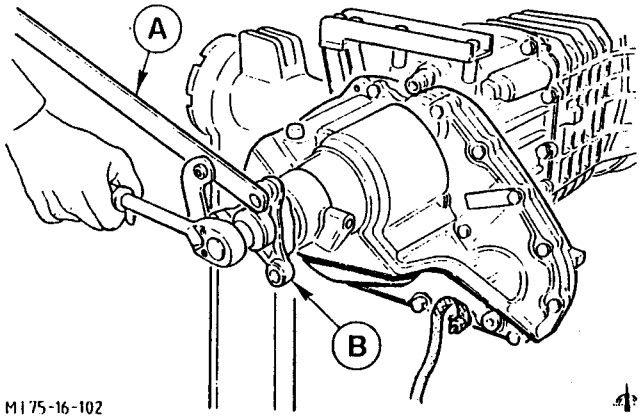


Fig.3. Remove output flange nut.
A - Special Tool 15-030
B - Output flange

5. Hold the output flange with Special Tool 15-030-A and pull it off the transmission mainshaft using a conventional three-legged puller, Fig.4.

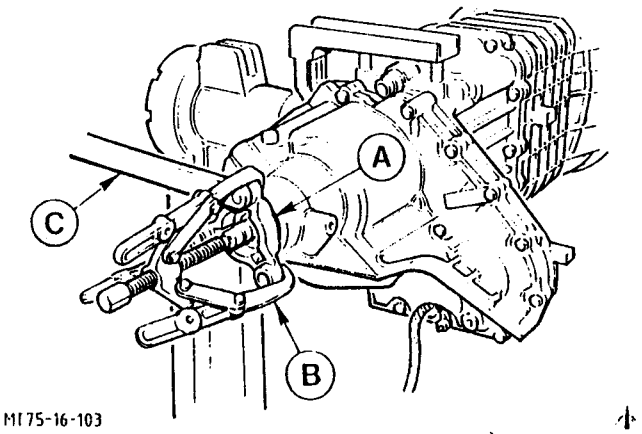


Fig.4. Pull off output flange.
A - Output flange
B - Three-legged puller
C - Special Tool 15-030-A

Fig.4. Pull off output flange.

6. Remove the output flange oil seal from the transfer box using Special Tool 21-051, Fig.5.

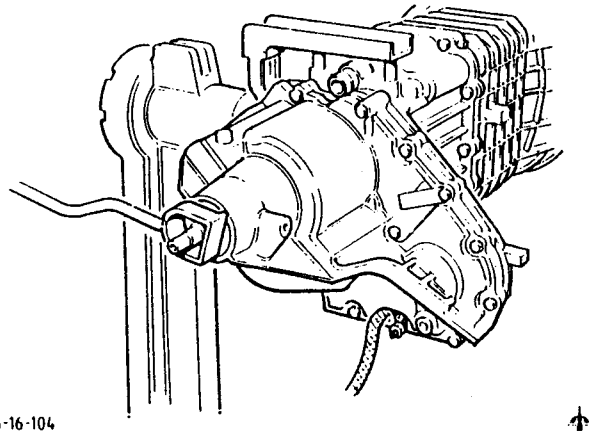


Fig.5. Remove oil seal using Special Tool 21-051.

7. Drive the upper and lower pins out of the transfer box.
Unscrew the 15 transfer box retaining bolts, Fig.6. Unscrew the nuts and remove the earth strap.

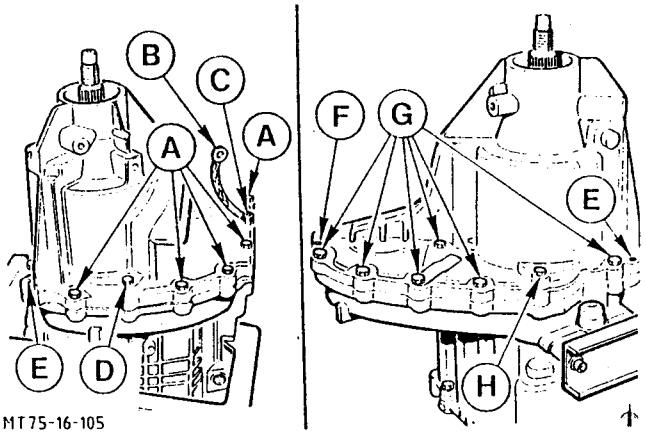


Fig.6. Transfer box retaining bolts.

Fig.6. Transfer box housing/rear transmission housing retaining bolts.
A - Short bolts - left-hand lower half
B - Earth strap
C - 2 nuts, 1 stud
D - Long bolt - left-hand lower half
E - Upper locating dowel
F - Lower locating dowel
G - Short bolt - right-hand upper half
H - Long bolt - right-hand upper half

8. Carefully prise the transfer box housing away from the transmission housing with 2 suitable levers, placing a block of wood under the levers, Fig.7.
Remove the transfer box housing.

NOTE: Do not damage the mating faces.

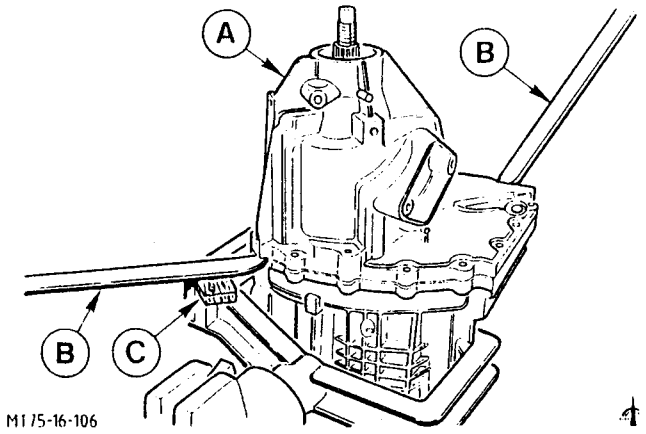


Fig.7. Remove transfer box.

Fig.7. Remove transfer box.
A - Transfer box housing
B - Lever
C - Block

9. Remove the magnetic disc and the shim on the planetary gear carrier, Fig.8.

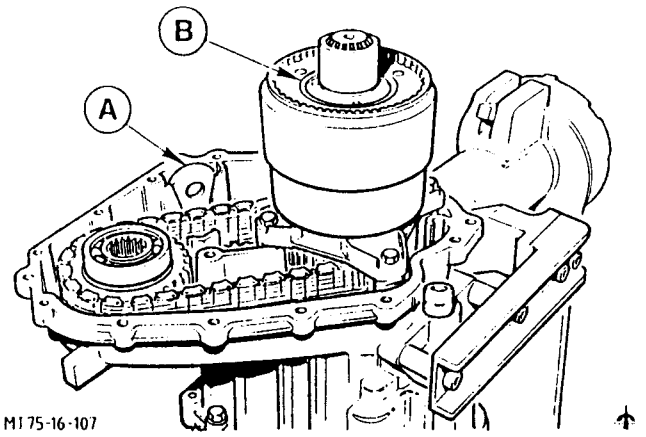


Fig.8. A - Magnetic disc
B - Shim

10. Remove the planetary gear train complete with the viscous coupling and annulus, Fig.9.

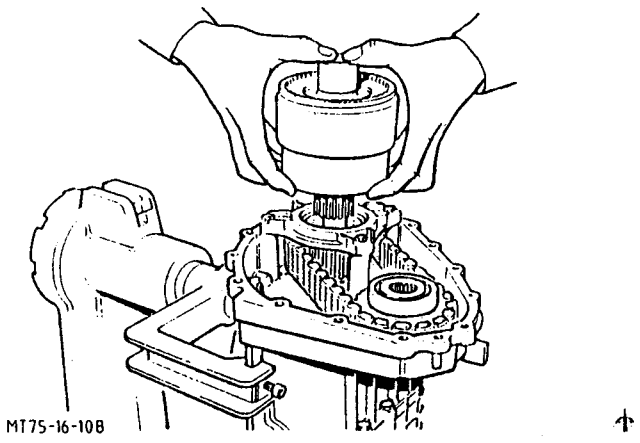


Fig.9. Lift off planetary gear train complete with viscous coupling and annulus.

11. Unscrew the 2 short and the 2 long retaining bolts from the drive sprocket bearing housing, Fig.10, and remove them with the U-shaped washers.

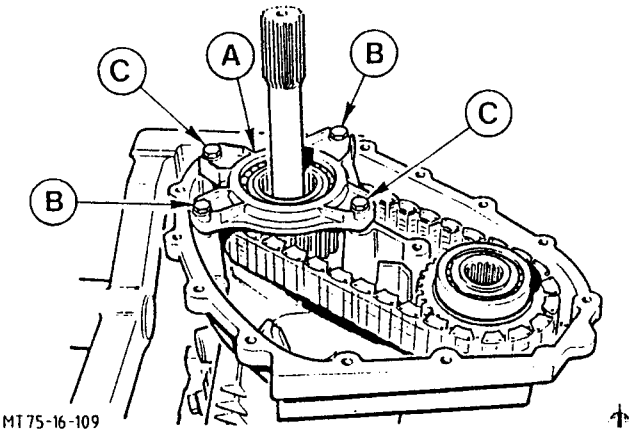


Fig.10. A - Bearing housing
B - Short bolts
C - Long bolts

12. Prise off the drive sprocket bearing housing with 2 levers with hardwood blocks between the levers and the mating face, Fig.11.

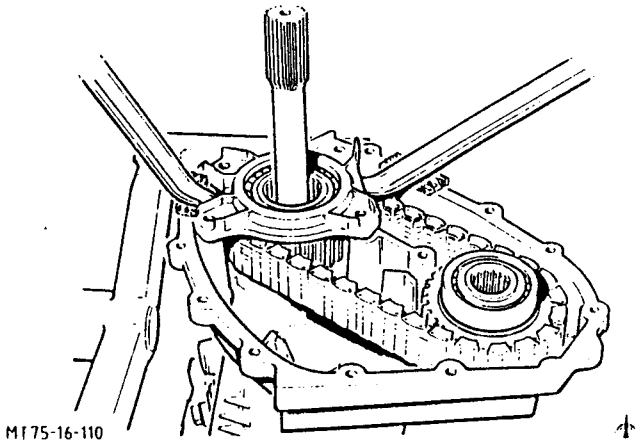


Fig.11. Prise off bearing housing with 2 levers.

13. Withdraw the radial oil seal for the driveshaft to the front axle box using Special Tool 21-051, Fig.12.

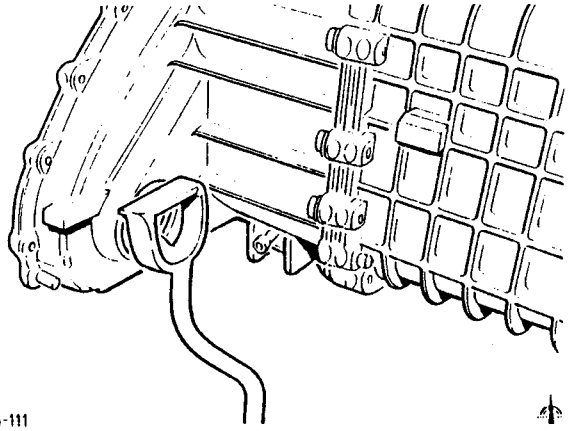


Fig.12. Extract radial oil seal using Special Tool 15-051.

14. Remove the driving and the driven sprocket each with its 2 ball bearings by applying even pressure on the upper ball bearing of the driving sprocket with 2 levers (on hardwood blocks) while simultaneously driving the driven sprocket and its ball bearings out of the housing using Special Tool 16-044, Fig.13.

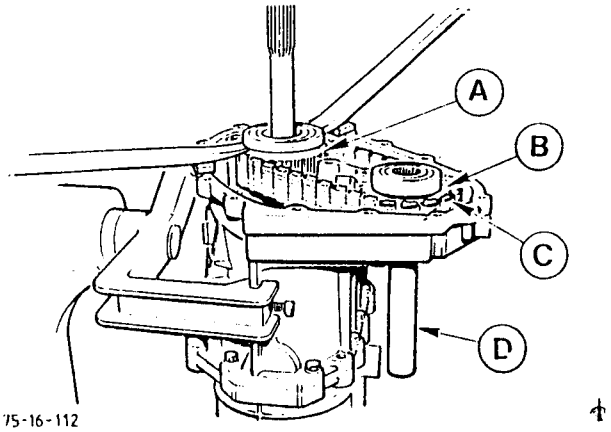


Fig.13. A - Driving sprocket
B - Driven sprocket C - Chain
D - Special Tool 16-044

15. Press the selector shaft in to engage 4th gear. Unscrew the transmission mainshaft nut using Special Tool 16-051, Fig.14A., while holding the input shaft with Special Tool 15-073 and a spanner, Fig.14B.

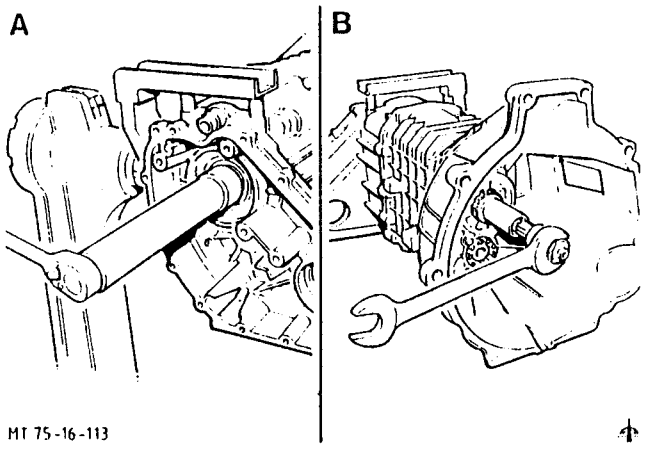


Fig.14. Unscrew transmission mainshaft nut.
A - Unscrew transmission mainshaft nut using Special Tool 16-051
B - Hold input shaft with Special Tool 15-073 and spanner

Fig.14. Unscrew transmission mainshaft nut.

16. Remove the retainer from the countershaft bearing housing (1 bolt), Fig.15A. Remove the countershaft bearing housing using a conventional 17 mm hexagon socket, Fig.15B.

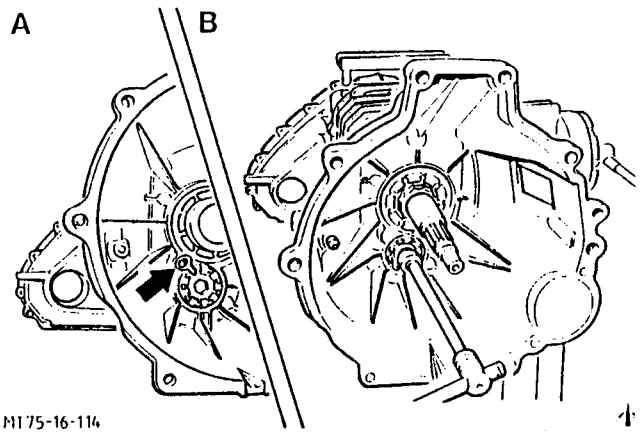


Fig.15. Countershaft bearing housing.
A - Remove circlip
B - Remove bearing housing

17. Remove the clutch release bearing guide sleeve using Special Tool 16-040, Fig.16. Remove the steel washer from the guide sleeve.

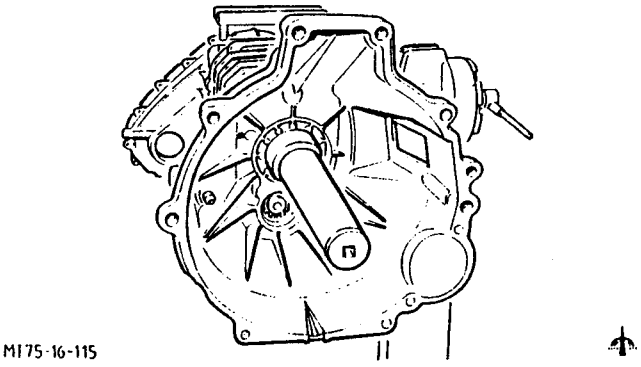


Fig.16. Remove clutch release bearing guide sleeve using Special Tool 16-040.

