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SECTION

MANUAL TRANSAXLE

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PRECAUTIONS

Caution

Removing and handling the parts must be carried out on a workbench with a knockproof cover. (thick rubber or plastic)

Cover all turning and synchronizer points in oil.

Observe the tightening torques.

Carefully carry out the specific settings and adjustments.

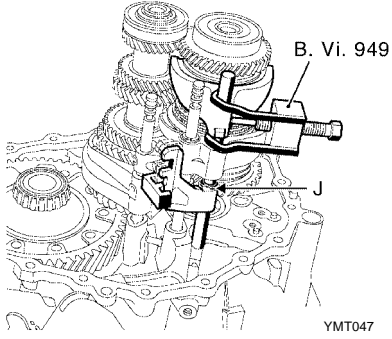
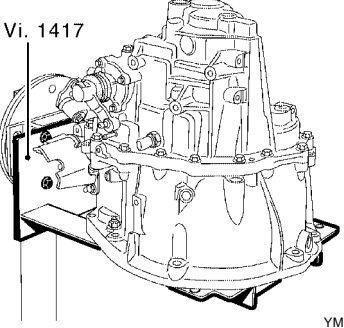
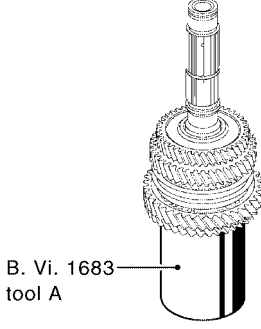
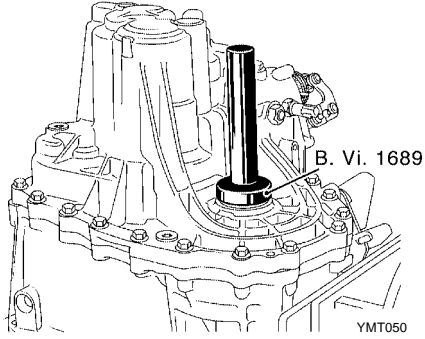
Be sure to properly refit parts in the same order and position after removal.

Marking the position of the sliding rods in relation to the hubs before removal is recommended.

During refitting, make sure the inside of the box remains free of dust or impurities.

PREPARATION

Special Service Tools

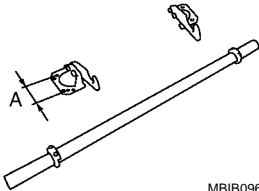
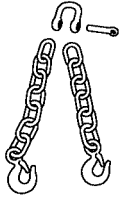
NISSAN tool number (Renault tool number) Tool name	Description	
KV32910320 (B. Vi. 949) Pin removal/refitting tool	 <p>YMT047</p>	Unpinning the 5th-6th fork
KV32910330 (B. Vi. 1417) Gearbox mounting	 <p>YMT048</p>	Fixing the gearbox
KV32910340 (B. Vi. 1683) ND0 renovation kit	 <p>YMT049</p>	<ul style="list-style-type: none"> ● Mark A gear disassembly tool ● Mark B primary shaft holder ● Mark C gear fitting tool ● Mark D gear fitting tool ● Mark E bearing cage fitting tool ● Mark F selector fork shaft ring mounting tool ● Mark G primary shaft oil seal fitting tool ● Mark H differential bearing fitting tool
KV32910350 (B. Vi. 1689) Differential oil seal fitting tool	 <p>YMT050</p>	Fitting the new differential output seals

PREPARATION

[RS6F93R]

Commercial Service Tools

XXXXX0000001

Tool name	Description
Engine support bar	<div><div>A: Approx. 12.5 mm (0.492 in)</div><div><p>MBIB0961E</p></div></div>
Engine support chain	<div><p>MBIB0962E</p></div>

Recommended Tool

XXXXX0000002

Grip and inertial extractor: Ø 42 - Ø 14

TROUBLE DIAGNOSIS

[RS6F93R]

TROUBLE DIAGNOSIS

PFP:XX000

Symptom Chart

XXXX0000108

Symptoms (after checking the clutch)		Possible causes						
Symptoms	Oil level or grade	External control	Synchr-onizer	Gearing	Sliding gear hub	Fork and balls	Bearings	Engine mounting - housing
Gear grinding	1	2	3		4			
One or more gears cannot be selected	1	2	3			4		
Gear disengagement		2	4		4	3		1
One or more gears locked		1		4		2		3
Noisy	1			3			2	

NOTE:
The numbers indicate the order of priority for diagnostics.

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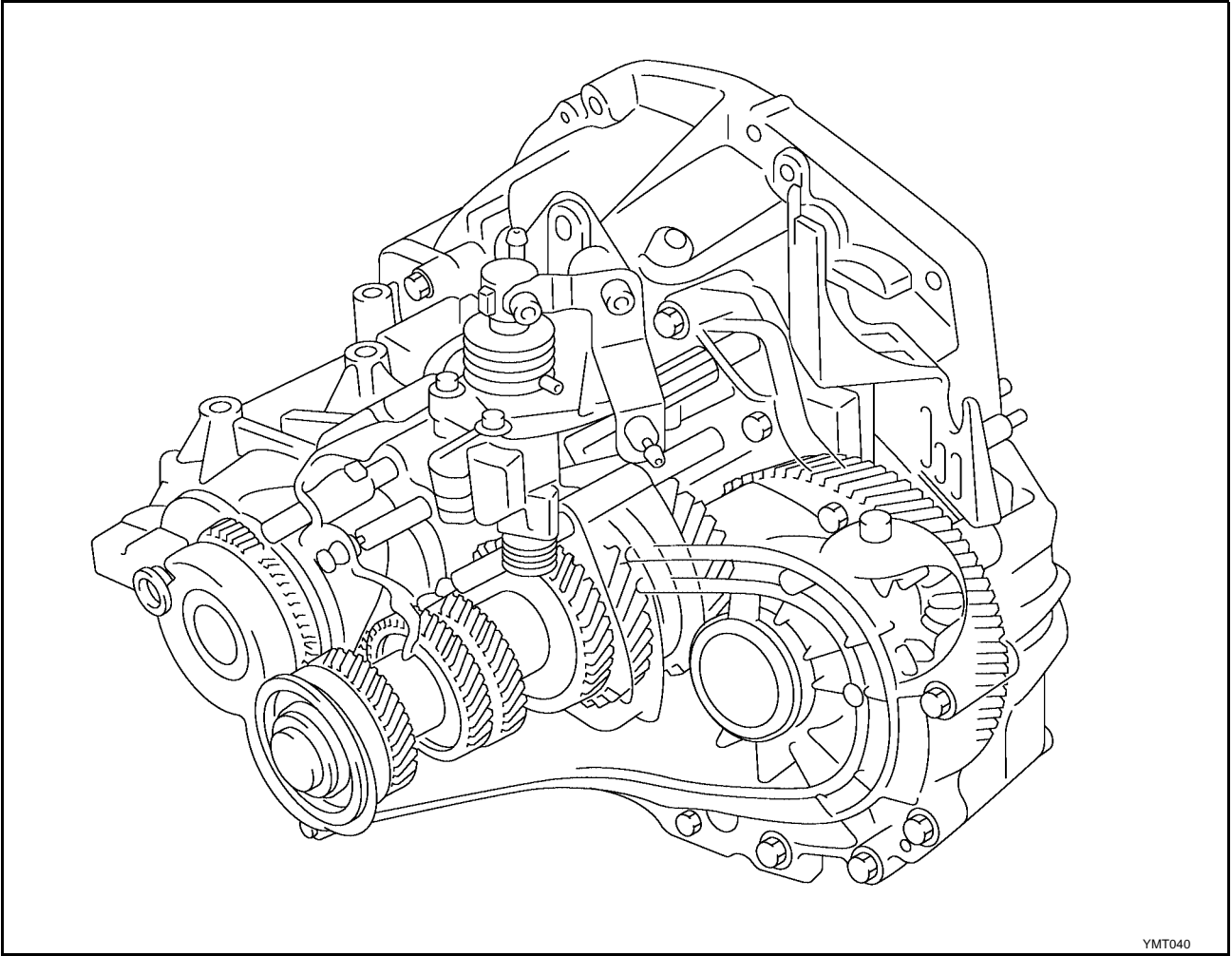
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DESCRIPTION

PFP:XX000

Cross-sectional View — RS6F93R

XXXX0000087



M/T OIL

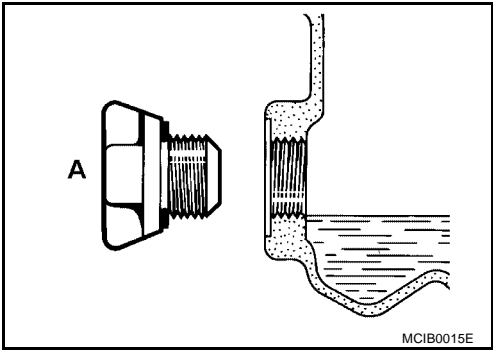
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Description

XXXXX0000106

Capacity	Grade
2.1 ℓ (1-7/8 Imp qt)	Genuine Nissan gear oil, SAE viscosity

Fill to the level of the fuel filler cap hole.



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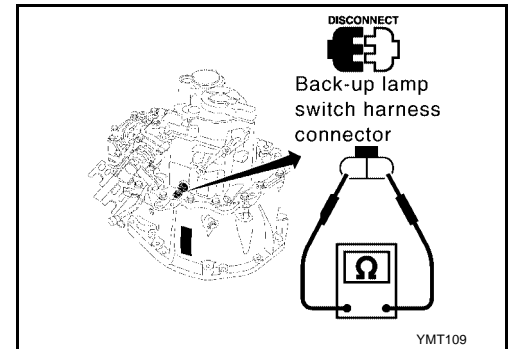
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POSITION SWITCH**Checking
BACK-UP LAMP SWITCH**

- Check continuity.

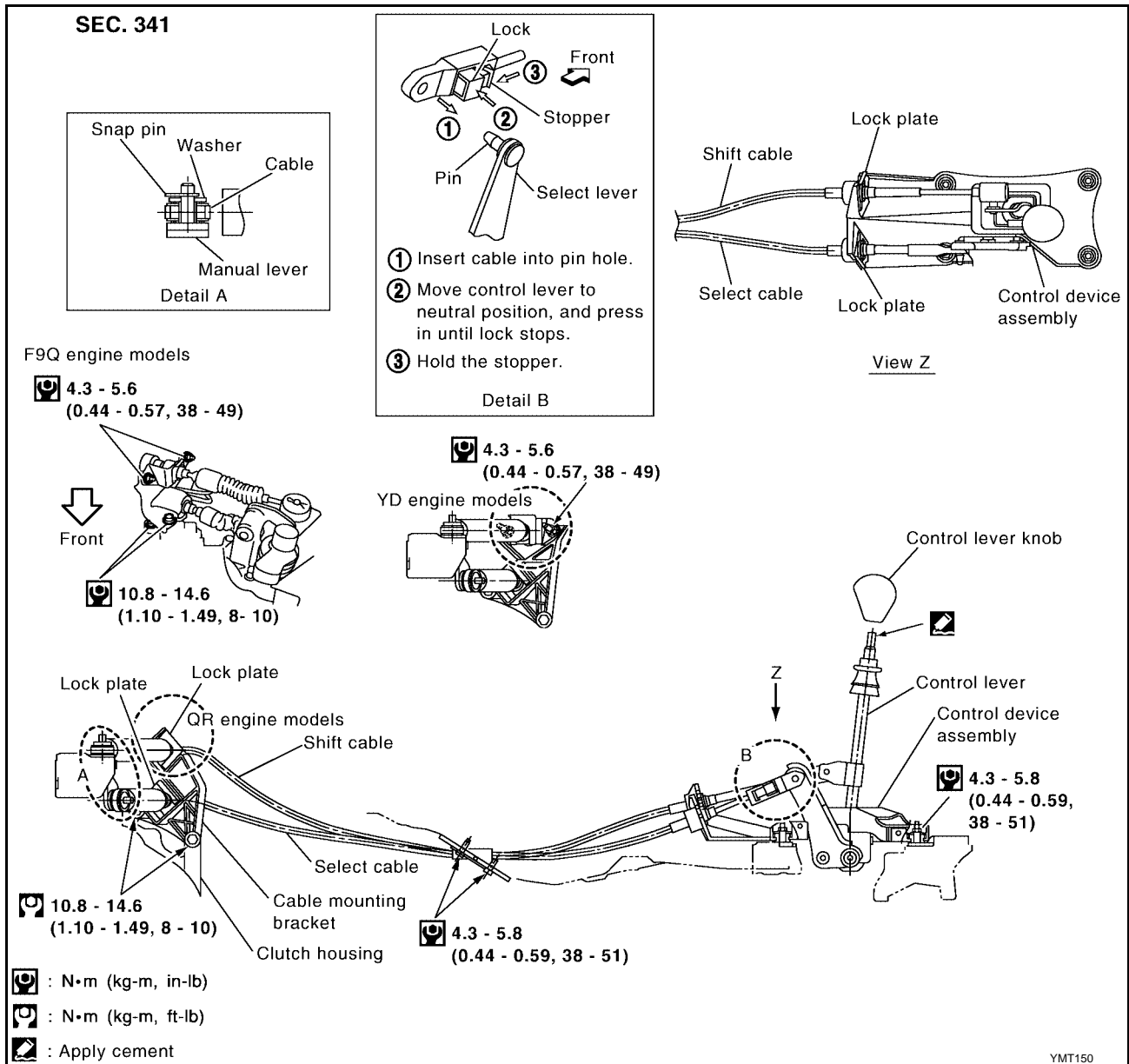
Gear position	Continuity
Reverse	Yes
Except reverse	No



CONTROL LINKAGE

Removal and Installation

Refer to the figure for removal and installation procedures.



