










V160 MANUAL TRANSMISSION

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09308-10010 Oil Seal Puller	
	09308-14010 Replacer Pipe A	
	09309-14040 Remover & Replacer D	
	09330-00021 Companion Flange Holding Tool	
	09950-30010 Puller A Set	
	(09951-03010) Upper Plate	
	(09953-03010) Center Bolt	
	(09954-03010) Arm	
	(09955-03030) Lower Plate 130	
	(09956-03030) Adaptor 20	

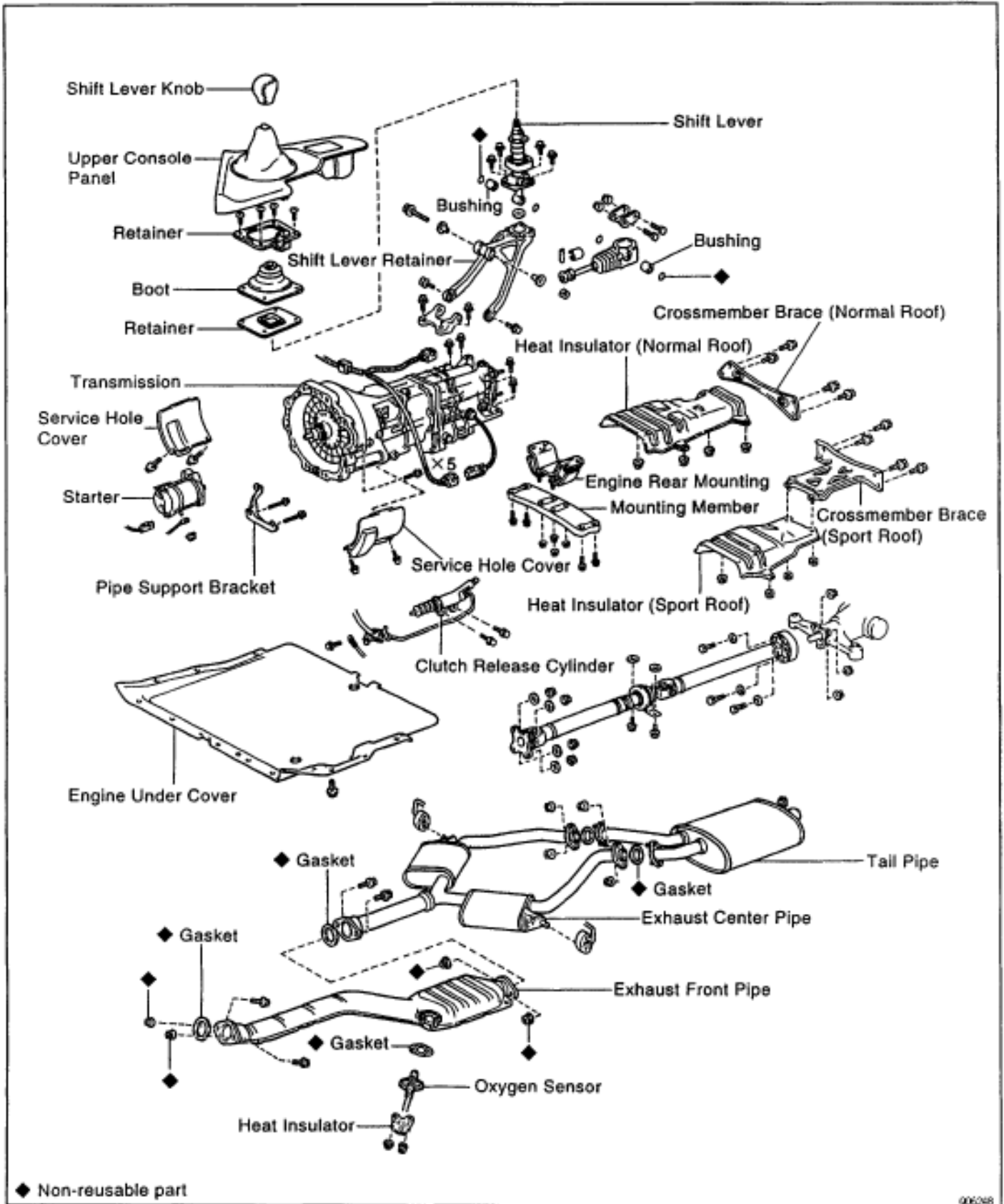
EQUIPMENT

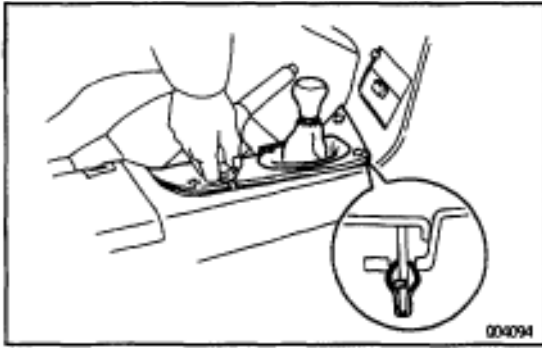
Calipers	
Torque wrench	

LUBRICANT

Item	Capacity	Oil type
Manual transmission oil	1.8 liters (1.9 US qts, 1.6 Imp.qts)	TOYOTA GEAR OIL V160 or ESSO ATF DEXRON®D 21065

ASSEMBLY REMOVAL AND INSTALLATION





TRANSMISSION REMOVAL

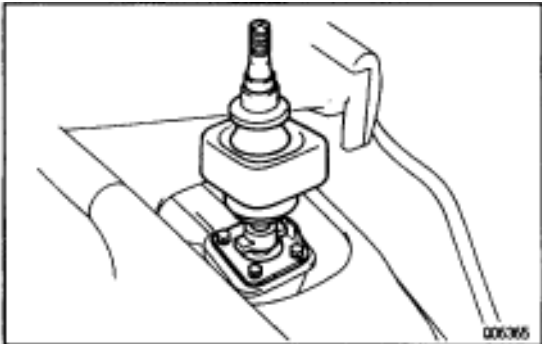