18. Remove the input shaft inner circlip, Fig.17.

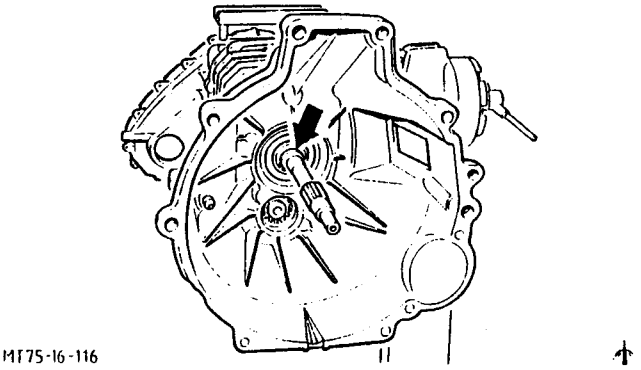


Fig.17. Input shaft inner circlip.

19. Unscrew the threaded plug of the selector detent mechanism. Remove the spring and pin. Extract the sleeve with circlip pliers. Remove the ball, Fig.18.

Fig.18. Selector shaft detent mechanism.
A - Threaded plug
B - Spring
C - Pin
D - Circlip pliers
E - Sleeve
F - Ball

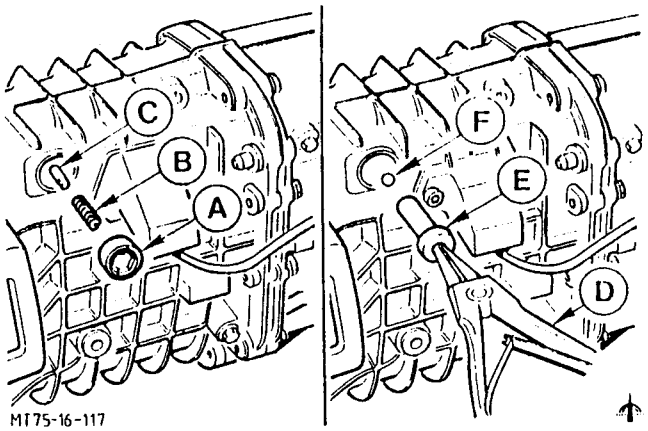


Fig.18. Selector shaft detent mechanism.

20. Remove the locking plate detent screw. Remove the reversing light switch (2 screws).
Loosen the 2 (blue) bolts of the reverse gear idler shaft but only remove the front bolt, Fig.19.

Fig.19. Bolts/screws on left-hand side of transmission.
A - Reversing light switch with retaining screws
B - Detent screw of locking plate/ transmission breather
C - Rear bolt of reverse gear idler shaft
D - Front bolt of reverse gear idler

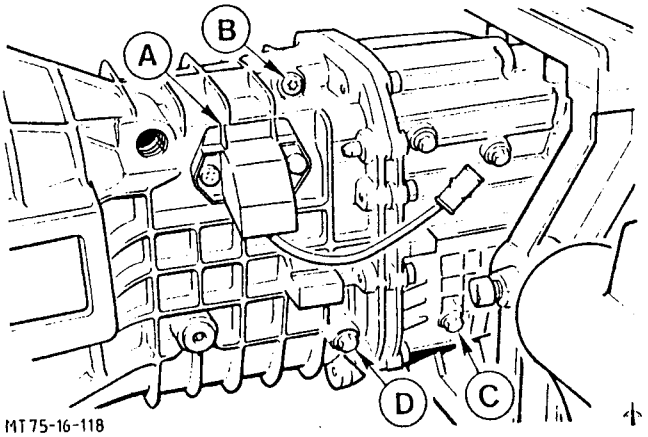


Fig.19. Bolts/screws on left-hand side of transmission.

To Remove Front Transmission Housing

NOTE: Do not hammer back the locating dowels.

21. Undo and remove the 10 transmission housing retaining bolts, Fig.20.

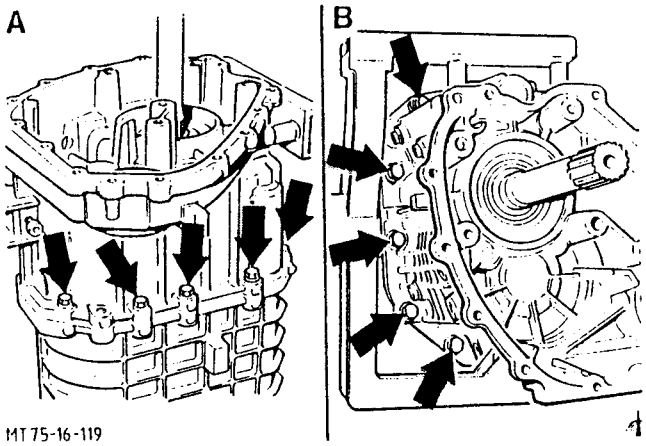


Fig.20. Transmission housing retaining bolts.
A - Right-hand side
B - Left-hand side

22. Separate the transmission housing sections. Screw in a transmission housing retaining bolt part of the way. Position a lever under the bolt. Carefully separate the transmission housing sections using 2 levers, Fig.21.

NOTE: Do not apply the levers on the mating faces.

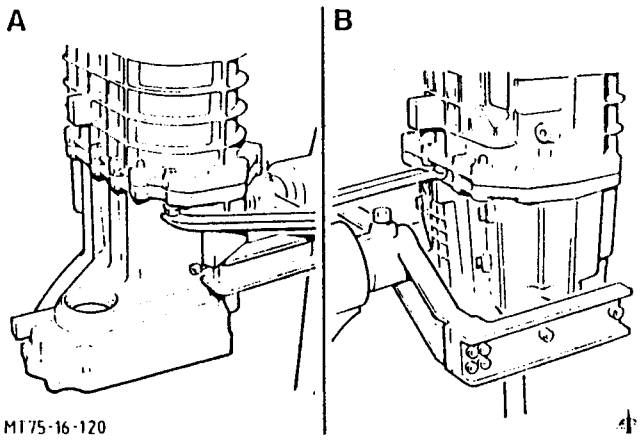


Fig.21. Separate transmission housing sections.
A - Leverage point on right-hand side with inserted bolt and block
B - Leverage point on left-hand side

Fig.21. Separate transmission housing sections.

23. Pull the front transmission housing off the rear transmission housing. To do this, screw Special Tools 16-041 and 16-041-01 into the threaded hole of the guide sleeve. Carefully pull the front transmission housing off the rear transmission housing, Fig.22.

NOTE: Before screwing in the Special Tool, check the threaded hole and the thread of the Special Tool for damage or dirt. After fitting, unscrew the adaptor (16-041-01) a quarter turn by hand. The front transmission housing must come away from the locating dowels easily. Do not apply any appreciable pressure to the input shaft via the Special Tool when separating the housing halves as this could damage the 4th gear synchronizer ring. If necessary, use levers to assist with the separating operation but do not apply the levers on the mating faces.

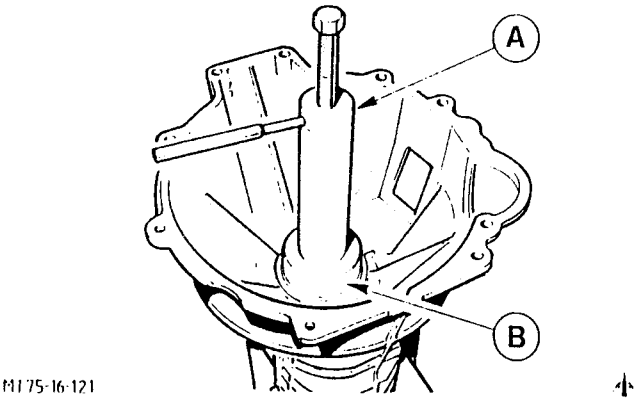


Fig.22. Pull off front transmission housing.
A - Special Tool 16-041
B - Special Tool 16-041-01

To Remove the Transmission Mainshaft and Gear Assembly:

24. Withdraw the auxiliary selector shaft from the 3rd/4th gear selector fork. Remove the 3rd/4th gear selector fork from the 3rd/4th gear synchronizer unit.

Unscrew the second bolt of the reverse gear idler shaft. Remove the magnetic disc from the rear transmission housing, Fig.23.

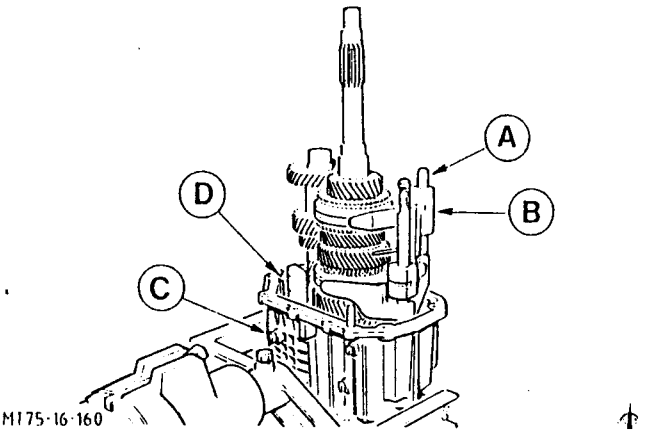


Fig.23. Remove transmission components.
A - Auxiliary selector shaft
B - 3rd/4th gear selector fork
C - Bolt of reverse gear idler shaft
D - Magnetic disc

Fig.23. Remove transmission components.

NOTE: Before pressing the transmission mainshaft out of the bearing in the rear transmission housing, move the selector shaft to the "neutral position" so that the guide pin cannot be broken off the selector pin holder.

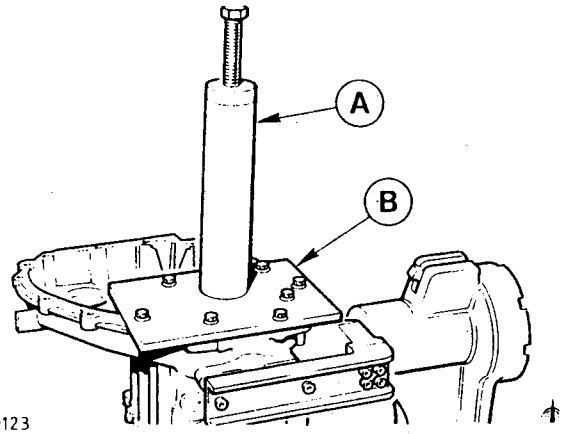


Fig.24. Special Tools attached.
A - Special Tool 16-041
B - Special Tool 16-041-02

25. Turn the transmission housing through 180°. Slide Special Tool 16-041 over the mainshaft. Secure Special Tool 16-041-02 to the rear transmission housing with 7 bolts, Fig.24.

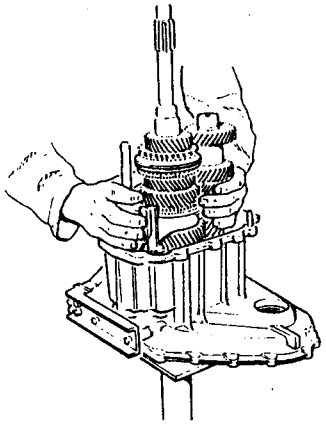


Fig.25. Lift out complete gear assembly with main selector shaft.

26. Swivel the transmission so that the tool is at the bottom. Press the transmission mainshaft upwards out of the bearing in the transfer box using Special Tool 16-041, Fig.24.
Lift the input shaft, transmission mainshaft, countershaft, main selector shaft and reverse gear idler shaft assembly out of the transmission housing, Fig.25.

NOTE: Hold the transmission components together with cable ties to facilitate removal.

Remove the Special Tools from the transfer box.

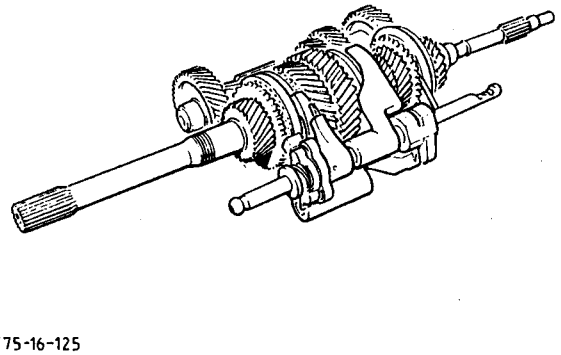


Fig.26. Complete gear assembly removed.

27. Remove the transmission mainshaft spacer sleeve from the transfer box, Fig.27.

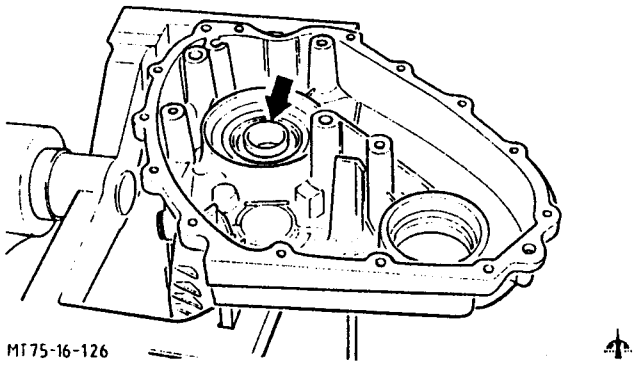


Fig.27. Transmission mainshaft spacer sleeve.

To Dismantle Transfer Box

28. Remove the thrust plate of the transmission mainshaft bearing from the transfer box (3 bolts), Fig.28.

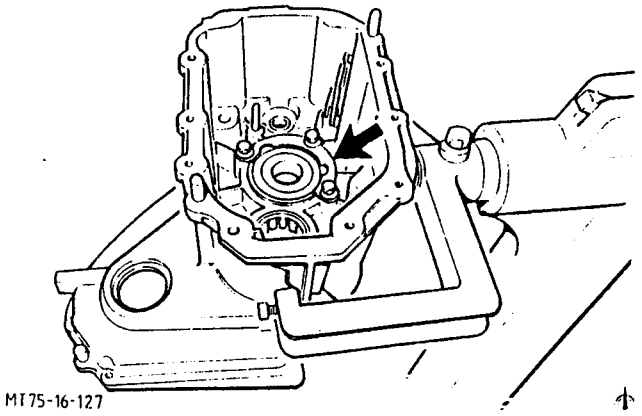


Fig.28. Retaining plate of transmission mainshaft bearing.

29. Drive the transmission mainshaft bearing out of the transfer box towards the inside using Special Tool 16-044, Fig.29.

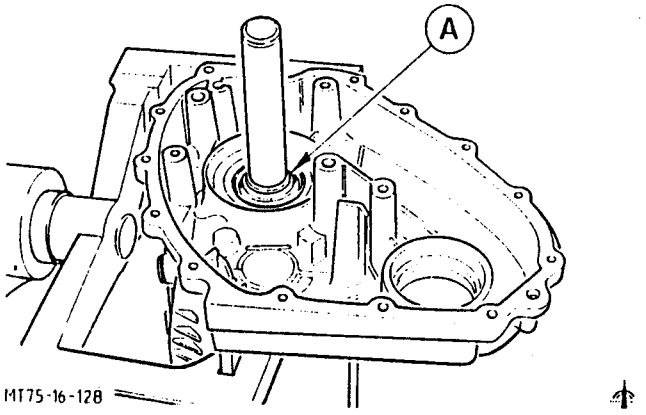


Fig.29. Remove transmission mainshaft bearing.
A - Special Tool 16-044

30. Drive the double-lipped radial oil seal of transmission mainshaft out of the transfer box from the inside using a suitable piece of tube, Fig.30.

NOTE: The radial oil seal has different outside diameters and therefore can only be removed in one direction.

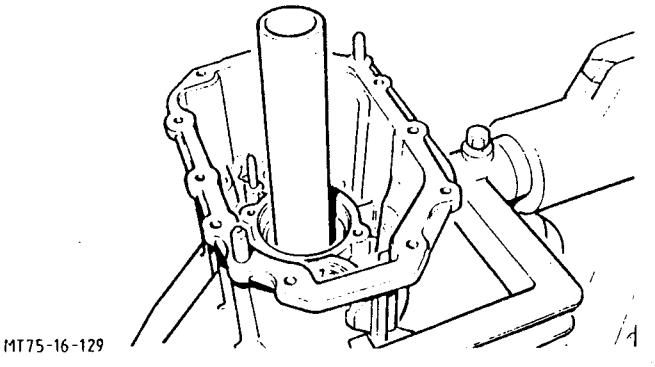


Fig.30. Drive out double-lipped radial oil seal with suitable length of tube.