CAUTION:

- Keep in mind that the select side lock plate for securing the control cable is different from the one on the shift side.
- After assembly, make sure selector lever automatically returns to Neutral when it is moved to 1st, 2nd, or Reverse.

TRANSAXLE ASSEMBLY**Removal and Installation**
REMOVAL**Preparation**

1. Remove suspension crossbar.
2. Drain coolant from the position between radiator and lower hose.
3. Disconnect battery cables.
4. Remove the following parts.
 - Engine cover
 - Undercover and LH/RH splash cover
 - LH/RH front wheels
 - Air duct and air cleaner
 - Charge air cooler piping and hose
 - ECM and ECM tray
5. Disconnect control linkage from transaxle.
6. Disconnect the following.
 - PNP switch harness connector
 - EGRC solenoid valve harness connector
 - Engine coolant temperature sensor harness connector
7. Remove catalyst bracket.
8. Remove catalytic converter to access starter motor.
9. Remove starter motor.

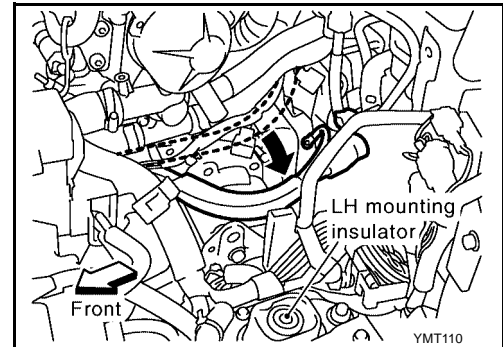
NOTE:

Remove starter motor mounting bolts, and then disconnect starter motor B terminal and S terminal.

10. Disconnect heater hose by thermostat housing side and remove thermostat housing and keep it upper side.
11. Remove the harness from the engine side and set it aside, as shown in the figure.

CAUTION:

Be sure to set the harness aside to prevent damaging it while transaxle assembly is removed.

**Vehicle Underbody**

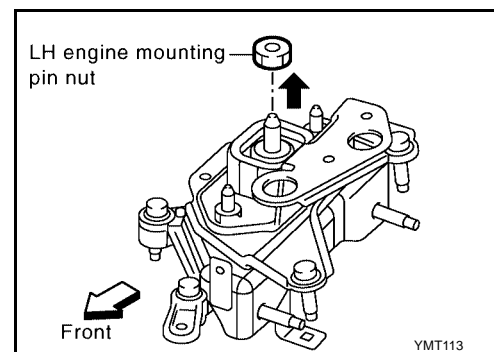
1. Remove suspension crossbar.
 2. Drain gear oil from transaxle and remove drive shaft.
- NOTE:**
After removing drive shaft, plug openings to stop gear oil leakages.
3. Disconnect crankshaft position sensor (POS) harness connector and remove crankshaft position sensor (POS).
 4. Remove ground cable terminal.
 5. Disconnect clutch operating tube. For details, refer to CL-9.

NOTE:

After removing tube, plug openings to stop fluid leakages.

Removal

1. Support engine by placing a suitable jack under oil pan.
2. Remove LH engine mounting pin nut.



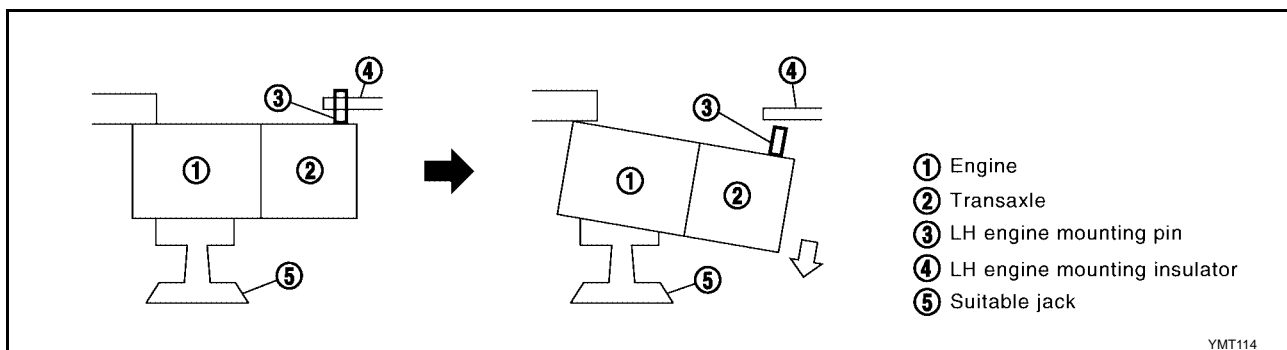
3. Jack down the left side of engine and transaxle assembly to pull LH engine mounting pin out.

NOTE:

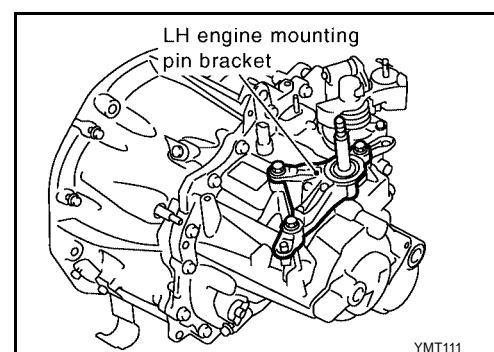
Use a suitable jack to jack down the left side of engine and transaxle.

CAUTION:

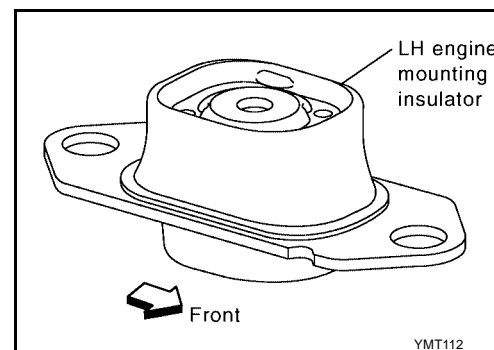
- Engine mounting pin may be fixed in engine mounting insulator, so keep engine supported by a suitable jack, so it will not fall down on the jack.
- During the operation, make sure that no part interferes with body side.



4. Remove LH engine mounting pin bracket.



5. Remove LH engine mounting insulator.



6. Set engine and transaxle at appropriate angle to remove transaxle from vehicle.

NOTE:

Use a suitable jack to change engine and transaxle's angle.

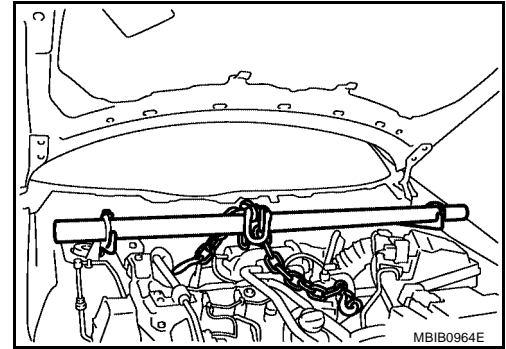
7. Set the engine support bar and engine support chain.

NOTE:

- Remove cowl top cover, if engine support bar can't be set with cowl top cover.

CAUTION:

- During the operation, make sure that no part interferes with body side.



8. Remove the jack supporting engine.
9. Place a suitable jack onto the transaxle.
10. Remove bolts securing transaxle to engine.
11. Remove transaxle from vehicle downward by carefully operating supporting tools.

CAUTION:

- Put a piece of wood or something similar as the supporting surface to secure a completely stable condition.
- Before and during this operation, always check if any harnesses connected harnesses are left.
- Fit the transaxle assembly on a suitable jack by a suitable method, so that it will not fall from the jack.

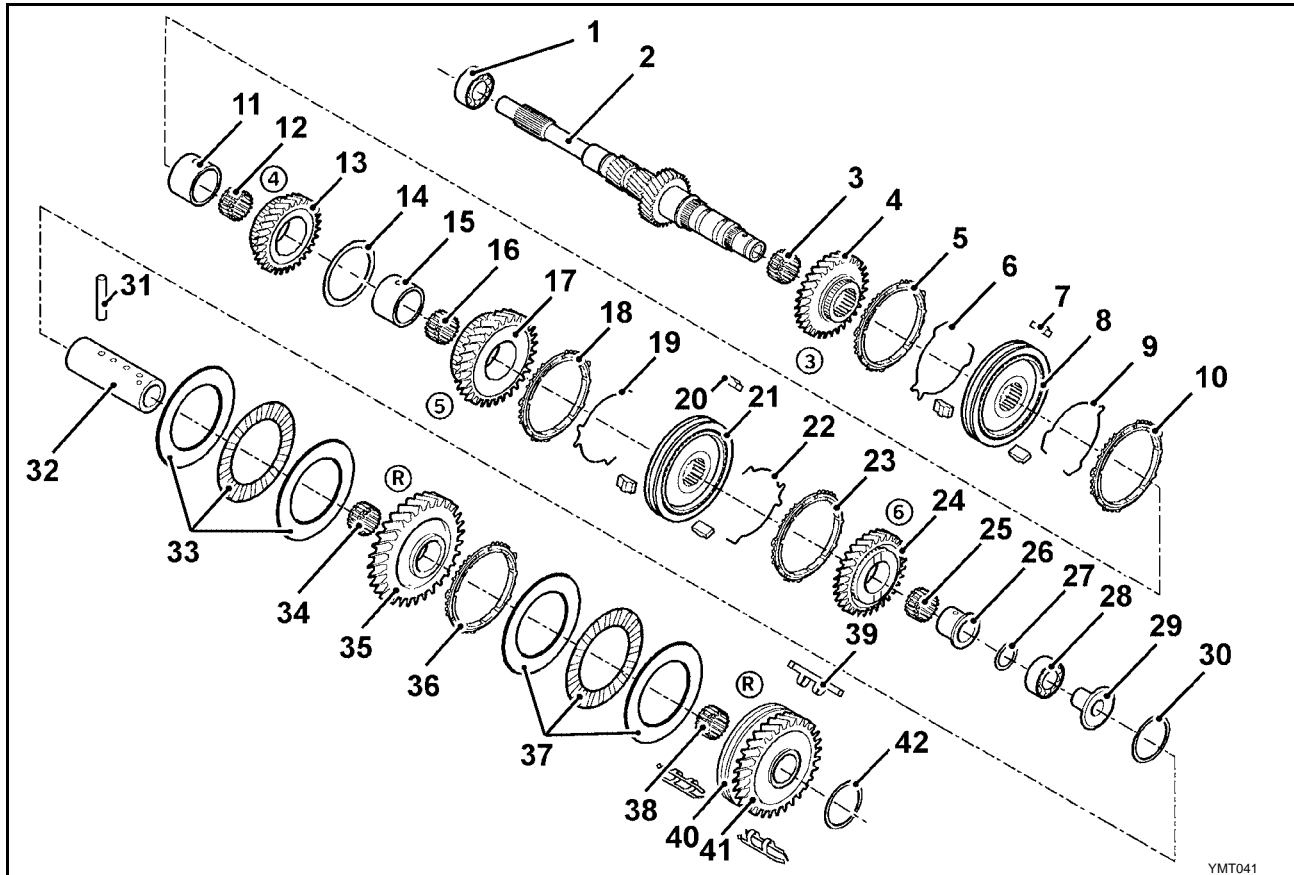
INSTALLATION

Install in the reverse order of removal.