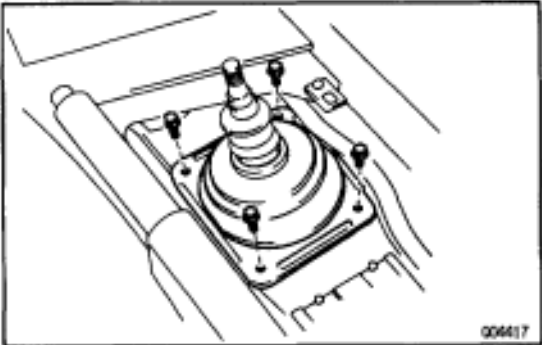
Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check and inspect item as follow.

- Road test the vehicle.

1. REMOVE UPPER CONSOLE PANEL, SHIFT LEVER BOOT AND SET BOLTS

- Remove the shift lever knob.
- Using a screwdriver, pry out the upper console panel.
- Remove the 4 set bolts.
- Remove the shift and select lever boot No.1 and No.2.



- Remove the 4 set bolts.
Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)

2. RAISE VEHICLE

NOTICE: Be sure the vehicle is securely supported.

3. DRAIN TRANSMISSION OIL

Oil type:

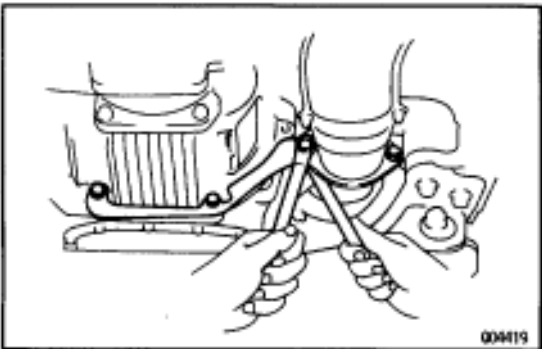
TOYOTA GEAR OIL V160 or
ESSO ATF DEXRON®D-21065

Capacity:

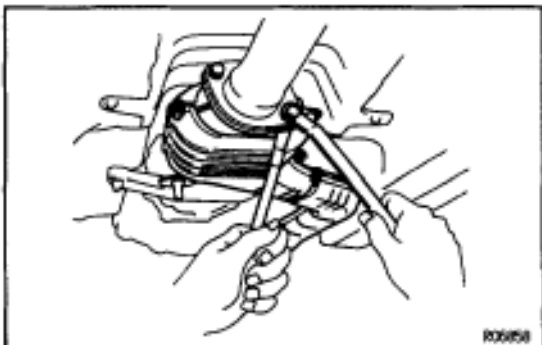
1.8 liters (1.9 US qts. 1.6 Imp.qts)

