

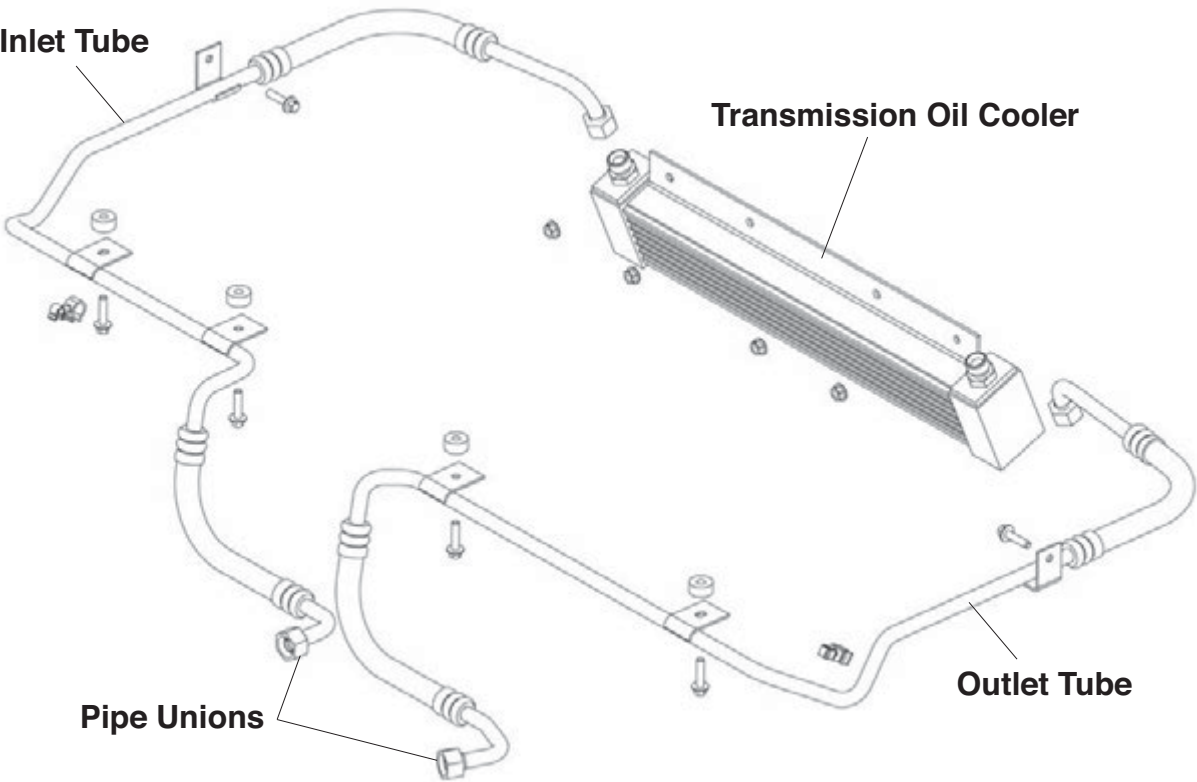
Transmission (07.00)

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Transmission (07.00)



07-02-001

Transmission Cooling (07.02)
Specifications

Torque Figures		
Description	Nm.	lb. / ft.
Cooler to subframe	8-10	6-7.5

Maintenance
Oil Cooler Matrix-Renew

Repair Operation Time (ROT)	
Item	Code
Oil Cooler Matrix-Renew	07.02.FC

Removal

1. Raise vehicle on ramp.
2. Remove rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Muffler - Renew).
3. Position drain container to collect oil spillage.

4. Loosen oil cooler pipe unions (x2) (see Fig. 1).



Fig.

5. Remove nuts (x4) from oil cooler to rear bumper armature.

07-02-002

- Disconnect oil cooler pipes and remove oil cooler (see Fig. 2).



Fig. 2

- Install plugs in oil cooler and pipe connections.

Installation

- Clean oil cooler, connections and mating face on subframe.
- Remove plugs, position oil cooler and connect oil cooler pipes (do not tighten at this stage).
- Install oil cooler and tighten nuts (x4).
- Tighten pipe unions.
- Top-up transaxle oil level.
- Remove drain container.
- Install rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Silencer - Renew).
- Lower vehicle on ramp.

