MANUAL TRANSAXLE

CONTENTS

22109000067

WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

(1) Improper service or maintenance of any component **of the SRS, or any SRS-related component, can lead to personal** injury or death to service personnel (from inadvertent firing of the air **bag) or to the driver and passenger (from rendering the SRS inoperative).**

(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.

(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS) and GROUP 00 – Maintenance Service, before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE

The SRS includes the following components: SRS-ECU, SRS warning light, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

MANUAL TRANSAXLE <2.0L ENGINE (TURBO) AND 2.4L ENGINE>

22100010144

GENERAL INFORMATION

The manual transaxles come in three models, namely, F5M31, F5M33 and W5M33. These transaxles are essentially the same as the previous models.

FWD

Items		2.4L Engine	2.0L Engine (Turbo)
Model		F5M31–2–VVXT	F5M33–2–SPZT
Applicable engine		4G64	4G63
Type		5-speed floor shift	5-speed floor shift
Gear ratio	1st	3.166	3.090
	2nd	1.833	1.833
	3rd	1.240	1.217
	4th	0.896	0.888
	5th	0.731	0.741
	Reverse	3.166	3.166
Final gear ratio		3.625	4.153
Speedometer gear ratio (driven/drive)		29/36	29/36

AWD

Items		Specifications
Model		W5M33–2–MUZT
Applicable engine		4G63
Type		5-speed floor shift
Gear ratio	1st	3.083
	2nd	1.684
	3rd	1.115
	4th	0.833
	5th	0.666
	Reverse	3.166
Reduction ratio	Primary	1.275
	Front differential	3.800
	Transfer	1.074
Speedometer gear ratio (driven/drive)		28/36

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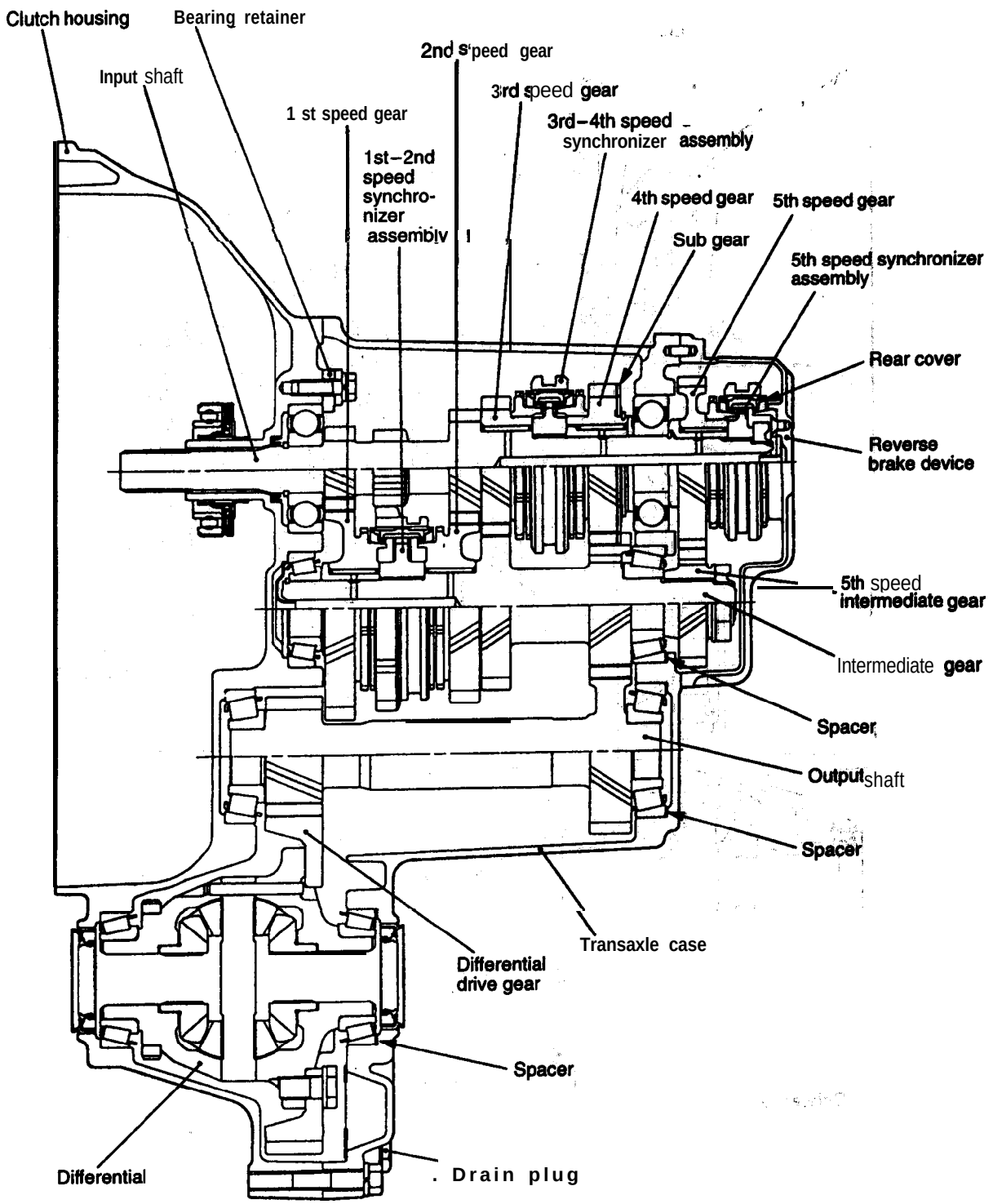
SECTIONAL VIEW

F5M31



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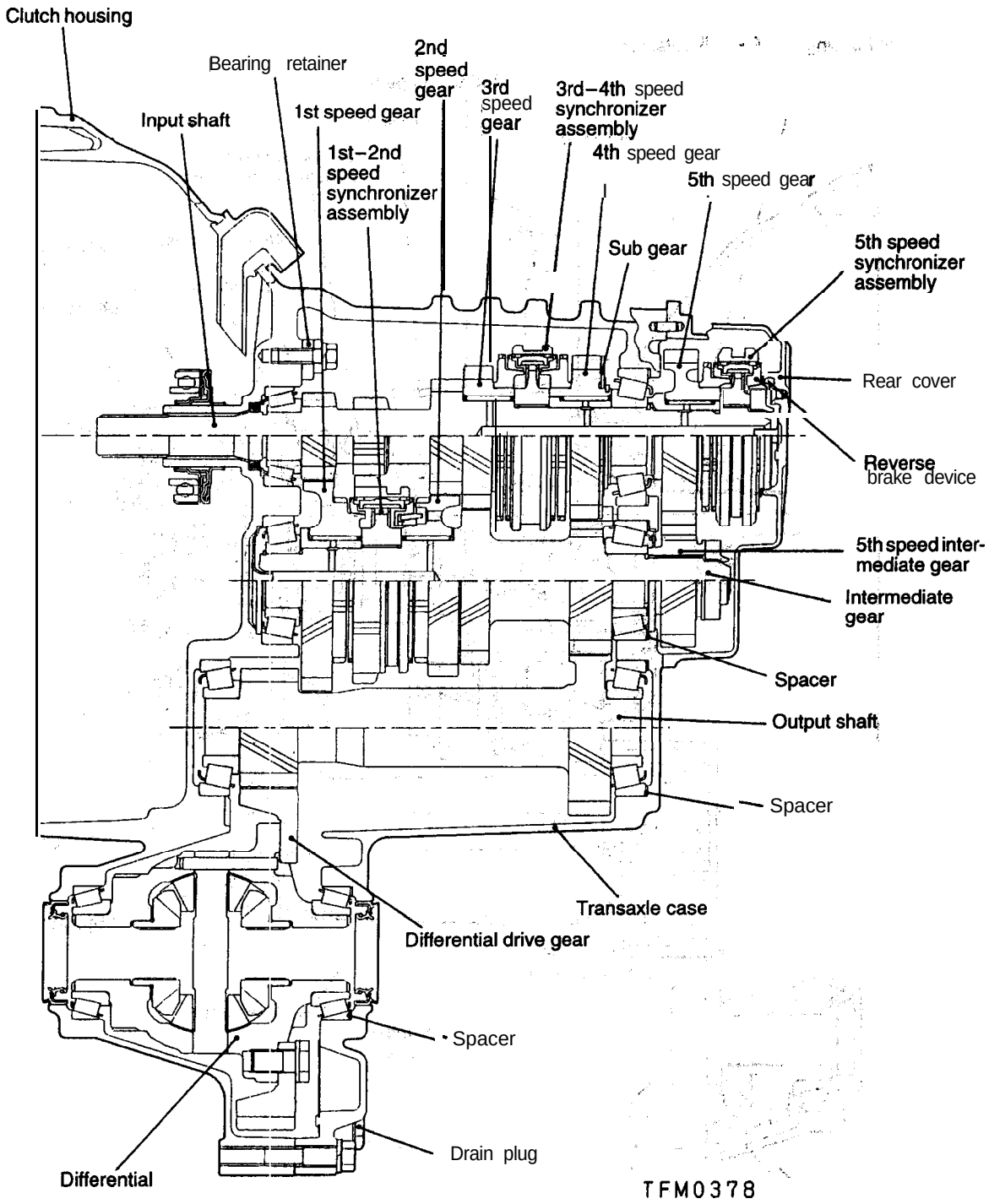
F5M33



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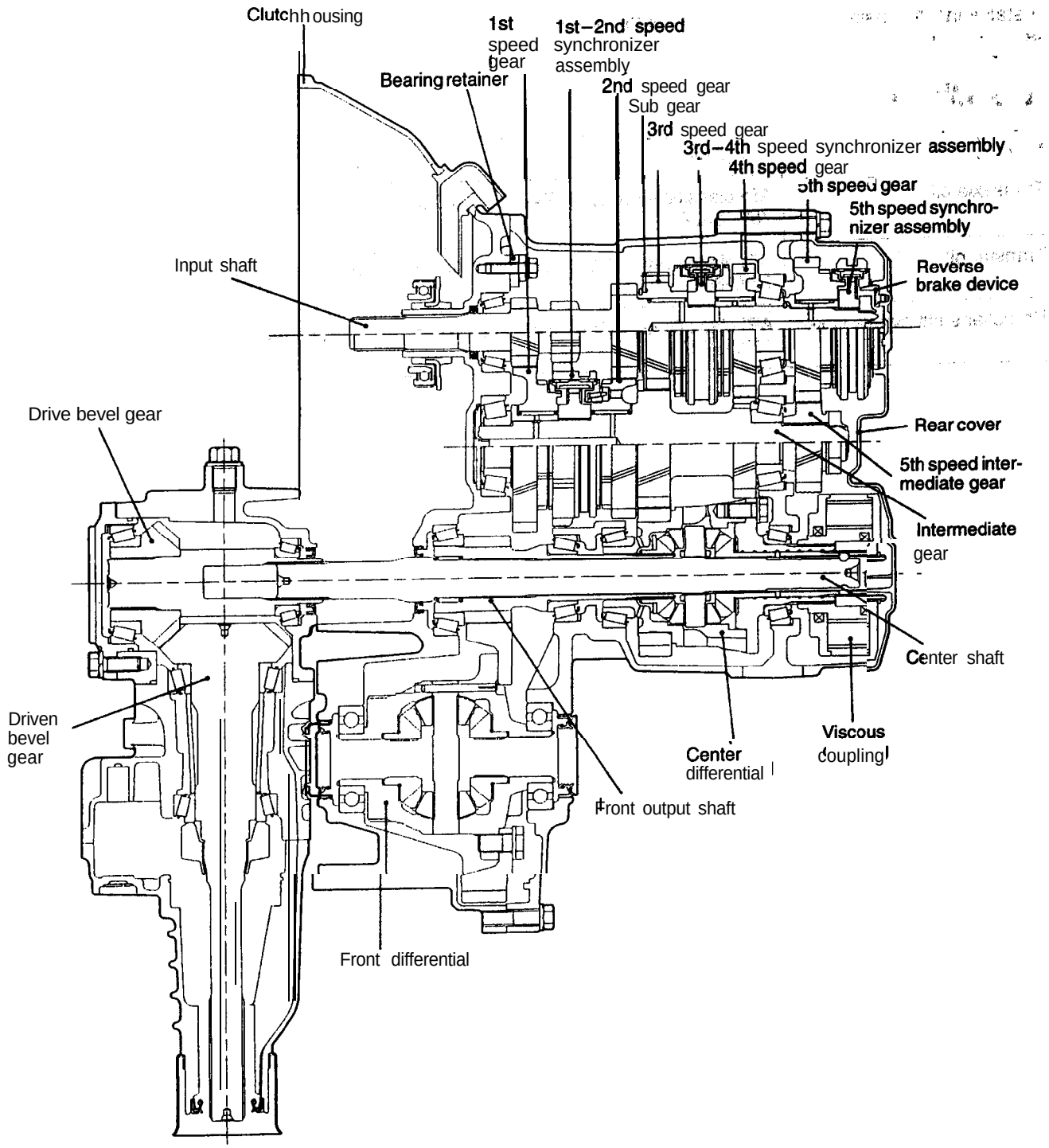
W5M33



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SERVICE SPECIFICATIONS

22100030010

Items	Standard value
Installation dimension of front rod stopper bracket assembly mm (in.)	43 ± 3 (1.69 ± .12)

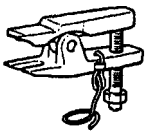
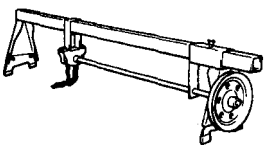
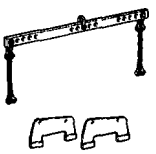
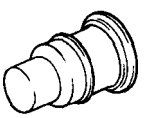
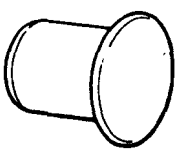
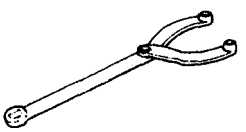
LUBRICANTS