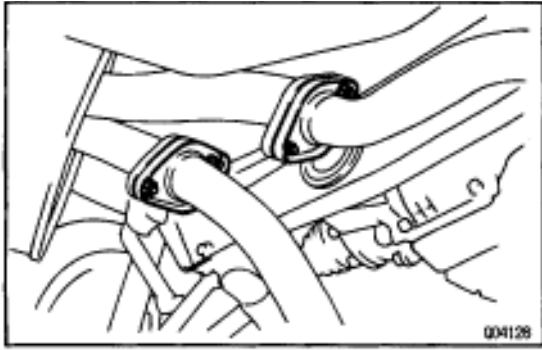
4. REMOVE EXHAUST FRONT PIPE AND PIPE SUPPORT BRACKET

- Remove the 2 nuts, heat insulator, oxygen sensor and gasket.
- Remove the 2 bolts and nuts.
- Remove the 2 bolts and pipe support bracket.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)



- Remove the 2 bolts and nuts.
- Remove the exhaust front pipe and gasket.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)





5. REMOVE EXHAUST CENTER PIPE

- (a) Remove the 4 nuts.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)
- (b) Disconnect the exhaust center pipe from the 2 rings.
- (c) Remove the exhaust center pipe.

6. REMOVE HEAT INSULATOR

- Remove the 4 nuts and heat insulator.
Torque: 5.4 N·m (55 ft·lbf, 48 in·lbf)

7. REMOVE CROSSMEMBER BRACE

Normal Roof:

Remove the 4 bolts and center floor crossmember brace.

Sport Roof:

Remove the 6 bolts and center floor crossmember brace.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

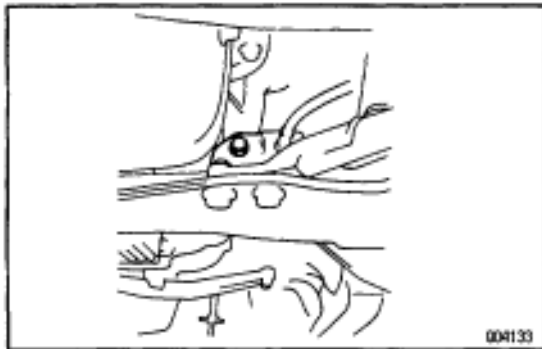
8. REMOVE PROPELLER SHAFT

(See page [PR-7](#), 13)



9. REMOVE TRANSMISSION SHIFT LEVER

- (a) Remove the bolt and nut.
- (b) Remove the transmission shift lever, inside of vehicle.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

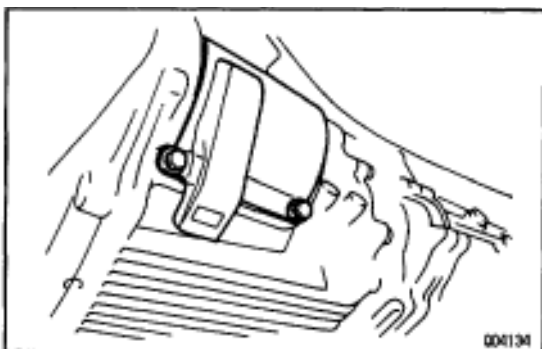


10. REMOVE CLUTCH RELEASE CYLINDER AND GROUND CABLE

- (a) Remove the bolt, clamp and ground cable.
Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)
- (b) Remove the 2 bolts and clutch release cylinder.
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

11. DISCONNECT STARTER WIRE

- (a) Remove the nut and disconnect the starter wire.
- (b) Disconnect the starter wire connector.