Manual Transmission Oil Outlet Hose-Renew

Repair Operation Time (ROT)	
Item	Code
Manual Transmission Oil Outlet Hose-Renew	07.02.FD

Removal

- Raise vehicle on ramp.
- Remove rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Muffler - Renew).
- Release transaxle breather hose from oil cooler pipe.
- Remove bolt, nuts (x2), insulating washers (x2) and plain washer securing outlet hose brackets to body.
- Position container to collect oil spillage.
- Loosen union and remove hose from oil cooler.
- Loosen union and remove oil cooler hose from transaxle and collect hose.
- Plug oil cooler and transaxle pipe connections.

Installation

- Clean hose connections and remove plugs.
- Position hose, align brackets, install insulating washers (x2) and plain washer.
- Install and tighten bolt and nuts (x2) to correct torque.
- Connect and tighten hose unions to correct torque.
- Remove drain container.
- Install transaxle breather hose clip to oil cooler pipe.
- Install rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Muffler - Renew).
- Lower vehicle on ramp.

Manual Transmission Oil Inlet Hose-Renew

Repair Operation Time (ROT)	
Item	Code
Manual Transmission Oil Inlet Hose-Renew	07.02.FE

Removal

- Raise vehicle on ramp.
- Remove rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Muffler - Renew).
- Release transaxle breather hose from oil cooler pipe.
- Remove bolt and nuts (x2) that secure inlet hose brackets to body.
- Collect pipe insulating washers (x2) and plain washer.
- Position container to collect oil spillage.
- Loosen union and remove hose from oil cooler.
- Loosen union and remove oil cooler hose from transaxle and collect hose.
- Plug oil cooler and transaxle pipe connections.

Installation

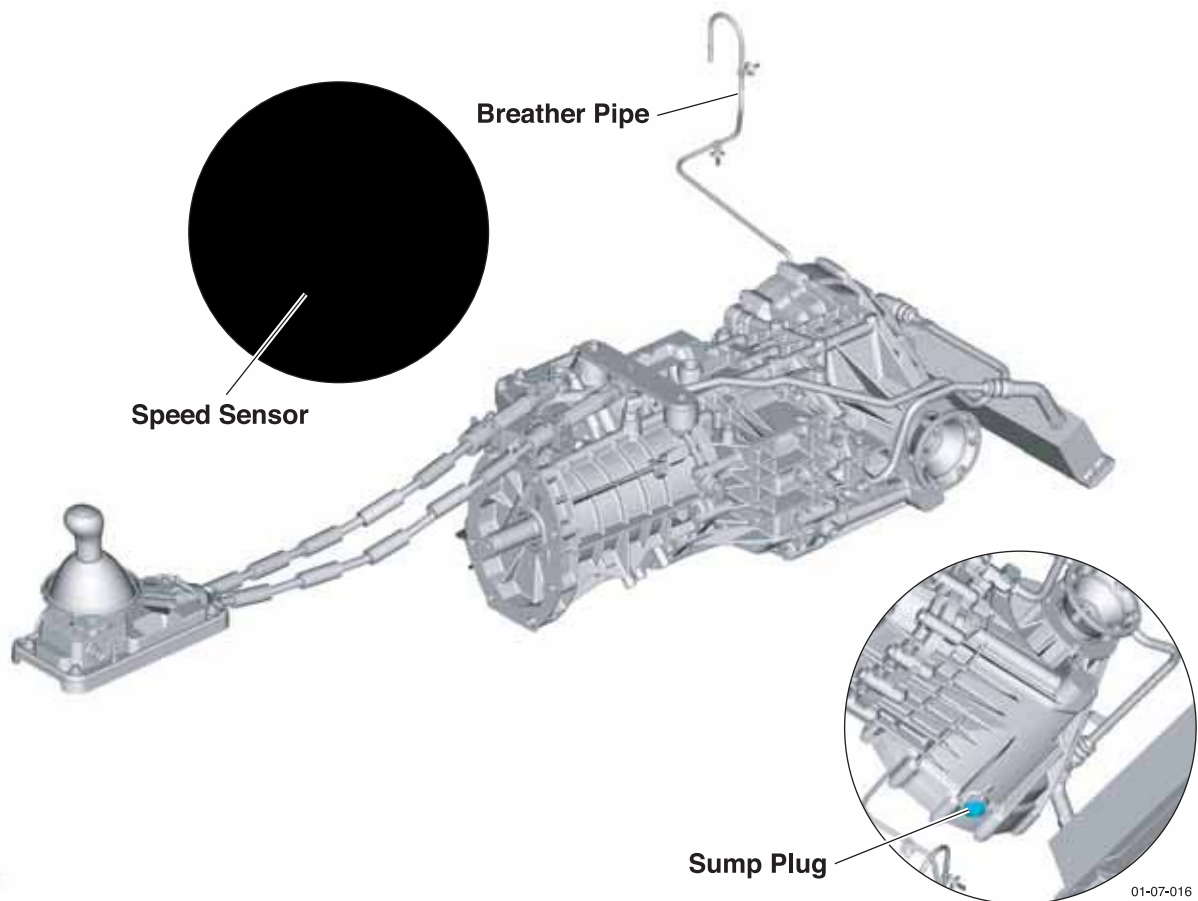
- Clean hose connections and remove plugs.
- Position hose, align brackets, install insulating washers and plain washer.
- Install and tighten bolt and nuts (x2) to correct torque.
- Connect and tighten hose unions to correct torque.
- Remove drain container.
- Install transaxle breather hose clip to oil cooler pipe.
- Install rear exhaust silencer heatshield (see Workshop Manual procedure 02.06.AG Heatshield - Exhaust Muffler - Renew).
- Lower vehicle on ramp.