22100040051

Items	Specified lubricant	Quantity
Transaxle oil	API classification GL-4, SAE 75W-90 or 75W-85W	2.3 dm^3 (2.4 qts.)
Transfer oil	API classification GL-4, SAE 75W-90 or 75W-85W	0.5 dm^3 (.53 qt.)
Propeller shaft sleeve yoke	API classification GL-4, SAE 75W-90 or 75W-85W	As required

SPECIAL TOOLS

22100060064

Tool	Tool number and name	Supersession	Application
	MB991113 Steering linkage puller	MB991113-01	• Tie rod end ball joint and knuckle disconnection • Lateral lower arm ball join and knuckle disconnection • Compression lower arm ba joint and knuckle disconnec tion
	GENERAL SERVICE TOOL MZ203827 Engine lifter	MZ203827-01	Supporting the engine assembly during removal and installation of the transaxle
	MB991 453 Engine hanger assem-bly	MZ203827-01	Supporting the engine assembly during removal and installation of the transaxle
	MB991461 <FWD> MB991460 <AWD> Plug	General Service Tool*	Preventing foreign substances from, entering transaxle case *Use shop towel
	MB991 193 Plug	General Service Tool	Preventing foreign substances rom entering transfer :AWD>
	MB990767 End yoke holder	MB990767-01	Fixing of hub :AWD>

TROUBLESHOOTING

22100070036

Symptom	Probable cause	Remedy
Vibration, noise	Loose or damaged transaxle and engine mounts	Tighten or replace mounts
	Inadequate shaft end play	Correct the end play
	Worn or damaged gears	Replace gears
	Use of inadequate grade of oil	Replace with specified oil
	Low oil level	Refill
	Inadequate engine idle speed	Adjust the idle speed
Oil leakage	Broken or damaged, oil seal or O-ring	Replace the oil seal or O-ring
Hard shift	Faulty control cable	Replace the control cable
	Poor contact or wear of synchronizer ring and gear cone	Correct or replace
	Weakenecl synchronizer spring	Replace synchronizer spring
	Use of inadequate grade of oil	Replace with the specified oil
Jumps out of gear	Worn gear shift fork or broken poppet spring	Replace the shift fork or poppet spring
	Synchronizer hub to sleeve spline clearance too large	Replace the synchronizer hub and sleeve

ON-VEHICLE SERVICE

22100090053

TRANSAXLE OIL LEVEL CHECK

Refer to GROUP 00 – Maintenance Service.

TRANSAXLE OIL REPLACEMENT

22100100055

Refer to GROUP 00 – Maintenance Service.

TRANSFER OIL LEVEL CHECK

22100110035

Refer to GROUP 00 – Maintenance Service.

TRANSFER OIL REPLACEMENT

22100120035

Refer to GROUP 00 – Maintenance Service.

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TRANSAXLE CONTROL

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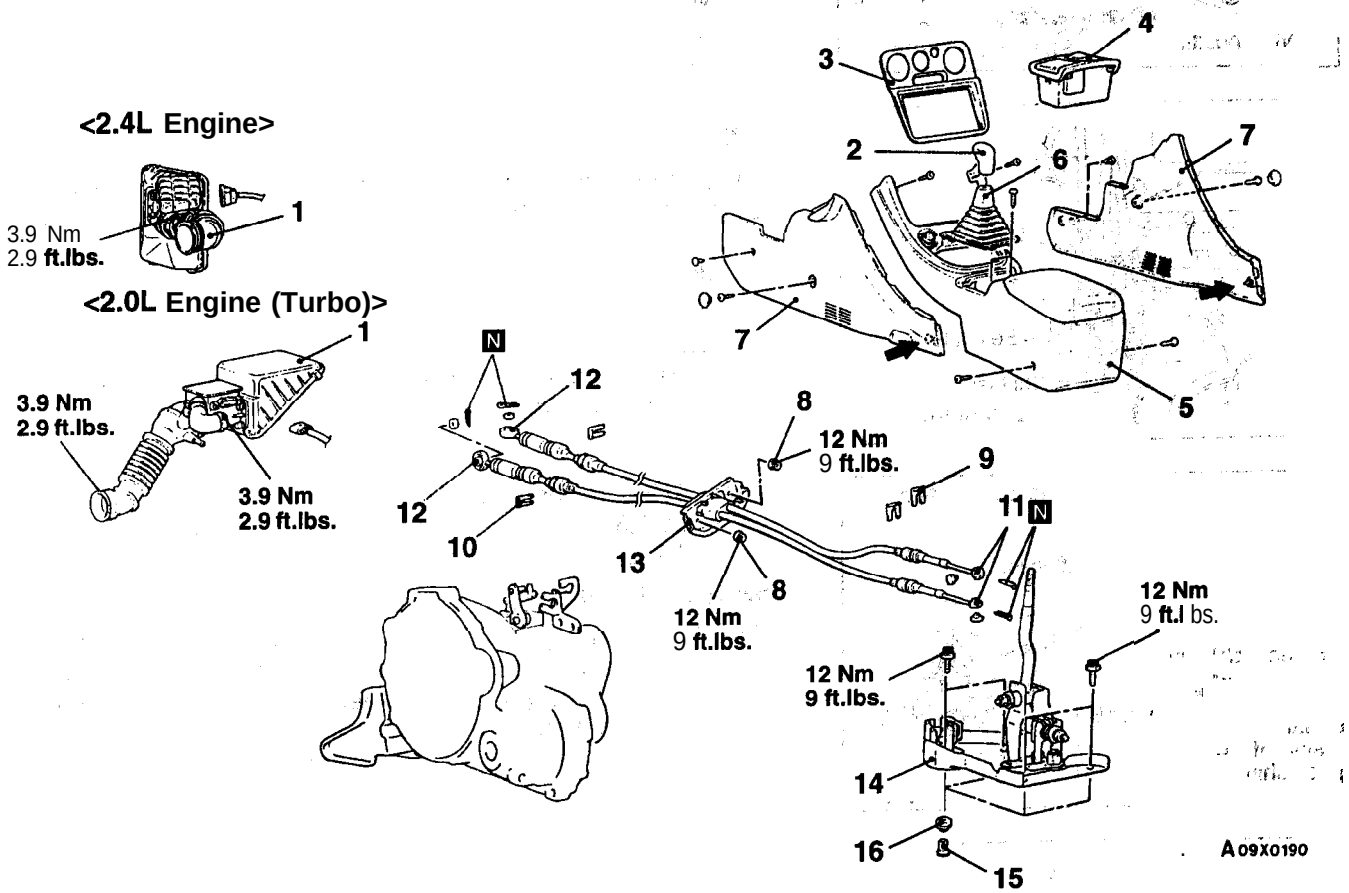
REMOVAL AND INSTALLATION

Caution: SRS
Be careful not to subject the SRS-ECU to any shocks during removal and installation of the transaxle control cable and shift lever assembly.



NOTE
◀: Resin clip position

Transaxle control cable assembly removal steps

1. Air cleaner and air intake hose assembly
2. Shift lever knob
3. Center panel
4. Cupholder assembly
5. Floor console assembly
6. Shift lever cover
7. Console side cover
8. Nut
9. Clip (passenger compartment side)
10. Clip (transaxle side
▶B◀ 11. Shift cable and select cable connection (passenger compartment side))
▶A◀ 12. Shift cable and select cable connection (transaxle side)
13. Shift cable and select cable assembly

Shift lever assembly removal steps

2. Shift lever knob
3. Center panel
4. Cupholder assembly
5. Floor console assembly
6. Shift lever panel
7. Console side cover
9. Clip (passenger compartment side)
▶B◀ 11. Shift cable and select cable connection (passenger compartment side)
14. Shift lever assembly
15. Distance piece
16. Bushing

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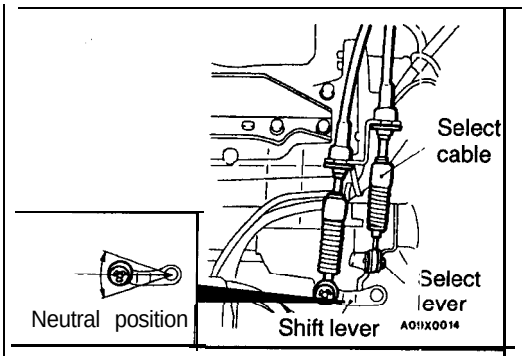

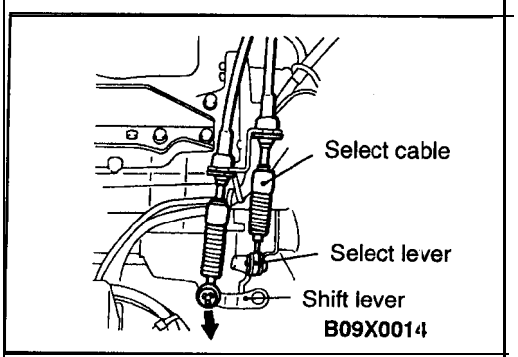

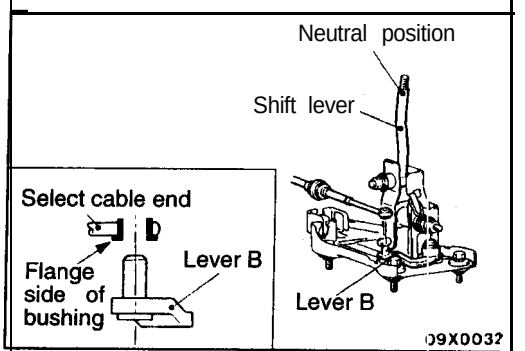

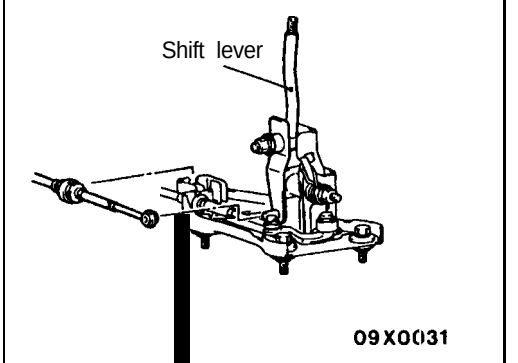

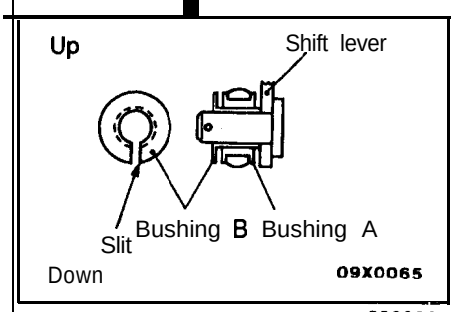

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INSTALLATION SERVICE POINTS

▶A◀ SHIFT CABLE AND SELECT CABLE CONNECTION (TRANSAXLE SIDE)

SELECT CABLE

(1) Connect the select cable to the transaxle side select lever.
(2) Set the shift lever of the transaxle side at the neutral position.

NOTE
When the shift lever of the transaxle side is set at the neutral position, the select lever of the transaxle side is also set at the neutral position.

SHIFT CABLE

(1) Connect the shift cable to the transaxle shift lever.
(2) While leaving the select lever at the transaxle side in the neutral position, move the shift lever at the transaxle side in the direction of the arrow in the illustration to set it to 4th gear.

NOTE
If the shift lever does not move easily, depress and hold the clutch pedal.

▶B◀ SHIFT CABLE AND SELECT CABLE CONNECTION (PASSENGER COMPARTMENT SIDE)

SELECT CABLE

(1) While leaving the shift lever inside the passenger compartment in the neutral position, install the select cable to the passenger compartment side of the shift lever.
(2) Install the select cable so that the flange side of resin bushing is positioned at the edge of lever B side.

SHIFT CABLE

(1) Pull the shift lever at the passenger compartment side fully in the direction shown in the illustration (4th gear position), and install the shift cable to the shift lever at the passenger compartment side.
Install so that the slit section of the bushing B is facing either up or down.
(2) Put the shift lever to all the positions and make sure that the operation is smooth.