31. Draw the countershaft roller bearing from the transfer box using a conventional internal extractor, Fig.31.

NOTE: Protect the mating faces of the transmission housing from damage with strips of aluminium.

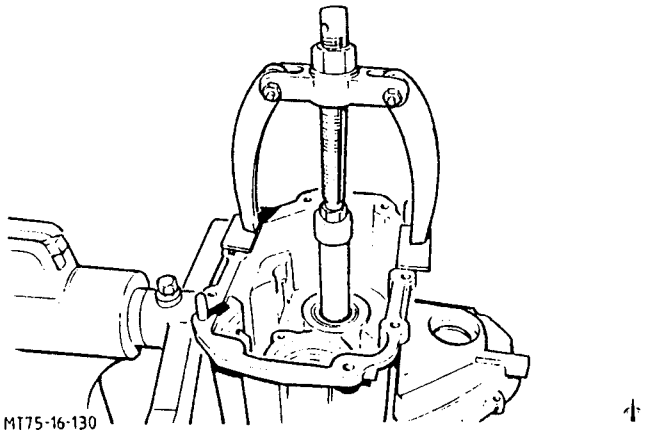


Fig.31. Extract roller bearing with conventional internal extractor.

32. Drive the bearing of the main selector shaft ball sleeve out of the transfer box with the radial oil seal using a suitable drift, Fig.32.

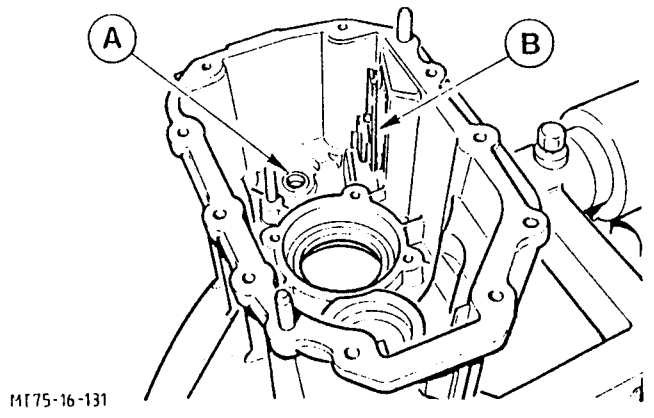


Fig.32. A - Main selector shaft ball sleeve
B - Selector gate

33. Remove the selector gate, Fig.32, from the transfer box (2 fit bolts), Fig.33.

NOTE: Only remove the selector gate if the transfer box is being replaced.

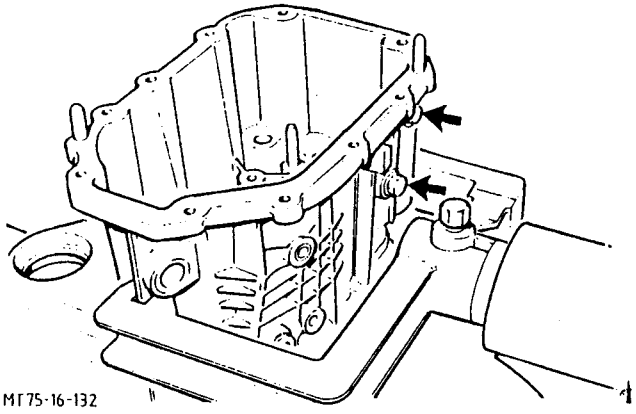


Fig.33. Selector gate special bolts.

To Reassemble Transfer Box

34. Fit the bearing of the main selector shaft ball sleeve bearing flush in the transfer box from the inside using Special Tool 21-044-A, Fig.34.

35. Fit the main selector shaft radial oil seal in the transfer box using an appropriate sleeve.

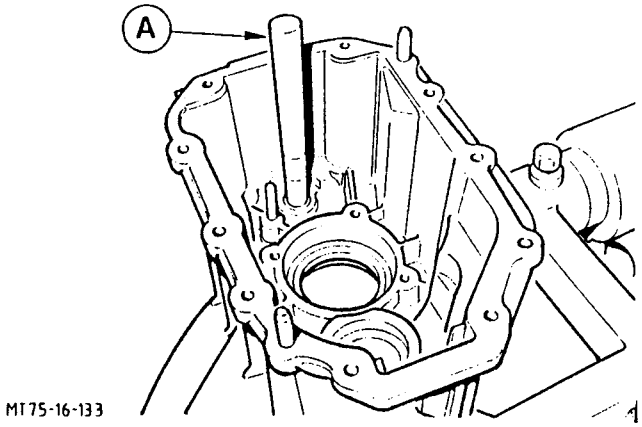


Fig.34. Fit main selector shaft ball sleeve.
A - Special Tool 21-044-A

36. If removed, fit the selector gate, Fig.35, in the transfer box with new special bolts.

37. Fit the countershaft roller bearing and the transmission mainshaft bearing.
To do this, heat the area around the bearing seats in the transfer box to a temperature of 70 to 100°C with a hot air blower.

NOTE: Cool the mainshaft bearing and countershaft bearing before fitting.

Fit the transmission mainshaft ball bearing with the closed side facing upwards and fit the countershaft roller bearing.

Secure the mainshaft bearing retaining plate with the 3 bolts, Fig.35

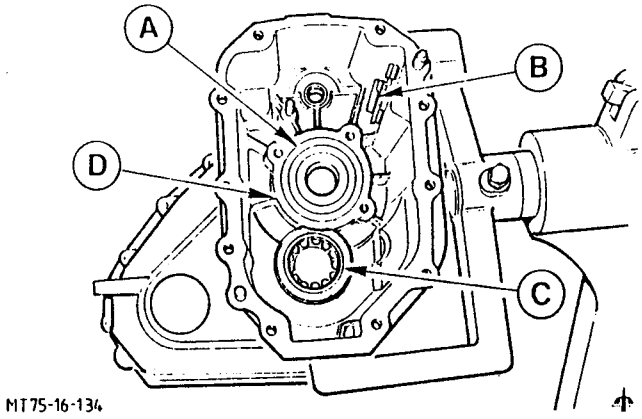


Fig.35. A - Bearing - closed side upwards
B - Selector gate
C - Roller bearing
D - Heated area

38. If the transfer box is being replaced, a new detent pin must be fitted for the gear shift. The distance between the tip of the detent pin and the housing mating face should be 69,0 ± 0,3 mm, Fig.36.

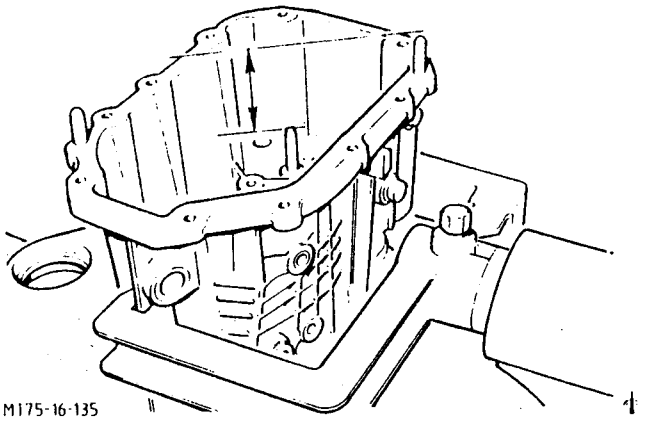


Fig.36. Distance from tip of detent pin to mating face 69,0 ± 0,3 mm.

To Dismantle Front Transmission Housing:

39. Drive the input shaft bearing out forwards, from the front transmission housing, using using a suitable length of tube. Detach the ball bearing circlip and discard the circlip, Fig.37.

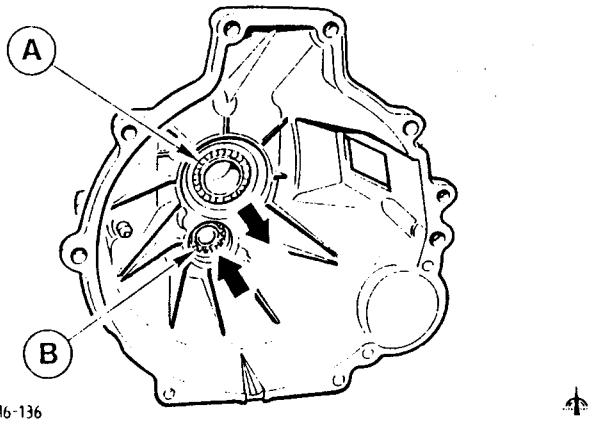


Fig.37. A - Input shaft bearing (removed towards front)
B - Countershaft roller bearing (removed towards rear)

40. Remove the main selector shaft ball sleeve bearing using a suitable internal extractor or, when available, Special Tool 21-036-A with the spindle of 21-037-B and an appropriate thrust element 55 mm in length and 13 mm in diameter, Fig.38

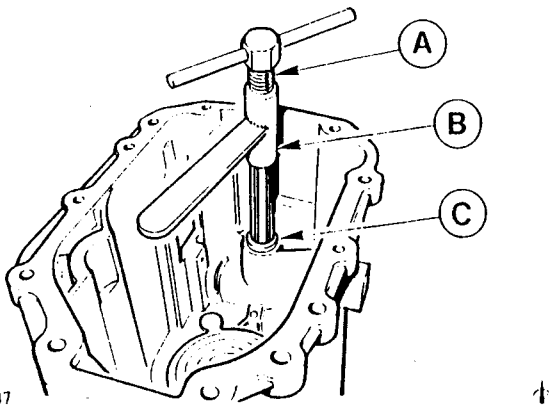


Fig.38. A - Special Tool 21-037-B
B - Special Tool 21-036-A
C - Main selector shaft ball sleeve bearing

To Reassemble Front Transmission Housing:

41. Fit the main selector shaft sleeve bearing flush in the front transmission housing from inside using Special Tool 21-044-A, Fig.39

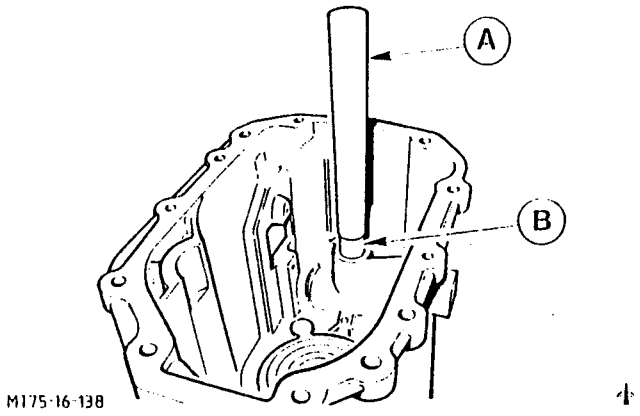


Fig.39. A - Special Tool 21-044-A
B - Main selector shaft sleeve bearing

42. Heat the bearing seat of the countershaft roller bearing in the front transmission housing to a temperature of 70 to 100°C with a hot air blower and fit the roller bearing so that it protrudes 2 mm using Special Tool 15-036, Fig.40.

NOTE: Do not drive the countershaft roller bearing flush into the front transmission housing but let it protrude approximately 2,0 mm, Fig.40.

43. Heat the bearing seat of the input shaft bearing in the front transmission housing to a temperature of 70 to 100°C using a hot air blower and fit the ball bearing flush with a suitable length of tube or, if available, Special Tool 15-064 and a drift from the clutch side, Fig.41.

NOTE: Fit the input shaft ball bearing with a new circlip. Cool the ball bearing before fitting circlip.

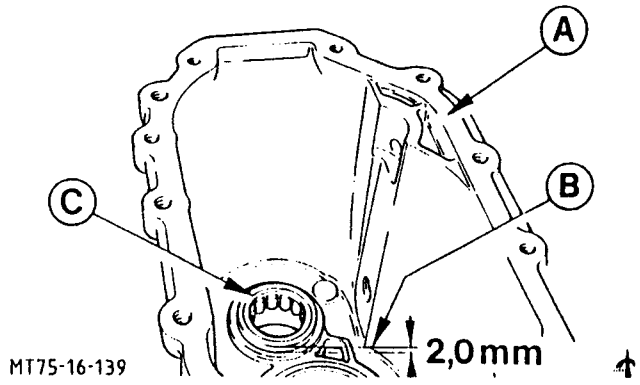


Fig.40. A - Front transmsisson housing
B - Protrusion of 2 mm
C - Countershaft roller bearing

Fig.41. Fit input shaft ball bearing in front transmission housing (shown with Special Tool 15-064)
A - Input shaft bearing
B - Drift
C - Special Tool 15-064

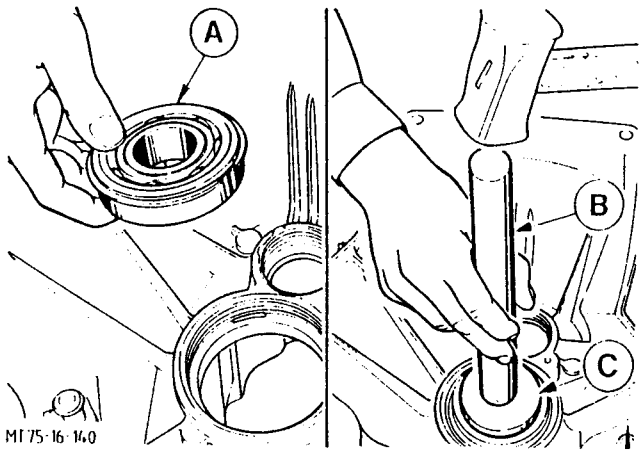


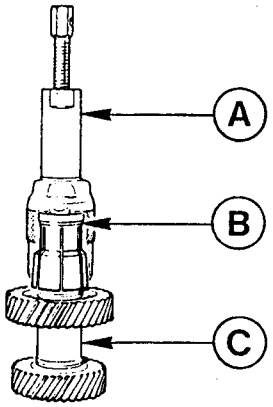
Fig.41. Fit input shaft bearing in front transmission housing (shown with Special Tool 15-064).

44. Pull off the countershaft bearing inner rings using Special Tool 15-050 A in conjunction with Special Tool 16-050, Fig.42.

Fig.42. Pull off countershaft bearing inner rings.
A - Special Tool 15-050 A
B - Special Tool 16-050
C - Countershaft

45. Heat the countershaft bearing inner rings to a temperature of approximately 100°C and draw them onto the countershaft.

NOTE: When the countershaft roller bearings are replaced, the inner rings must also be replaced as the two parts are paired.



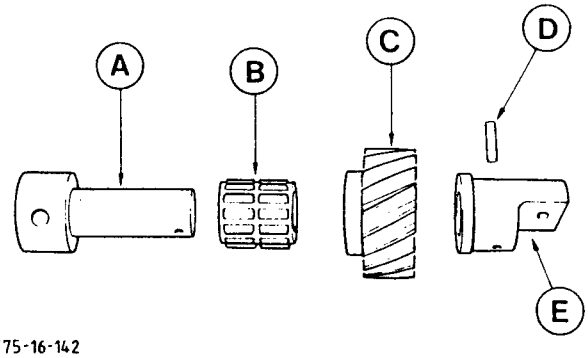
MT75-16-141

Fig.42. Pull off countershaft bearing inner rings.

To Dismantle Reverse Gear Idler Shaft:

46. Drive out the roll pin and remove the bearing block, idler gear and needle roller bearing from the idler shaft.

Fig.43. Reverse gear idler shaft - exploded view.
A - Shaft
B - Needle roller bearing
C - Idler gear
D - Roll pin
E - Bearing block



MT75-16-142

Fig.43. Reverse gear idler shaft - exploded view.

To Reassemble Reverse Gear Idler Shaft:

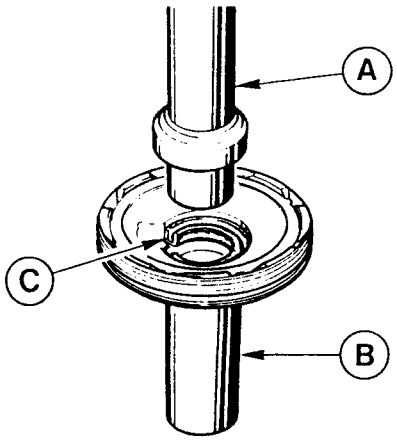
47. Slide the bearing, idler gear and bearing block onto the idler shaft and secure them with the roll pin.