Transmission (07.00)

Manual Transmission (07.03)

Description



The Graziano rear transaxle installed to this vehicle incorporates a six speed transmission plus reverse, with synchromesh on all gears. Gear selection is via an Integrated Shifter Bellcrack System (Cable Operated).

Cooling

The manual transaxle has an external cooling circuit which operates continuously by a fixed displacement pump driven by the input shaft.

The cooler is mounted at the rear attached to the subframe.

Specifications

Type

Graziano AM803T transaxle with:

- Integrated Shifter Bellcrack System (Cable Operated)
- Integrated Reverse Switch
- Plate Type Limited Slip Differential

Synchronisers

Triple Cone Syncros on 1st and 2nd, double cone on all other gears incl. reverse.

Lubrication

Pressure fed system with integrated pump driven by the input shaft. Filter (filter is serviceable item).

Transaxle Oil

Shell Transaxle 75W/90 (very important that this is the transaxle type, Do not use Shell Spirax 75W90)

Transaxle Quantity. 4 ltr (7 pt / 4.2 US qts)

Coolant System Quantity. 0.5 ltr (0.9 pt / 0.53 US qts)

Transaxle + Coolant Quantity 4.5 ltr (7.9 pt / 4.6 US qts)

Gear Ratios

1st	2nd	3rd	4th	5th	6th
3.15:1	1.95:1	1.44:1	1.15:1	0.94:1	0.77:1
Reverse					
2.39:1					

I=41/13 (0.317)

II=37/19 (0.514)

III=33/23 (0.697)

IV=31/27 (0.871)

V=29/31 (1.069)

VI=27/35 (1.296)

REV=31/13 (0.419)

FDR=11/43 (3.909)

Differential Locking Ratio

10% Drive, 30% Coast

Torque Figures

Description	Nm.	lb. / ft.
Speedo sensor to cover plate	7	5.5
Sump plug	49	36.5
LH Output shaft housing	10	7.5
Halfshaft	70	52
Differential Cover	35	26

Maintenance

Transaxle Assembly-Remove for Access/Refit

Repair Operation Time (ROT)	
Item	Code
Transaxle Assembly-Remove for Access/Refit	07.03.AA

Removal

1. Disconnect vehicle battery.
2. Raise vehicle on ramp and secure with straps (see Fig. 1).



Fig. 1

3. Remove road wheel(s).
4. Remove rear exhaust silencer (see Workshop Manual procedure 09.00.KA Silencer and Bypass Valve Assembly - Remove for Access & Refit).
5. Remove bolts (x4) from subframe cross brace.
6. Loosen clamp nuts (x2) and release centre pipe from both catalysts.
7. Remove centre pipe and rear exhaust pipes as an assembly.
8. Remove bolts (x4) from centre heatshield to body and remove heatshield.
9. Remove bolts (x8) from shear plate to body and remove shear plate.

10. Remove bolt securing earth lead to transaxle (see Fig. 2). 15. Loosen unions and disconnect oil cooler pipes (x2) from transaxle interconnecting pipes (see Fig. 5).