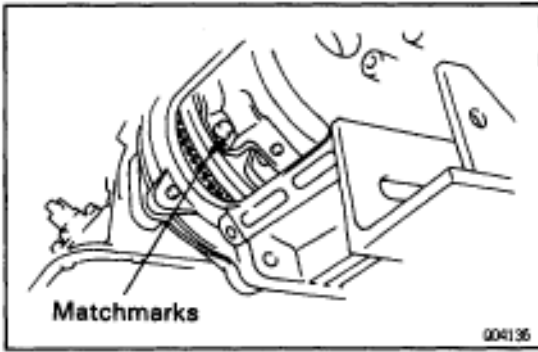


12. DISCONNECT VEHICLE SPEED SENSOR CONNECTOR

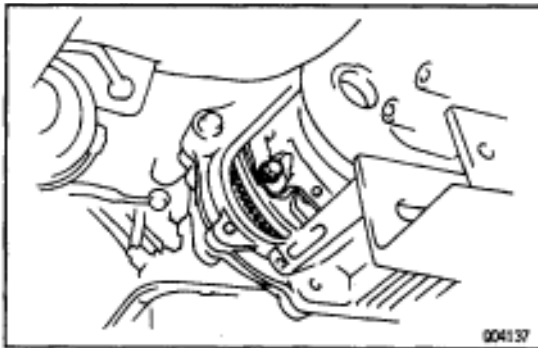
13. DISCONNECT BACK-UP LIGHT SWITCH CONNECTOR

14. REMOVE CLUTCH COVER SET BOLTS

- (a) Remove the 2 bolts and service hole cover.
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)



- (b) Place matchmarks on the flywheel and clutch cover.



- (c) Remove the 6 bolts.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

15. JACK UP TRANSMISSION SLIGHTLY

Using a transmission jack, support the transmission.

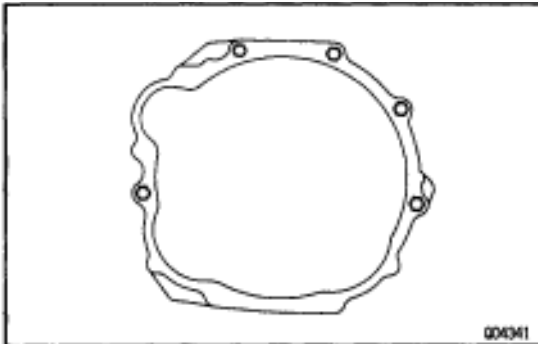
16. REMOVE REAR ENGINE MOUNTING MEMBER

Remove the 4 nuts, bolts and rear engine mounting member.

Torque:

·Nut: 13 N·m (135 kgf·cm, 10 ft·lbf)

Bolt: 25 N·m (260 kgf·cm, 19 ft·lbf)



17. REMOVE STARTER

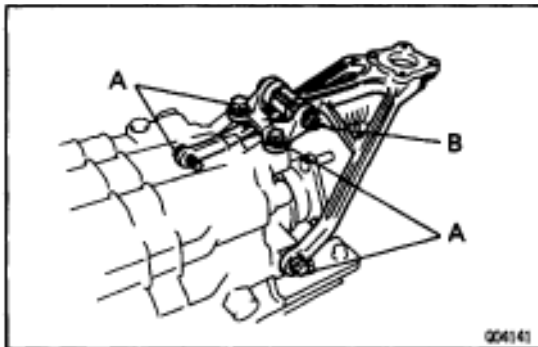
Lower the engine rear side and remove the 2 bolts and starter.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

18. REMOVE TRANSMISSION

Remove the transmission mounting 5 bolts and transmission from the engine.

Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)



19. REMOVE SHIFT LEVER RETAINER

Remove the 4 bolts and shift lever retainer from the transmission.

Torque:

Bolt A: 19 N·m (195 kgf·cm, 14 ft·lbf)