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SHIFT LEVER ASSEMBLY
DISASSEMBLY AND REASSEMBLY

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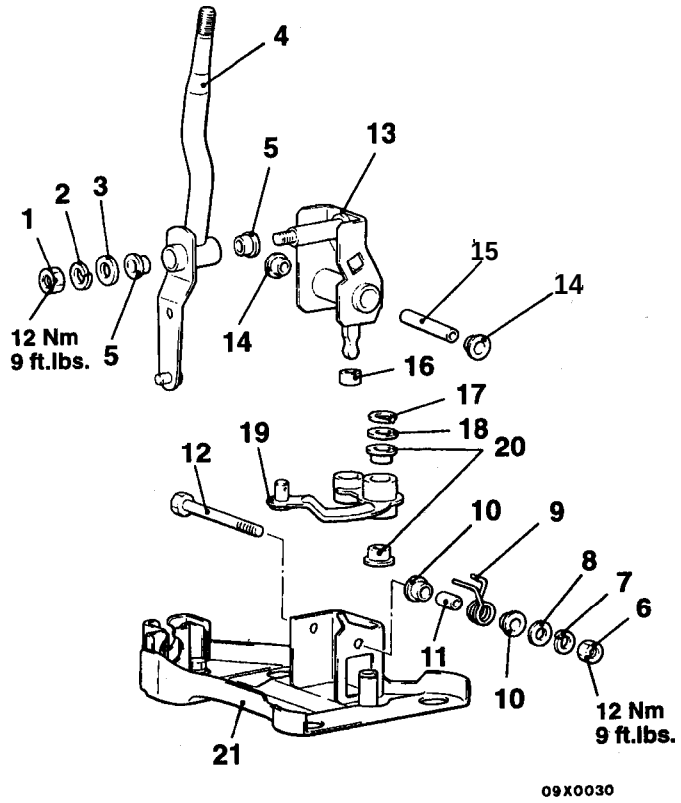

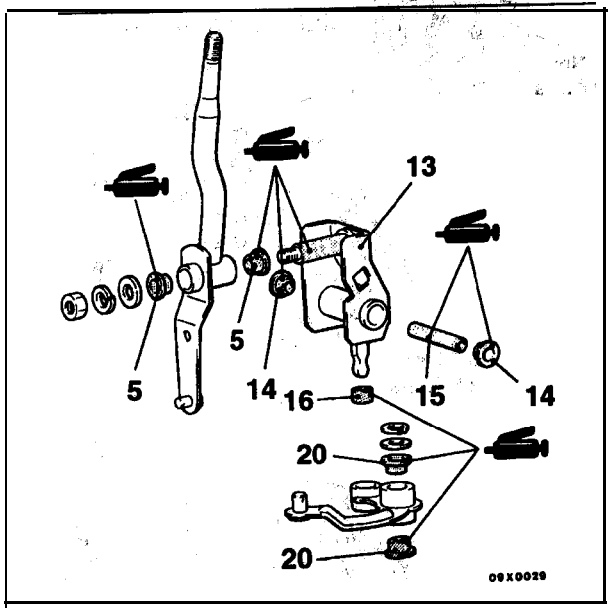

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Disassembly steps

1. Nut
2. Spring washer
3. Plain washer
4. Shift lever
5. **Bushing**
6. **Nut**
7. Spring washer
8. Plain washer
9. Return spring
10. Bushing
11. Pipe
12. Bolt
13. Lever A
14. Bushing
15. Collar
16. Bushing
17. Snap ring
18. Washer
19. **Lever B**
20. Bustiing
21. Bracket assembly

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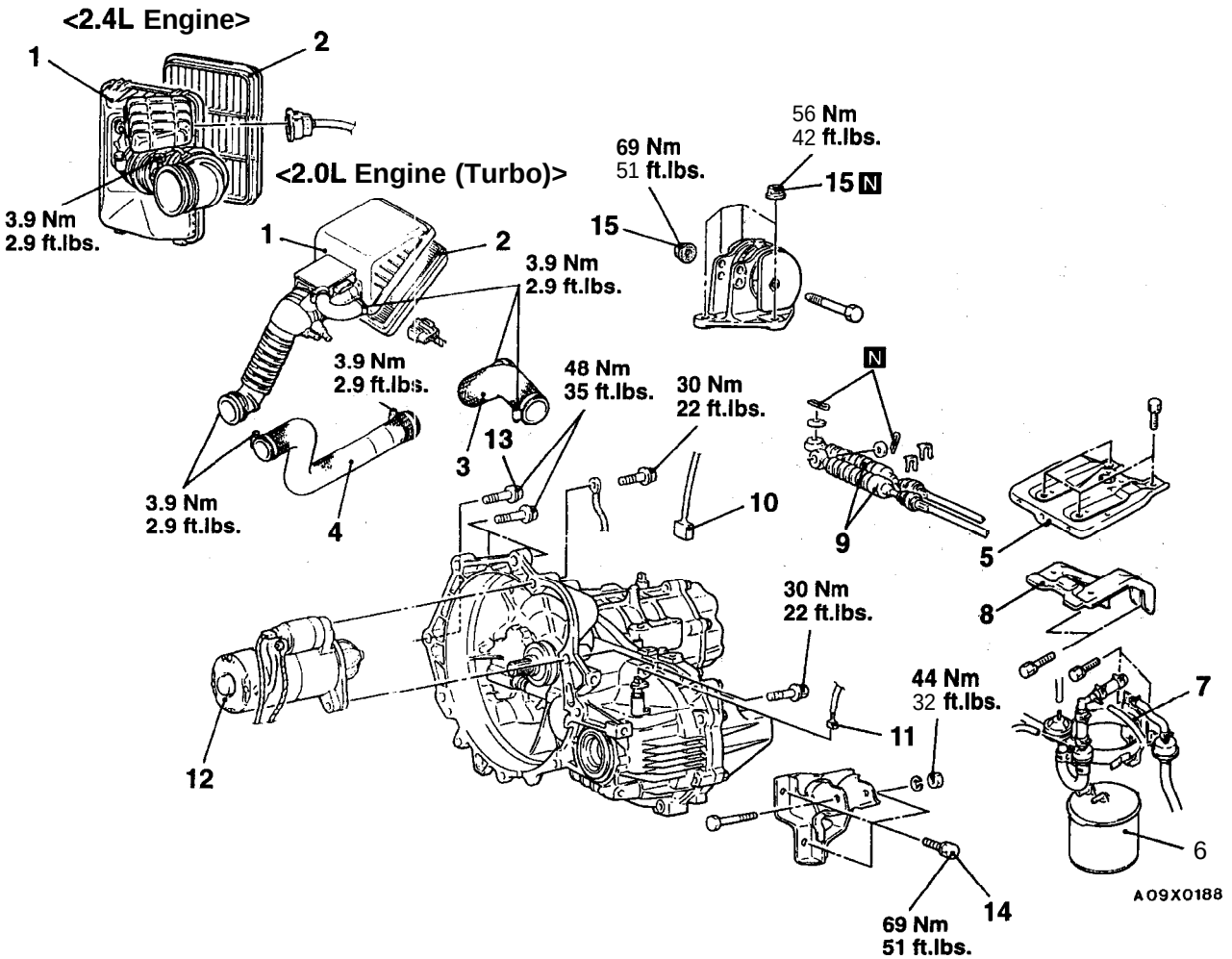
TRANSAXLE ASSEMBLY <FWD>

22100270238

REMOVAL AND INSTALLATION

Pre-removal Operation
- Transaxle Oil Draining (Refer to GROUP 00 – Maintenance Service.)
- Battery Removal
- Under Cover Removal (Refer to GROUP 42 – Under Cover.)

Post-installation Operation
- Supplying Transaxle Oil (Refer to GROUP 00 – Maintenance Service.)
- Shift Lever Operation Check
- Speedometer Operation Check
- Under Cover Installation (Refer to GROUP 42 – Under Cover.)
- Battery installation



Removal steps

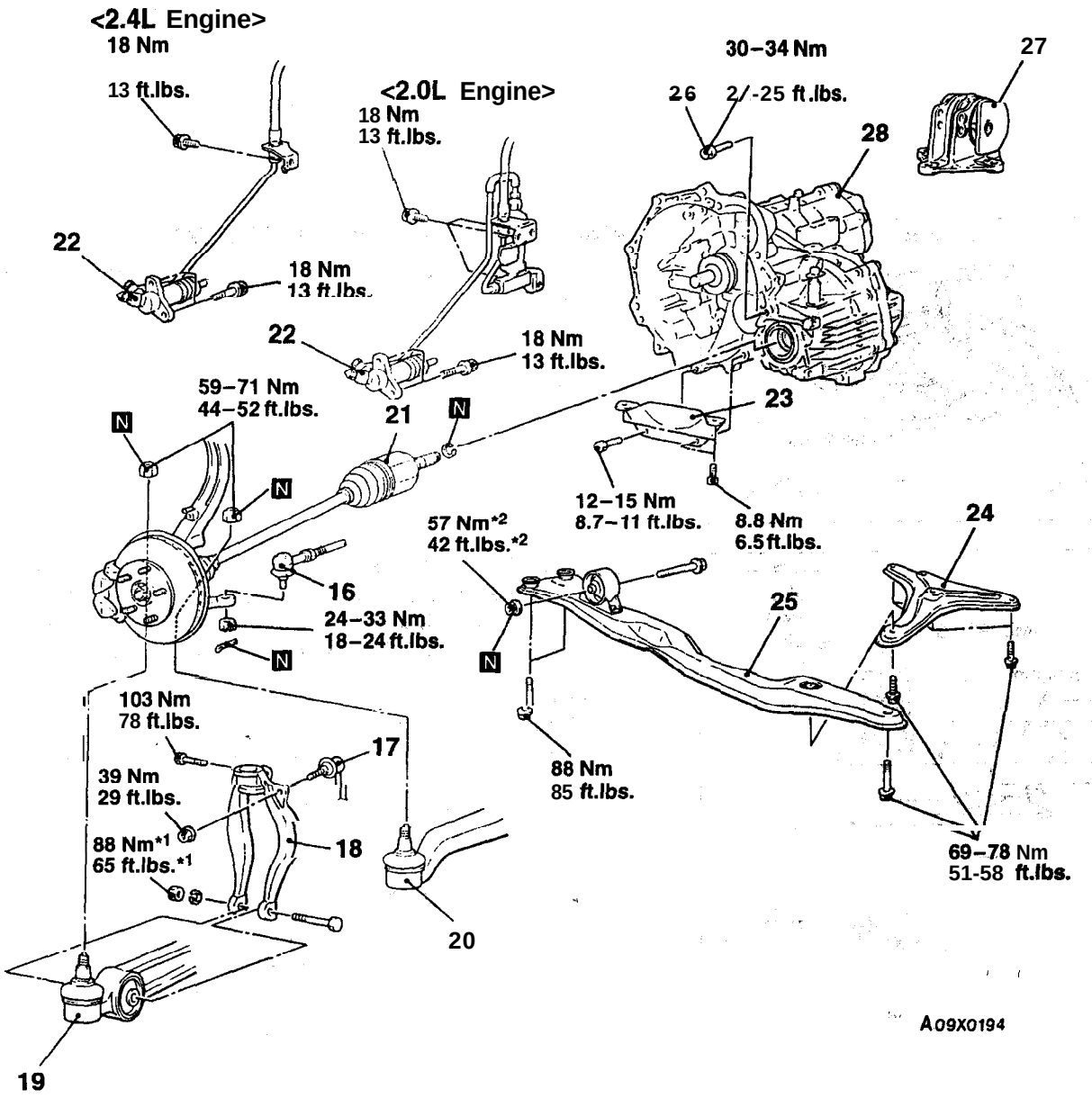
1. Air cleaner cover and air intake hose assembly
2. Air cleaner element
3. Air hose C <2.0L Engine (Turbo)>
4. Air hose A <2.0L Eingine (Turbo)>
5. Battery tray
6. Evaporative emission canister <2.0L Engine (Turbo)>
7. Evaporative emission canister holder <2.0L Engine (Turbo)>
8. Battery tray stay

◀A▶

◀B▶

9. Shift cable and select cable connection
10. Backup light switch connector
11. Vehicle speed sensor connector
12. Starter motor
13. Transaxle assembly mounting bolts
14. Rear roll stopper bracket mounting bolts
15. Transaxle mounting bracket mounting nuts
- Supporting engine assembly

TSB Revision



Lifiting up of the vehicle

◀C▶ 16. Tie rod end ball joint and kunckle connection
17. Stabilizer link connection
18. Damper fork
◀C▶ 19. Lateral lower arm ball joint and kunckle connection
◀C▶ 20. Compression lower arm ball joint and kunckle connection
◀D▶ ▶C◀ 21. Drive shaft connection
◀E▶ 22. Clutch release cylinder connection
23. Bell housing cover
24. Stay (R.H.)
▶B◀ 25. Center member assembly
▶A◀ 26. Transaxle assembly mounting bolt
27. Transaxle mounting
28. Transaxle assembly

Caution

***1: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

***2: For tightening locations indicated by the symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.**

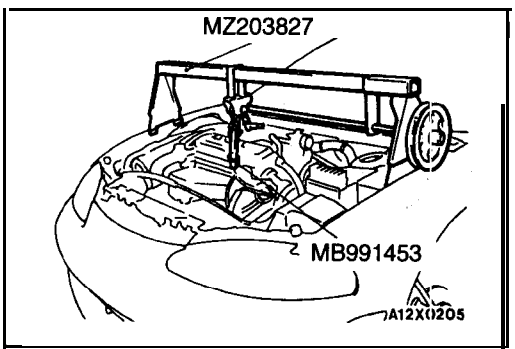
TSB Revision

REMOVAL SERVICE POINTS

◀A▶ TRANSAXLE MOUNTING BRACKET MOUNTING NUTS REMOVAL

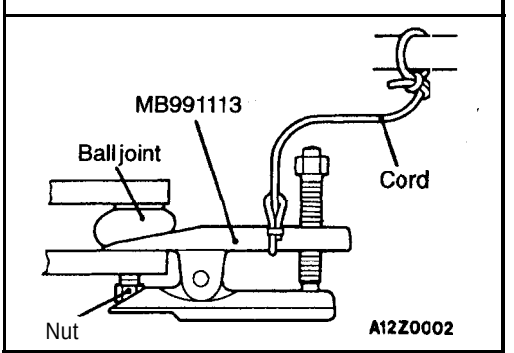
Jack up the transaxle assembly gently with a garage jack, and then remove the transaxle mounting bracket nuts.

Caution
Be sure not to tilt the transaxle assembly.



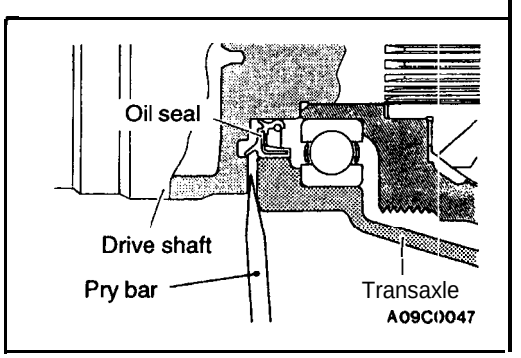
◀B▶ SUPPORTING ENGINE ASSEMBLY

Set the special tool to the vehicle to support the engine assembly.