**Fig. 2**

11. Mark drive shaft to differential flanges for assembly purposes.
12. Remove and discard Allen bolts (x12) from drive shaft flanges to transaxle and collect plates (x6) (see Fig. 3).

**Fig. 3**

13. Release drive shafts from transaxle and position aside (see Fig. 4).

**Fig. 4**

14. Position drain container to collect oil spillage.

**Fig. 5**

16. Plug pipe connections (x4).
17. Remove drain container.
18. Disconnect transaxle breather pipe (see Fig. 6).

**Fig. 6**

19. Remove nuts (x2) from hydra mounts to subframe mountings (see Fig. 7).

**Fig. 7**

20. Position hydraulic lifter to support transaxle (see Fig. 8). 26. Release reverse lamp switch multiplug from bracket and disconnect multiplug (see Fig. 11).



Fig. 8

21. Remove and discard bolts (x8 - 4 each side) from mounting brackets to transaxle (see Fig. 9).



Fig. 9

22. Remove mounting brackets with hydra mounts.
23. Lower transaxle using tool 308 - 642 and release selector cable ball joints from selector levers (see Fig. 10).



Fig. 10

24. Remove horseshoe clips and release selector cables from bracket.
25. Release reverse light harness clip from transaxle.

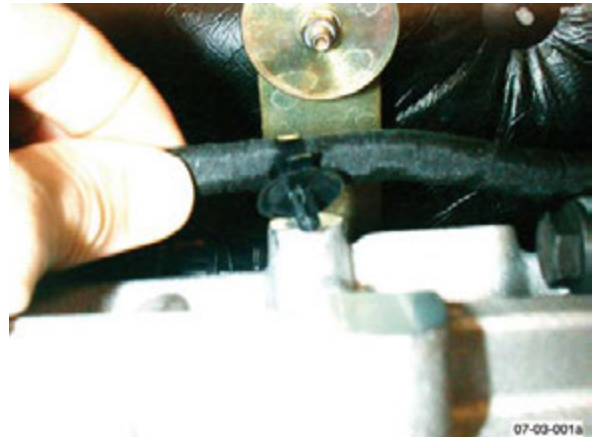


Fig. 11

27. Position lifter to support torque tube (see Fig. 12).



Fig. 12

28. Remove bolts (x8) from torque tube to transaxle (see Fig. 13).



Fig. 13

29. With assistance, manoeuvre and remove transaxle from subframe (see Fig. 14).



Fig. 14

Installation

1. Clean transaxle and mating face on torque tube.
2. With assistance, manoeuvre and install transaxle in subframe.
3. Align transaxle to torque tube and install and torque tighten bolts (x8).
4. Lower lifter from torque tube.
5. Connect selector cables and install horseshoe clips.
6. Connect multiplug to reverse light switch and install multiplug in bracket.
7. Install reverse light harness clip in transaxle.
8. Connect transaxle breather pipe.
9. Install transaxle mounting brackets and hydra mounts.
10. Install and torque tighten new bolts (x8).
11. Align hydra mounts to subframe, lower lifter and install and torque nuts.
12. Remove lifter.
13. Remove plugs and connect and torque oil cooler unions.
14. Apply thread lock to new Allen bolts.
15. Align drive shafts to transaxle flanges and clean and install plates (x6).
16. Install and torque tighten Allen bolts (x12).
17. Position earth lead to transaxle and install and torque tighten bolt.
18. Install shear plate and install bolts (x8).
19. Tighten bolts to correct torque.
20. Install centre heatshield, install bolts (x4) and tighten bolts to correct torque.
21. Install centre and rear exhaust pipe assembly and align to both catalysts.
22. Tighten clamp nuts to correct torque.
23. Install subframe cross brace, install bolts (x4) and torque.
24. Install rear exhaust silencer (see Workshop Manual procedure 09.00.KA Silencer and Bypass Valve Assembly - Remove for Access & Refit).
25. Install road wheel(s).
26. Lower vehicle on ramp and remove securing straps.
27. Connect vehicle battery.
28. Test drive vehicle.
29. Raise vehicle on ramp and check transaxle oil level.
30. Lower vehicle on ramp.