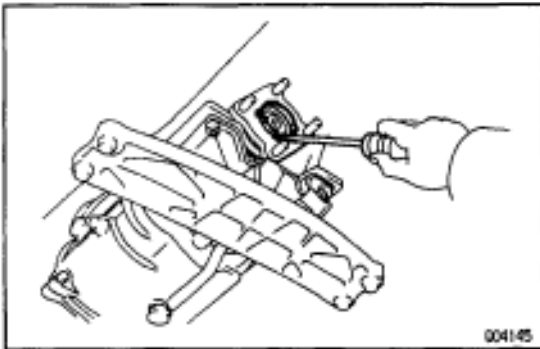
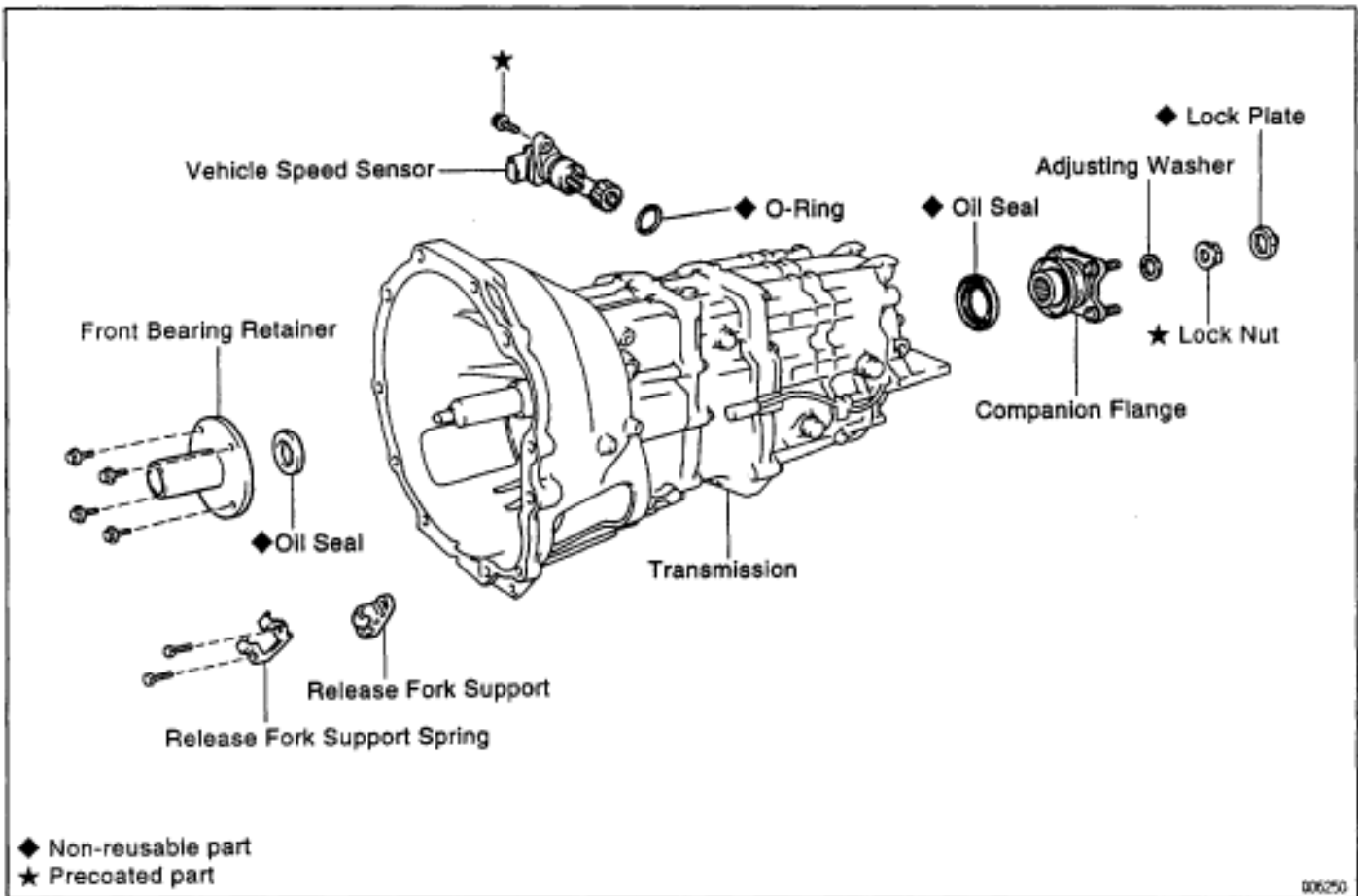
Bolt B: 25 N·m (250 kgf·cm, 18 ft·lbf)

20. REMOVE ENGINE REAR MOUNTING

Remove the 4 bolts and engine rear mounting from the transmission.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