◀C▶ TIE ROD END BALL JOINT AND KNUCKLE/ LATERAL LOWER ARM BALL JOINT AND KNUCKLE/COMPRESSION LOWER ARM BALL JOINT AND KNUCKLE DISCONNECTION

Caution
1. **Using the special tool, loosen the tie rod end mountlng nut. Only loosen the nut; do not remove it from the ball joint.**
2. **Support the special tool with a cold, etc. to prevent it from coming off.**



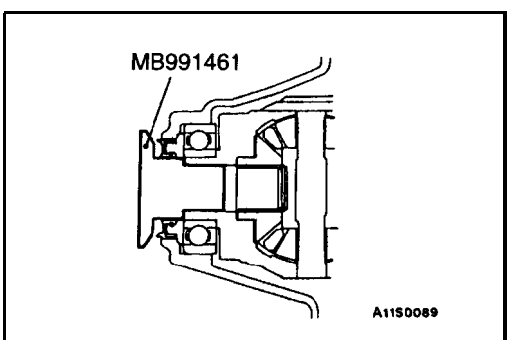
◀D▶ DRIVE SHAFT DISCONNECTION

(1) Insert a pry bar between the transaxle case and the drive shaft to remove the drive shaft.

NOTE
Do not remove the hub and knuckle from the drive shaft.

Caution
1. **Use a pry bar to remove the drive shaft from the B.J. assembly, or the T.J. assembly may be damaged.**
2. **Do not insert the bar too far, or the oil seal may be damaged.**

(2) Suspend the removed drive shaft with wire so that there are no sharp bends in any of the joints.
(3) Use the special tool as a cover not to let foreign objects get into the transaxle case.



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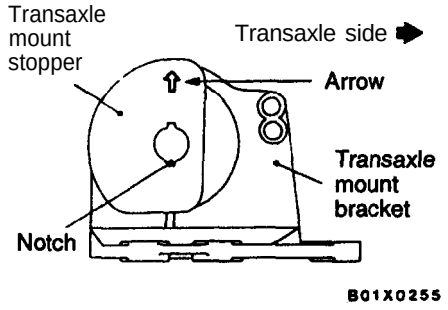
◀E▶ CLUTCH. RELEASE CYLINDER DISCONNECTION

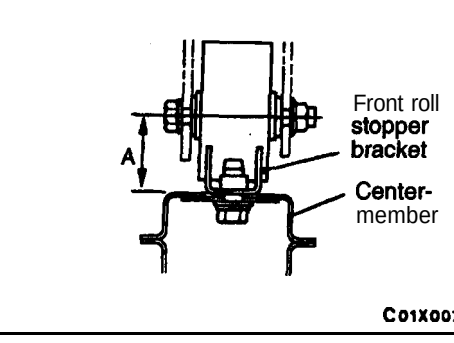
Remove the clutch release cylinder without disconnecting the oil line, and suspend it to a nearby parts with "a wire, etc.



INSTALLATION SERVICE POINT

▶A◀ TRANSAXLE MOUNTING INSTALLATION

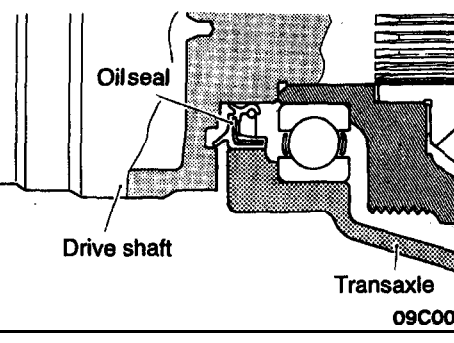
Align the notches on the stopper with the transaxle mount bracket with the arrow mark facing toward the shown direction. Then install the stopper.



▶B◀ CENTER MEMBER ASSEMBLY INSTALLATION

If the dimension shown in the illustration is outside the standard value when the weight of the engine is on the body;, replace the front roll stopper bracket assembly.

Standard value (A): 43 ± 3 mm (1.69 ± .12 in.)



▶C◀ DRIVE SHAFT CONNECTION

Temporarily install the drive shaft so that the T.J. case of the drive shaft is perpendicular to the transaxle.

Caution
Do not damage the oil seal lip by the serrated part of the drive shaft.

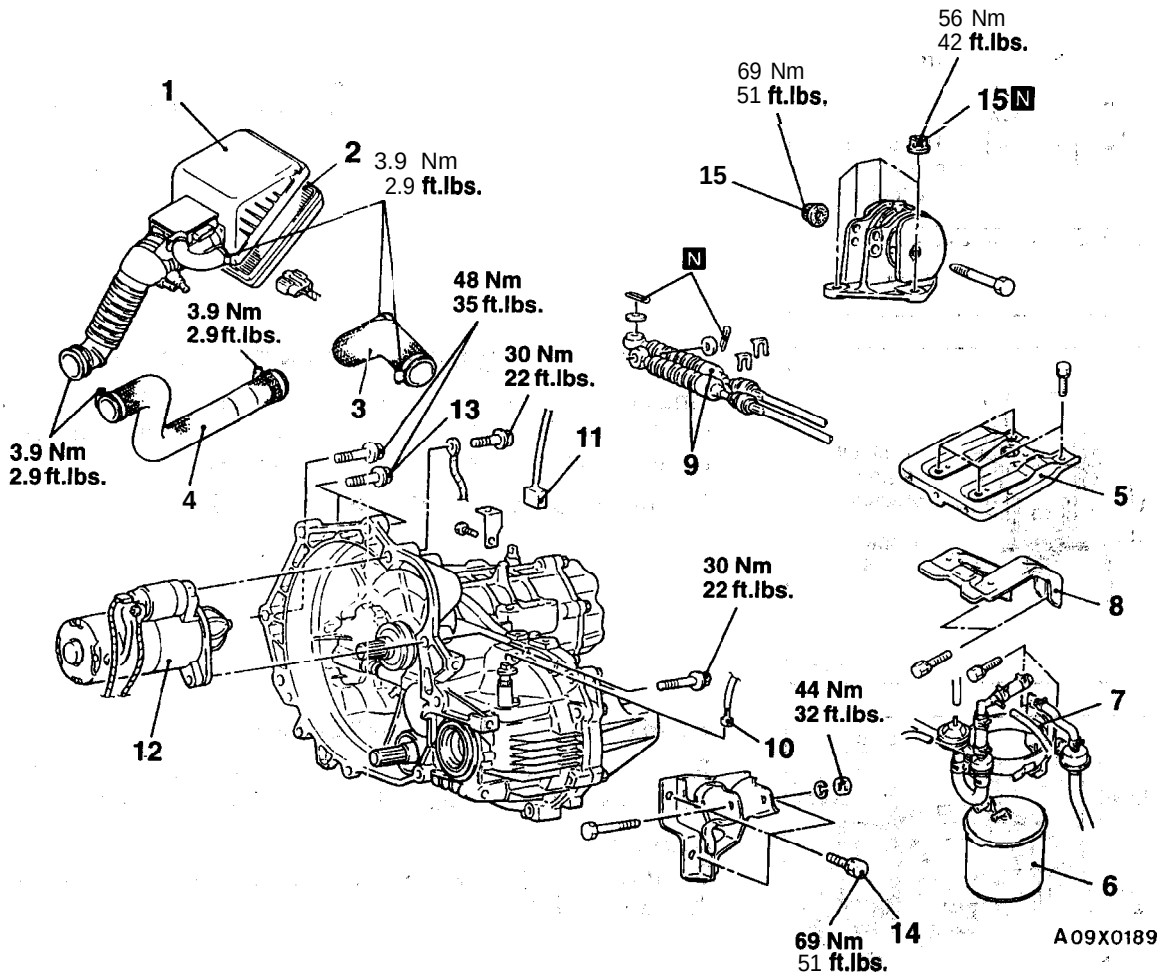
TRANSAXLE ASSEMBLY <AWD>

22100270092

REMOVAL AND INSTALLATION

Pre-removal Operation
- Transaxle Oil Draining (Refer to GROUP 00 – Maintenance Service.)
- Battery Removal
- Under Cover Removal (Refer to GROUP 42 – Under Cover.)
- Transfer Assembly Removal (Refer to P.22A-2.)

Post-installation Operation
- Supplying Transaxle Oil (Refer to GROUP 00 – Maintenance Service.)
- Shift Lever Operation Check
- Speedometer Operation Check
- Transfer Assembly Installation (Refer to P.22A-20.)
- Under Cover Installation (Refer to GROUP 42 – Under Cover.)
- Battery Installation



Removal steps

1. Air cleaner cover and air intake hose assembly
2. Air cleaner element
3. Air hose C
4. Air hose A
5. Battery tray
6. Evaporative emission canister
7. Evaporative emission canister holder
8. Battery tray stay
9. Shift cable and select cable connection
10. Backup light switch connector
11. Vehicle speed sensor connector
12. Starter motor
13. Transaxle assembly mounting bolts
14. Rear roll stopper bracket mounting bolts
15. Transaxle mounting bracket mounting nuts

◀A▶
◀B▶ • Supporting engine assembly

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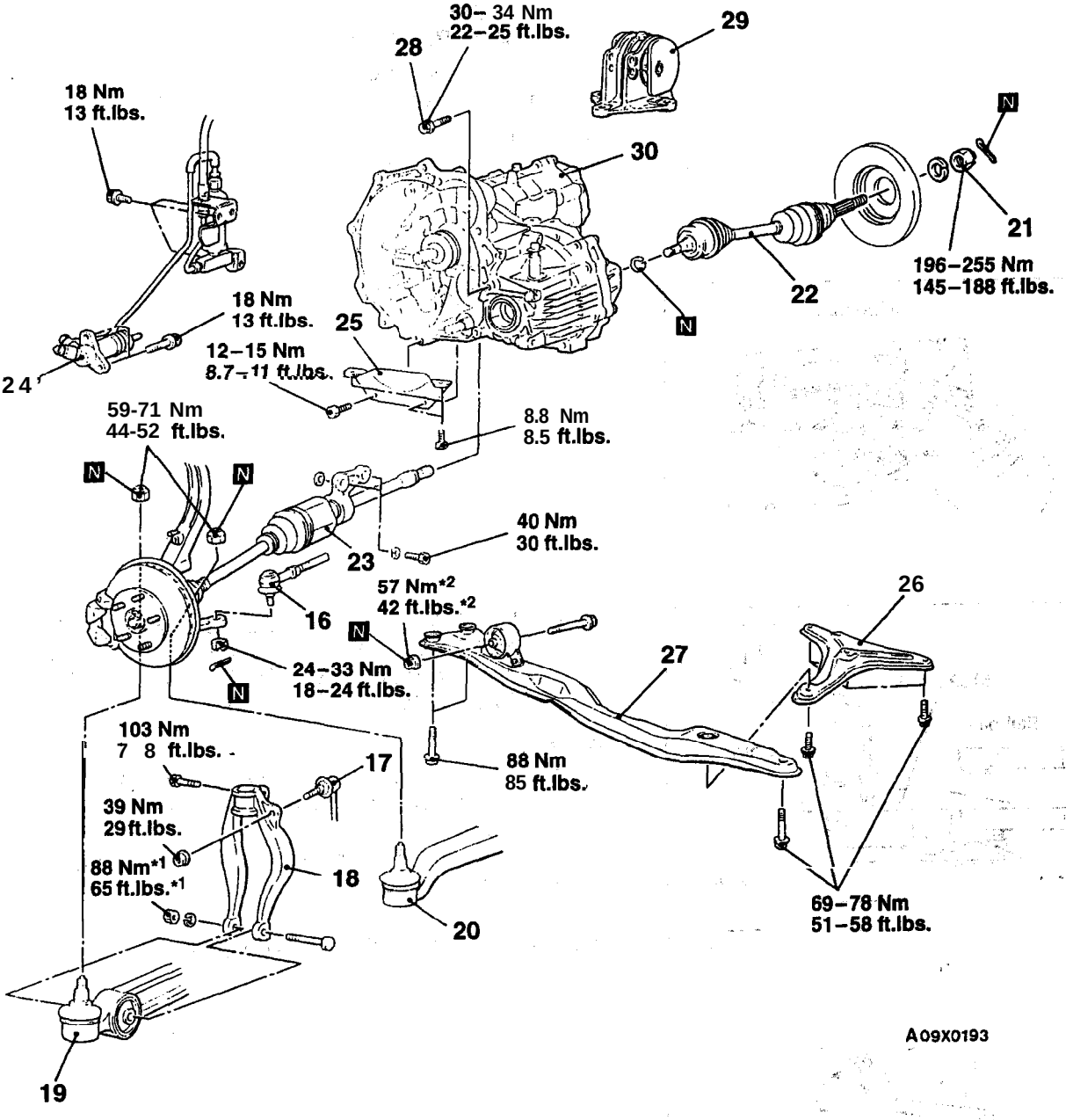

Lifting up of the vehicle

◀C▶ 16. Tie rod end ball joint and knuckle connection
17. Stabilizer link connection
18. Damper fork
◀C▶ 19. Lateral lower arm ball joint and knuckle connection
◀C▶ 20. Compression lower arm ball joint and knuckle connection
◀D▶ ▶D◀ 21. Drive shaft nut
◀E▶ ▶C◀ 22. Drive shaft
◀F▶ ▶C◀ 23. Drive shaft with inner shaft connection
◀G▶ 24. Clutch release cylinder connection
25. Bell housing cover
26. Stay (R.H.)
▶B◀ 27. Center member assembly
28. Transaxle assembly mounting bolt
▶A◀ 29. Transaxle mounting
30. Transaxle assembly

'Caution
*1: indicates parts which should, be temporarily tightened, and, then. fully tightened with the vehicle on the ground in the unladen condition.
*2: For tightening locations indicated by the symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.