Components

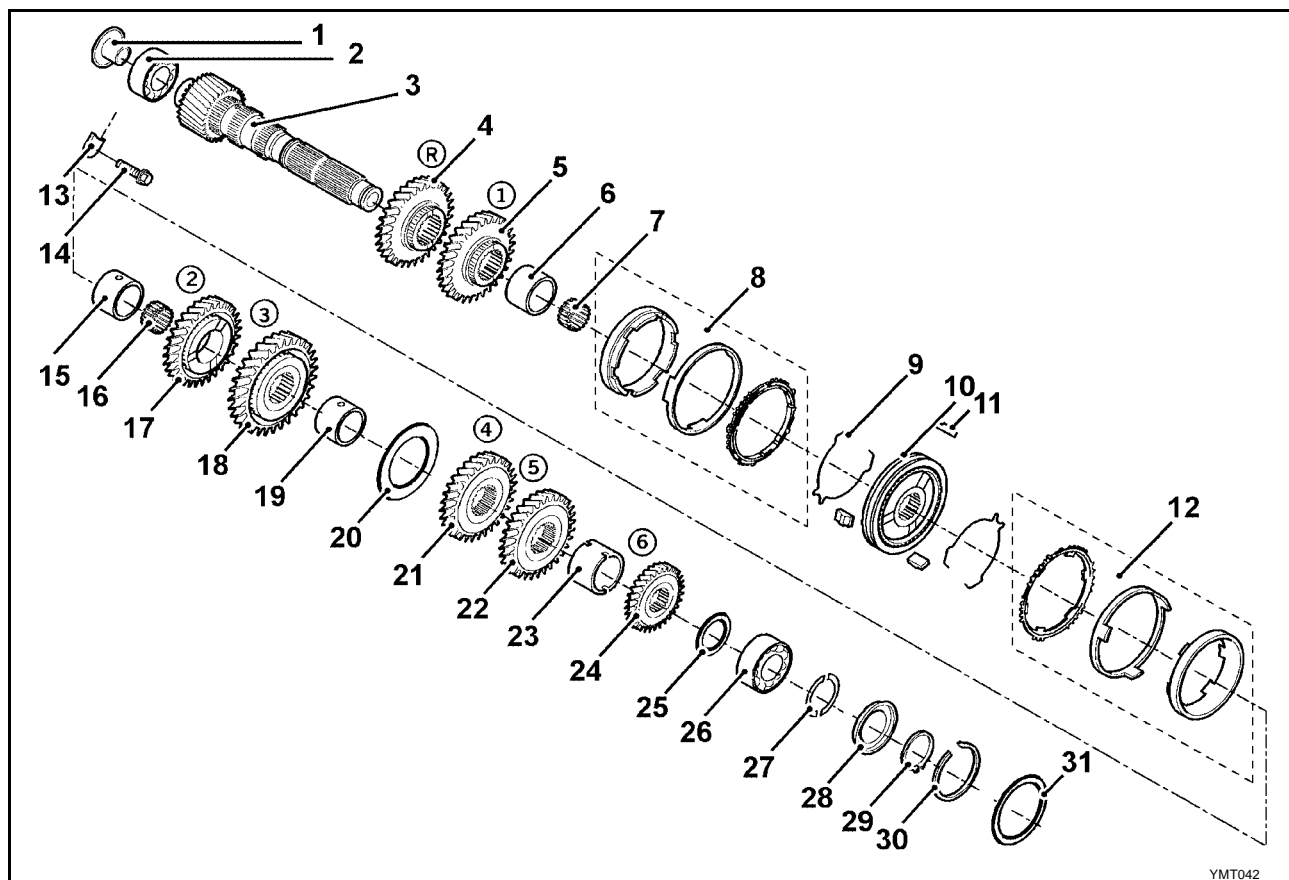
GEAR COMPONENTS

Input Shaft



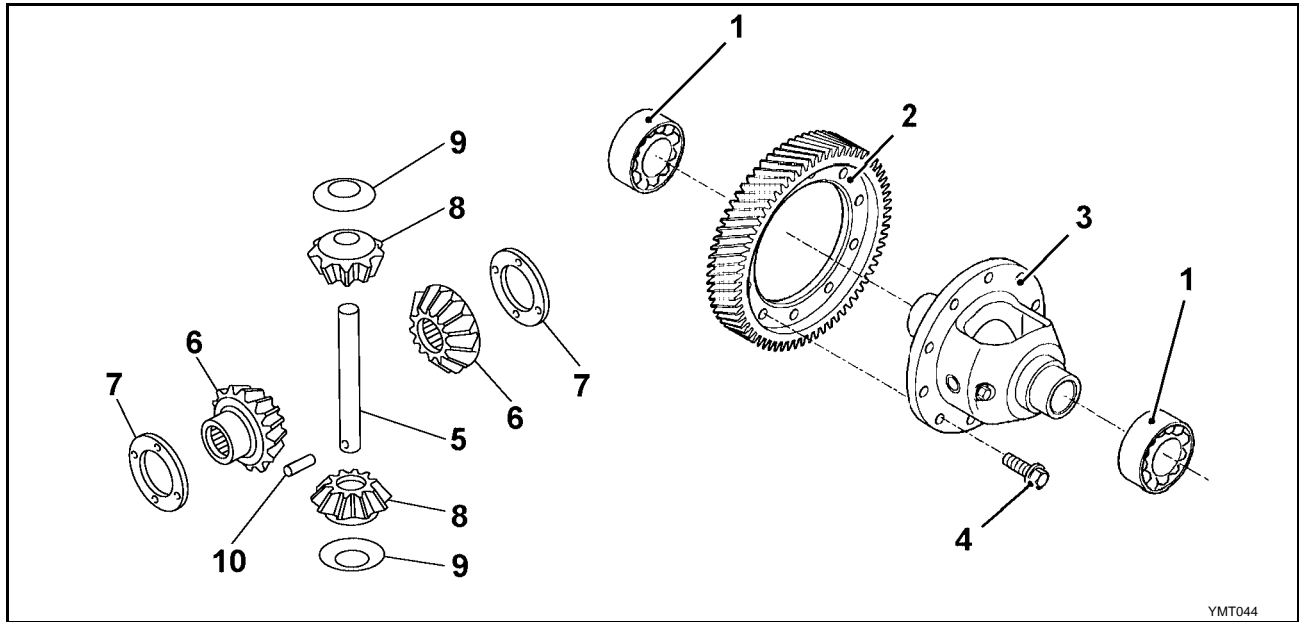
- | | | |
|----------------------------|----------------------------------|----------------------------------|
| 1. Bearing | 2. Input shaft | 3. Needle bearing |
| 4. Third-gear pinion | 5. Synchronisation ring | 6. Synchronisation spring |
| 7. Rollers | 8. Third-fourth sliding gear hub | 9. Synchronisation spring |
| 10. Synchronisation ring | 11. Sprocket bush | 12. Needle bearing |
| 13. Fourth-gear pinion | 14. Adjustment shim | 15. Sprocket bush |
| 16. Needle bearing | 17. Fifth-gear pinion | 18. Synchronisation ring |
| 19. Synchronisation spring | 20. Rollers | 21. Fifth-sixth sliding gear hub |
| 22. Synchronisation spring | 23. Synchronisation ring | 24. Sixth-gear pinion |
| 25. Needle bearing | 26. Sprocket bush | 27. Stop clips |
| 28. Bearing | 29. Oil deflector | 30. Adjustment shim |
| 31. Retaining pin | 32. Reverse gear shaft | 33. Thrust bearing |
| 34. Needle bearing | 35. Reverse gear shaft | 36. Synchronisation ring |
| 37. Thrust bearing | 38. Needle bearing | 39. Brace retainers |
| 40. Sliding gear hub | 41. Reverse gear shaft | 42. Adjustment shim |

Output Shaft



- | | | |
|-----------------------------------|---------------------------------------|---------------------------|
| 1. Oil deflector | 2. Bearing | 3. Output shaft |
| 4. Reverse gear shaft | 5. First-gear pinion | 6. Sprocket bush |
| 7. Needle bearing | 8. Synchronisation ring | 9. Synchronisation spring |
| 10. First-second sliding gear hub | 11. Stress | 12. Synchronisation ring |
| 13. Retaining block | 14. Bolt [8 N·m (0.8 kg·m, 71 in·lb)] | 15. Sprocket bush |
| 16. Needle bearing | 17. Second-gear pinion | 18. Third-gear pinion |
| 19. Spacer | 20. Adjustment shim | 21. Fourth-gear pinion |
| 22. Fifth-gear pinion | 23. Spacer | 24. Sixth-gear pinion |
| 25. Adjustment shim | 26. Bearing | 27. Half-shims |
| 28. Closing washer | 29. Clips | 30. Bearing clips |
| 31. Adjustment shim | | |

DIFFERENTIAL GEAR



- | | | |
|------------------------------|----------------------|----------------------------|
| 1. Differential side bearing | 2. Final gear | 3. Differential case |
| 4. Bolt | 5. Pinion mate shaft | 6. Side gear |
| 7. Side gear thrust washer | 8. Pinion mate gear | 9. Pinion mate gear washer |
| 10. Retaining pin | | |

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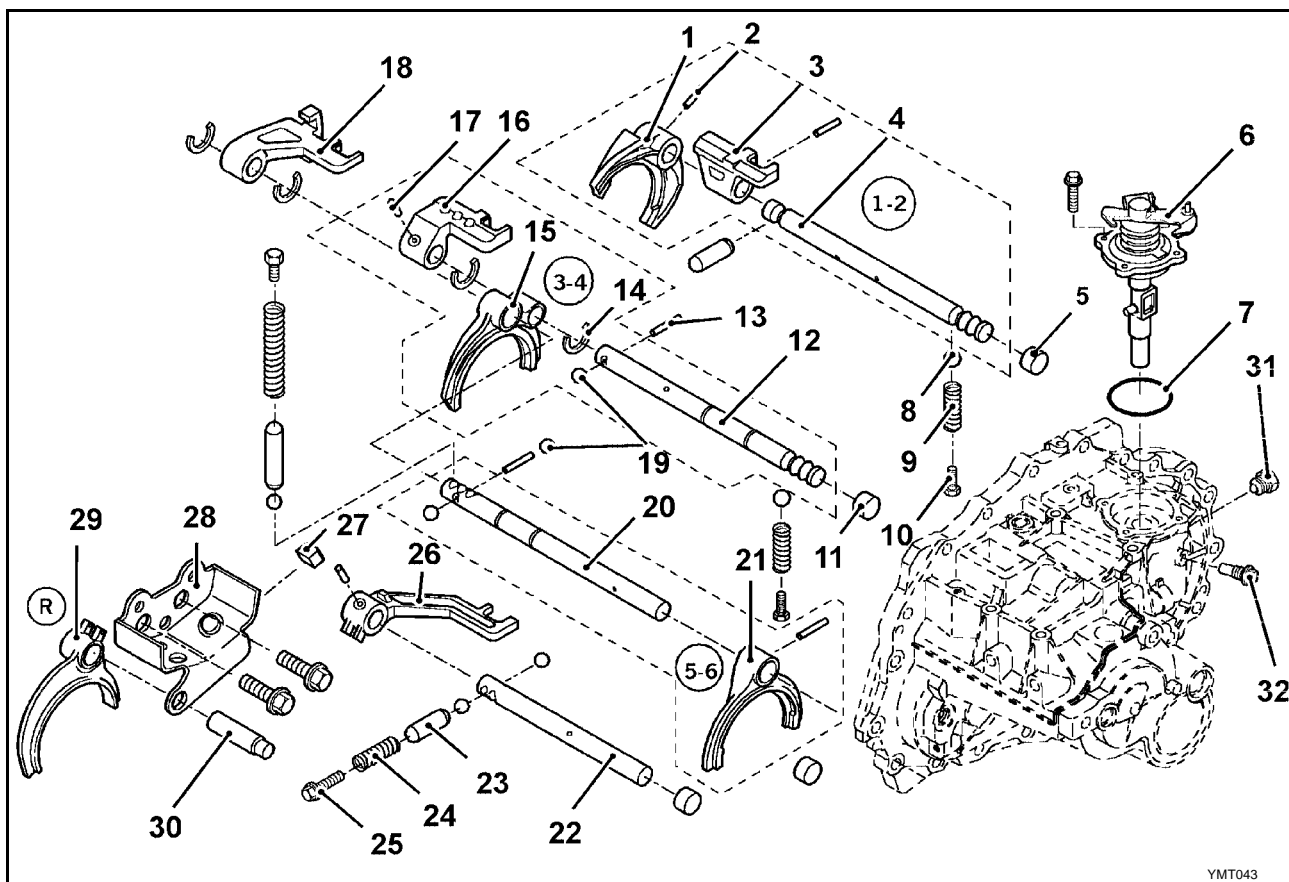
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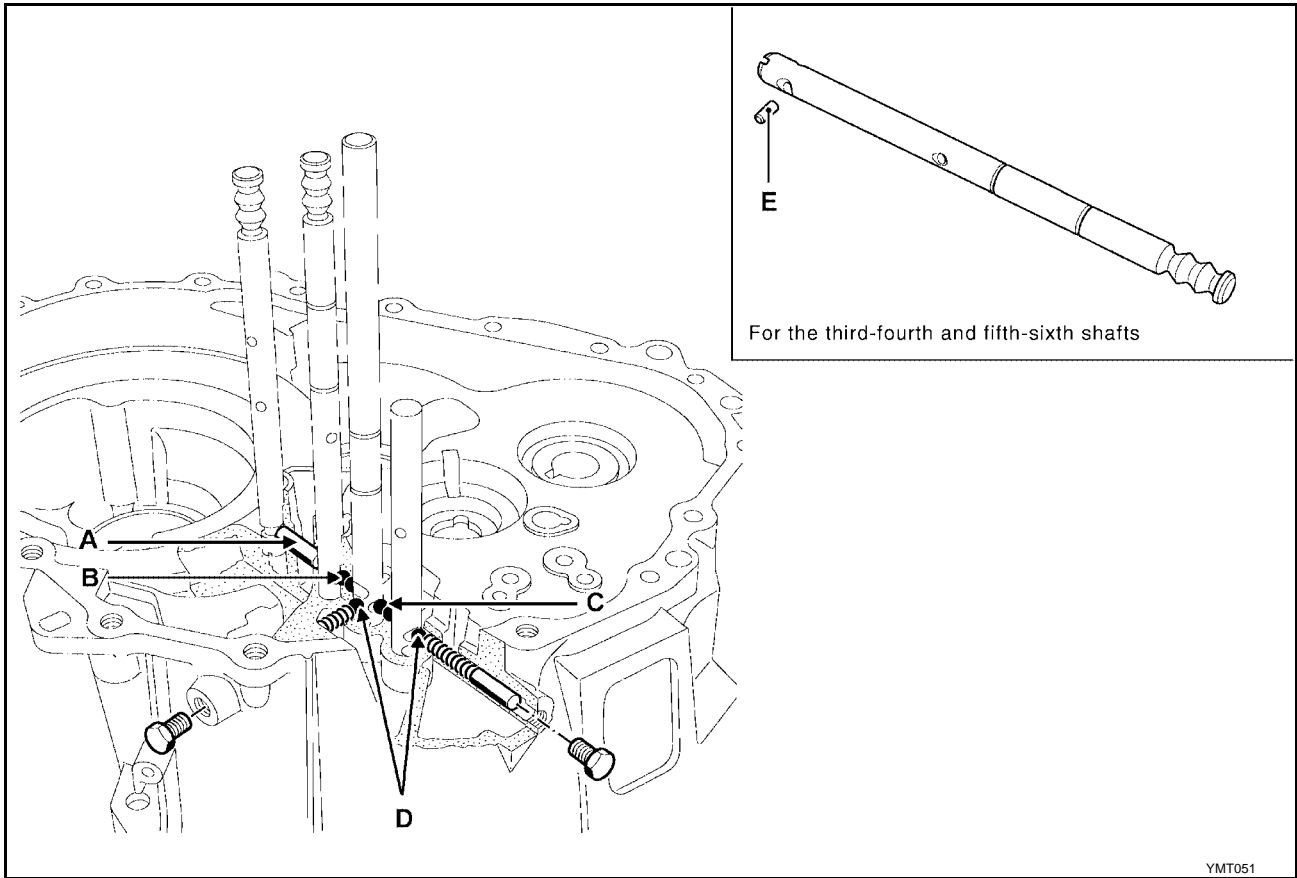
SHIFT CONTROL COMPONENTS