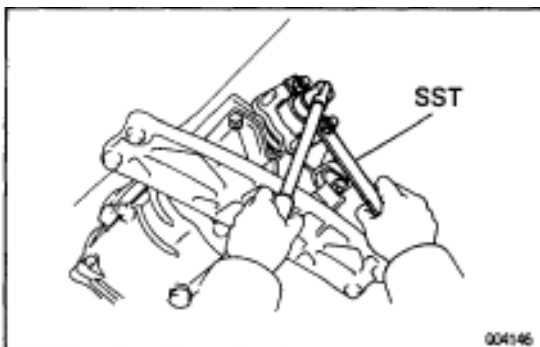
OIL SEALS COMPONENTS

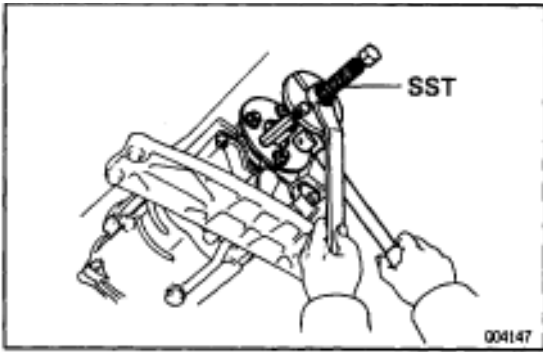


OIL SEAL REPLACEMENT

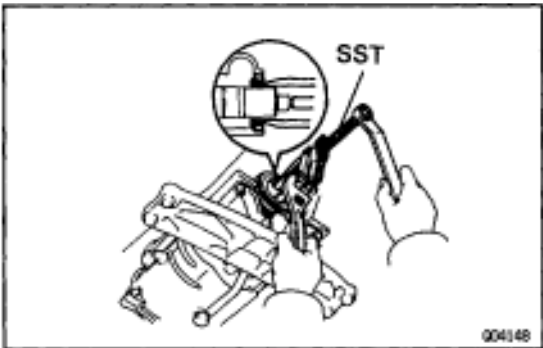
1. REPLACE TRANSMISSION REAR OIL SEAL

- (a) Remove propeller shaft.
(See page [PR-7](#))
- (b) Using a screwdriver, remove the lock plate.
- (c) Using SST to hold the flange, remove the lock nut.
SST 09330-00021
- (d) Remove the 2 adjusting washers.

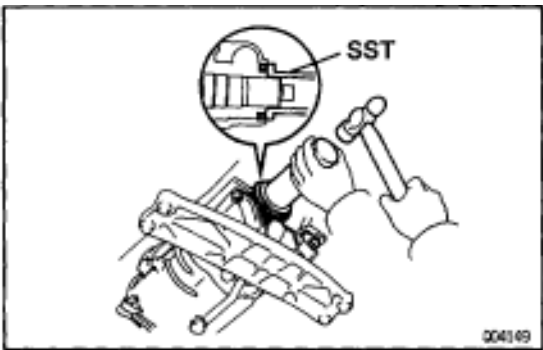




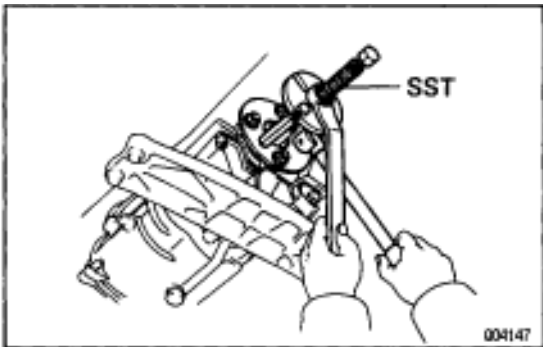
- (e) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03030)



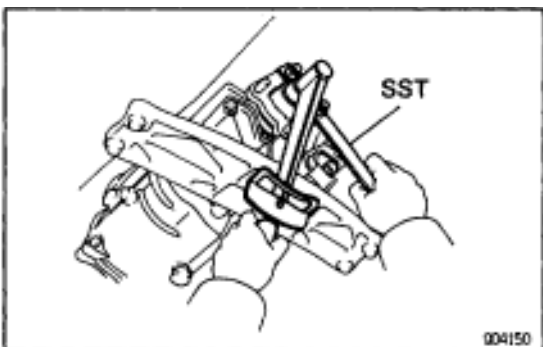
- (f) Using SST, remove the oil seal.
SST 09308-10010



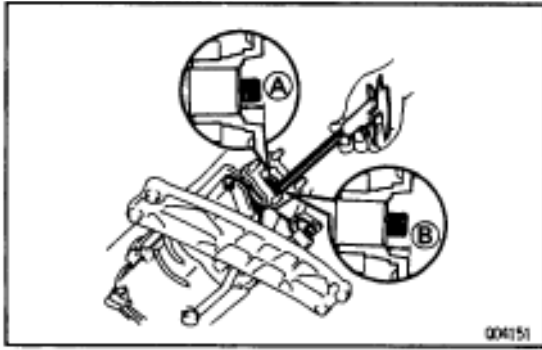
- (g) Using SST and a hammer, install a new oil seal.
SST 09308-14010, 09309-14040