NOTE: Make sure that the bearing block is fitted turned at the right angle. The threaded holes must line up with one another.

48. Remove the radial oil seal from the clutch release bearing guide sleeve.

49. Fit the radial oil seal in the clutch release bearing guide sleeve using Special Tool 16-044.

NOTE: The sealing lip must point towards the tool when the seal is fitted, Fig.44.



MT75-16-16

Fig.44. Fit radial oil seal.
A - Special Tool 16-044
B - Clutch release bearing guide sleeve
C - Radial oil seal in position

0392

To Dismantle Transmission Mainshaft

50. Remove the input shaft with the 4th gear synchronizer ring and input shaft/transmission mainshaft roller bearing.

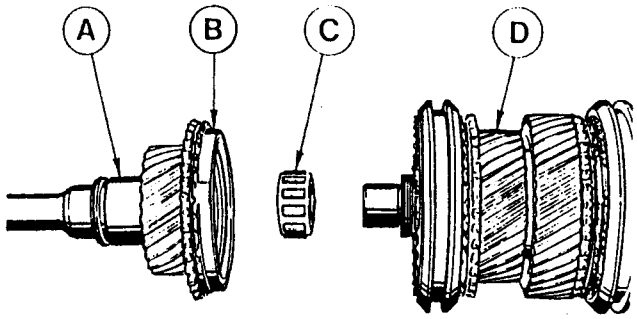


Fig.45. Input shaft removed.

Fig.45. Input shaft removed
A - Input shaft
B - 4th gear synchronizer ring
C - Input shaft/transmission mainshaft roller bearing
D - Transmission mainshaft

51. Remove the 5th gear cog with the synchronizer ring and needle roller bearing from the transmission mainshaft, Fig.46.

52. Clamp the transmission mainshaft in a vice with the output side pointing downwards.

NOTE: Use soft jaws.

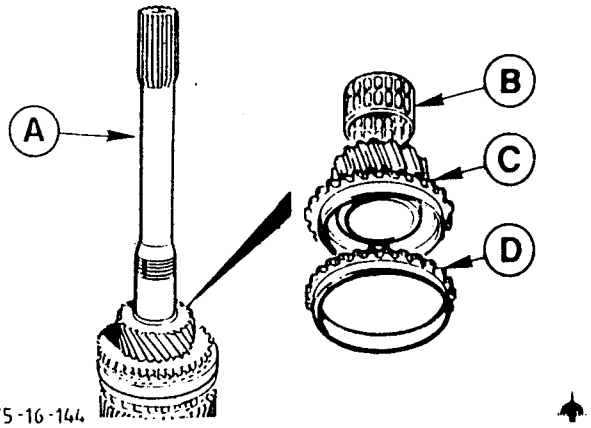


Fig.46.

Fig.46. A - Transmission mainshaft
B - Needle roller bearing
C - 5th gear cog
D - Synchronizer ring

CAUTION: Danger of injury - do not remove the synchronizer unit on its own otherwise it could fall apart.

53. Remove the snap ring for the 3rd/4th gear synchronizer unit from the transmission mainshaft and remove the 3rd/4th gear synchronizer unit complete with the 3rd gear cog and 3rd gear needle roller bearing from the transmission mainshaft, Fig.47.

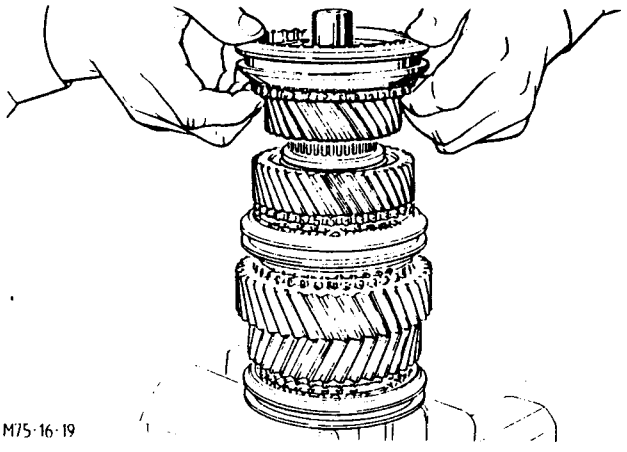


Fig.47. Remove 3rd/4th gear synchronizer unit complete with 3rd gear cog.

54. Heat the 3rd gear bearing bush to approx. 100°C with a hot air blower. Align the 2nd gear oil grooves with the openings in the bearing bush. Lift the bearing off the transmission mainshaft using 2 suitable levers and pull it off using a puller, Fig.48.

    Remove the 2nd gear cog with the needle roller bearing and the 2nd gear synchronizer ring from the transmission mainshaft.

NOTE: Do not mix up the needle roller bearings of the 2nd and 3rd gear cogs. Always keep the bearing with its associated cog.

CAUTION: Danger of injury - do not remove the synchronizer unit on its own otherwise it may fall apart.

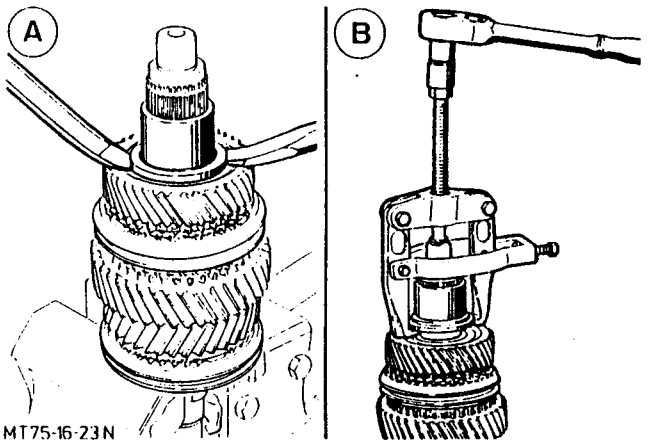


Fig.48. Remove 3rd gear bearing bush.
A - Lift
B - Pull off

55. Remove the snap ring of the 1st/2nd rear synchronizer unit from the transmission mainshaft.
    Remove the 1st/2nd gear synchronizer unit complete with 1st gear cog and 1st gear needle roller bearing from the transmission mainshaft.

56. Release the transmission mainshaft from the vice and clamp it again with the output side pointing upwards.

57. Remove the snap ring of the 5th/reverse gear synchronizer unit from the transmission mainshaft. Remove the 5th/reverse gear synchronizer unit complete with the reverse gear cog and needle roller bearing from the transmission mainshaft.

58. Do not remove the synchronizer unit on its own since there is a danger of it falling apart.

    The 1st/2nd gear and 5th/reverse gear synchronizer units are identical. Do not mix them up when reassembling.

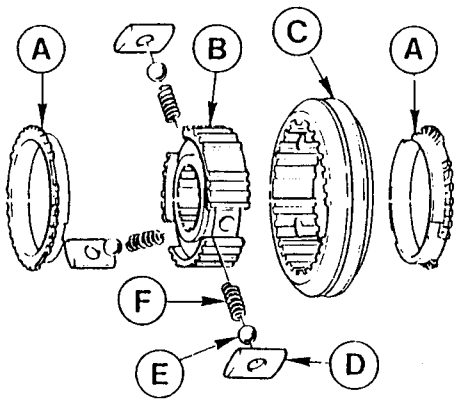


Fig.49. Synchronizer unit - exploded view.

Fig.49. Synchronizer unit - exploded view
A - Synchronizer rings
B - Synchronizer hub
C - Selector ring
D - Inserts
E - Ball
F - Spring

To Reassemble Transmission Mainshaft:

NOTE: Replace all the snap rings and circlips. Select new snap rings and circlips so that they fit in the appropriate groove without any play, Fig.50. Snap rings and circlips are available in different thicknesses (see parts Microfiche). Before assembling, oil all the transmission parts, synchronizer rings and needle roller bearings with the specified transmission fluid (see Technical Data).

59. Clamp the transmission mainshaft in the vice with the output side pointing upwards.

NOTE: Use soft jaws.

60. Slide the reverse gear needle roller bearing and the reverse gear cog onto the transmission mainshaft. Fit the 5th/reverse gear synchronizer unit and synchronizer ring on the mainshaft and secure them with the circlip.

61. Release the transmission mainshaft from the vice and clamp it again with the output side pointing downwards.

62. Slide the 1st gear needle roller bearing and cog onto the transmission mainshaft. Fit the 1st/2nd gear synchronizer ring, synchronizer unit and cog on the transmission mainshaft and secure them with a snap ring, Fig.51.

63. Slide the 2nd gear synchronizer ring, needle roller bearing and 2nd gear cog onto the transmission mainshaft.

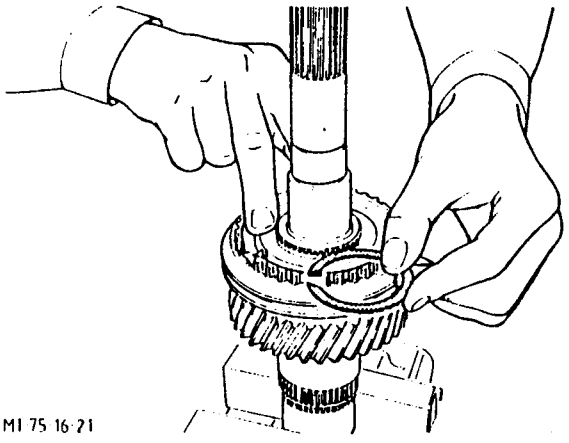


Fig.50. Select circlip (5th/reverse gear synchronizer MT-75 shown without 4x4).

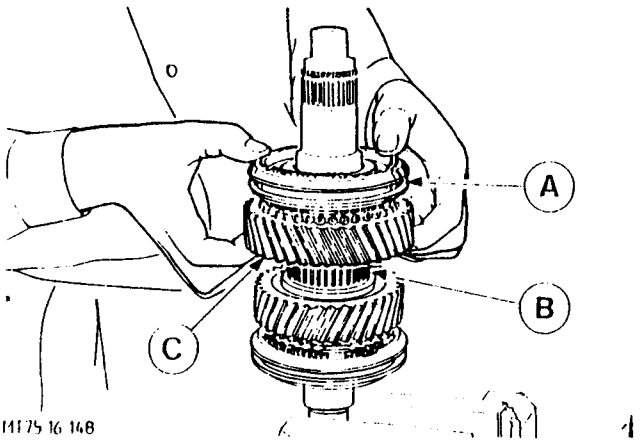


Fig.51. Fit 1st/2nd gear synchronizer unit.
A - 1st gear cog
B - Synchronizer unit
C - 1st gear needle roller bearing

64. Heat the bearing bush of the 3rd gear needle roller bearing to a temperature of approximately 100°C and slide the bearing bush onto the transmission mainshaft.

NOTE: Make sure that the bearing bush is slid fully onto the transmission mainshaft and is in contact with the shoulder on the transmission mainshaft, Fig.52. Only replace the 3rd gear needle roller bearing in conjunction with the bearing bush.

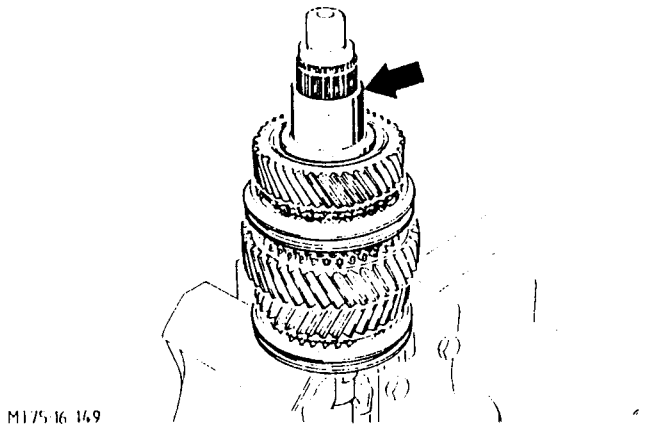


Fig.52. Bearing bush of 3rd gear needle roller bearing.

65. When the bearing bush has cooled, fit the 3rd gear needle roller bearing and cog. Slide the synchronizer ring and the 3rd/4th gear synchronizer unit with the short collar facing upwards, onto the transmission mainshaft and secure them with a snap ring, Fig.53.

66. Remove the transmission mainshaft assembly from the vice. Fit the 5th gear synchronizer ring, 5th gear needle roller and cog on the transmission mainshaft.

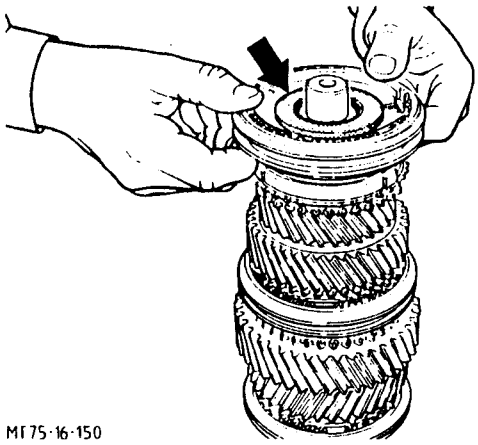


Fig.53. Short collar of 3rd/4th gear synchronizer unit.

To Dismantle Main Selector Shaft:

67. Remove the circlip in front of the spring retainer from the main selector shaft. Remove the spring retainer, spring and spring carrier, Fig.54.

NOTE: Catch the two balls of the spring carrier.

Fig.54. Selector shaft - exploded view
A - Spring retainer
B - Spring carrier
C - Selector pin holder
D - Selector pin
E - Main selector shaft
F - Locking sleeve
G - 1st/2nd gear selector fork
H - Balls
J - Spring
K - Circlip

68. Drive the roll pin out of the selector pin holder and main selector shaft. Pull the selector pin holder off the selector shaft.

69. Remove the 1st/2nd gear selector fork and locking sleeve from the main selector shaft.

70. Drive the roll pin out of the selector pin and main selector shaft and remove the selector pin.

NOTE: Do not remove the actuating pin for the reversing light switch, Fig.54. The main selector shaft is supplied complete with the actuating pin.

To Assemble Main Selector Shaft:

71. Slide the selector pin onto the main selector shaft and secure it with the roll pin. The pin must point in the opposite direction to the actuating pin for the reversing light switch.

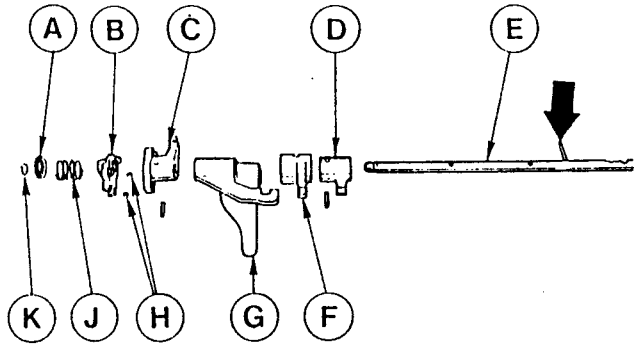
72. Slide the locking sleeve onto the selector shaft and selector pin and fit the 1st/2nd gear selector fork on the selector shaft, Fig.55.

73. Slide the selector pin holder onto the selector shaft and secure it with the roll pin. Press the roll pin in centrally, i.e. so it is countersunk on both sides.

NOTE: The pins on the selector pin holder must point in the same direction as the actuating pin for the reversing light switch, Fig.56.

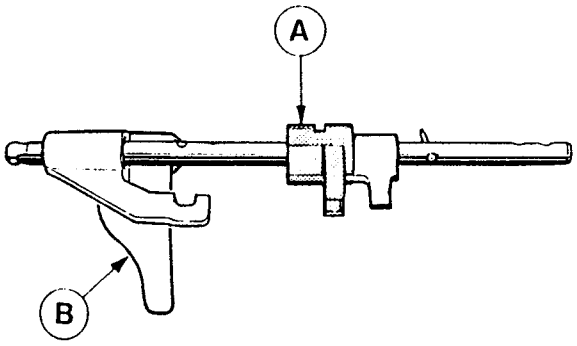
74. Fit the spring carrier with the two balls on the main selector shaft. Fit the spring and spring retainer and secure them with a snap ring.