YMT043

- | | | |
|---------------------------------------------------|---------------------------------------------|--------------------------------------------------|
| 1. First-second fork | 2. Pin | 3. First-second striker rod |
| 4. First-second selector fork shaft | 5. Shaft collar | 6. External control [8 N·m (0.8 kg-m, 71 in-lb)] |
| 7. O-ring | 8. Ball bearing | 9. Spring |
| 10. Bolt [25 N·m (2.6 kg-m, 18 ft-lb)] | 11. Shaft collar | 12. Third-fourth selector fork shaft |
| 13. Internal lock shaft | 14. Retaining clip | 15. Third-fourth fork |
| 16. Third-fourth striker rod | 17. Pin | 18. Fifth-sixth striker rod |
| 19. Lock ball | 20. Fifth-sixth selector fork shaft | 21. Fifth-sixth fork |
| 22. Reverse gear selector fork shaft | 23. Lock shaft | 24. Spring |
| 25. Bolt [25 N·m (2.6 kg-m, 18 ft-lb)] | 26. Reverse gear striker rod | 27. Bearing shell |
| 28. Switch mounting [15 N·m (1.5 kg-m, 11 ft-lb)] | 29. Reverse gear fork | 30. Reverse gear selector fork shaft |
| 31. Selection balls [15 N·m (1.5 kg-m, 11 ft-lb)] | 32. Check rod [30 N·m (3.1 kg-m, 22 ft-lb)] | |

BALLS



A Lock shaft

B Lock ball

C Lock balls or shaft depending on type of gearbox

D Ball bearings

E Internal tappet

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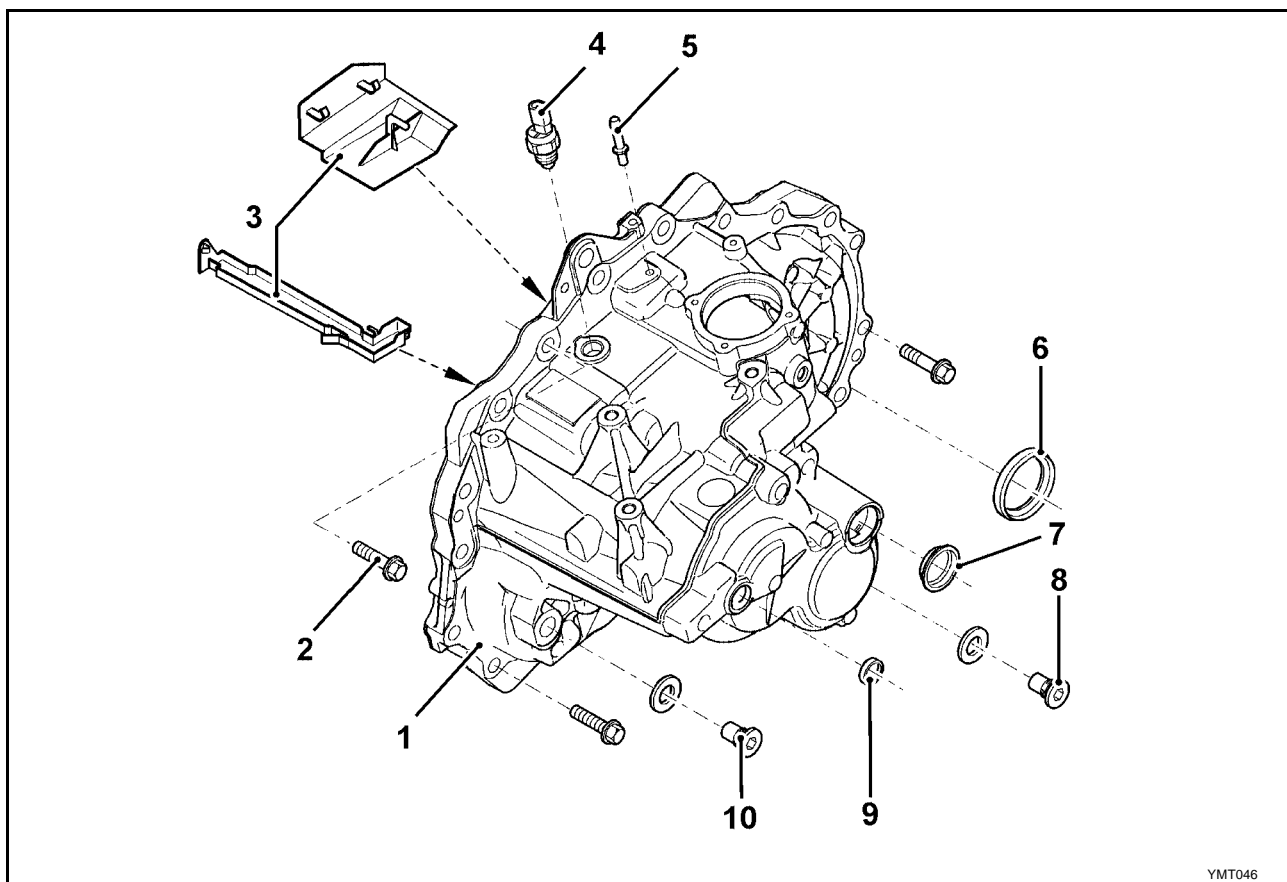
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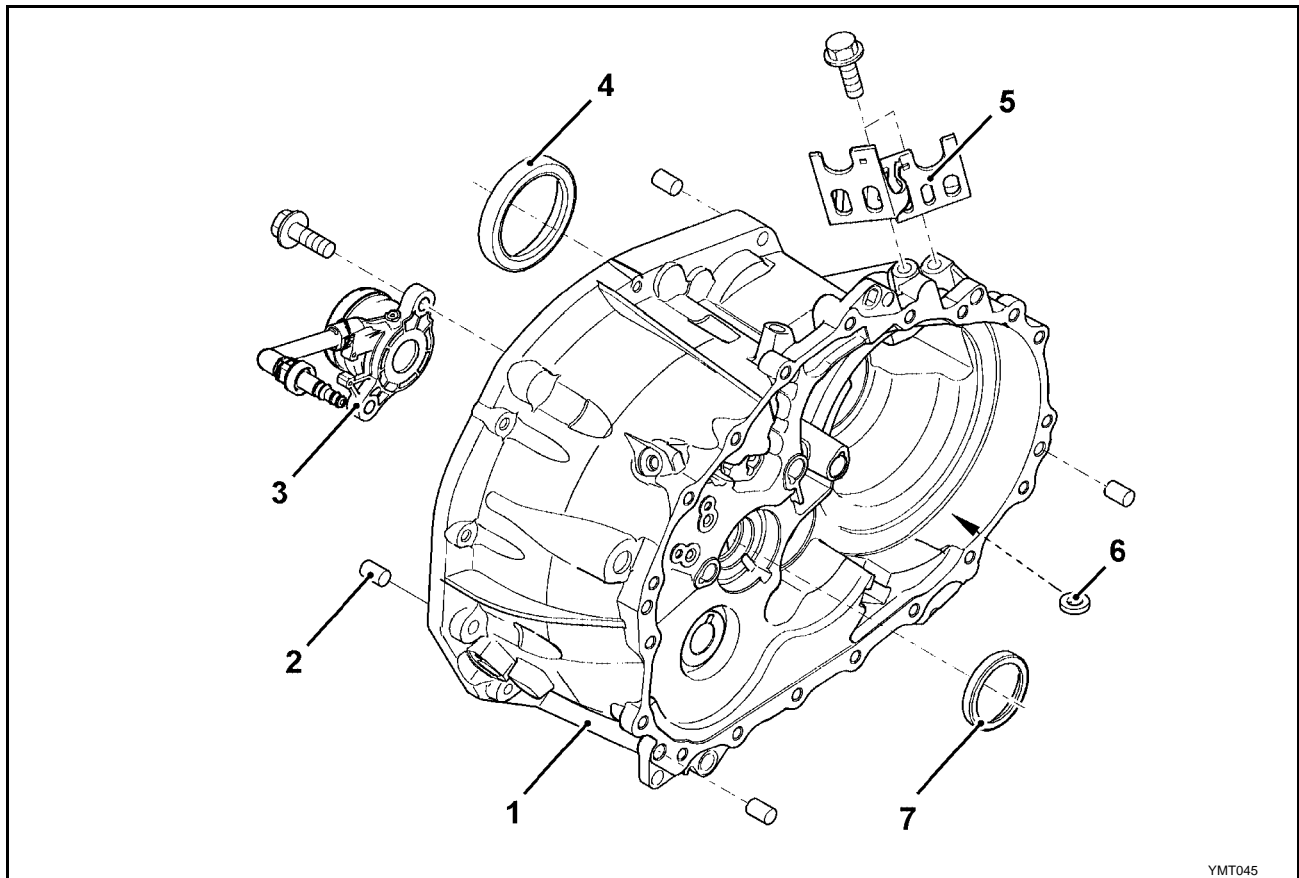
CASE COMPONENTS



YMT046

- | | | |
|-----------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------|
| 1. Mechanism housing | 2. Gearbox edge bolt [63 N·m (6.4 kg-m, 46 ft-lb)] and [52 N·m (5.3 kg-m, 38 ft-lb)] | 3. Oil funnel |
| 4. Reverse gear switch [3 N·m (0.3 kg-m, 27 in-lb)] | 5. Breather tube | 6. Differential joint |
| 7. Blanking cover | 8. Drain plug [3.5 N·m (0.36 kg-m, 31 in-lb)] | 9. Blanking cover |
| 10. Fuel filler cap [3.5 N·m (0.36 kg-m, 31 in-lb)] | | |

CLUTCH HOUSING

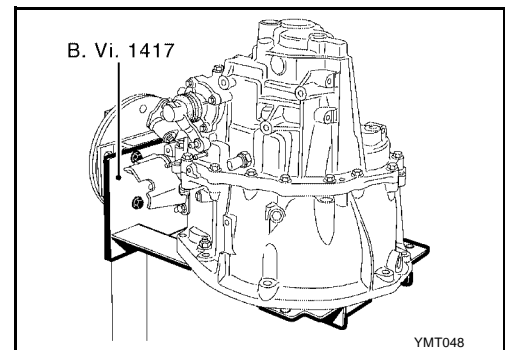


- | | | |
|-----------------------|------------------------------------------------|---------------------------------------------------|
| 1. Clutch housing | 2. Centring ring | 3. Hydraulic stop [2.1 N·m (0.21 kg·m, 19 in·lb)] |
| 4. Differential joint | 5. Sheath stop [2.1 N·m (0.21 kg·m, 19 in·lb)] | 6. Asbestos |
| 7. Input shaft seal | | |

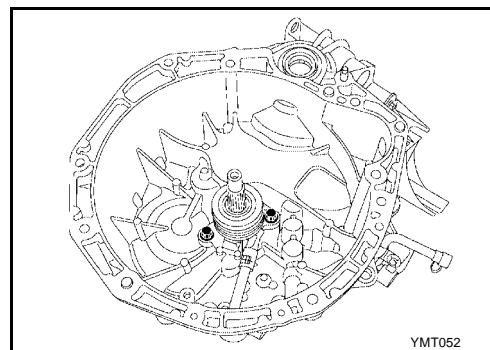
Disassembly and Assembly

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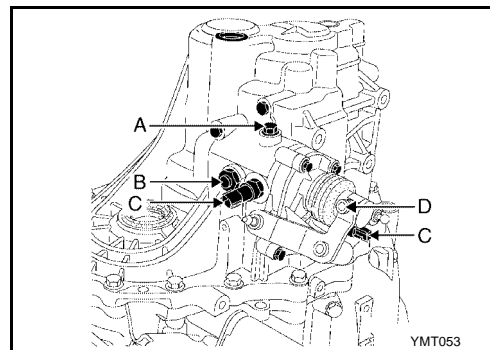
1. Mount the B. Vi. 1417 on a support. With B. Vi. 1417 horizontal, position the gearbox with the engine side against the plate. Fit the gearbox on the B. Vi. 1417 support.