TSB Revision

REMOVAL SERVICE POINTS

◀A▶ TRANSAXLE MOUNTING BRACKET MOUNTING NUTS REMOVAL

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Caution
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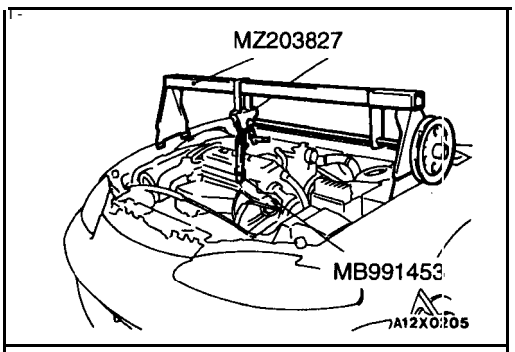
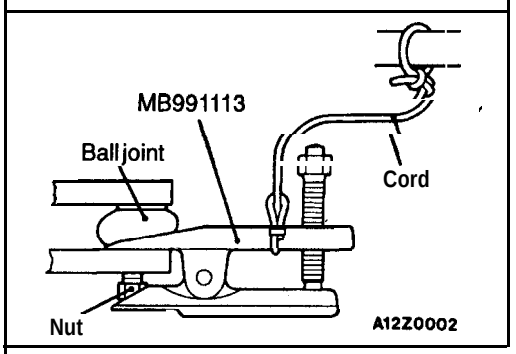


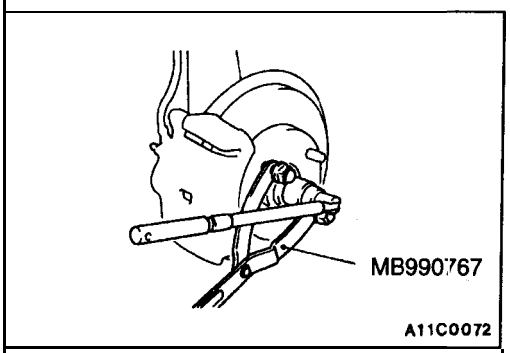
◀B▶ SUPPORTING ENGINE ASSEMBLY

Set the special tool to the vehicle to support the engine assembly.



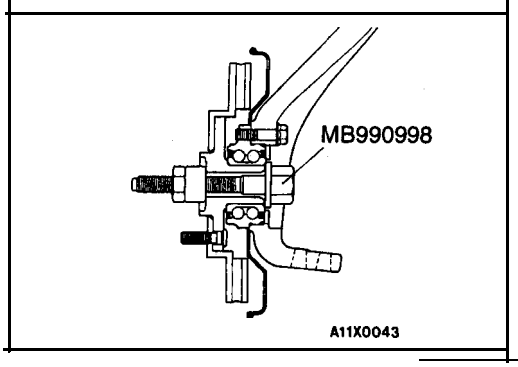
◀C▶ TIE ROD END BALL JOINT AND KNUCKLE/ LATERAL LOWER ARM BALL JOINT AND KNUCKLE/COMPRESSION LOWER ARM BALL JOINT AND KNUCKLE DISCONNECTION

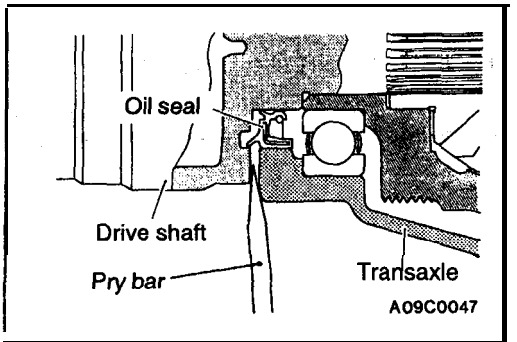
Caution
1. **Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.**
2. **Support the special tool with a cord, etc. to prevent it from coming off.**



◀D▶ DRIVE SHAFT NUT REMOVAL

Caution
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. If, however, the vehicle weight must be applied to the bearing (because of moving the vehicle), temporarily use the special tool MB990998, etc. to secure the wheel bearing.



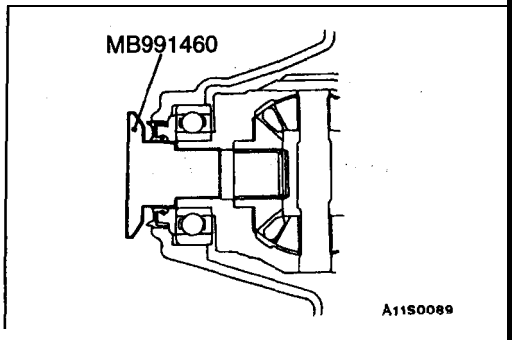


◀E▶ DRIVE SHAFT REMOVAL

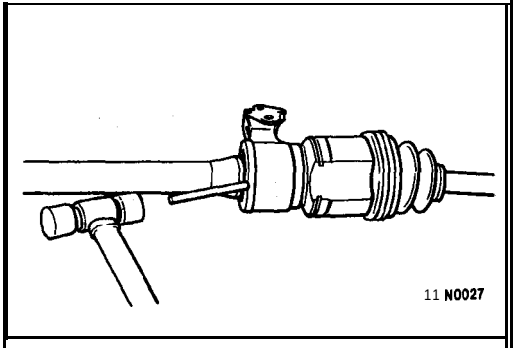
(1) Insert a pry bar between the transaxle case and the drive shaft, and then pry the drive shaft from the transaxle.

Caution

1. **Use a pry bar to remove the drive shaft from the B.J. assembly, or the T.J. assembly may be damaged.**
2. **Do not insert the bar too far, or the oil' seal may be damaged.**

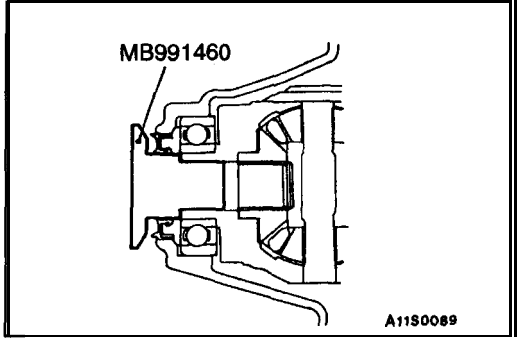


(2) Use the special tool to cover the transaxle case not to' let foreign materials get into the transaxle case.



◀F▶ DRIVE SHAFT WITH INNER SHAFT DISCONNECTION

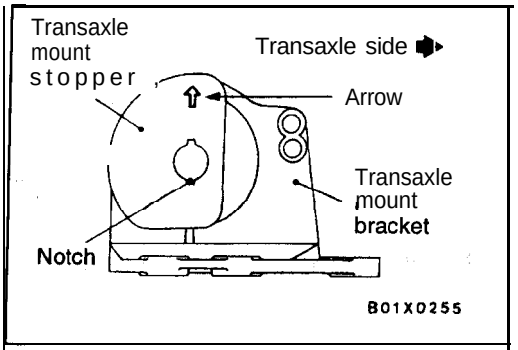
(1) Lightly tap the center -bearing bracket with a plastic hammer or similar tool "to remove the inner shaft from the transaxle.



(2) Suspend the removed drive shaft with inner shaft with wire so that there are no sharp bends in any of the joints.
(3) Use the special tool to cover the transaxle case not to let foreign materials get into the transaxle case.

◀G▶ CLUTCH RELEASE CYLINDER DISCONNECTION

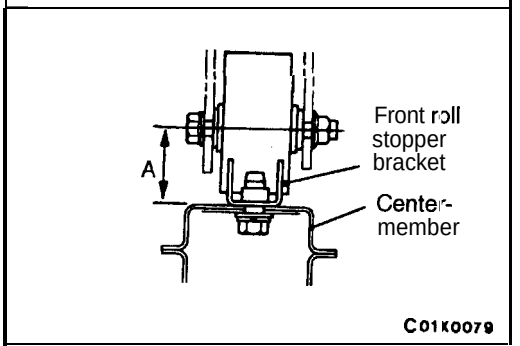
Remove the clutch release cylinder without disconnecting the oil line, and suspend it to a nearby parts with a wire, etc.



INSTALLATION SERVICE POINT

▶A◀ TRANSAXLE MOUNTING INSTALLATION

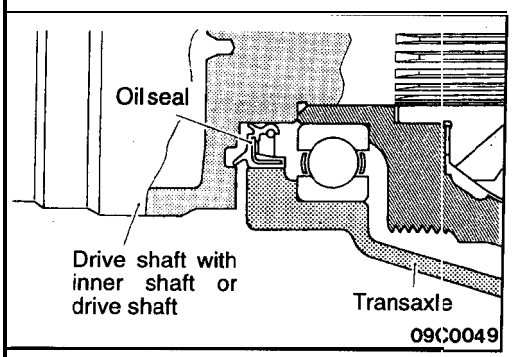
Align the notches on the stopper with the transaxle mount bracket with the arrow mark facing toward the shown direction. Then install the stopper.



▶B◀ CENTER MEMBER ASSEMBLY INSTALLATION

If the dimension shown in the illustration is outside the standard value when the weight of the engine is on the body, replace the front roll stopper bracket assembly.

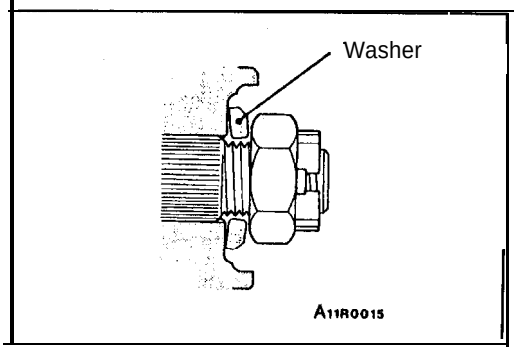
Standard value (A): 43 ± 3 mm (1.69 ± .12 in.)



▶C◀ DRIVE SHAFT WITH INNER SHAFT CONNECTION/DRIVE SHAFT INSTALLATION

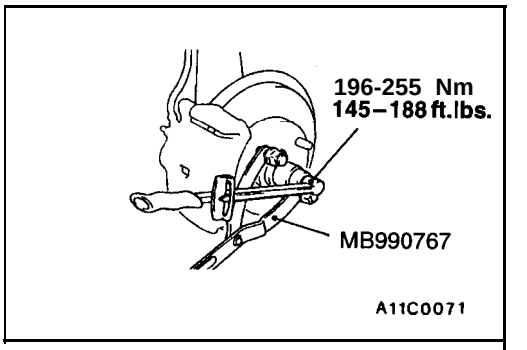
Temporarily install the drive shaft so that the inner shaft or T.J. case of the drive shaft is perpendicular to the transaxle.

Caution
Do not damage the oil seal lip by the serrated part of the drive shaft.



▶D◀ DRIVE SHAFT NUT INSTALLATION

(1) Install the drive shaft washer in the specified direction.



(2) Use the special tool to tighten the drive shaft nut.

Caution
Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings.

(3) If the position of the cotter pin holes does not match, tighten the nut up to 255 Nm (188 ft.lbs.) in maximum.
(4) Install the cotter pin in the first matching holes and bend it securely.

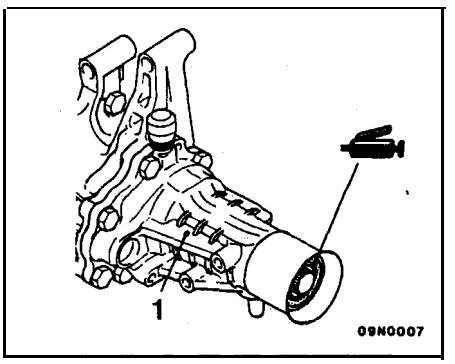
TSB Revision

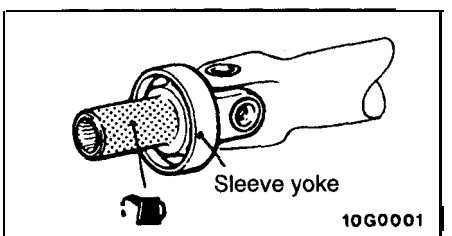
TRANSFER ASSEMBLY <AWD>

22100320025

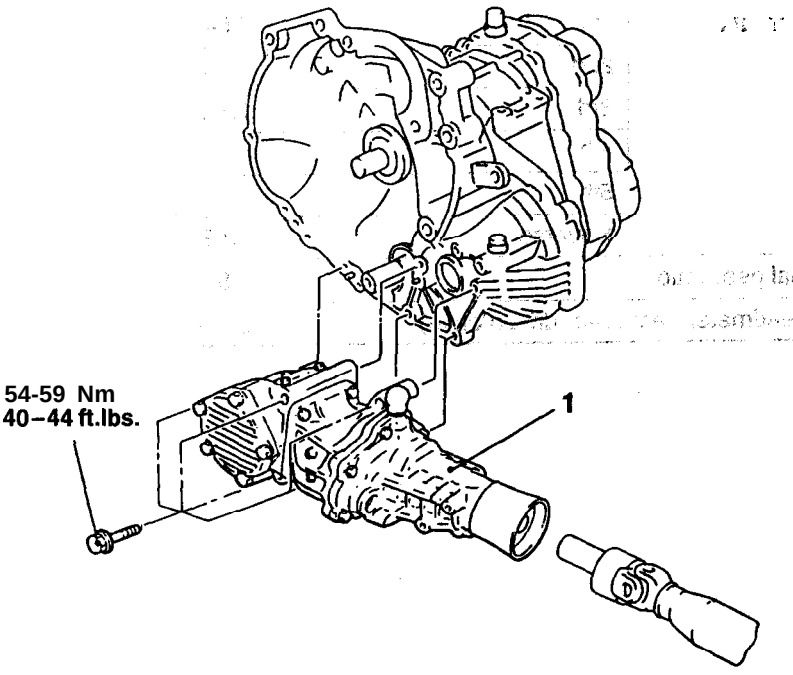
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Transfer Oil Draining and Supplying (Refer to GROUP 00 – Maintenance Service.)
- Front Exhaust Pipe Removal and Installation (Refer to GROUP 15 – Exhaust Pipe, Muffler.)