Transmission Axle Assembly-Drain/Refill

Repair Operation Time (ROT)	
Item	Code
Transmission Axle Assembly-Drain/Refill	07.03.BC

Removal

1. Position vehicle on ramp.
2. Remove rear undertray (see Workshop Manual procedure 01.02.PB Undertray - Rear - Renew).
3. Position container to collect transaxle oil.
4. Remove transaxle drain plug and drain oil.
5. Loosen and disconnect oil cooler pipes and allow oil in the oil cooler system to drain into container.
6. Remove filler plug.
7. Discard sealing washers (x2).

Installation

1. Clean drain and filler plugs.
2. Install new sealing washers to filler and drain plugs.
3. Install drain plug and tighten to correct torque.
4. Install oil cooler pipes and tighten unions to correct torque.
5. Fill transaxle with the correct grade and quantity of oil.
6. Install filler plug and tighten to the correct torque.
7. Install rear undertray (see Workshop Manual procedure 01.02.PB Undertray - Rear - Renew).
8. Lower vehicle on ramp.
9. Road test vehicle.
10. Position vehicle on ramp.
11. Check and top-up transaxle oil level.
12. Lower vehicle on ramp.

Transaxle Assembly-Oil Check/Top-up

Repair Operation Time (ROT)	
Item	Code
Transaxle Assembly-Oil Check-Top-up	07.03.BD

1. Raise vehicle on ramp.
2. Wait 2 minutes before checking oil level.
3. Position suitable container to collect spillage.
4. Remove filler plug and discard sealing washer.
5. If necessary, top-up with specified oil until oil 'dribbles' from filler aperture.
6. Clean filler plug and install new sealing washer.
7. Install and torque tighten filler plug.



8. Remove drain container.
9. Lower vehicle on ramp.

Transaxle Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Transaxle Assembly-Renew	07.03.CB

Removal

1. Remove transaxle assembly (see Workshop Manual procedure 07.03.AA Transaxle Assembly - Manual - Remove for Access & Refit).
2. Attach slings to transaxle and connect suitable hoist.
3. With assistance, remove transaxle from lifter and position on work bench.
4. Lower hoist and remove slings.
5. Position container and drain transaxle oil.
6. Remove bolt securing oil cooler pipes bracket to transaxle (see Fig. 1).



Fig. 1

7. Loosen and disconnect oil cooler pipe unions and remove oil cooler pipe assembly (see Fig 2).



Fig. 2

8. Remove reverse light switch from transaxle (see Fig. 3).



Fig. 3

9. Remove bolts (x3) from selector cable bracket to transaxle and collect bracket (see Fig. 4).

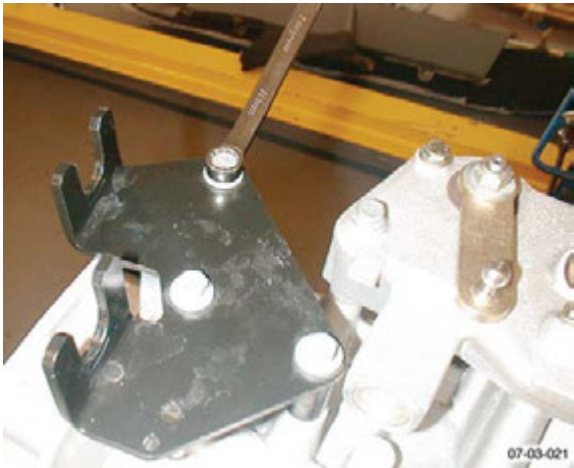


Fig. 4

10. Remove nuts (x2) from selector levers (x2) to transaxle (see Fig. 5).



Fig. 5

Installation

1. Clean reverse light switch, oil cooler pipes, selector levers and selector cable bracket.

2. Install selector levers (x2) and install and torque tighten nuts (x2).
3. Install selector cable bracket and install and torque tighten bolts (x3).
4. Install and torque tighten reverse light switch.
5. Install oil cooler pipe assembly.
6. Install and torque tighten oil cooler pipe unions and support bracket bolt.
7. Fill transaxle with the specified oil to the correct level.
8. Attach slings to transaxle and connect hoist.
9. With assistance, remove transaxle from workbench and position on lifter.
10. Install transaxle assembly (see Workshop Manual procedure 07.03.AA Transaxle Assembly - Manual - Remove for Access & Refit).
11. Install road wheel(s).
12. Test drive vehicle.
13. Raise vehicle on ramp and check transaxle oil level.
14. Lower vehicle on ramp.