- (h) Heat the companion flange in an oven.
80-90°C (176-194°F)
(i) Apply gear oil to the output shaft and install the companion flange.
(j) Using SST, install the companion flange to the output shaft.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03030)



- (k) Using SST to hold the flange, install and torque the lock nut.
SST 09330-00021
Torque: 190 N·m (1,940 kgf·cm, 140 ft·lbf)

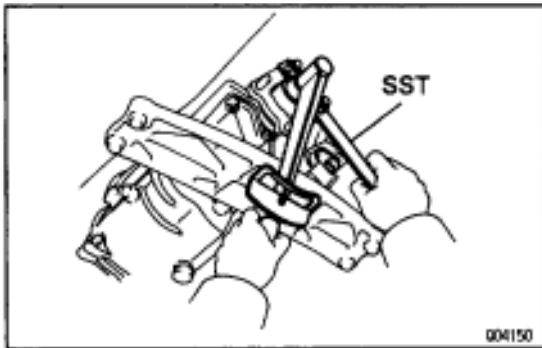


- (l) Remove the lock nut.
- (m) Using a caliper gauge, measure dimension (A) and dimension (B).
- (n) Calculate the required thickness of the adjusting shim.

Thickness:

$$\text{(Dimension (A)– Dimension (B) – (0.05 ~ 0.14 mm, 0.0020 ~ 0.0055 in.)}$$

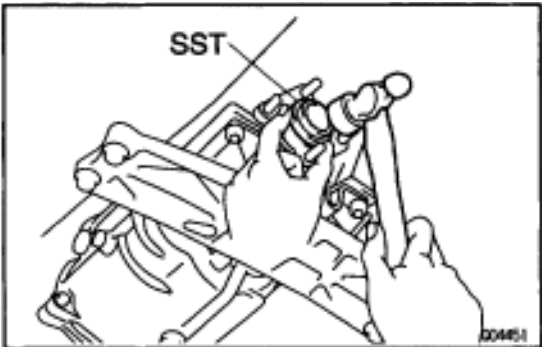
Adjusting shim thickness mm (in.)	Adjusting shim thickness mm (in.)
1.15–1.20 (0.0453–0.0472)	1.65–1.70 (0.0650–0.0669)
1.25–1.30 (0.0492–0.0512)	1.85–1.90 (0.0729–0.0748)
1.45–1.50 (0.0571–0.0591)	1.95–2.00 (0.0768–0.0787)



- (o) Install the selected shims to the output shaft.
- (p) Apply sealant to the nut threads.

Sealant:

Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent



- (q) Using SST to hold the flange, reinstall and torque the lock nut.

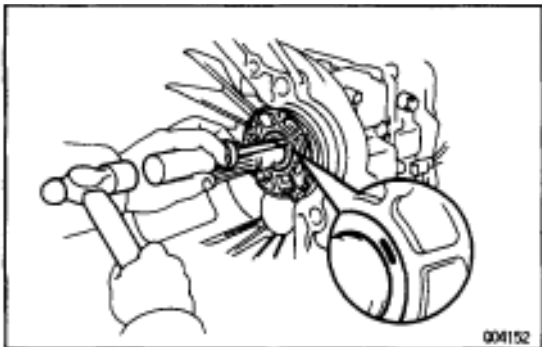
SST 09330-00021

Torque: 120 N·m (1,220 kgf·cm, 88 ft·lbf)

- (r) Using SST and a hammer, install the lock plate.

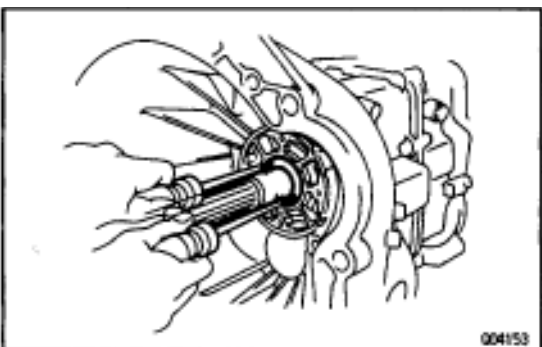
SST 09309-14010
HINT: If necessary, using a pin punch and hammer tap the lock plate.