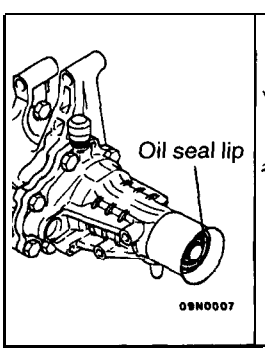


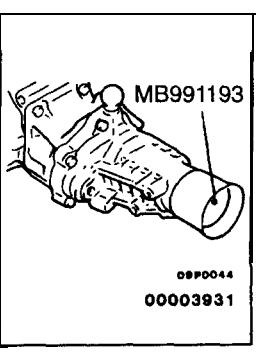


Gear oil:
API classification **GL-4,** SAE **75W-90** or **75W-85W**



◀A▶ 1. Transfer assembly





REMOVAL SERVICE POINT

(A, TRANSFER ASSEMBLY REMOVAL

Caution
(1) Do not damage the oil seal lip of the transfer.
(2) Use the special tool to cover the transaxle case to prevent oil from gushing out or foreign materials from getting into the transaxle case.

TSB Revision

MANUAL TRANSAXLE <2.0L ENGINE (NON-TURBO)>

22110010022

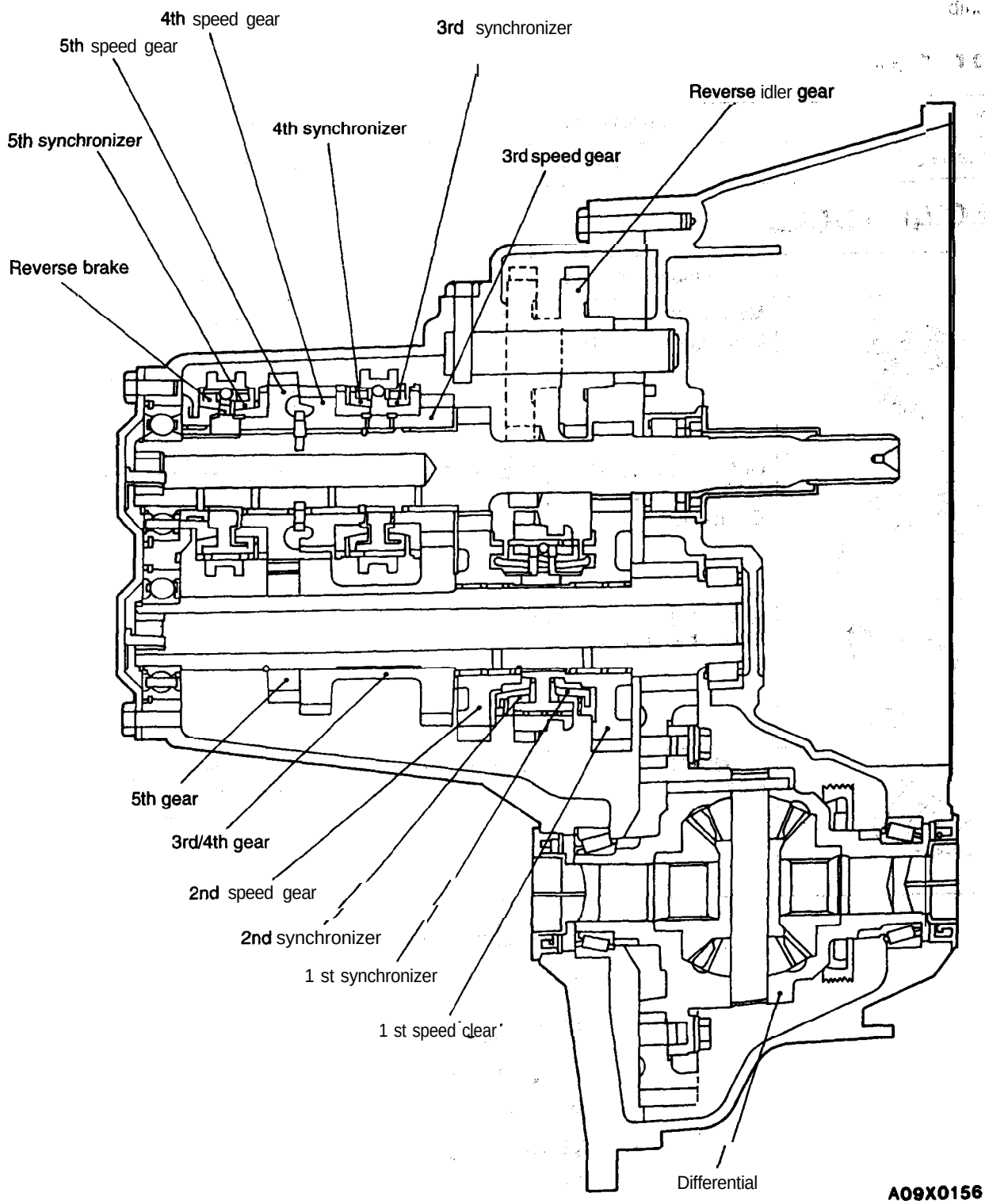
GENERAL INFOMATION

The manual transaxle comes in one model, namely F5MC1.

Items		Specifications	
Model		F5MC1-1-QPAF	F5MC1-1-QQAF
Applicable engine		420A	
Type		5-speed floor shift	
Gear ratio	1st	3.54	
	2nd	2.13	
	3rd	1.36	
	4th	1.03	
	5th	0.81	
	Reverse	3.42	
Final gear ratio		3.94	
Speedmeter gear ratio (driven/drive)		28/36	29/36

SECTIONAL VIEW

F5MC1



TSB Revision

SERVICE SPECIFICATIONS

22100020010

Items	Standard value
Installation dimension of front roll stopper bracket assembly mm (in.)	43 ± 3 (1.69 ± .12)

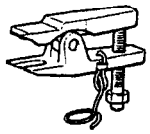
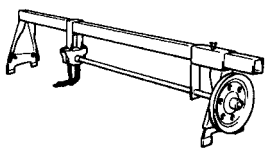
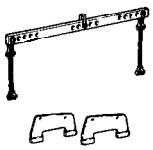
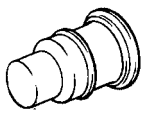
LUBRICANTS

22110020025

Items	Specified lubricant	Quantity dm^3 (qts.)
Transaxle oil	TEXACO MTX FLUID FM	2.0(2.1)

SPECIAL TOOLS

22110020028

Tool	Tool number and name	Supersession	Application
	MB991113 Steering linkage puller	MB991113-01	• Tie rod end ball joint and knuckle disconnection • Lateral lower arm ball join and knuckle disconnection • Compression lower arm ba joint and knuckle disconnec tion
	GENERAL SERVICE TOOL MZ203827 Engine lifter	MZ203827-01	Supporting the engine assembly during removal and installation of the transaxle
	MB991453 Engine hanger assembly	MZ203827-01	
	MB991461 Plug	General Service Tool*	Preventing foreign substances from entering transaxle case *Use shop towel

TROUBLESHOOTING

22110040021

Refer to P.22A-8.

ON-VEHICLE SERVICE

22110060027

TRANSAXLE OIL LEVEL CHECK

Refer to GROUP 00 – Maintenance Service.

TRANSAXLE OIL REPLACEMENT

22110070020

Refer to GROUP 00 – Maintenance Service.

TSB Revision

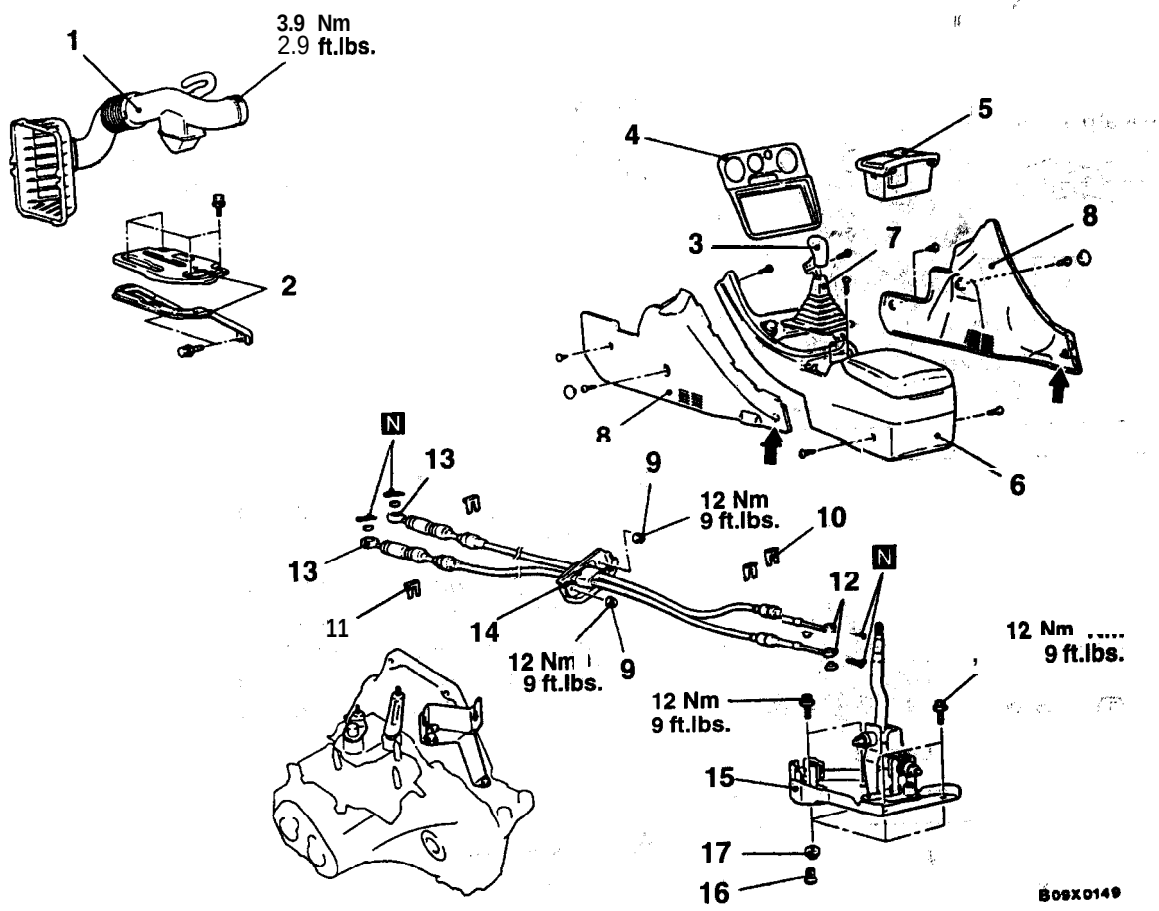
TRANSAXLE CONTROL

22100380078

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Battery Removal and Installation

Caution: SRS
Be careful not to subject the SRS-ECU to any shocks during removal and installation of the transaxle control cable and shift lever assembly.

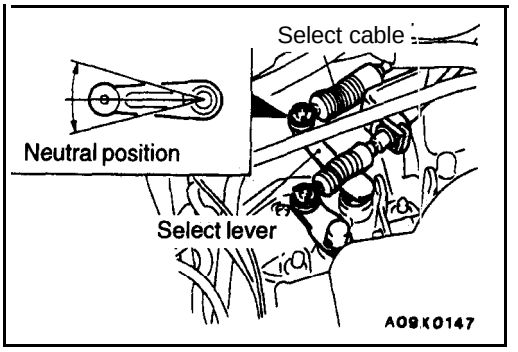


NOTE
⬅: Resin clip position

Transaxle control cable assembly removal steps
1. Air cleaner and air intake hose assembly
2. Battery tray and tray stay
3. Shift lever knob
4. Center panel
5. Cup holder assembly
6. Floor console assembly
7. Shift lever cover
8. Console side cover
9. Nut
10. Clips (passenger compartment side)
11. Clips (transaxle side)
▶B◀ 12. Shift cable and select cable connection (passenger compartment side)
▶A◀ 13. Shift cable and select cable connection (transaxle side)
14. Shift cable and select cable assembly

Shift lever assembly removal steps
3. Shift lever knob
4. Center panel
5. Cup holder assembly
6. Floor console assembly
7. Shift lever panel
8. Console side cover
10. Clip (passenger compartment side)
▶B◀ 12. Shift cable and select cable connection (passenger compartment side)
15. Shift lever assembly
16. Distance piece
17. Bushing

TSB Revision

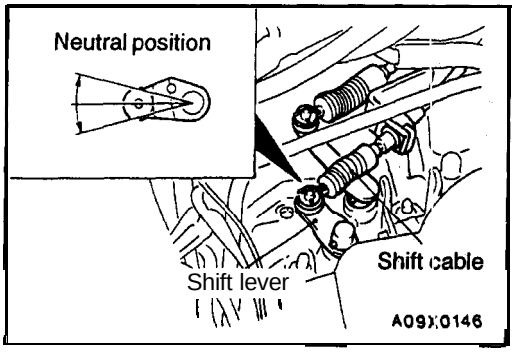


INSTALLATION SERVICE POINTS

▶A◀ SHIFT CABLE AND SELECT CABLE CONNECTION (TRANSAXLE SIDE)

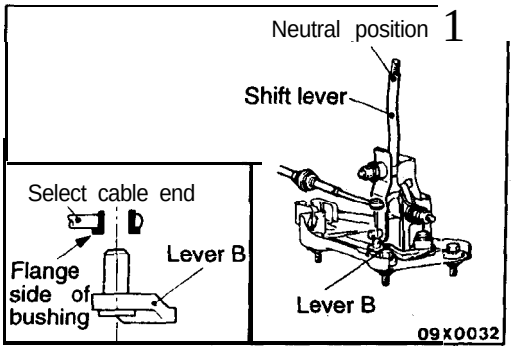
SELECT CABLE

(1) Connect the select cable to the transaxle side select lever.
(2) Set the select lever of the transaxle side at the neutral position.