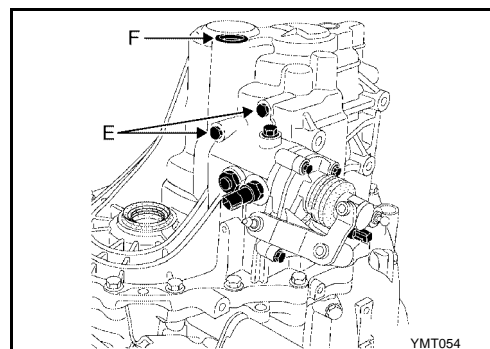
2. Remove the mounting bolts of the clutch slave cylinder, then remove it.



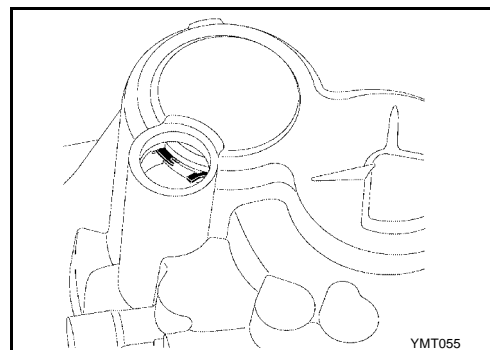
3. Remove the selection stop rod (A), the selection balls (B), the two position sensors (C) and the selection control unit (D).



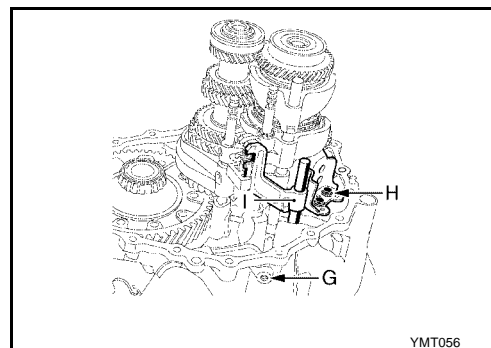
4. Remove the selector fork shaft balls (E), the blanking cover (F) and the gearbox edge bolts.



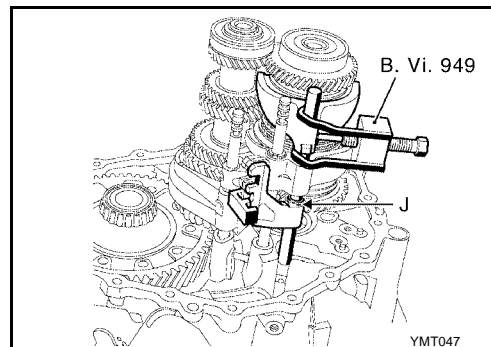
5. Remove the retaining circlips from the secondary shaft bearings. Then remove the mechanism housing.



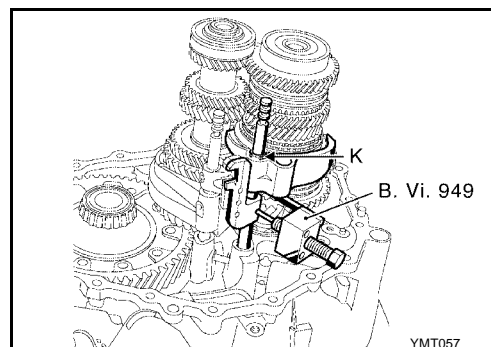
6. Remove the selection shaft balls (G) (see balls page), the switch (H) and the reverse gear control rod and shaft (I). Recover the two lock balls (or shaft) (see balls page).



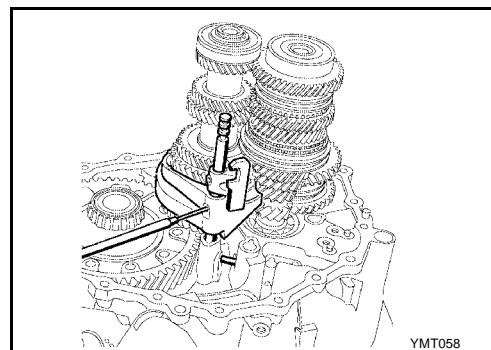
7. Unpin the fifth-sixth fork with B. Vi. 949. Unclip the fifth-sixth control rod (J) and remove the shaft-fork unit. Recover the small tappet in the fifth-sixth shaft and the two lock balls (see balls page).



8. Unclip the third-fourth fork (K). Unpin the third-fourth control rod with B. Vi. 949. Remove the third-fourth shaft and fork unit. Recover the small tappet inside the third-fourth shaft (see balls page).

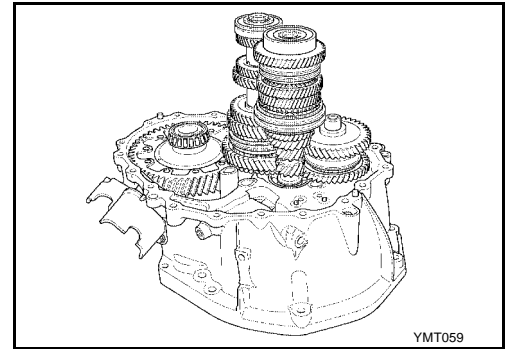


9. Unpin the first-second fork. Remove the first-second shaft and fork unit, the reverse gear shaft and fork unit.



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10. With another worker, remove the “primary shaft-secondary shaft-reverse gear” unit.



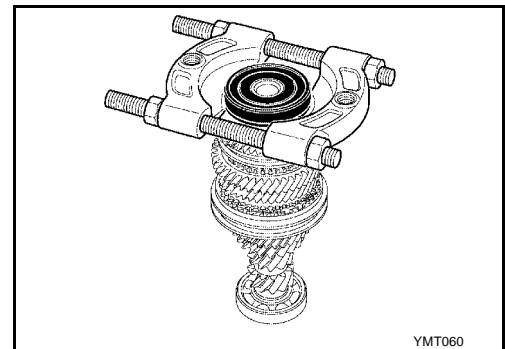
REMOVING THE GEARING

NOTE:

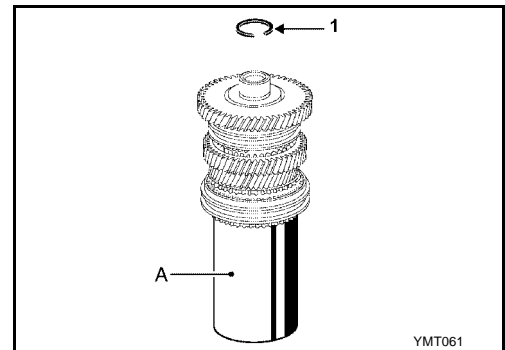
The gear supporting rings are fitted so tightly to the shafts that a force of some 3 to 5 tonnes is required to remove them; this requires solid equipment (press-support).

Primary Shaft

1. Remove the bearing using a puller.

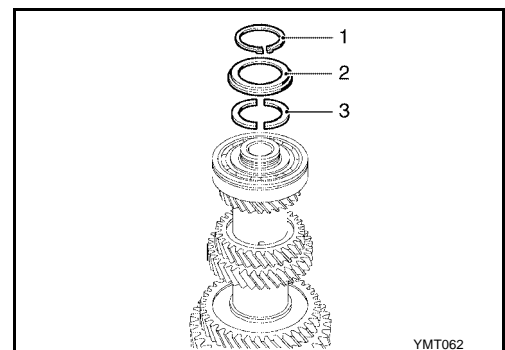


2. Remove the lock ring (1) and the rings-pinions-hub unit at the press with tool A from kit B. Vi. 1683 and taking support under the third gear pinion.

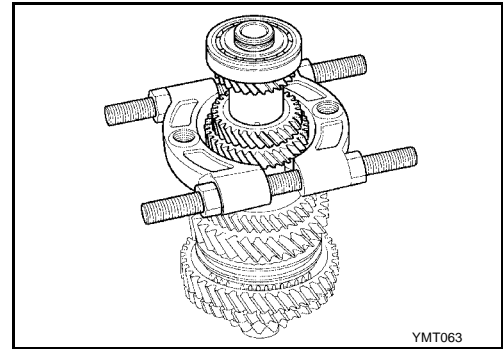


Secondary Shaft

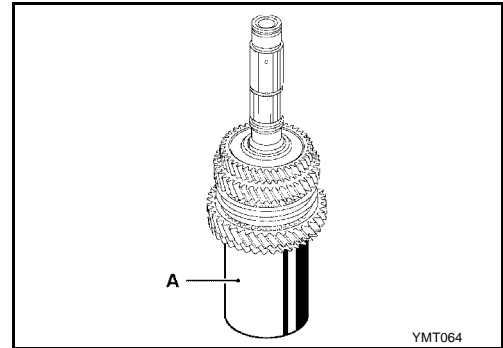
1. Remove the lock ring (1), the closing washer (2) and the two half shims (3).



- Using press remove the fourth-fifth-sixth pinion units with a stripper, taking support under the fourth-gear pinion.

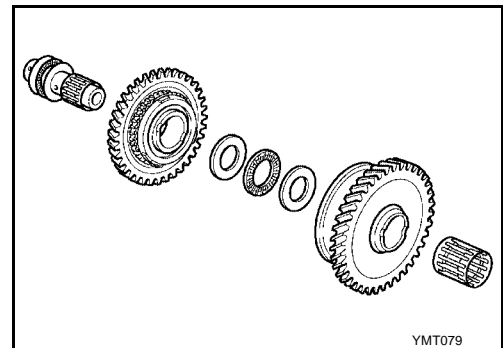


- Using press remove the rings-pinions-hub nut with tool A from kit B. Vi. 1683, taking support under the reverse gear pinion.



Reverse Gear Unit

- Remove the unit and check the parts.



CHECKING PARTS

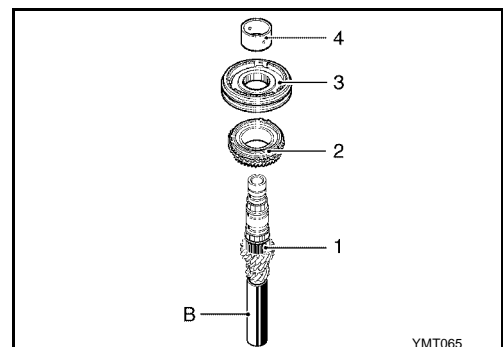
The sprocket teeth and the claws should not be chipped or excessively worn. Also ensure that there are no signs of grating or abnormal wear on the surfaces of the shafts or the inner walls of the sprockets.

It is advisable to mark the position of the sliding shafts in relation to the hub.

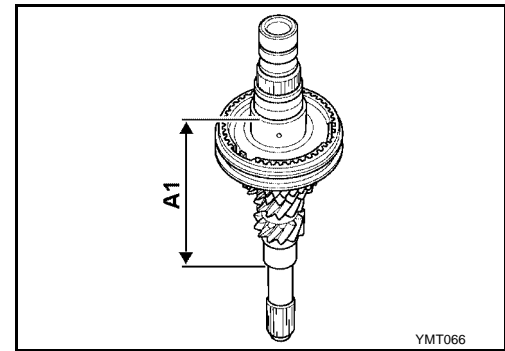
REFITTING THE GEARING

Primary Shaft

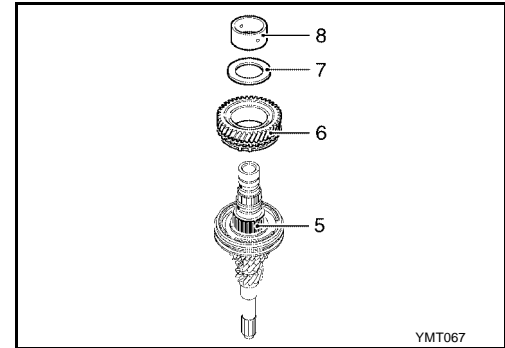
- Fit the shaft to tool B from B. Vi. 1683.
- Oil and position the third-gear needle bearing (1) and idle gear (2) with its synchronisation ring.
- With tool C from B. Vi. 1683, by press sleeve the third-fourth sliding gear hub (3), (large hub offset on the pinion side of third, sliding gear offset on the pinion side of fourth).
- Align and make the ring and hub notches coincide.
- With tool C from B. Vi. 1683, by press sleeve the ring (4).
- Position the oil lubrication holes at 90° from those on the shaft. Apply a pressure of 2.5 tonnes at the end of the press.