NOTE: The opening in the spring carrier for the detent pin must face in the opposite direction to the actuating pin for the reversing light switch.



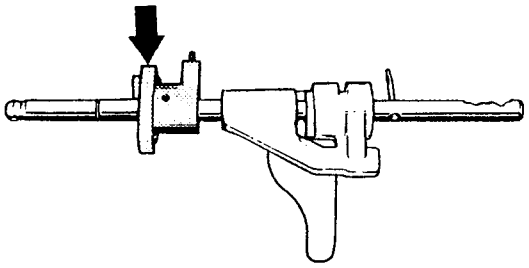
MT75-16-151

Fig.54. Selector shaft - exploded view.



MT75-16-152

Fig.55. Fit selector fork and locking sleeve.
A - Locking sleeve
B - 1st/2nd gear selector fork



MT75-16-153

Fig.56. Selector pin holder.

To Reassemble Transmission

75. Clamp the transmission mainshaft assembly in the vice with the output side pointing downwards.

NOTE: Use soft jaws.

76. Fit the main selector shaft to the transmission mainshaft with the spring carrier at the bottom so that the 1st/2nd gear slector fork engages in the middle 1st/2nd gear synchronizer unit, Fig.57.

77. Fit the input shaft with the 4th gear synchronizer ring and input shaft/transmission mainshaft roller bearing.

NOTE: Lubricate the bearing with transmission fluid (see Technical Data for specification).

78. Assemble the countershaft with the transmission mainshaft and secure the shafts with a cable tie, Fig.58.

Fig.58. Assemble countershaft with transmission mainshaft.
A - Input shaft
B - Transmission mainshaft
C - Countershaft
D - Cable tie

79. Insert the 5th/reverse gear selector fork in the lower (5th/reverse gear) synchronizer unit with the outrigger pointing upwards, to the right of the main selector shaft, Fig.59.

Fig.59. Secure reverse gear idler shaft and 5th/reverse gear selector fork with second cable tie (viewed from two directions).
A - Transmission mainshaft
B - Second cable tie
C - Idler shaft
D - 5th/reverse gear selector

80. Fit the reverse gear idler shaft to the countershaft and the transmission mainshaft with the end with the flat at the top. Secure the reverse gear idler shaft and 5th/reverse selector fork with a second cable tie, Fig.59.

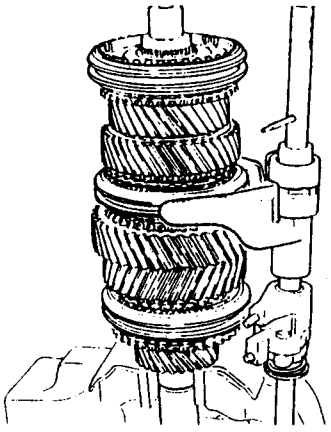


Fig.57. Fit main selector shaft to transmission mainshaft.

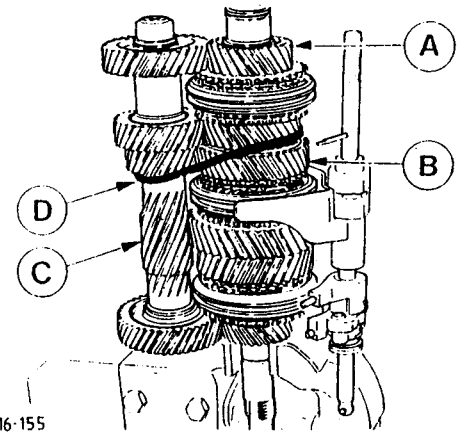


Fig.58. Assemble countershaft with transmission mainshaft.

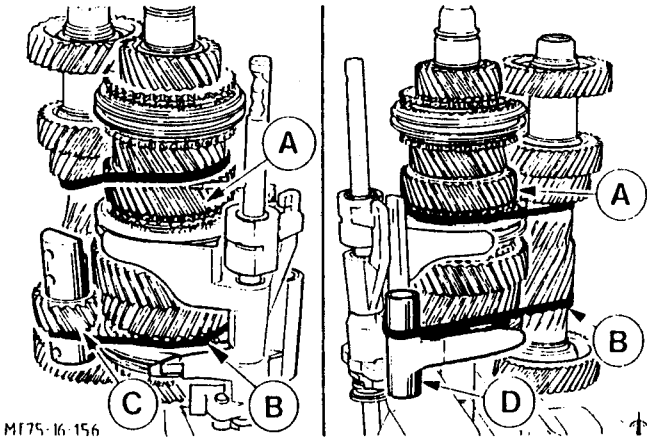


Fig.59. Secure reverse gear idler shaft and 5th/reverse gear selector fork with second cable tie (view from two directions).

81. Position the transfer box upright on the assembly stand with the opening uppermost.

82. Release the complete gear assembly (transmission mainshaft, countershaft, main selector shaft, reverse gear idler, input shaft and 5th/reverse gear selector fork) from the vice and carefully insert it, output end first in the transfer box, Fig.60.

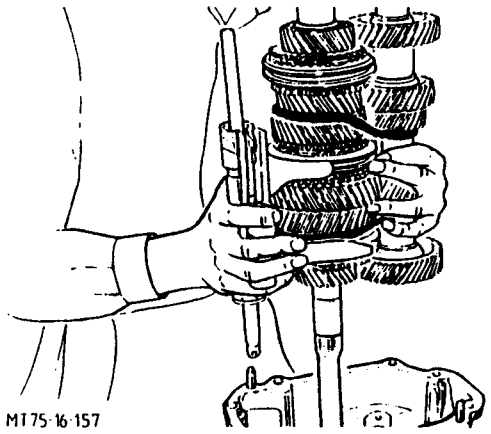


Fig.60. Insert complete drive train in transfer box.

83. Engage 4th gear. Draw the transmission mainshaft into the transfer box using Special Tools 16-053 and 16-051 and hold it with Special Tool 15-073, Fig.61.

NOTE: Fit Special Tool 16-053 with the short collar towards the transmission.

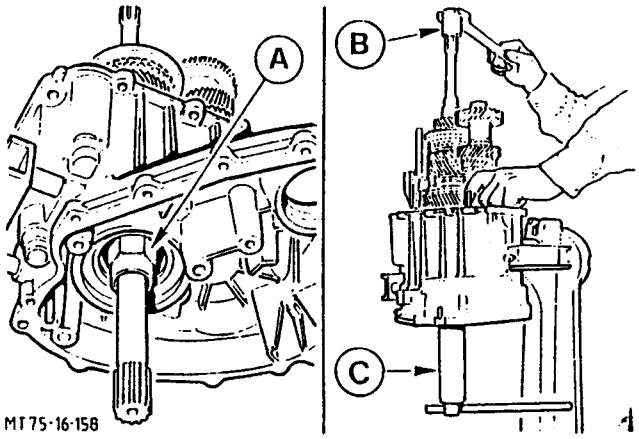


Fig.61. Draw in transmission mainshaft
A - Special Tool 16-053
B - Special Tool 15-073
C - Special Tool 16-051

Fig.61. Draw in transmission mainshaft.

84. Unscrew installer Special Tool 16-053. Fit installer with the long collar towards the transmission and pull the transmission mainshaft fully in. Disengage 4th gear.

NOTE: As the mainshaft is drawn in make sure that the countershaft goes into the rear roller bearing (move it gently). The distance "X" between the countershaft gear and the synchronizer cone on the 3rd, gear cog must not be zero, Fig.62.

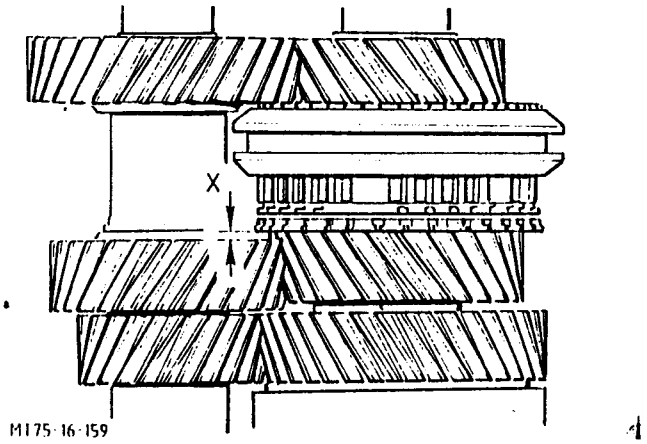


Fig.62. Distance "X" between countershaft gear and synchronizer cone on 3rd gear cog.

85. Insert the rear bolt of the reverse gear idler shaft and screw it in finger tight.

86. Insert the magnetic disc in the transmission housing and remove the cable ties from the gear assembly.

87. Insert the auxiliary selector shaft in the 3rd/4th gear and 5th/reverse gear selector forks and the transfer box, with the chamfered side pointing upwards, Fig.63.

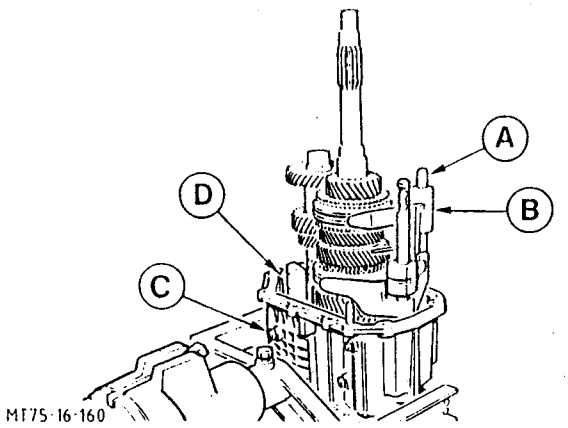


Fig.63. Gear assembly inserted.
A - Auxiliary selector shaft
B - 3rd/4th gear selector fork
C - Bolt
D - Magnetic disc

88. Slip the front transmission housing over the input shaft, transmission mainshaft, countershaft and selector shafts and support it on the transfer box with 3 spacer sleeves approximately 25 mm long, Fig.64.

89. Fit Special Tool 16-041 on the input shaft. Fit the 2-piece sleeve over the input shaft and secure it with the tube; slide the large sleeve over that and unscrew the nut and washer onto the thread.

Apply sealer (see Technical Data) to the transfer box mating face.

NOTE: The mating faces must be clean and free of grease and oil.

90. Remove the spacer sleeves. Draw the front transmission housing onto the transfer box.

NOTE: Do not damage the thread when fitting the Special Tool in the front transmission housing. Do not tilt the countershaft front ball bearing when drawing on the Front transmission housing. Observe the assembly process through the bearing hole in the housing.

91. Insert 2 housing bolts on opposite sides and carefully draw the housing halves together. Then insert the remaining 8 housing bolts. Tighten all the bolts to the specified torque, Fig.65. Remove the Special Tool.

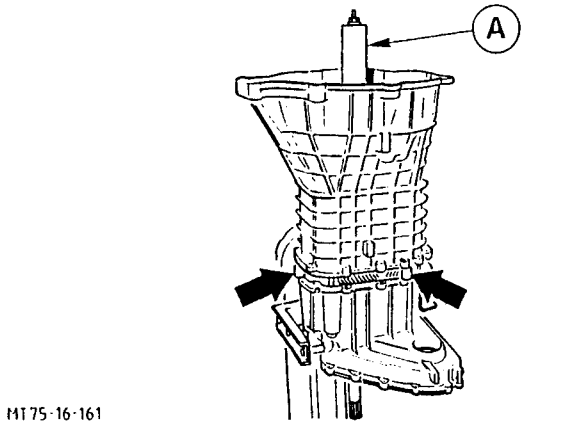


Fig.64. Front transmission housing supported on transfer box with spacer sleeves.
A - Special Tool 16-041

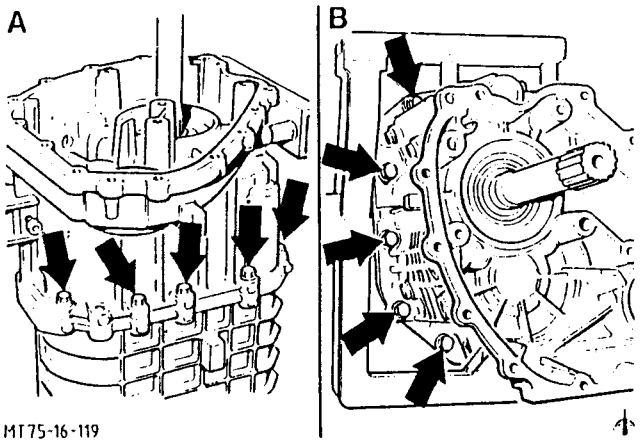


Fig.65. Transmission housing retaining bolts
A - Right-hand side
B - Left-hand side

92. Position the transmission horizontally on the stand.

93. Smear the thread of the locking plate detent screw with sealer (see Technical Data), insert it in the front transmission housing and tighten it to the specified torque, Fig.66.

NOTE: Sealer must not get into the transmission breather hole in the detent screw.

Fig.66. Screw/bolts on left-hand side of transmission.
A - Reversing light switch with retaining screws.
B - Detent screw of locking plate/ transmission breather
C - Rear bolt of reverse gear idler shaft
D - Front bolt of reverse gear idler shaft

94. Fit the front bolt of the reverse gear idler shaft and tighten the 2 bolts, Fig.66.

95. Fit the reversing light switch with the wiring pointing downwards, Fig.66.

96. Press the sleeve of the selector shaft detent mechanism into the front transmission housing as far as it will go, insert the ball, pin and spring. Smear the thread of the screw plug with sealer (see Technical Data), insert the screw and tighten it, Fig.67.

Fig.67. Selector shaft detent mechanism.
A - Sleeve
B - Ball
C - Pin
D - Spring
E - Threaded plug

97. Measure and fit the input shaft inner circlip, Fig.68.

NOTE: Circlips are available in 5 thicknesses. The differences are colour coded.

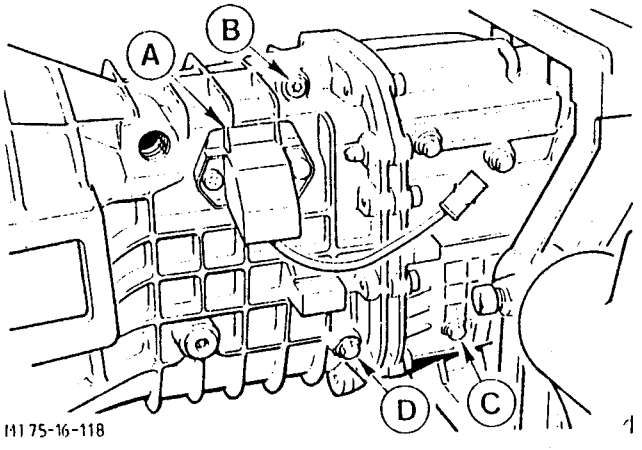


Fig.66. Screws/bolts in left-hand side of transmission.

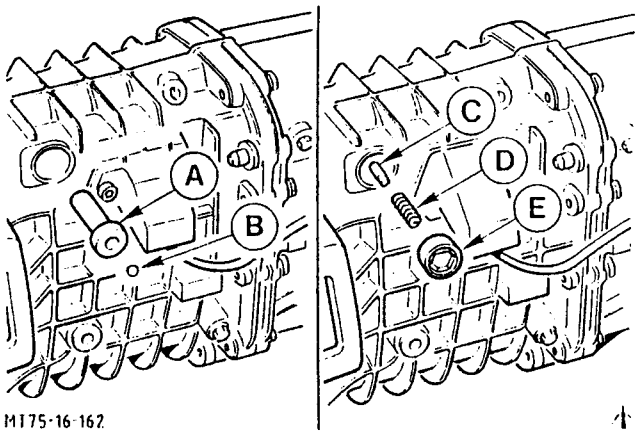


Fig.67. Selector shaft detent mechanism.