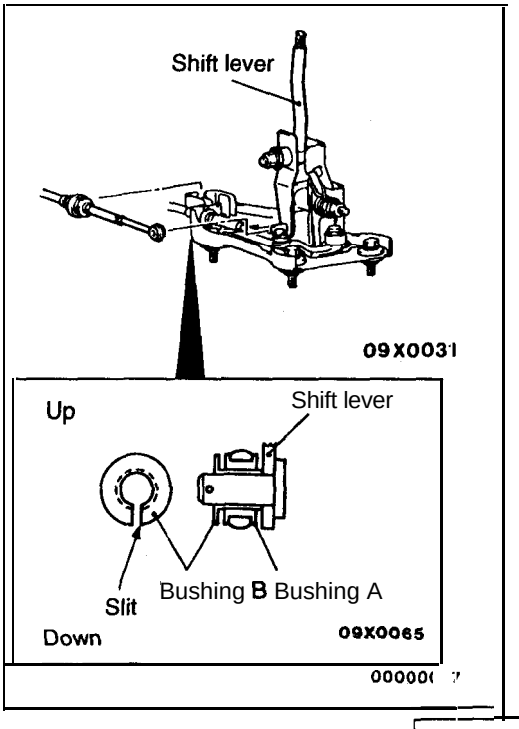
SHIFT CABLE

(1) Connect the shift cable to the transaxle side shift lever.
(2) Set the shift lever of the transaxle side at the neutral position.



▶B◀ SHIFT CABLE AND SELECT CABLE CONNECTION (PASSENGER COMPARTMENT SIDE)

(1) While leaving the shift lever inside the passenger compartment in the neutral position, install the select cable to the passenger compartment side of the shift lever.
(2) Install the select cable so that the flange side of resin bushing is positioned at the edge of lever B side.

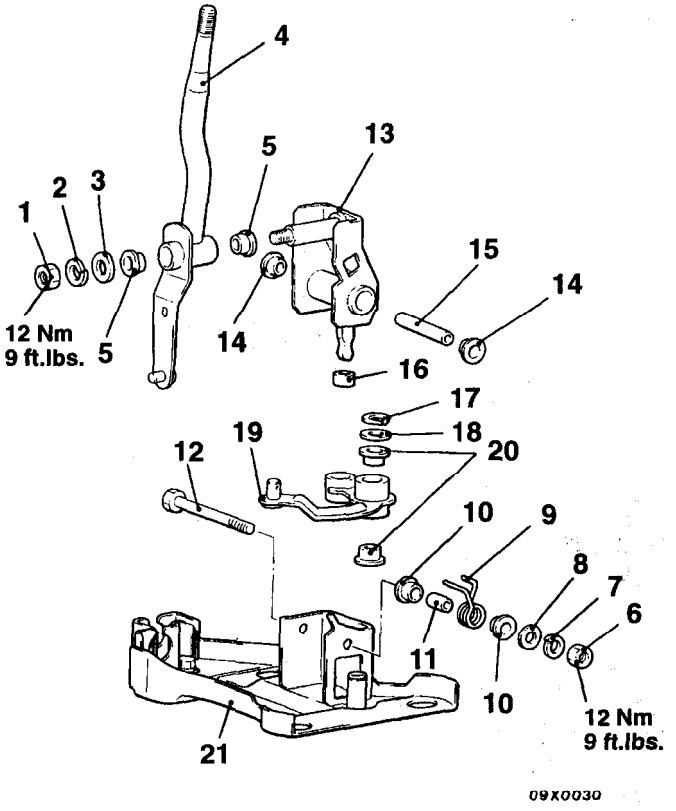


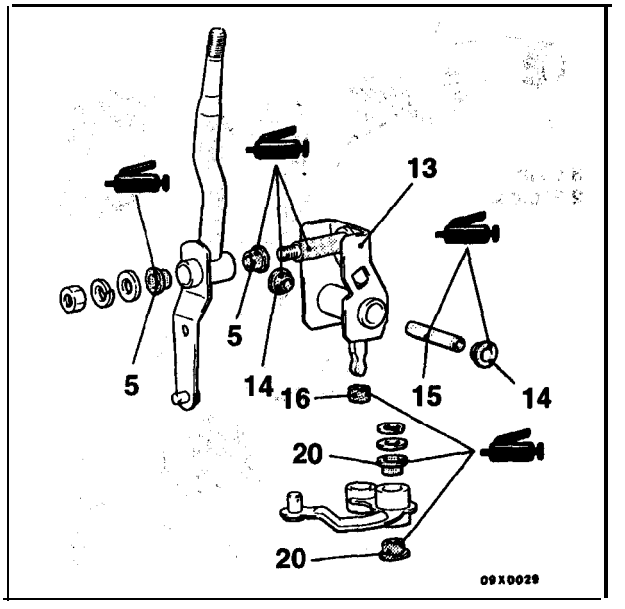
SHIFT CABLE

(1) While leaving the shift lever inside the passenger compartment in the neutral position, install the shift cable to the passenger compartment side of the shift lever. Install so that the slit section of the bushing B is facing either up or down.
(2) Put the shift lever to all the positions and make sure that the operation is smooth.

SHIFT LEVER ASSEMBLY
DISASSEMBLY AND REASSEMBLY

22100400057





00000098

Disassembly steps

1. Nut
2. Spring washer
3. Plain washer
4. Shift lever
5. Bushing
6. Nut
7. Spring washer
8. Plain washer
9. Return spring
10. Bushing
11. Pipe
12. Bolt
13. Lever A
14. Bushing
15. Collar
16. Bushing
17. Snap ring
18. Washer
19. Lever B
20. Bushing
21. Bracket assembly

TSB Revision

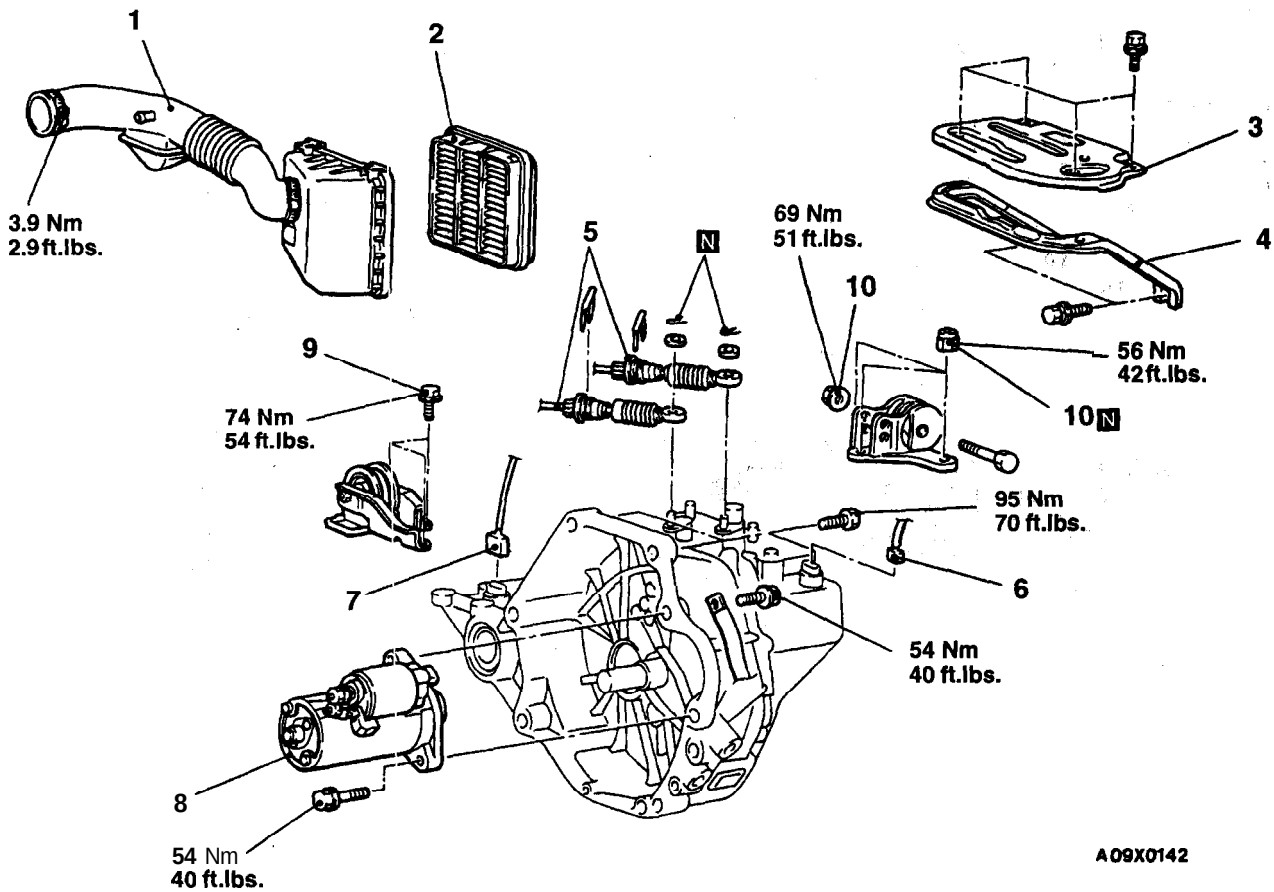
TRANSAXLE ASSEMBLY

22100270108

REMOVAL AND INSTALLATION

Pre-removal Operation
- Transaxle Oil Draining (Refer to GROUP 00 – Maintenance Service.)
- Battery Removal
- Under Cover Removal (Refer to GROUP 42 – Under Cover.)

Post-installation Operation
- Supplying Transaxle Oil (Refer to GROUP 00 – Maintenance Service.)
- Shift Lever Operation Check
- Speedometer Operation Check
- Under Cover Installation (Refer to GROUP 42 – Under Cover.)
- Battery Installation

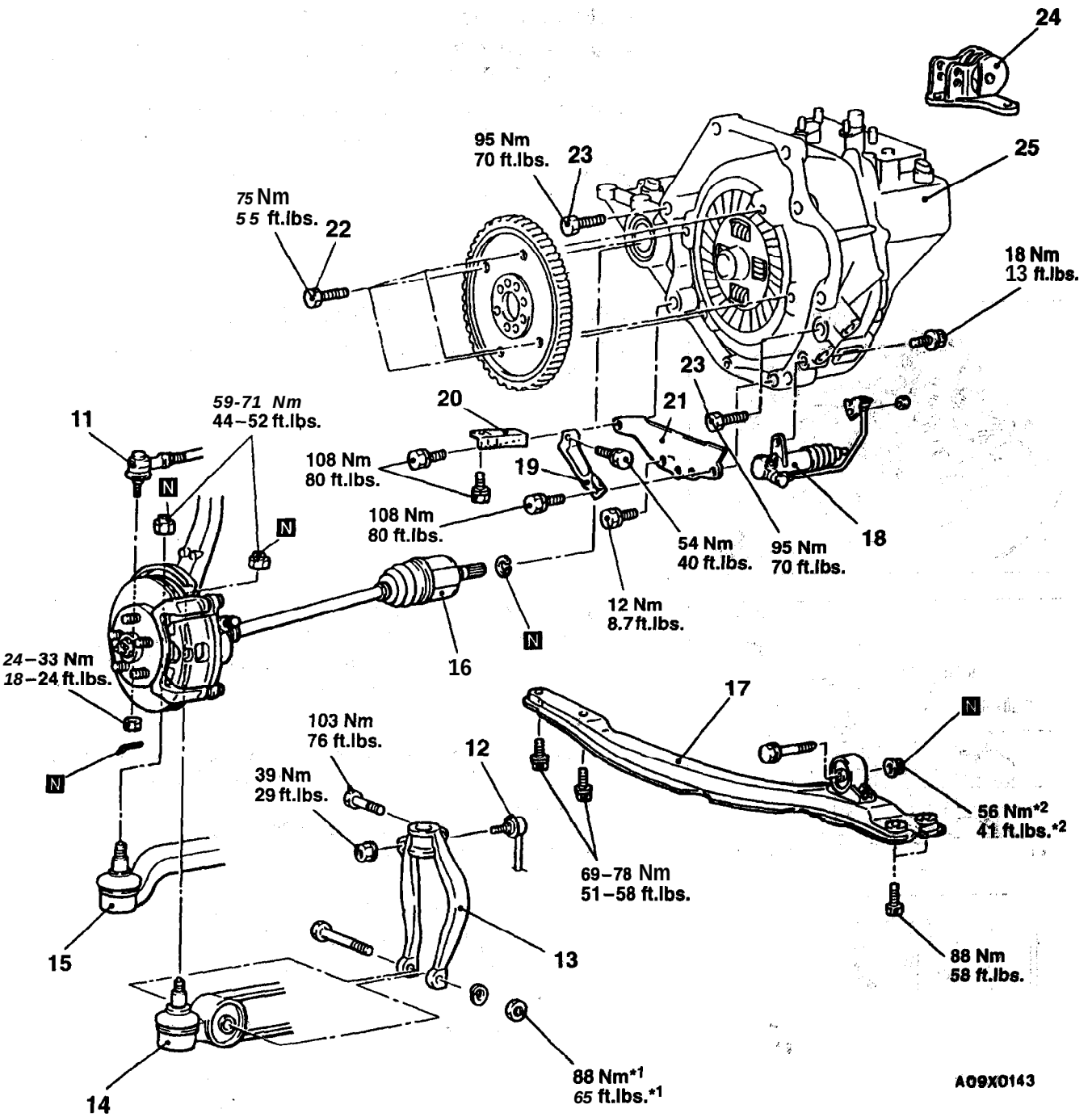


Removal steps

1. Air cleaner cover and air intake hose assembly
2. Air cleaner element
3. Battery tray
4. Battery tray stay
5. Shift cable and select cable connection
6. Backup light switch connector
7. Vehicle speed sensor connector
8. Starter motor
9. Rear roll stopper bracket mounting bolts
10. Transaxle mounting bracket mounting nuts