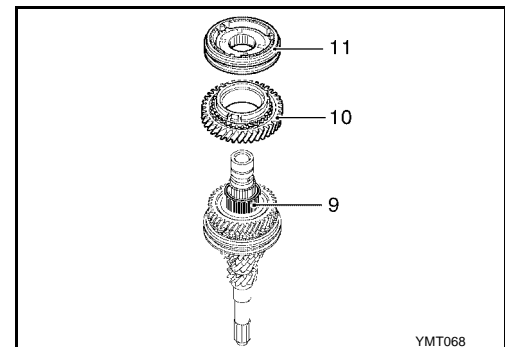
7. Measure distance (A1) between the bearing face and end of the ring to determine the thickness of the thrust washer.
Since the nominal value is 154.75 ± 0.05 use the following formula:
Thrust washer = $154.75 - A1$
Example:
A1 = 150.80
Thrust washer = $154.75 - 150.80 = 3.95$
Since the shims range from 0.06 in increments of 0.06, for this example a 3.96 thrust washer has to be selected from the collection.



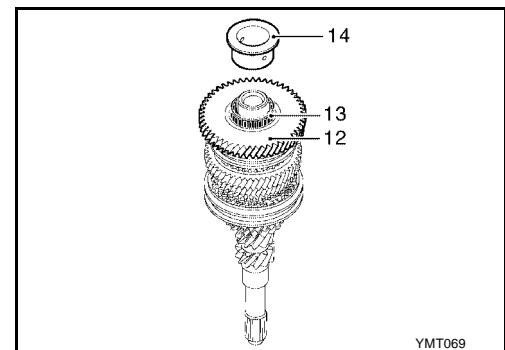
8. Oil and position the fourth-gear needle bearing (5) and idle gear (6) with its synchronisation ring.
9. With tool C from B. Vi. 1683, by press sleeve the thrust washer (7) and then the ring (8) with the oil lubrication holes positioned at 90° from those in the shaft.
10. Apply a pressure of 2.5 tonnes at the end of the press.



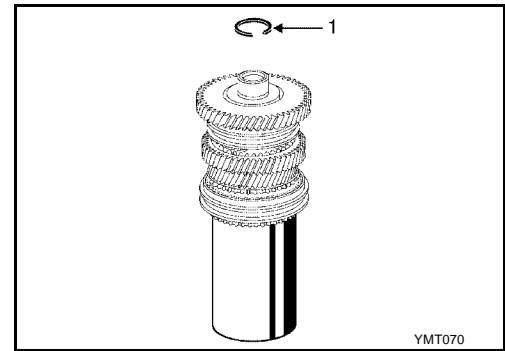
11. Oil and position the fifth-gear needle bearing (9) and idle gear (10) with its synchronisation ring.
12. With tool C from B. Vi. 1683, by press sleeve the fifth-sixth sliding gear hub (11), (large hub offset on the pinion side of fifth, sliding gear offset on the pinion side of sixth).
13. Align and make the ring and hub notches coincide.



14. Position the sixth-gear pinion (12) with its synchronisation ring.
15. Oil and position the needle bearing (13).
16. With tool C from B. Vi. 1683, by press sleeve the ring (14) with the oil lubrication holes positioned at 90° from those in the shaft.
17. Apply a pressure of 2.5 tonnes at the end of the press.

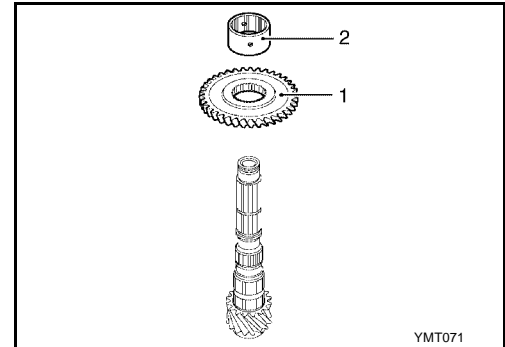


18. Select and mount a nine circlips (1) that just fits into the throat.
19. With tool C from B. Vi. 1683, by press sleeve the bearings.

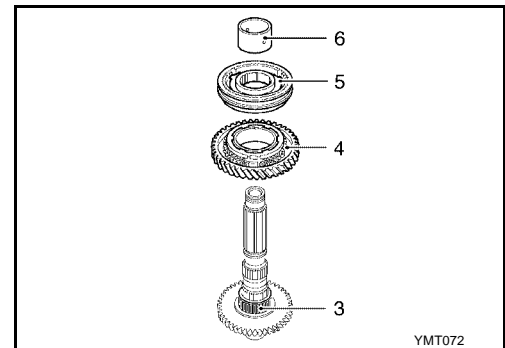


Secondary Shaft

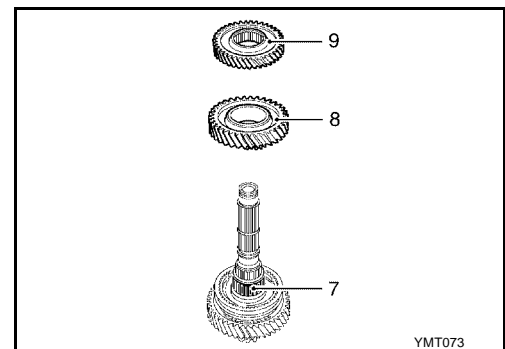
1. With tool C from B. Vi. 1683, by press sleeve the reverse-gear fixed pinion (1) and the ring (2) with the oil lubrication holes positioned at 90° from those in the shaft.
2. Apply a pressure of 2.5 tonnes at the end of the press.



3. Oil and position the first-gear needle bearing (3) and idle gear (4) with its synchronisation ring.
4. With tool C from B. Vi. 1683, by press sleeve the first-second sliding gear hub (5), (large hub offset on the pinion side of second, sliding gear offset on the pinion side of first).
5. Align and make the ring and synchronisation hub notches coincide.
6. With tool C from B. Vi. 1683, by press sleeve the ring (6) with the oil lubrication holes positioned at 90° from those in the shaft.
7. Apply a pressure of 2.5 tonnes at the end of the press.



8. Oil and position the second-gear needle bearing (7) and idle gear (8) with its synchronisation ring.
9. With tool D from B. Vi. 1683, by press sleeve the third gear fixed pinion (9).



10. Position the spacer (4).
11. Measure distance (A2) between the end of the fixed pinion of the shaft and the end of the spacer to determine the thickness of the adjustment shim.

Since the nominal value is 173.90 ± 0.05 use the following formula:

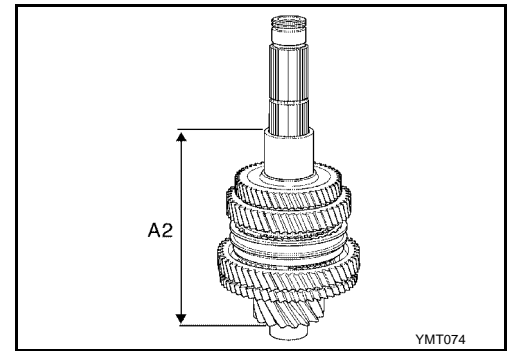
$$\text{Adjustment shim} = 173.90 - A2$$

Example:

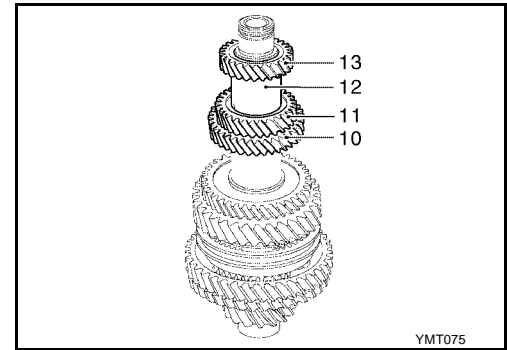
$$A2 = 173.23$$

$$\text{Adjustment shim} = 173.90 - 173.30 = 0.67$$

Since the shims range from 0.08 in increments of 0.08, for this example a 0.68 shim has to be selected from the collection.



12. Position the selected shim.
13. With tool D from B. Vi. 1683, by press sleeve the fourth- (10) and fifth-gear (11) fixed pinions.
14. Position the spacer (12) and sixth-gear fixed pinion (13).



15. Measure distance (A3) between the end of the shaft and the sixth pinion to determine the thickness of the shim (14).

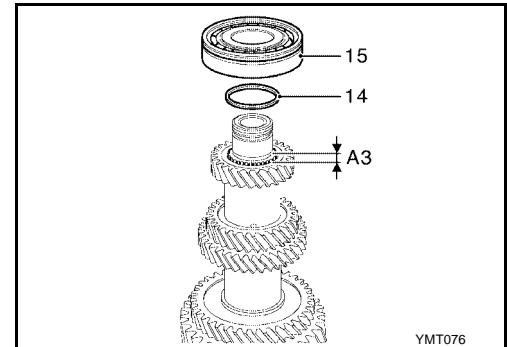
Example:

$$A3 = 1.30$$

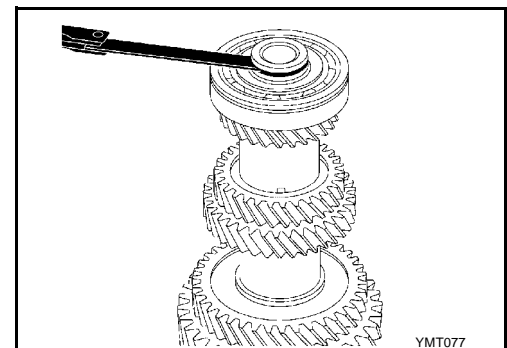
$$\text{Shim (14)} = 1.30 - 0.01 = 1.29$$

Since the shims range from 0.08 in increments of 0.08, for this example a 1.28 shim has to be selected from the collection.

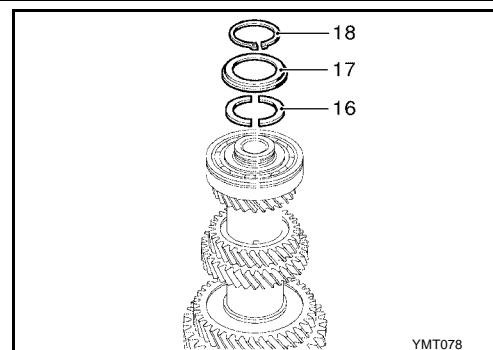
By press sleeve the bearing (15).



16. Determine the thickness of the half-shims with a shim set.

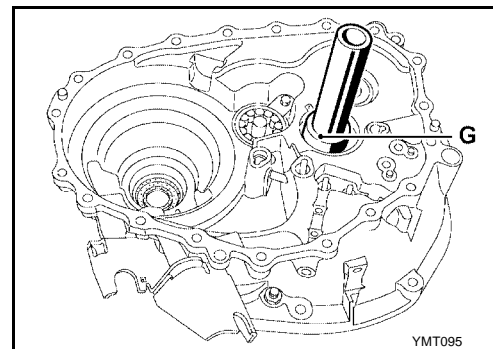


17. Fit the two half shims (16), the closing washer (17) and the lock ring (18).



ASSEMBLY

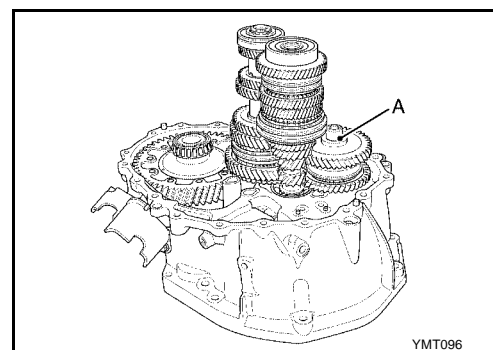
1. Position the primary shaft seal with tool G from B. Vi. 1683.



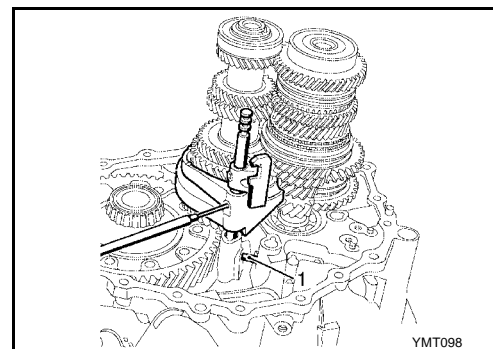
2. Refit the differential. With another worker, refit the “primary shaft - secondary shaft - reverse gear”.

NOTE:

- Do not forget the adjustment shim from the reverse gear unit determined above (A).
- When reinstalling the shaft unit, pay attention to the position of the reverse gear shaft. The anti-rotation of the shaft is held by a pin.

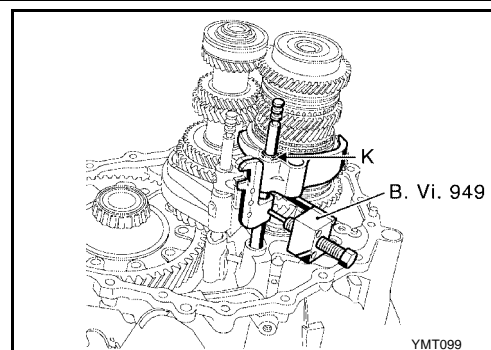


3. Position “first-second shaft-fork and control rod”.
4. Pin the first-second fork.
5. Position the lock shaft (1) (see balls page).



6. Position “third-fourth shaft-fork and control rod”.
7. Do not forget the small tappet inside the shaft (see balls page).