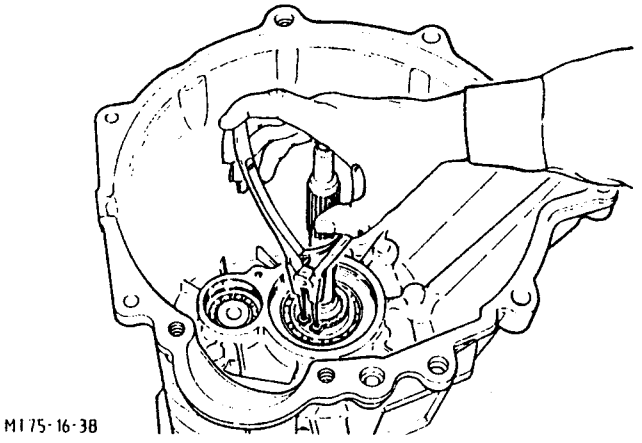


Fig.68. Fit input shaft circlip.

98. Fit the steel washer in the guide sleeve. Grease the thread of the guide sleeve (see Technical Data for grease specification). Screw the locating sleeve into the front transmission housing with a new greased O-ring. Tighten the guide sleeve using Special Tool 16-040, Fig.69.

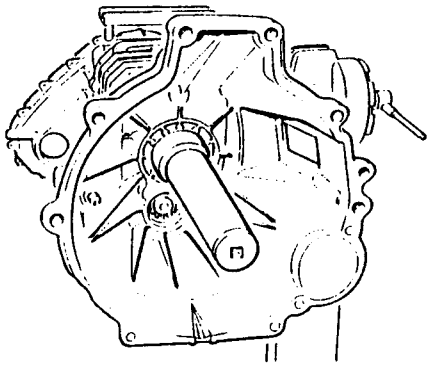


Fig.69. Tighten clutch release bearing guide sleeve with Special Tool 16-040.

99. Fit a new greased O-ring on the countershaft bearing housing. Screw the bearing housing into the front transmission housing and tighten the bearing housing, Fig.70.

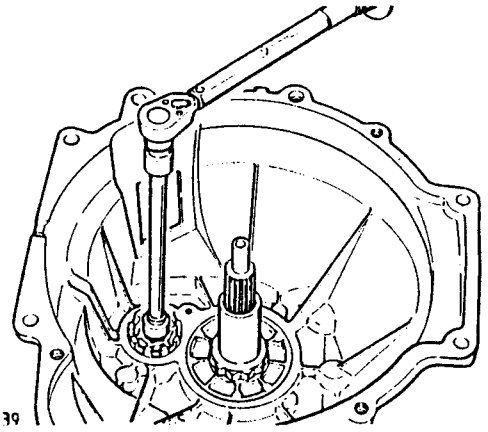


Fig.70. Fit countershaft bearing housing in front transmission housing.

100. Mark the position of the bearing housing in relation to the transmission housing. Slacken the bearing housing 60° from this position, Fig.71.

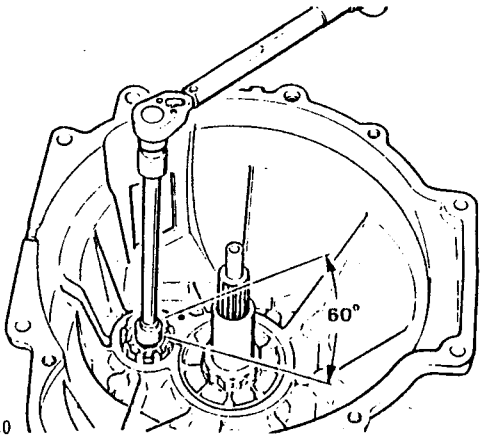


Fig.71 Slacken bearing housing 60° from marked position.

101. Strike two blows on each of the bosses next to the bearing housing using a brass drift and hammer to drive the countershaft bearing against the bearing housing, Fig.72.

102. Check that the countershaft bearing is resting against the bearing housing. The bearing housing must not screw in easily by hand otherwise repeat sub-operation 101.

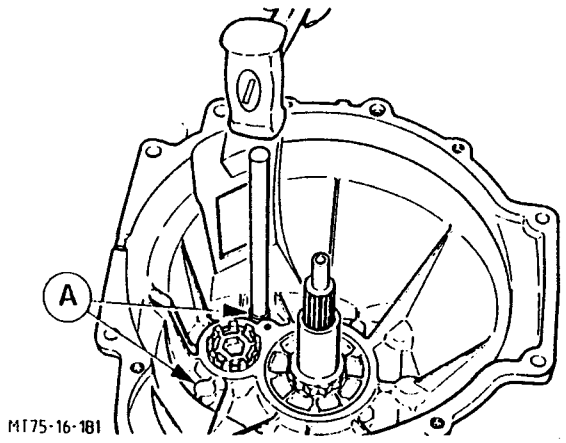


Fig.72. Drive countershaft bearing against bearing housing.
A - bosses

103. Fit the bearing housing retainer and secure it with the bolt.

104. Heat the transmission mainshaft spacer sleeve to a temperature of 70 to 100°C with a hot air blower and shrink it onto the rear end of the transmission mainshaft, Fig.73.

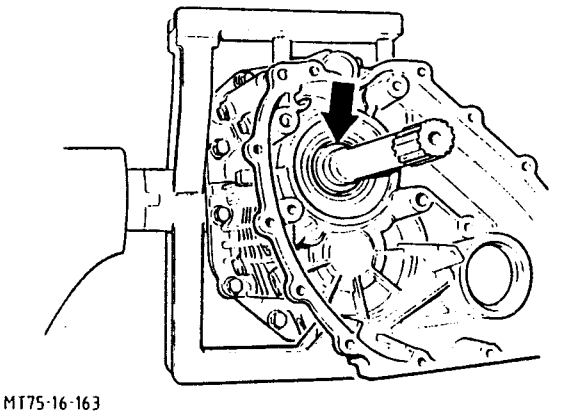


Fig.73. Transmission mainshaft spacer sleeve.

105. Fit the double-lipped radial oil seal of the transmission mainshaft in the rear transmission housing using Special Tool 16-054, Fig.74.

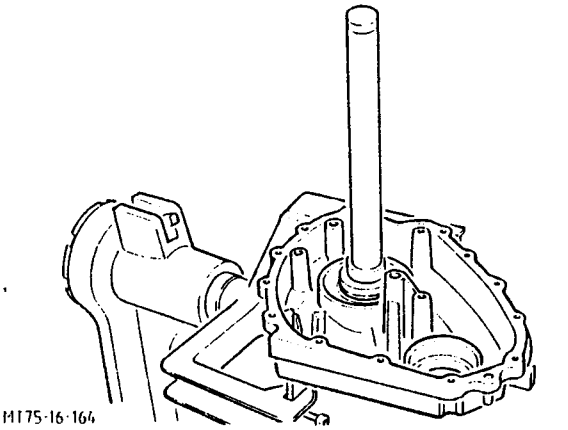


Fig.74. Fit transmission mainshaft transfer box radial oil seal using Special Tool 16-054.

106. Engage 4th gear. Fit the nut to the transmission mainshaft and tighten it with Special Tool 16-051 and a torque wrench, holding the input shaft with Special Tool 15-073 and a spanner, Fig.75.

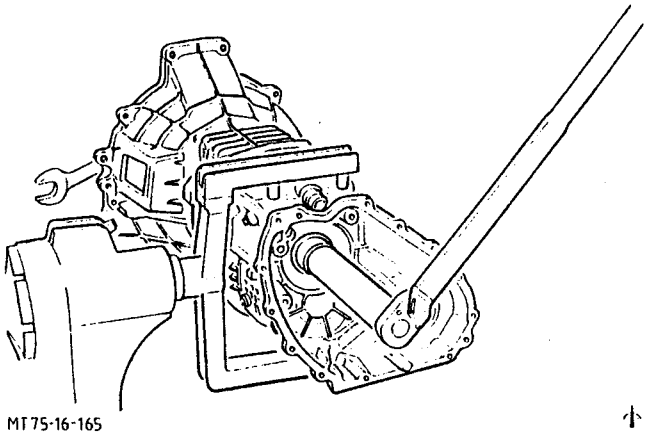


Fig.75. Tighten transmission mainshaft nut using Special Tool 16-051 and torque wrench.

To Dismantle Transfer Box

107. Remove the oil pipe and oil seal from the transfer box.
Detach the oil deflector from the transfer box housing (2 bolts), Fig.76.

Fig.76. Transfer box housing.
A - Oil pipe
B - Seal
C - Oil deflector
D - Output shaft
E - Drive plate

108. Remove the drive plate and the output shaft shim from the transfer box, Fig.76.

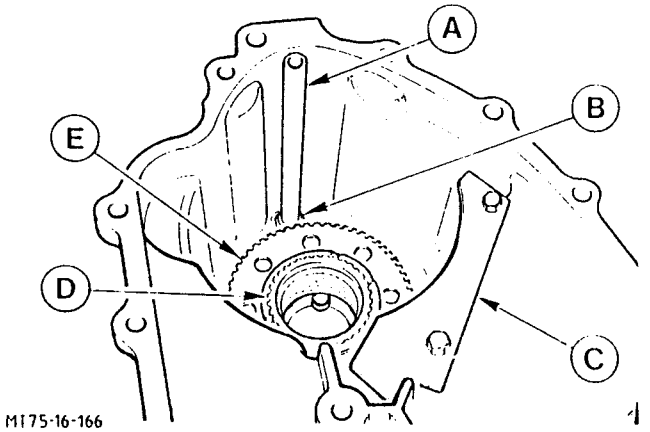


Fig.76. Transfer box.

109. Press the output shaft out of the transfer box housing using a press.

110. Remove the circlip of the transfer box housing bearing using a suitable drift, Fig.77.

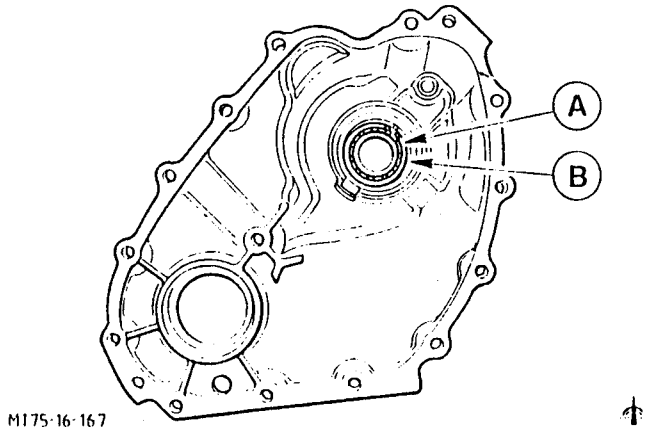


Fig.77. A - Transfer box bearing
B - Circlip

To Dismantle Output Shaft

111. Clamp the output shaft in a vice and pull off the output shaft ball bearing using a conventional three-legged puller and extension (Special Tool 16-025-01), Fig.78.

NOTE: Use aluminium jaws in the vice.

Fig.78. Pull off ball bearing.
A - Three-legged puller
B - Extension - Special Tool 16-025-01
C - Output shaft

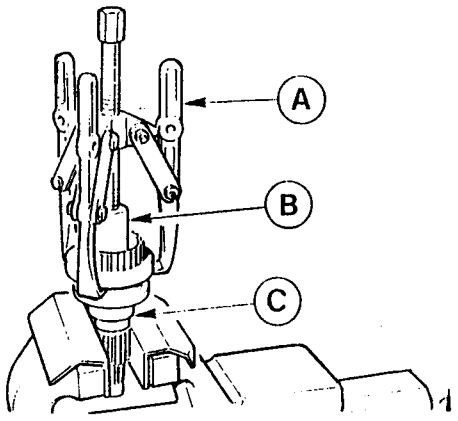


Fig.78. Pull off bearing.

To Assemble Output Shaft

112. Heat the output shaft bearing with a hot air blower and shrink it flush onto the bearing seat.

NOTE: Do not fit the drive plate and shim yet because the shim thickness must be measured again.

Fig.79. Output shaft components.
A - Output shaft
B - Bearing
C - Shim
D - Drive plate

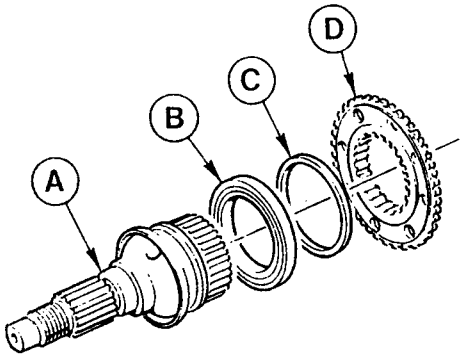


Fig.79. Output shaft components.

To Assemble Transfer Box

113. Heat the transfer box housing to a temperature of 70 to 100°C with a hot air blower, fit the transfer box housing bearing in the bearing seat and secure the circlip, Fig.80.

114. Drive the output shaft into the bearing in the transfer box housing using a copper drift.

115. Fit the oil baffle in the transfer box (2 bolts).

116. Fit the oil pipe and a new seal in the transfer box.

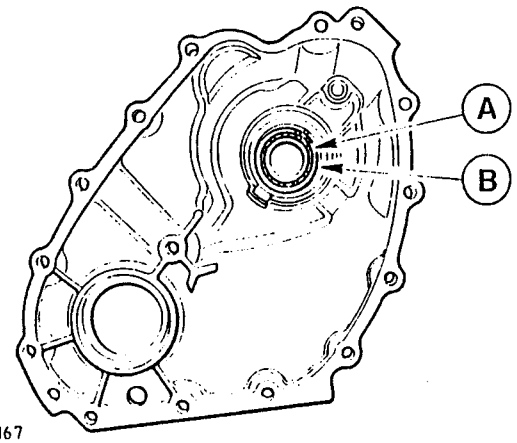


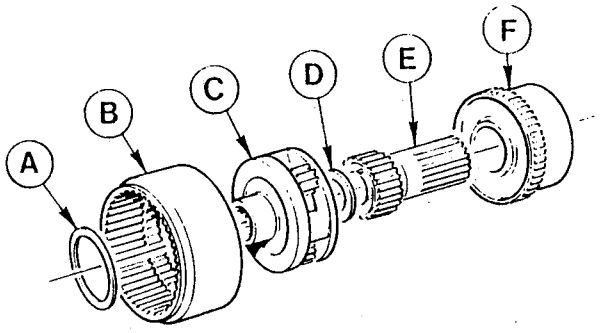
Fig.80. Fit bearing in transfer box housing.
A - Bearing
B - Circlip

117. Remove the annulus, planetary gear carrier and thrust washer from the sun wheel shaft, Fig.81.

Fig.81. Sun wheel shaft with planetary gear train and viscous coupling.
A - Shim (already removed)
B - Annulus
C - Planetary gear carrier
D - Thrust washer
E - Sun wheel shaft
F - Viscous coupling

118. Detach the sun wheel shaft from the viscous coupling by tapping it on a wooden block.

NOTE: Do not dismantle the viscous coupling any further.



MT75-16-171

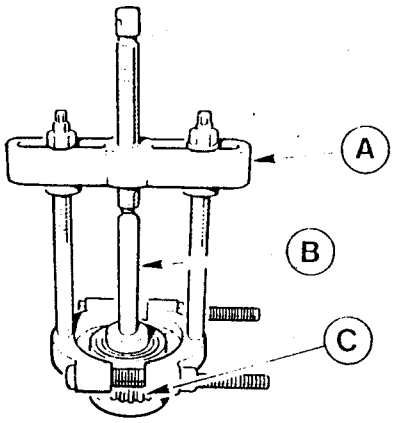
Fig.81. Sun wheel shaft with planetary gear train and viscous coupling.

119. Slide the viscous coupling onto the sun wheel shaft.

120. Slide the thrust washer, planetary gear carrier and annulus onto the sun wheel shaft.

121. Pull off the bearings of the driven and driving chain sprockets using a conventional puller and suitable thrust element, Fig.82.

122. Heat the bearings of the driven and driving chain sprockets to a temperature of approximately 80°C with a hot air blower and fit them onto the sprockets.



MT75-16-172

Fig.82. Pull off bearings
A - Puller
B - Thrust element
C - Driven sprocket

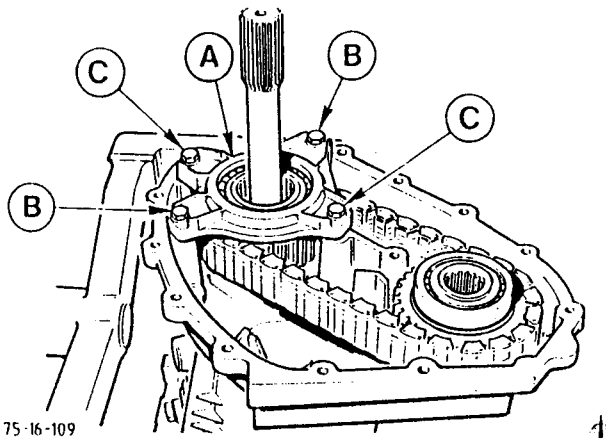
123. Insert the sprockets and chain in the housing.