- (s) Install the propeller shaft.
(See page [PR-13](#))

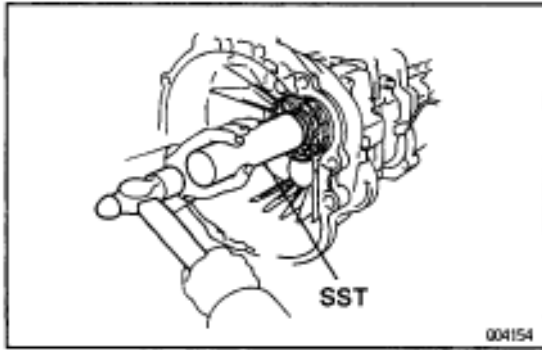


2. REPLACE TRANSMISSION FRONT OIL SEAL

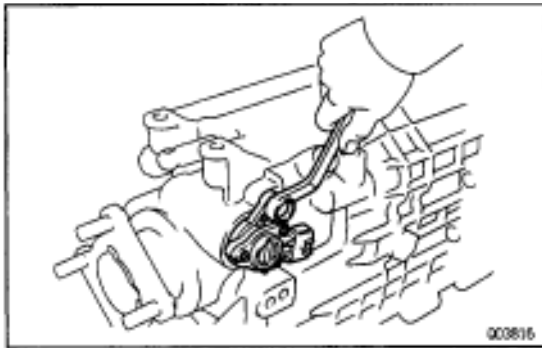
- (a) Remove the transmission.
(See page [MT2-4](#))
- (b) Remove the 2 bolts and clutch release fork support.
- (c) Remove the 4 bolts and front bearing retainer.
- (d) Using a hammer, tap in the screwdriver to the oil seal.



- (e) Pry out the oil seal.



- (f) Using SST and a hammer, install a new oil seal.
SST 09308-14010, 09309-14040
- (g) Install the transmission.
(See page [MT2-4](#))
- (h) Install the front bearing retainer with the 4 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
- (i) Install the clutch release fork support with the 2 bolts.
Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)



O-RING REPLACEMENT

REPLACE VEHICLE SPEED SENSOR OIL SEAL

- (a) Remove the transmission.
(See page [MT2-4](#))
- (b) Remove the set bolt and driven gear.
- (c) Remove the O-ring from the driven gear.
- (d) Install a new O-ring to the driven gear.
- (e) Apply sealant to the bolt threads.

Sealant:

**Part No.08833-00080, THREE BOND 1344, LOCTITE 242
or equivalent**

- (f) Install the driven gear with a bolt.
Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

SERVICE SPECIFICATIONS

SERVICE DATA

Companion flange adjusting shim thickness	1.15–1.20 mm (0.0453–0.0472 in.) 1.25–1.30 mm (0.0492–0.0512 in.) 1.45–1.50 mm (0.0571–0.0591 in.) 1.65–1.70 mm (0.0650–0.0669 in.) 1.85–1.90 mm (0.0729–0.0748 in.) 1.95–2.00 mm (0.0768–0.0787 in.)
---	--

TORQUE SPECIFICATIONS

Part tightened	N-m	kgf-cm	ft-lbf
Engine rear mounting x Transmission	25	250	18
Shift lever retainer x Transmission	19	195	14
Transmission x Engine	72	730	53
Starter x Transmission	39	400	29
Rear engine mounting member x Body	25	260	19
Rear engine mounting member x Transmission	13	135	10
Clutch cover x Flywheel	19	195	14
Service hole cover set bolt	12	120	9
Clutch release cylinder set bolt	12	120	9
Shift lever x Control rod	19	195	14
Crossmember brace x Body	13	130	9
Heat insulator x Body	5.4	55	48in.·lbf
Exhaust center pipe x Tail pipe	19	195	14
Exhaust front pipe x Exhaust center pipe	43	440	32
Pipe support bracket x Transmission	37	380	27
Exhaust front pipe x Exhaust manifold	58	590	43
Oxygen sensor set bolt	18	180	13
Shift lever x Shift lever retainer	7.8	80	69 in.·lbf
Clutch release fork support x Transmission	26	260	19
Vehicle speed sensor set bolt	11	110	8
Companion flange lock nut	120	1,220	88
Front bearing retainer set bolt	10	100	7
Clutch release fork support set bolt	26	260	19
Vehicle speed sensor set bolt	11	110	8