8. Pin the third-fourth control rod with B. Vi. 949 and clip the third-fourth fork (K).

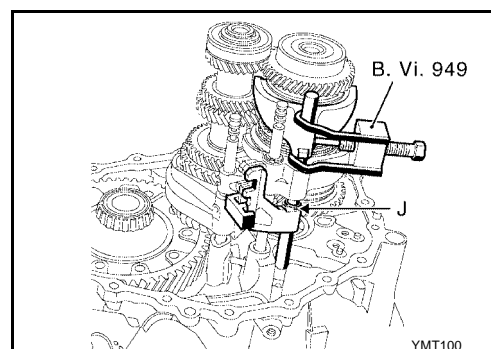


9. Position the two lock balls (see balls page).
10. Position "fifth-sixth shaft-fork and control rod".

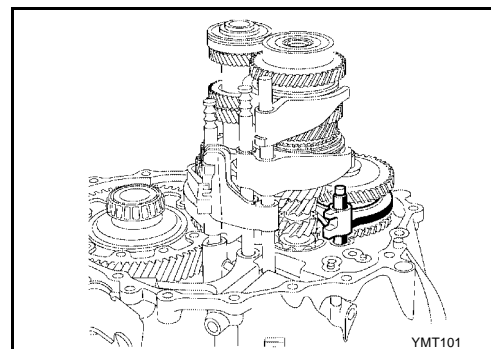
NOTE:

Do not forget the small tappet inside the shaft (see balls page).

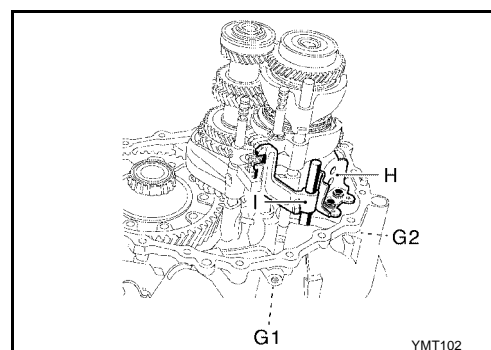
11. Pin the fifth-sixth fork with B. Vi. 949 and clip the control rod (J).



12. Position the reverse-gear shaft and fork.



13. Position the two lock balls (see balls page).



14. Position the reverse-gear shaft and control rod (I).

NOTE:

Do not forget the reverse-gear switch rod bushing (L).

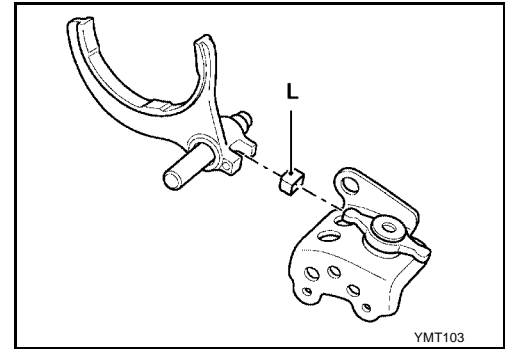
15. Position switch (H) and tighten the bolts to a torque of [15 N·m (1.5 kg-m, 11 ft-lb)].
16. Position the ball bearings (G) (see balls page).

NOTE:

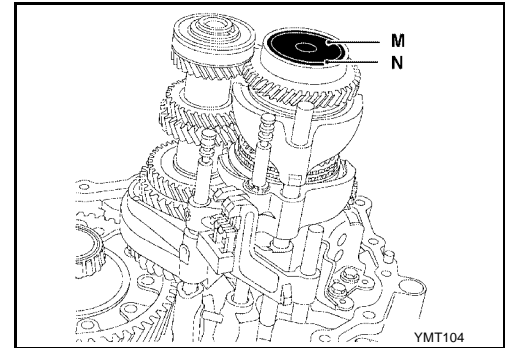
G1 = large shaft and large spring

G2 = small shaft and small spring

17. Tighten the bolts to torque [25 N·m (2.6 kg-m, 18 ft-lb)].



18. Place deflector (M) and adjustment shim (N) at the end of the primary shaft.
19. Apply a strip of RHODORSEAL all around the sealing surface.

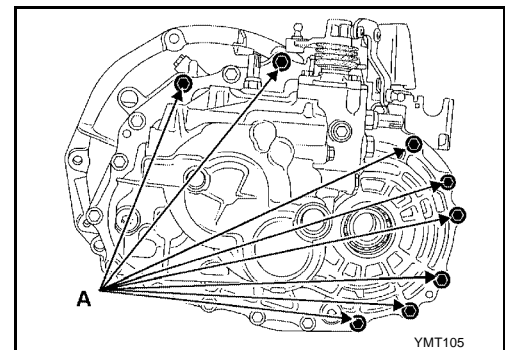


20. Take the mechanism housing.

21. Remove the retaining circlips to position the housing.

22. Put in and tighten the gearbox edge bolts:

- 65 N·m (6.6 kg-m, 48 ft-lb) for the bolts (A) coated with LOC-TITE,
- 52 N·m (5.3 kg-m, 38 ft-lb) for the other bolts.

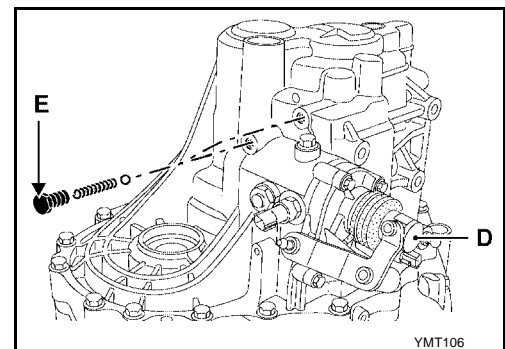


23. Position and tighten to torque the selection control unit (D) [8 N·m (0.8 kg-m, 71 in-lb)].

24. Fit the control shaft balls (E) and tighten the bolts to torque [25 N·m (2.6 kg-m, 18 ft-lb)].

25. Shift out of 2nd gear to raise the secondary shaft and clip in the bearing.

26. Shift back into neutral.



27. Position and torque tighten:

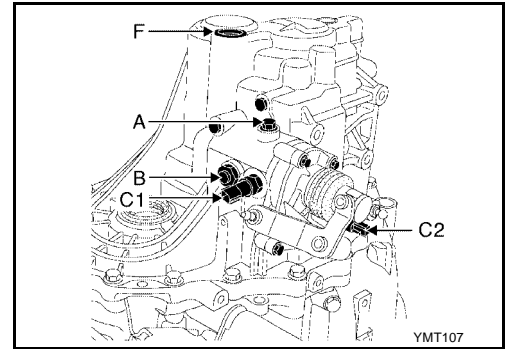
- the selection stop rod (A) [30 N·m (3.1 kg-m, 22 ft-lb)],
- the selection ball (B) [15 N·m (1.5 kg-m, 11 ft-lb)],
- the two position sensors (C) [30 N·m (3.1 kg-m, 22 ft-lb)],
- the blanking cover (F),

NOTE:

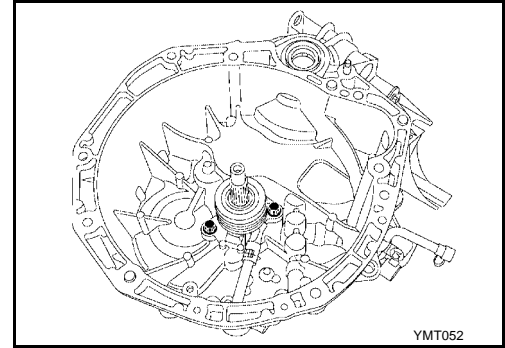
Apply LOCTITE to the switch threading.

C1 = black neutral switch

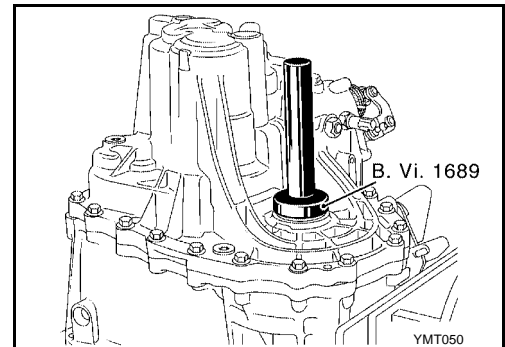
C2 = blue reverse-gear switch



28. Refit the clutch slave cylinder and tighten the bolts to a torque of [21 N·m (2.1 kg-m, 15 ft-lb)].



29. Refit the new differential output seals with B. Vi. 1689.

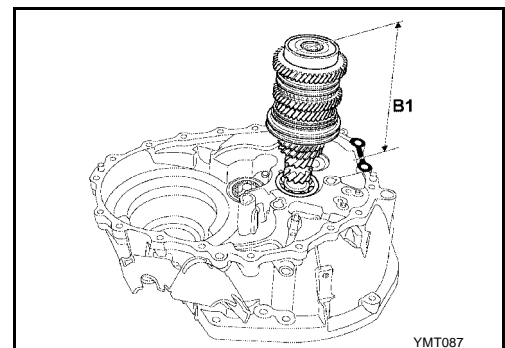


XXXX0000024

Adjustment

PRIMARY SHAFT END FLOAT ADJUSTMENT

1. With the primary shaft in place, measure the distance between the end of the bearing and the gasket face (B1).



2. Measure the distance between the mechanism housing gasket face and the bearing face that takes the adjustment shim (B2). Use the following formula to determine shim thickness, taking into account an end float between 0 and 0.06 mm (0 and 0.0024 in).

Adjustment shim = (B1 – B2) – end float

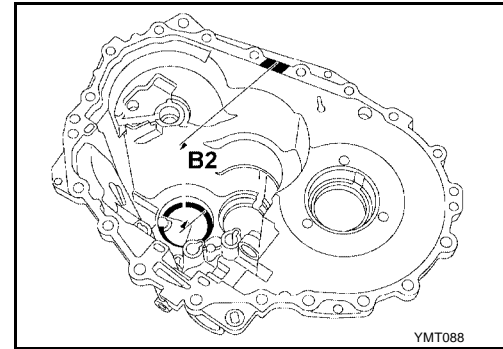
Example:

B1 = 226.59 mm

B2 = 227.56 mm

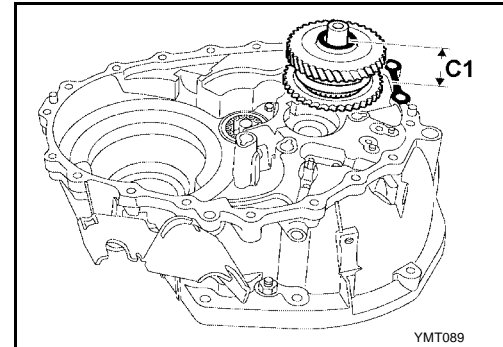
Adjustment shim = (226.59 – 227.56) = 0.97 mm

Since the shims vary by 0.040 mm (0.0016 in), for this example a 0.96 mm (0.0378 in) shim has to be selected from the collection.



REVERSE GEAR INTERMEDIATE SHAFT END FLOAT

1. With the reverse gear shaft in place, measure the distance between the end of the reverse gear pinion and the gasket face (C1).



2. Measure the distance between the mechanism housing gasket face and the bearing face that takes the adjustment shim (C2). Use the following formula to determine shim thickness, taking into account an end float between 0.04 and 0.14 mm (0.0016 and 0.0055 in).

Adjustment shim = (C1 – C2) – end float

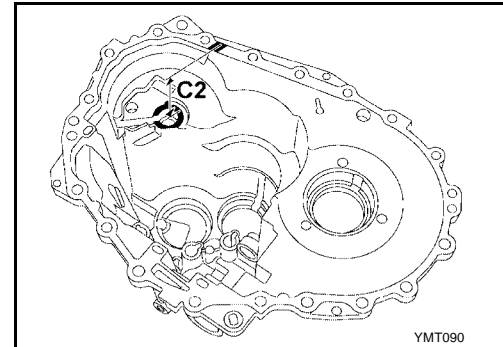
Example:

C1 = 58.29 mm

C2 = 60.60 mm

Adjustment shim = (58.29 – 60.60) = 2.31 mm

Since the shims vary by 0.080 mm (0.0031 in), for this example a 2.24 mm (0.0882 in) shim has to be selected from the collection.

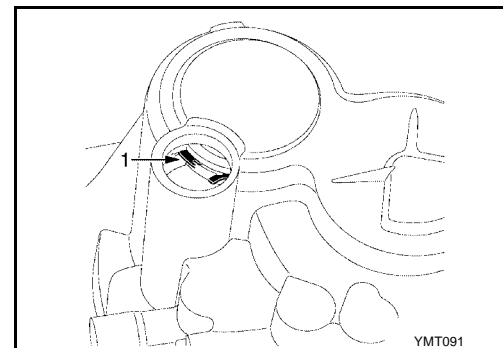


SECONDARY SHAFT END FLOAT ADJUSTMENT

NOTE:

This procedure is only done if replacing housings.

1. With the secondary shaft in place, position the mechanism housing (without the adjustment shim), remove the retaining clips (1) and put it into place. With a screwdriver, clip on the secondary shaft.



- With a dial gauge attached to B. Vi. 1161, check the distance between the bearing and the housing shim bearing face. To do this, with the dial gauge in place (test needle on the bearing), remove the clips with a screwdriver while at the same time lifting the secondary shaft so that the bearing stops on the bearing face of the housing. Measure distance (D).