To do this, heat the area of the housing around the driven sprocket to a temperature of 70 to 100°C with a hot air blower and let the driven sprocket cool for approximately half an hour.

NOTE: Fit the sprocket bearings evenly in the bearing seats in the transmission housing.

124. Fit the driving sprocket bearing housing with the 2 guide sleeves and secure it (2 long and 2 short bolts with U-shaped washers), Fig.83.

NOTE: Coat the threads of the bolts with thread-locking compound (see Technical Data) and insert them.



MT75-16-109

Fig.83. Fit bearing housing
A - Bearing housing
B - Short bolts
C - Long bolts

125. Insert the viscous coupling, planetary gear train and annulus complete.

126. Fit the planetary gear carrier shim and the drive plate to the planetary gear train, Fig.84.
Insert the magnetic disc in the housing, Fig.84.

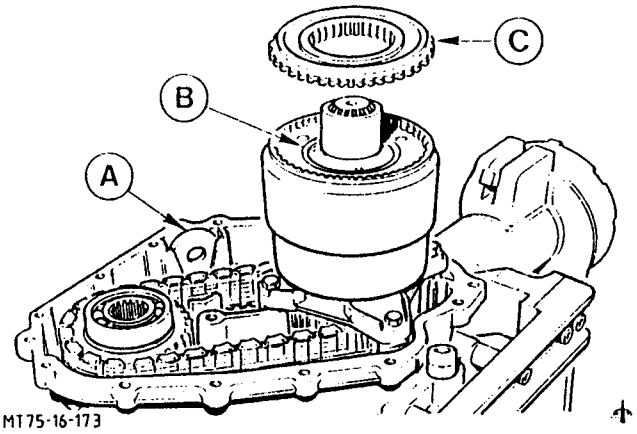


Fig.84. A - Magnetic disc
B - Shim
C - Drive

127. Fit the output flange radial oil seal in the rear transfer box housing using Special Tool 15-058 and adaptor 16-043-A, Fig.85. Grease the sealing lips of the radial oil seal (see Technical Data).

Fig.85. Fit radial oil seal.
A - Special Tool 15-058
B - Special Tool 16-043-A
C - Radial oil seal

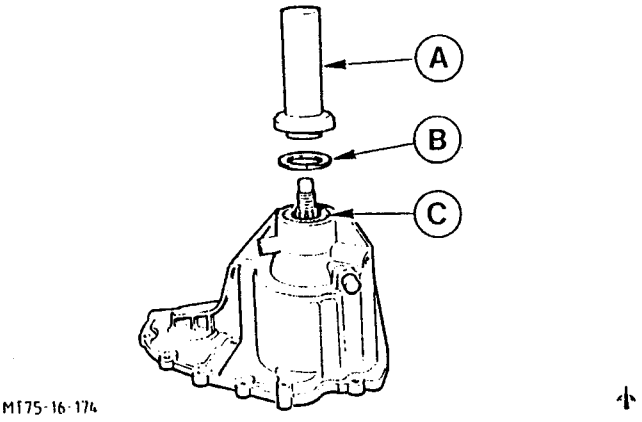


Fig.85. Fit radial oil seal.

128. Fit the output flange to the output shaft. Smear the thread of the output flange nut with sealer (see Technical Data) and fit the nut. Clamp Special Tool 15-030-A in a vice. Fit the output flange in Special Tool 15-030-A and tighten the nut, Fig.86.

Fig.86. Fit output flange.
A - Output flange
B - Special Tool clamped in vice
C - Torque wrench

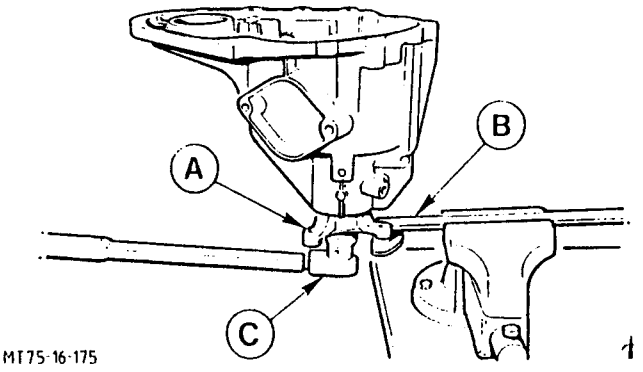
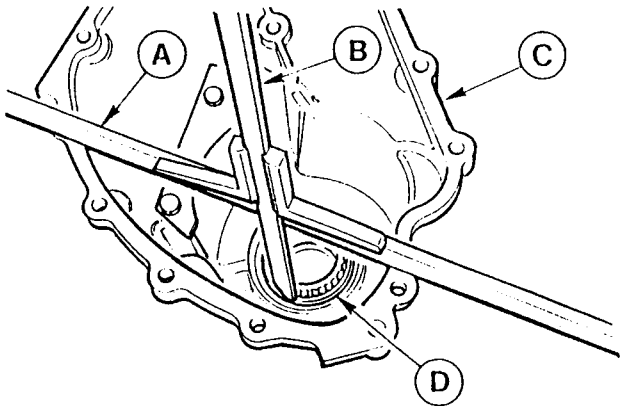


Fig.86. Fit output flange.

129. Measure for shim for transfer box end float:

NOTE: The mating faces must be clean and free of burrs.

Fig.87. Measure end float (distance from mating face of transfer box to bearing inner race shown from above).
A - Steel rule
B - Depth gauge
C - Mating face
D - Ball bearing inner race

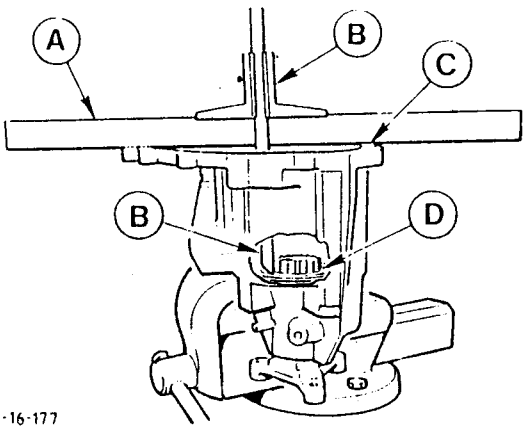


MT75-16-176

Measure the distance from the mating face of the transfer box housing to the bearing inner race with a steel rule and depth gauge at 3 points and note the figures, Fig.87 and Fig.88.

Fig.87. Measure end float (distance from mating face of transfer box to bearing inner race shown from above).

Fig.88. Measure end float (distance from mating face of transfer box housing to bearing inner race shown in partially scrap side view).
A - Steel rule
B - Depth gauge
C - Mating face
D - Bearing inner race



MT75-16-177

If the values differ, calculate the mean of the measured values, e.g. in the case of 3 measurements.

Measurement 1	158,2 mm
Measurement 2	+158,0 mm
Measurement 3	+158,1 mm

474,3 mm divided by 3 (number of measurements)

= 158,1 mm

Fig.88. Measure end float (distance from mating face of transfer box to bearing inner race shown in partially scrap side view).

Measure the width of the steel rule with a slide caliper and substract this figure from the measured distance.

Example

Measured distance	158,1 mm
Width of steel rule	- 29,5 mm
Distance from mating face to bearing inner race	128,6 mm

130. Measure the distance from the mating face of the transmission housing to the ground face of the drive plate with a steel rule and depth gauge at 2 points and note the figures, Fig.89.

Fig.89. Measure end float (distance from mating face of transmission housing to ground face of drive plate).
A - Depth gauge
B - Ground face of drive plate
C - Transmission housing mating face
D - Steel rule

If the measurements are different, calculate the mean from the measured values:

154,5 mm
+154,7 mm
309,2 mm

309,2 mm divided by 2 (number of measurements)

= 154,6 mm

Example:

Distance measured	154,6 mm
Width of steel rule	-29,5 mm
Distance from drive plate to mating face	125,1 mm

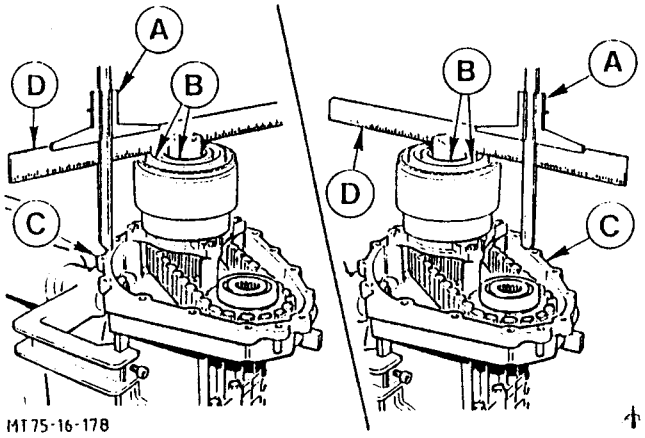


Fig.89. Measure end float (distance from mating face of transmission housing to ground face of drive plate).

To Determine Shim Thickness

131. Calculate the difference between the two measurements and substract 0,5 to 0,7 mm (mean 0,6 mm) for end float from this value. The difference is the size of shim to be fitted (see Parts Microfiche).

Example

Measurement 1	128,6 mm
Measurement 2	-125,1 mm
Difference	3,5 mm
Difference	3,5 mm
End float	- 0,6 mm
Thickness of shim	2,9 mm

132. Fit the required shim and the drive plate in the transfer box housing.

To Fit Transfer Box Housing

133. Heat the bearing seat on the output shaft bearing to a temperature of 70 to 100°C with a hot air blower.

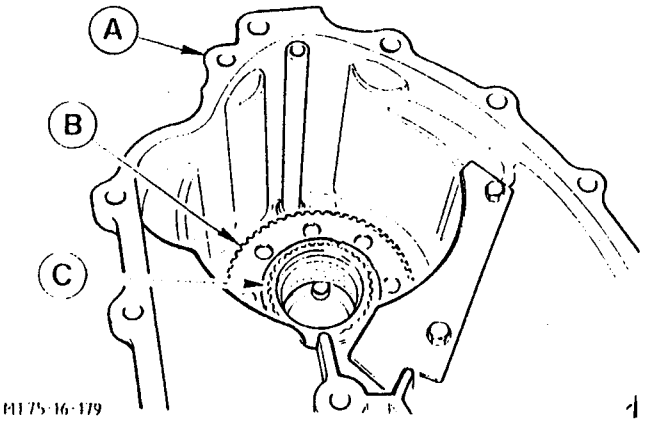


Fig.90. Transfer box housing.

Fig.90. Transfer box housing.
A - Transfer box housing
B - Drive plate (with shim underneath)
C - Output shaft

134. Smear the mating face (free of oil and grease) with sealer (see Technical Data).

135. Fit and align the transfer box housing on the transmission housing.

NOTE: The drive plate teeth must mesh with the teeth of the annulus.

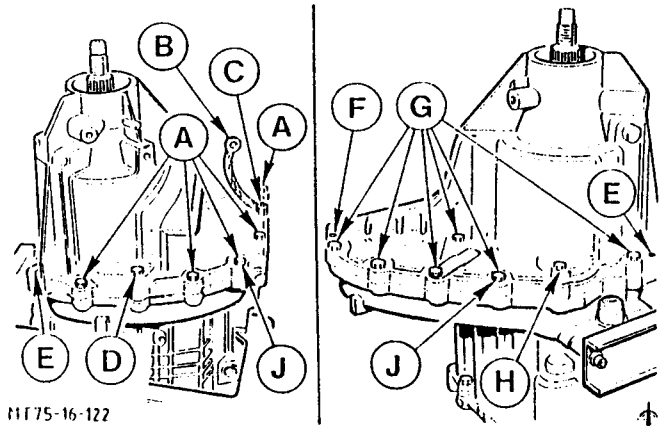


Fig.91. Bolts securing transfer box housing to rear transmission housing.

136. Drive the two locating dowels into the transmission housing, Fig.91 (E, F).

137. Tighten the transfer box housing retaining bolts uniformly, working diagonally. Screw in the stud fit the nut and secure the earth strap with the second nut. Mark the 2 bolts with thread-locking paint (see (Technical Data), Fig.91 (A, B, C, D, G, H, J)

Fig.91. Bolts securing transfer housing to rear transmission housing.
A - Short bolts - left-hand lower half
B - Earth strap - left-hand lower half
C - 2 nuts, 1 stud
D - Long bolts
E - Upper locating dowel
F - Lower locating dowel
G - Short bolts - right-hand upper half
H - Long bolts - right-hand upper hald
J - Bolts with thread-locking paint

138. Fit the radial oil seal of the driveshaft to the front axle box in the transfer box housing using special 14-028, Fig.92. Fit the radial oil seal as far as the shoulder. Smear the sealing lips with grease (see Technical Data).

139. Screw in and tighten the oil drain plugs and the oil filler plug, Fig.93.

140. Fit the vibration damper and tighten the studs to the specified torque using a Torx socket wrench (see Proprietary Tools).

141. Fit the Torx studs in the transmission output flange:

- Clean the threaded holes in the transmission output flange and the threads of the studs (to remove all traces of grease and dirt).
- Apply 2 drops of thread locking compound (see Technical Data) threaded offset at 180° on the flange-end threads of the studs.
- Insert the studs and tighten them to the specified torque.

NOTE: The studs must be tightened completely within a maximum of 5 minutes of applying the thread locking compound.

- Let the thread locking compound harden for 30 minutes.

142. Fit the transmission mounting.

143. Remove the mounting bracket and remove the transmission, Fig.94.

Fig.94. MT-75/4x4 transmission on stand.
A - Stand
B - Clutch release lever
C - Mounting bracket connecting bolts
D - Mounting bracket retaining bolts
E - Upper part of mounting bracket
F - Output flange
G - Transmission mounting
H - Transmission mounting bracket clamp bolt
J - Mounting bracket

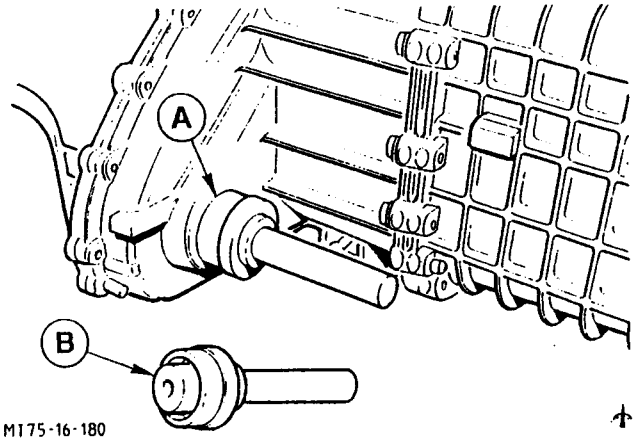


Fig.92. A - Radial oil seal
B - Special Tool 14-028.

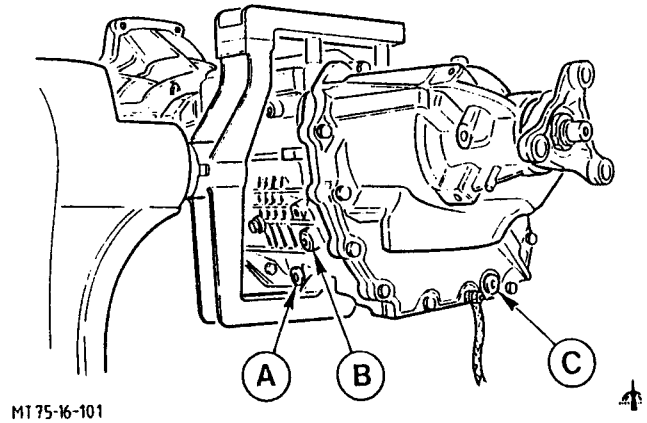


Fig.93. A - Transmission oil drain plug
B - Transfer box oil filler plug
C - Transfer box oil drain plug

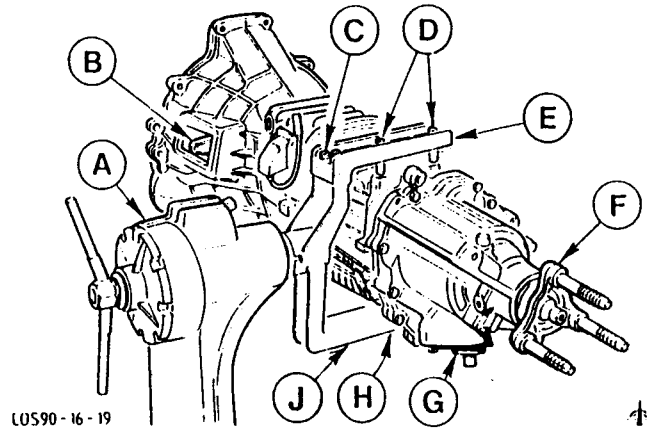


Fig.94. MT-75/4x4 transmission on stand.