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Transmission (07.00)

Manual Control System (07.06)**Maintenance****Gearshift Assembly Mechanism-Renew**

Repair Operation Time (ROT)	
Item	Code
Gearshift Assembly Mechanism-Renew	07.06.AA

Removal

1. Remove panel assembly - console (see Workshop Manual procedure 01.12.DB Panel Assembly Console - Renew).
2. Using tool (308 - 642), release selector cable ball joints (x2) from gear lever mechanism.
3. Remove screws (x6), securing gear lever mechanism to housing.
4. Remove gearshift assembly mechanism.
5. Remove gear knob, collect gaiter.

Installation

1. Clean gearshift mechanism.
2. Lubricate gearshift mechanism with recommended grease.
3. Install gearshift mechanism, install and tighten screws (x6).
4. Install selector cables to gearshift mechanism.
5. Install panel assembly - console (see Workshop Manual procedure 01.12.DB Panel Assembly Console - Renew).
6. Install gear lever gaiter, install gear knob.

Transmission Gearshift Cable Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Transmission Gearshift Cable Assembly-Renew	07.06.AE

Removal

1. Disconnect vehicle battery.
2. Remove panel assembly - console.
3. Using tool 308 - 642, release selector cable ball joint from gear lever mechanism.
4. Remove horseshoe clip securing selector to bracket.
5. Raise vehicle on ramp and secure with straps.
6. Remove road wheel(s).
7. Remove rear exhaust muffler (see Workshop Manual procedure 09.00.KA Silencer and Bypass Valve Assembly - Remove for Access & Refit)
8. Remove bolts (x4), subframe cross brace.
9. Loosen clamp nuts (x2), release centre pipe from both catalysts.

10. Remove centre pipe and rear exhaust pipes as an assembly.
11. Remove bolts (x4), centre heatshield to body, remove heatshield.
12. Remove bolts (x8), shear plate to body, remove shear plate.
13. Remove bolt securing earth lead to transaxle.
14. Mark drive shaft to differential flanges for assembly purposes.
15. Remove and discard Allen bolts (x12), collect plates (x6), drive shaft flanges to transaxle.
16. Release drive shafts from transaxle and position aside.
17. Position drain container to collect oil spillage.
18. Loosen unions and disconnect oil cooler pipes (x2) from transaxle interconnecting pipes. Plug pipe connections (x4).
19. Remove drain container.
20. Remove nuts (x2), hydra mounts to subframe mountings.
21. Position hydraulic lifter to support transaxle.
22. Remove and discard bolts (x8 (4 each side), mounting brackets to transaxle. Remove mounting brackets with hydra mounts.
23. Release reverse lamp switch multiplug from bracket, disconnect multiplug.
24. Lower transaxle sufficiently and use tool (308 - 642) to release selector cable ball joint from selector lever.
25. Remove horse shoe clip securing selector cable to mounting bracket, remove selector cable assembly.

Installation

1. Install selector cable, connect to ball joint, install horseshoe clip.
2. Connect multiplug to reverse light switch, install multiplug in bracket.
3. Install reverse light harness clip in transaxle.
4. Install transaxle mounting brackets and hydra mounts, install and torque tighten new bolts (x8).
5. Align hydra mounts to subframe, lower lifter, install and torque tighten nuts (x2). Remove lifter.
6. Remove plugs, connect and torque oil cooler unions.
7. Apply thread lock to new Allen bolts.
8. Align drive shafts to transaxle flanges, clean and install plates (x6), install and torque tighten Allen bolts (x12).
9. Position earth lead to transaxle, install and torque tighten bolt.
10. Install shear plate, install bolts (x8), tighten bolts to correct torque.
11. Install centre heatshield, install bolts (x4), tighten bolts to correct torque.
12. Install centre and rear exhaust pipe assembly, align to both catalysts. tighten clamp nuts to correct torque.
13. Install subframe cross brace, install and torque tighten bolts (x4).



14. Install rear exhaust muffler (see Workshop Manual procedure 09.00.KA Silencer and Bypass Valve Assembly - Remove for Access & Refit).
15. Install road wheel(s).
16. Lower vehicle on ramp, remove securing straps.
17. Position selector cable in bracket, install horseshoe clip.
18. Install selector cable ball joint to gear lever mechanism.
19. Install panel assembly - console.
20. Connect vehicle battery.
21. Test drive vehicle.
22. Raise vehicle on ramp; Check transaxle oil level.