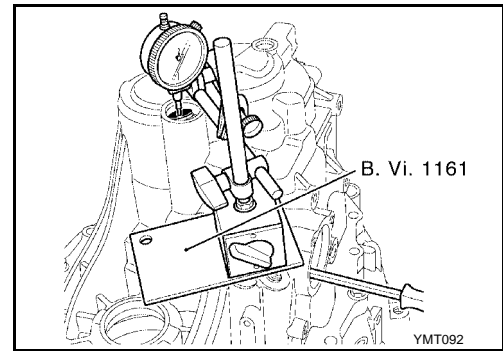
Use the following formula to determine shim thickness, taking into account an end float between 0 and 0.06 mm (0 and 0.0024 in).

Adjustment shim = D – end float

Example:

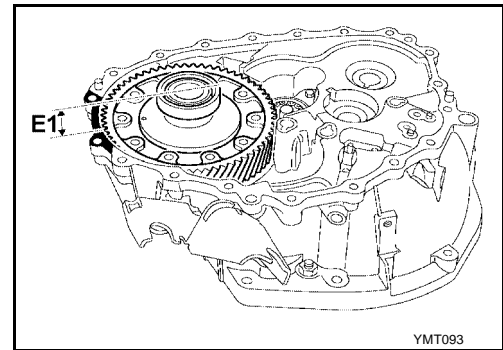
D = 0.73 mm

Since the shims vary by 0.040 mm (0.0016 in), for this example a 0.72 mm (0.0283 in) shim has to be selected from the collection.



DIFFERENTIAL BEARING PRETENSIONING TORQUE ADJUSTMENT

- With the differential in place, measure the distance between the end of the bearing race and the gasket face (E1).



- Measure the distance between the mechanism housing gasket face and the bearing face that takes the shim (E2).

Determine the thickness of the adjustment shim with the following formula, using a pretensioning torque with a value between 0.15 and 0.21 mm (0.0059 and 0.0083 in) (average 0.18).

Adjustment shim = (E1 – E2) + pretensioning torque

Example:

E1 = 26.49 mm

E2 = 26.98 mm

Adjustment shim = (26.49 – 26.98) + (0.18) = 0.67 mm

Since the shims vary by 0.040 mm (0.0016 in), for this example a 0.68 mm (0.0268 in) shim has to be selected from the collection.

TIGHTENING TORQUES

[RS6F93R]

TIGHTENING TORQUES

PFP:XX000

Description

XXXXX0000092

Tightening portion	N·m (kg-m, ft-lb) N·m (kg-m, in-lb)*
Gearbox edge bolt coated with LOCTITE	63 (6.4, 46)
Gearbox casing bolt	52 (5.3, 38)
Differential crownwheel	125 (13, 92)
Differential crown bolt	120 (12, 89)
Secondary shaft bearing retaining bracket	8 (0.8, 71)*
Cable sleeve stop mounting	21 (2.1, 15)
Switch	30 (3.1, 22)
Clutch slave cylinder bolt	21 (2.1, 15)
Selector fork shaft ball bearings bolt	25 (2.6, 18)
External control bolt	8 (0.8, 71)*
Drain and fill plug	35 (3.6, 26)
Switch mounting bolt	15 (1.5, 11)
Control stop plunger	30 (3.1, 22)
Control ball bearings	15 (1.5, 11)

A

B

MT

D

E

F

G

H

I

J

K

L

M

RATIOS

[RS6F93R]

RATIOS

PFP:XX000

RENAULT Gearbox

XXXX0000102

Main gear: Input gear

Suffix	First	Second	Third	Fourth	Fifth	Sixth	Final	Reverse gear
ND0-000	13:41	18:35	28:39	36:38	42:34	49:33	14:57	37:38
ND0-001	13:41	19:34	31:37	40:34	47:31	50:27	15:58	37:38
ND0-002	12:41	19:35	31:39	38:36	45:33	48:29	15:58	37:38
ND0-003	14:49	18:35	28:39	36:38	42:34	49:33	14:57	37:38
ND0-008	13:41	19:34	31:37	40:34	47:31	50:27	14:57	37:38
ND0-014	13:41	18:35	28:39	36:38	52:45	56:41	16:70	37:38
ND0-015	14:49	18:35	28:39	36:38	52:45	56:41	16:70	37:38
ND0-016	14:49	18:35	28:39	36:38	52:45	56:41	14:57	37:38

NISSAN Gearbox

XXXX0000029

Main gear: Input gear

Suffix	First	Second	Third	Fourth	Fifth	Sixth	Final	Reverse gear
ND0-101	13:41	19:34	31:37	40:34	47:31	50:27	14:57	37:38

CONSUMABLES

[RS6F93R]

CONSUMABLES

PFP:XX000

Description

XXXXX0000104

A

B

MT

D

E

F

G

H

I

J

K

L

M

Types	Packaging	Parts Department No.	Component
Gearbox oil			Immerse all parts
RHODORSEAL	100 g tubes	77 01 404 452	Housing assembly
LOCTITE 518	24 ml syringe	77 01 421 162	Back-up lamp switch threading

PARTS TO BE REPLACED SYSTEMATICALLY

PFP:XX000

Description

XXXX0000113

If they have been removed:

- the lip seals,
- the O-rings,
- the gear supporting rings,
- the roll pins,
- the blanking cover cap,
- the sliding gear hub springs,
- the gearbox edge bolts coated with LOCTITE.

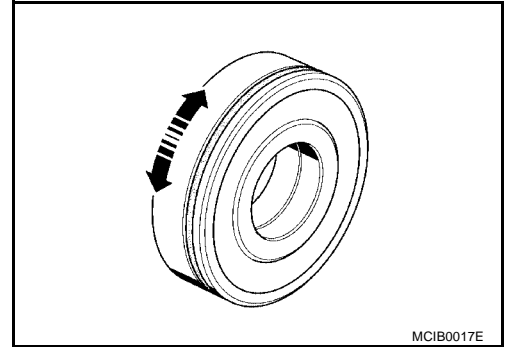
CHECKING

PFP:XX000

XXXX0000115

Bearings

Check that the bearings show no signs of damage and that they turn evenly. Replace them if necessary.



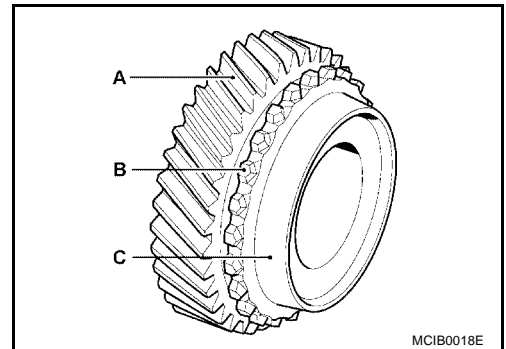
XXXX0000116

Gearing

NOTE:

The inspection focuses mainly on the appearance of the teeth, especially in terms of claw chamfers.

1. Check that the teeth (A) are not broken or chipped.
2. Check that the claws (B) are not broken, chipped or worn.
3. Check that the friction cone (C) shows no scratches or blueness. Also ensure that there are no signs of grating or unusual wear on the surfaces of the shafts or the inner sides of the sprockets.

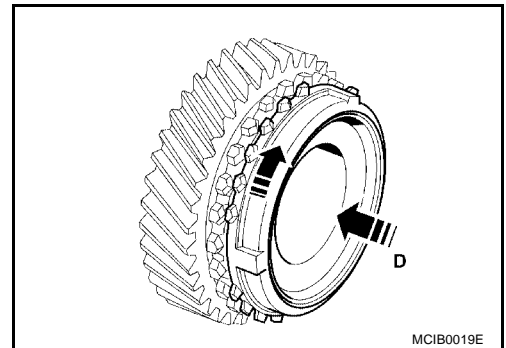


XXXX0000117

Synchronizer Ring

Check that the grooves and ridges on the ring are not worn or damaged.

1. Checking put the ring onto the gear cone.
2. Checking rotate the ring while applying force in the direction of the cone (D).
3. Checking the ring should lock against the cone. Otherwise, replace the synchronizer ring.

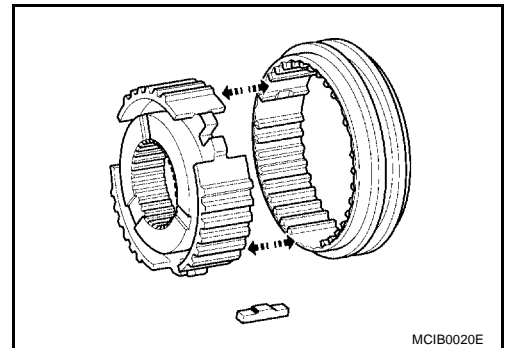


XXXX0000118

Sliding Gear Hub

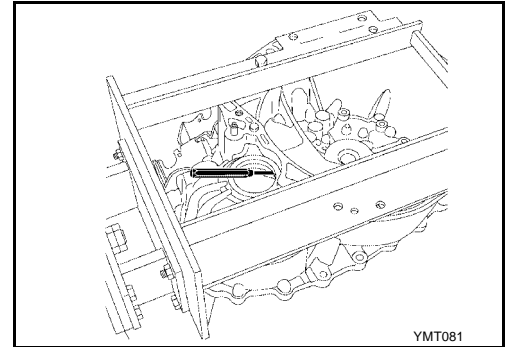
Make sure the sliding gear turns smoothly in the hub. Check the condition of the synchronization rollers.

Systematically replace the sliding gear hub springs.

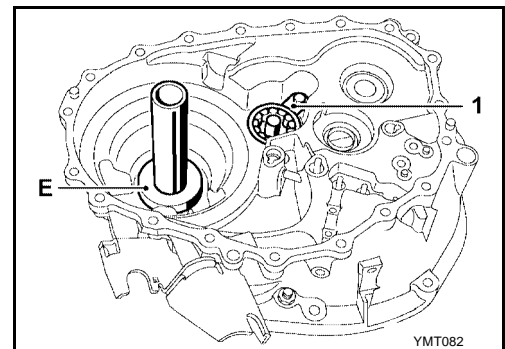


TRANSAXLE CASE BEARING**Removal and Installation**
REMOVAL

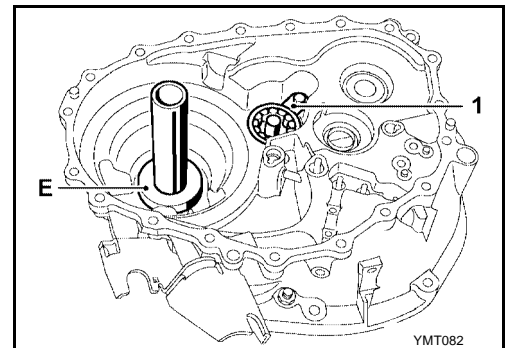
1. Remove the differential bearing races with a roll pin punch.



2. Removing the secondary shaft bearing requires removing the retaining bracket (1).

**INSTALLATION****NOTE:**

When refitting, tighten the bolt to a torque of [8 N·m (0.8 kg-m, 71 in-lb)].
Refit the differential bearing race with tool E from B. Vi. 1683.

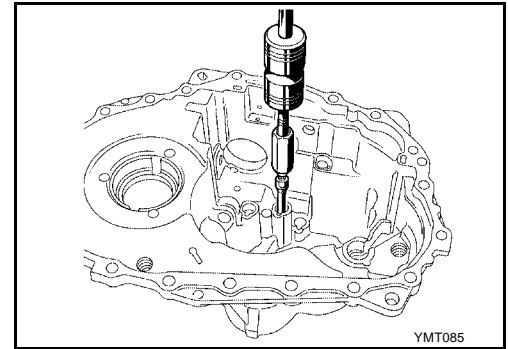


SELECTOR SHAFT RINGS

Removal and Installation

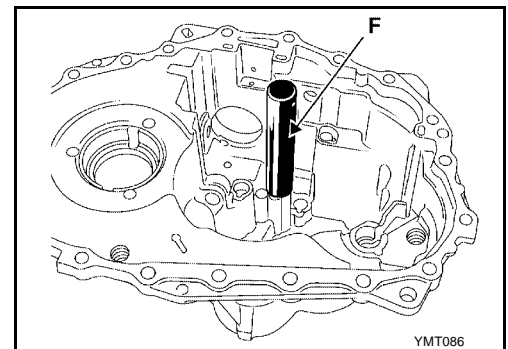
REMOVAL

Remove the rings with a diameter 14 puller.



INSTALLATION

Refit the rings with tool H from B. Vi. 1683.



A

B

MT

D

E

F

G

H

I

J

K

L

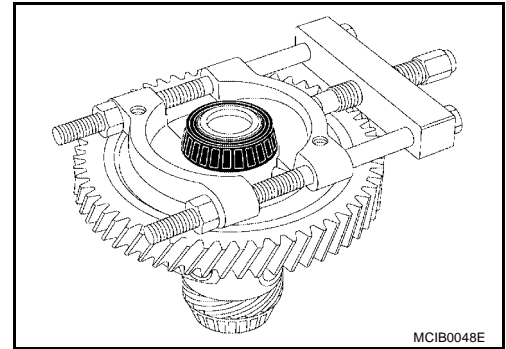
M

DIFFERENTIAL BEARINGS

Removal and Installation

REMOVAL

Remove the bearing using an antisticking pin.



INSTALLATION

Reposition the bearings with tool H from B. Vi. 1683.