16 337 0 SEAL - TRANSFER BOX - REPLACE

SPECIAL SERVICE TOOLS REQUIRED:

Transfer box oil seal extractor	..	21-051
Transfer box oil seal installer	..	14-028

To Remove

1. Disconnect the battery earth cable.

2. Sierra only:
Unclip the multiplug of the HEGO sensor from the turbocharger heat shield and disconnect the multiplug, Fig.1 (B).

Fig.1. Turbocharger heat shield.
A - Retaining bolt
B - HEGO sensor multiplug
C - Heat shield clips
D - Retaining nut

3. Sierra only:
Detach the turbocharger heat shield and bracket from the bulkhead (1 bolt) and from the bracket on the fender (1 nut). Pull the heat shield out of the lower clips and remove heat shield, Fig.1 (A, C, D).

4. Escort only:
Disconnect the multiplug of the HEGO sensor and unclip the wiring, Fig.2.

5. Escort only:
Detach the turbocharger heat shield from the bracket, air cleaner casing and fender (2 bolts, 1 nut in the wheelhouse), Fig.3.

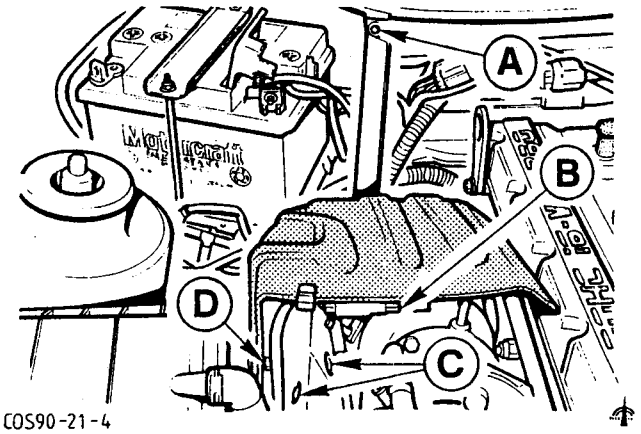


Fig.1. Turbocharger heat shield.
(Sierra shown)

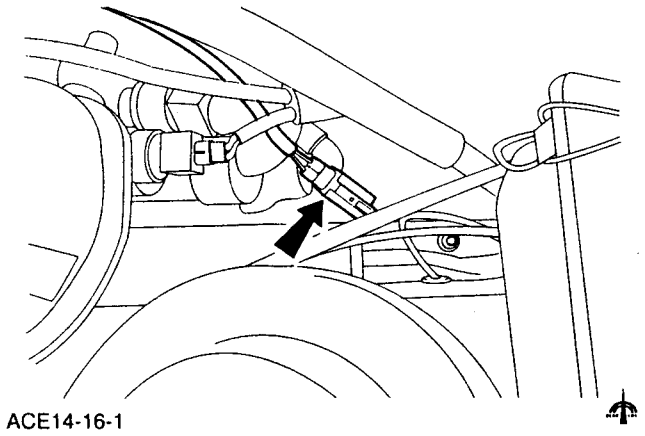


Fig.2. HEGO sensor multiplug.

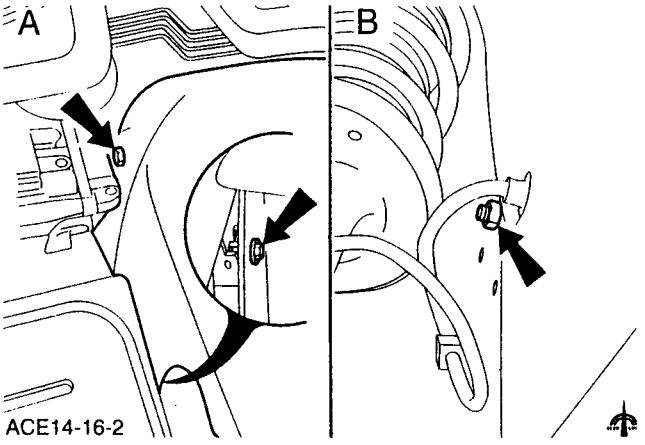


Fig.3. Turbocharger heat shield fixture.
(Escort shown)
A - Bolts
B - Nut in wheelhouse

0392

6. Detach the front exhaust pipe from the turbocharger (3 nuts), Fig.4.

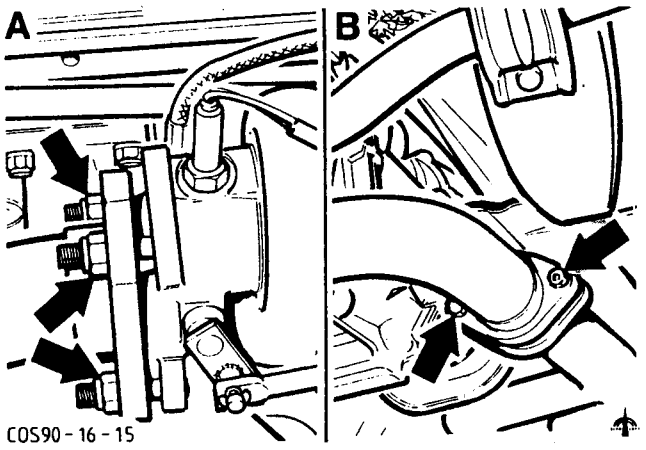


Fig.4. Fixture of front exhaust pipe.
A - To turbocharger
B - To catalytic converter

7. Raise the vehicle.

8. Sierra only:
Detach the lower engine cover from the side members and front axle/engine crossmember (6 bolts), Fig.5.

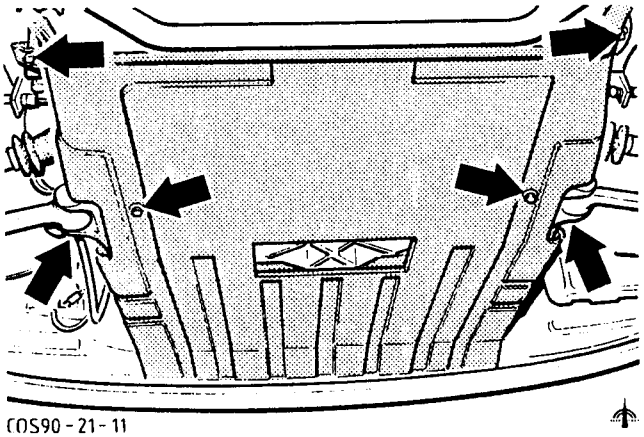


Fig.5. Retaining bolts of lower engine cover. (Sierra shown)

9. Escort only:
Detach the lower engine cover from the side members (4 bolts) and the body (5 bolts), Fig.6.

10. Detach the front exhaust pipe from the catalytic converter (2 bolts and nut), Fig.4 (B).

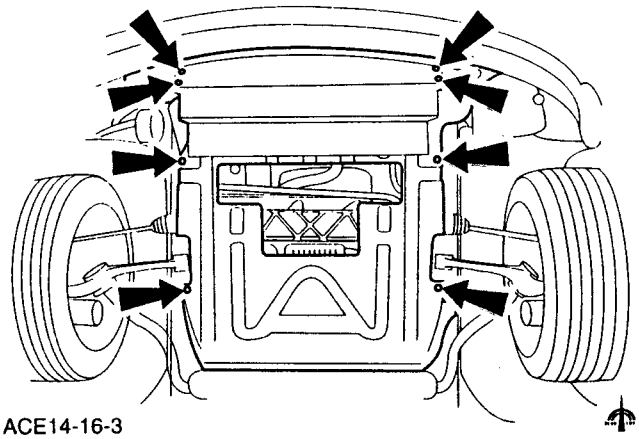


Fig.6. Retaining bolts of lower engine cover. (Escort shown)

0392

11. Place an oil collecting tray under the transfer box. Disconnect the driveshaft to the front axle from the drive flange on the front axle box (4 Torx bolts), Fig.7. Withdraw the driveshaft from the transfer box and catch the oil that escapes.

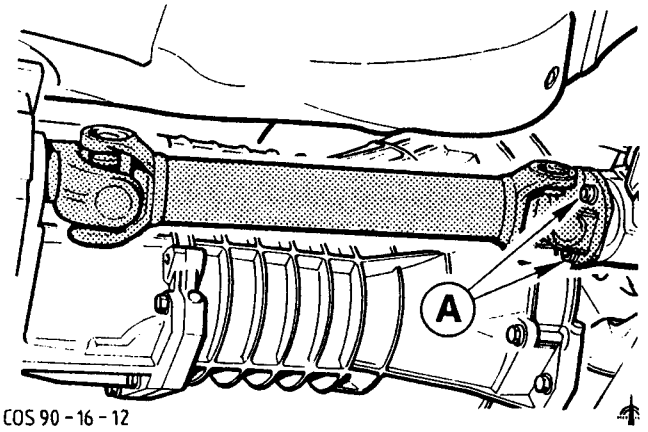


Fig.7. Driveshaft to front axle.
A - Retaining bolts (2 concealed)

12. Remove the transfer box radial oil seal using Special Tool 21-051, Fig.8.

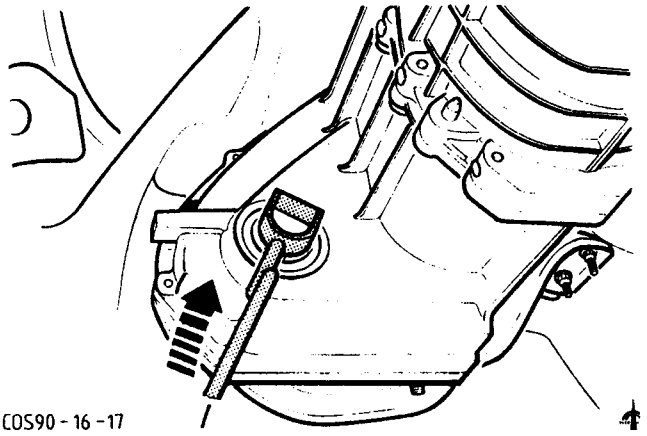


Fig.8. Remove transfer box radial oil seal using Special Tool 21-051.

To Install

NOTE: When installing, tighten the nuts and bolts to the tightening torques specified in Technical Data.

13. Fit the transfer box radial oil seal using Special Tools 14-028, Fig.9.

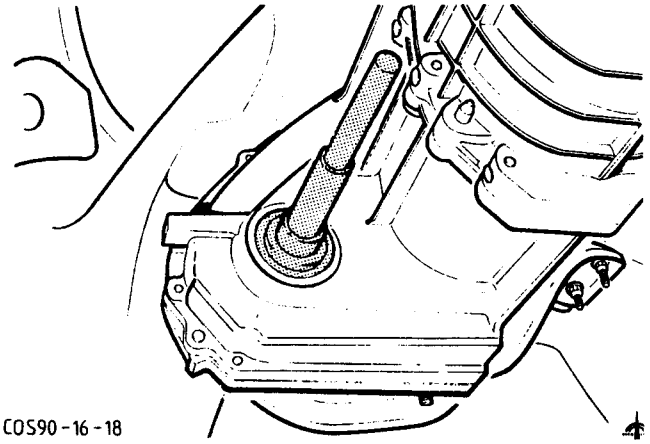


Fig.9. Fit transfer box radial oil seal using Special Tool 14-028.

0392

14. Insert the driveshaft to the front axle in the transfer box and connect the driveshaft to the front axle drive flange, Fig.10.

15. Connect the front exhaust pipe to the catalytic converter.

16. Fill the transfer box with oil (see Technical Data for quantity and specification), Fig.11

17. Fit the lower engine cover to the side member and front axle/engine crossmember or body.

18. Lower the vehicle.

19. Connect the front exhaust pipe to the turbocharger.

20. Sierra only:
Locate the turbocharger heat shield in position and push it into the 2 lower clips. Secure the turbocharger heat shield and bracket to the bulkhead and to the bracket on the fender, Fig.12 (A, C, D).

Fig.12. Turbocharger heat shield.
A - Retaining bolt
B - HEGO sensor multiplug
C - Heat shield clips
D - Retaining nut

21. Sierra only:
Connect the multiplug of the HEGO sensor and clip the multiplug to the turbocharger heat shield, Fig.12 (B).

22. Escort only:
Secure the turbocharger heat shield to the bracket, air cleaner casing and fender. Connect the HEGO sensor multiplug and clip the wiring in place.

23. Reconnect the battery earth cable.

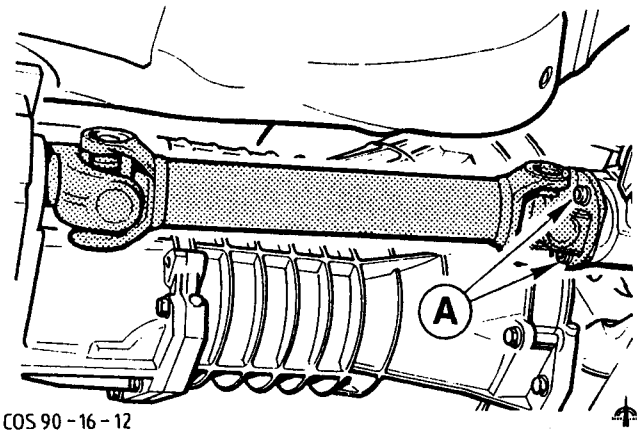


Fig.10. Driveshaft to front axle.
A - 2 retaining bolts (2 concealed)

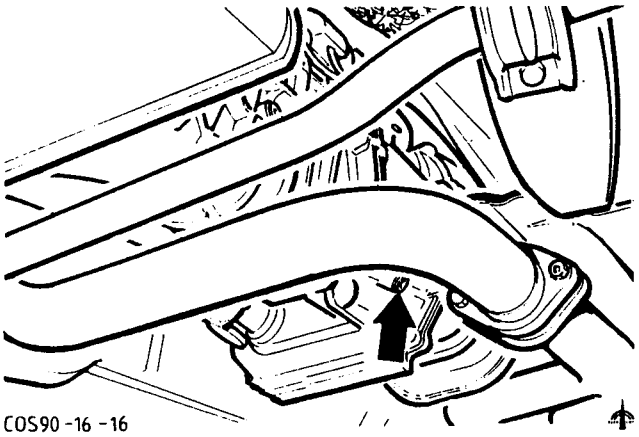


Fig.11. Transfer box oil level check plug.

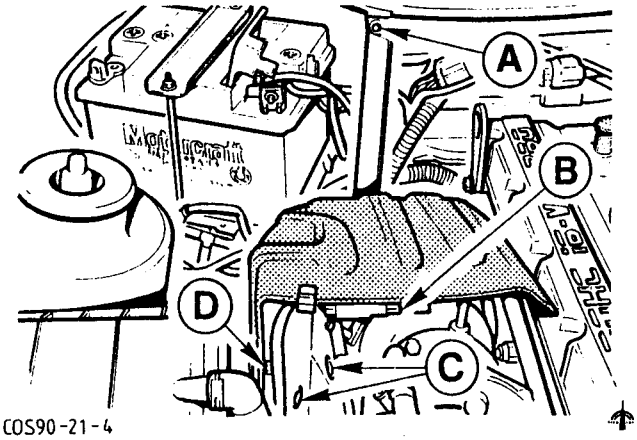


Fig.12. Turbocharger heat shield.
(Sierra shown)

0392