◀A▶ • Supporting engine assembly

TSB Revision



Lifting up of the vehicle

◀C▶ 11. Tie rod end ball joint and knucklle connection
12. Stabilizer link connection
13. Damper fork
◀C▶ 14. Lateral lower arm ball joint and knucklle connection
◀C▶ 15. Compression lower arm ball joint and knucklle connection
◀D▶ ▶C◀ 16. Drive shaft connection
▶B◀ 17. Center member assembly
◀E▶ 18. Clutch release cylinder connection
19. Front plate
20. Rear plate
21. Transaxle case lower cover
◀F▶ 22. Flex plate connecting bolts
◀F▶ 23. Transaxle assembly mounting bolts
▶A◀ 24. Transaxle mounting
◀F▶ 25. Transaxle assembly

Caution

- **l: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen dondition.**
- ***2: For tightening locations indicated by the symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.**

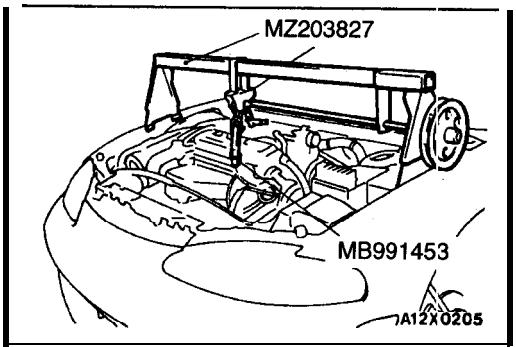
TSB Revision

REMOVAL SERVICE POINTS

◀A▶ TRANSAXLE MOUNTING BRACKET MOUNTING NUTS REMOVAL

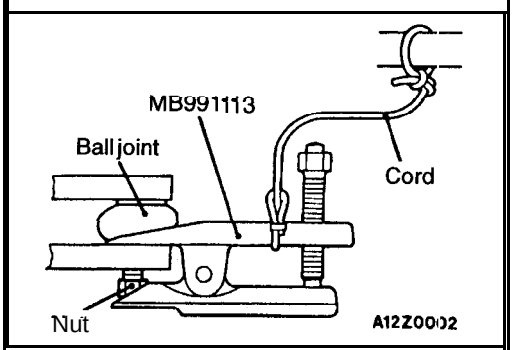
Jack up the transaxle assembly gently with a garage jack, and then remove the transaxle mounting bracket nuts.

Caution
Be sure not to tilt the transaxle assembly.



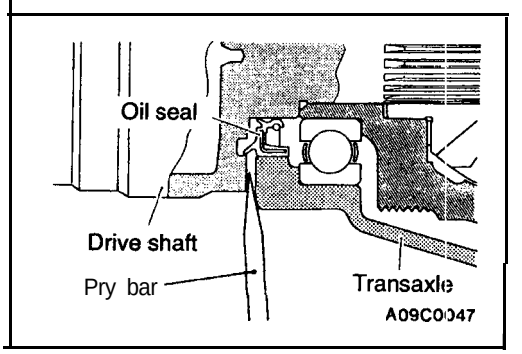
◀B▶ SUPPORTING ENGINE ASSEMBLY

Set the special tool to the vehicle to support the engine assembly.



◀C▶ TIE ROD END BALL JOINT AND KNUCKLE/LATERAL LOWER ARM BALL JOINT AND KNUCKLE/COMPRESSION LOWER ARM BALL JOINT AND KNUCKLE DISCONNECTION

Caution
1. **Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from. the ball joint.**
2. **Support the special tool with a cord, etc. to prevent it from coming off.**



◀D▶ DRIVE SHAFT DISCONNECTION

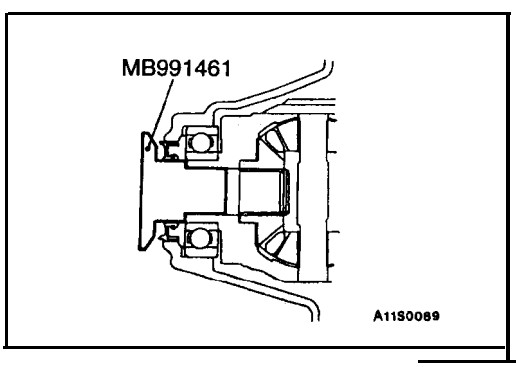
(1) Insert a pry bar between the transaxle case and the drive shaft to remove the drive shaft.

NOTE
Do not remove the hub and knuckle from the drive shaft.

Caution
1. **Use a pry bar to remove the drive shaft from B.J. assembly, or the T.J. assembly may be damaged.**
2. **Do not insert the bar too far, or the oil seal may be damaged.**

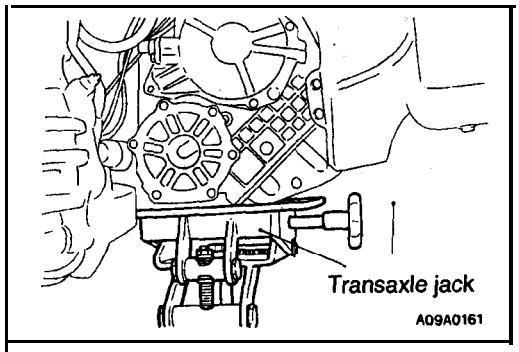
(2) Suspend the removed drive shaft with wire so that there are no sharp bends in any of the joints.

(3) Use the special tool to cover the transaxle case to prevent foreign materials from getting into the transaxle case.



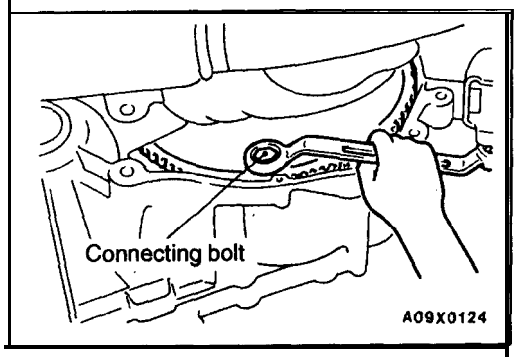
◀E▶ CLUTCH RELEASE CYLINDER DISCONNECTION

Remove the clutch release cylinder **without** disconnecting the oil line connection, and fix it to the vehicle chassis.

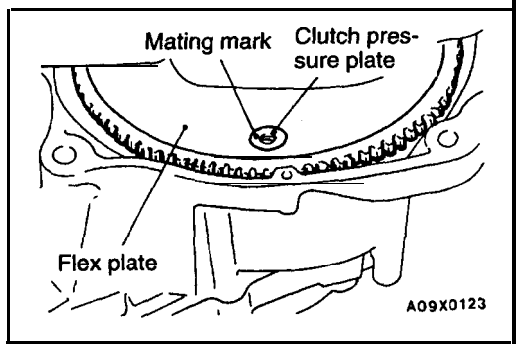


◀F▶ FLEX PLATE CONNECTING BOLTS/TRANSAXLE ASSEMBLY MOUNTING BOLTS/TRANSAXLE ASSEMBLY REMOVAL

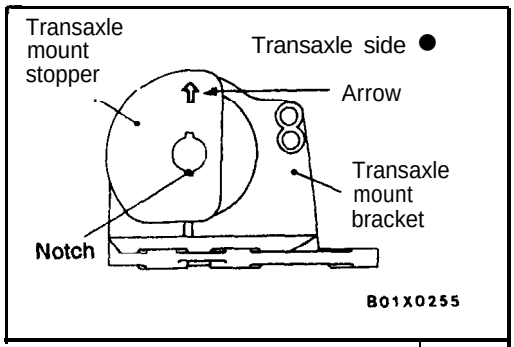
(1) Support the transaxle **assembly by using** a transaxle jack.



(2) Remove the connection bolts while turning the crankshaft.



(3) Chalk mating marks on the flex plate and clutch pressure plate for easier installation.
(4) Press the clutch pressure plate into the transaxle for easier removal.
(5) Remove the transaxle assembly mounting bolt and lower the transaxle assembly.



INSTALLATION SERVICE POINT

▶A◀ TRANSAXLE MOUNTING INSTALLATION

Align the notches on the stopper with the transaxle mount bracket with the arrow mark facing toward the shown direction. Then install the stopper.

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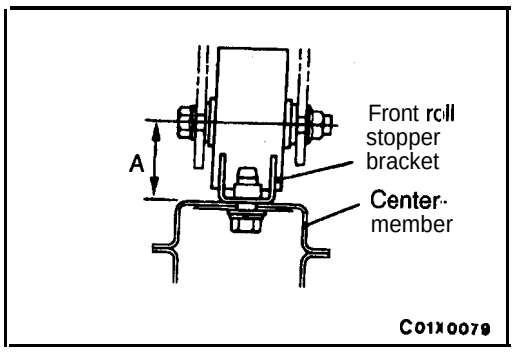
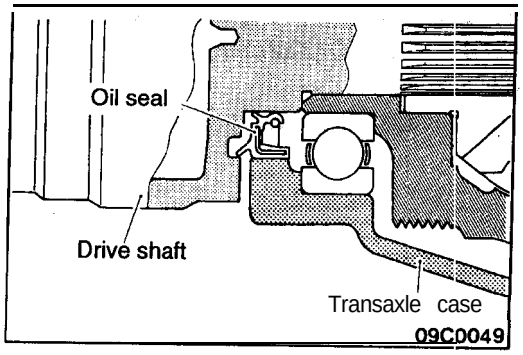


▶B◀ CENTERMEMBER ASSEMBLY INSTALLATION

If the dimension shown in the illustration is outside the standard value when the' weight of the engine is on the body, replace the front roll stopper bracket assembly.

Standard value (A): 43 ± 3 mm (1.69 ± .12 in.)



▶C◀ DRIVE SHAFT CONNECTION

Temporarily install the drive shaft so that the T.J. case of the drive shaft is perpendicular to the transaxle.

Caution
Do not damage the oil seal lip by the serrated part of the drive shaft.

MANUAL TRANSAXLE OVERHAUL <F5M31, F5M33, W5M33>

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22209000053

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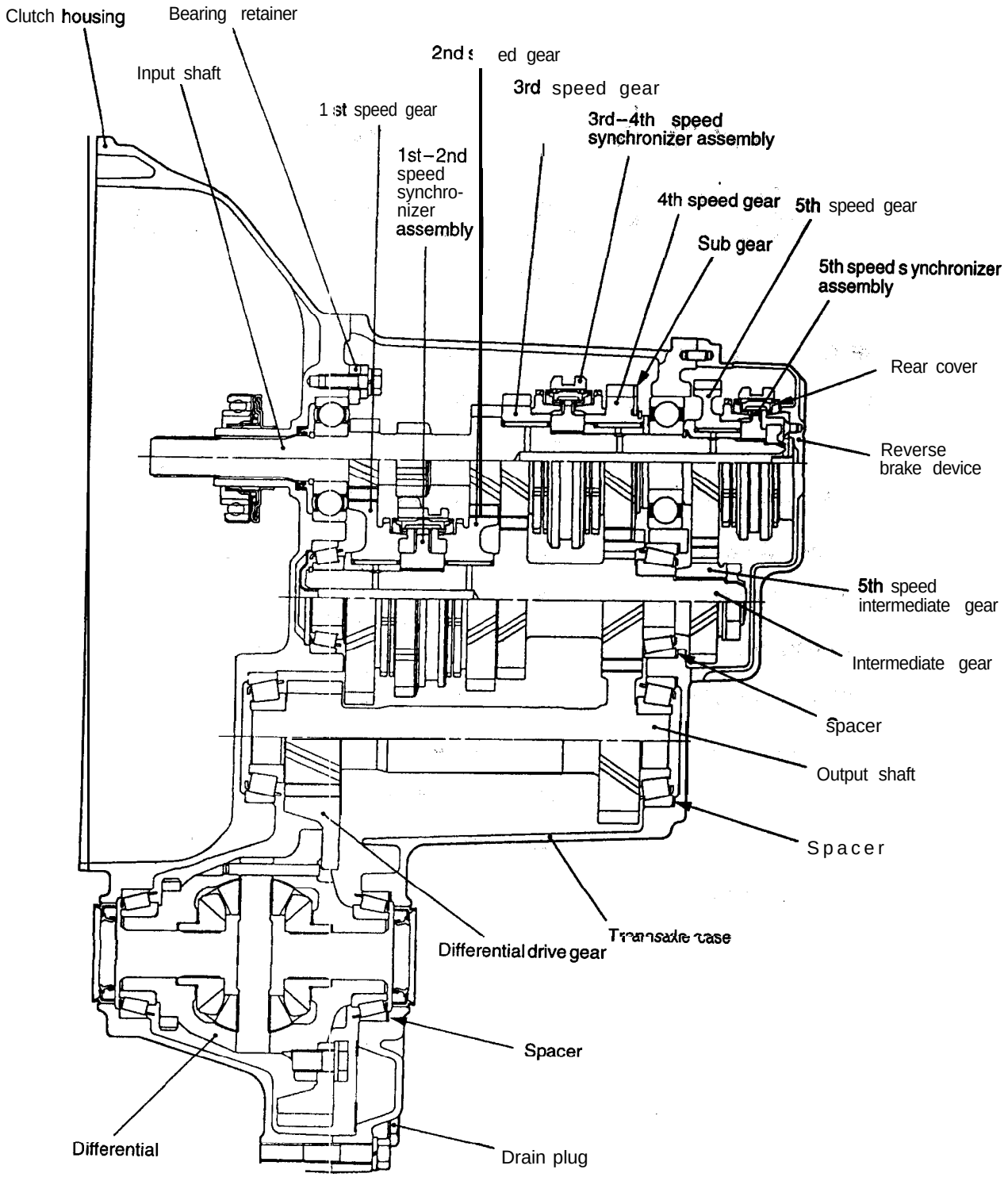
22200010055

SECTIONAL VIEW – F5M31



ZTFM0275

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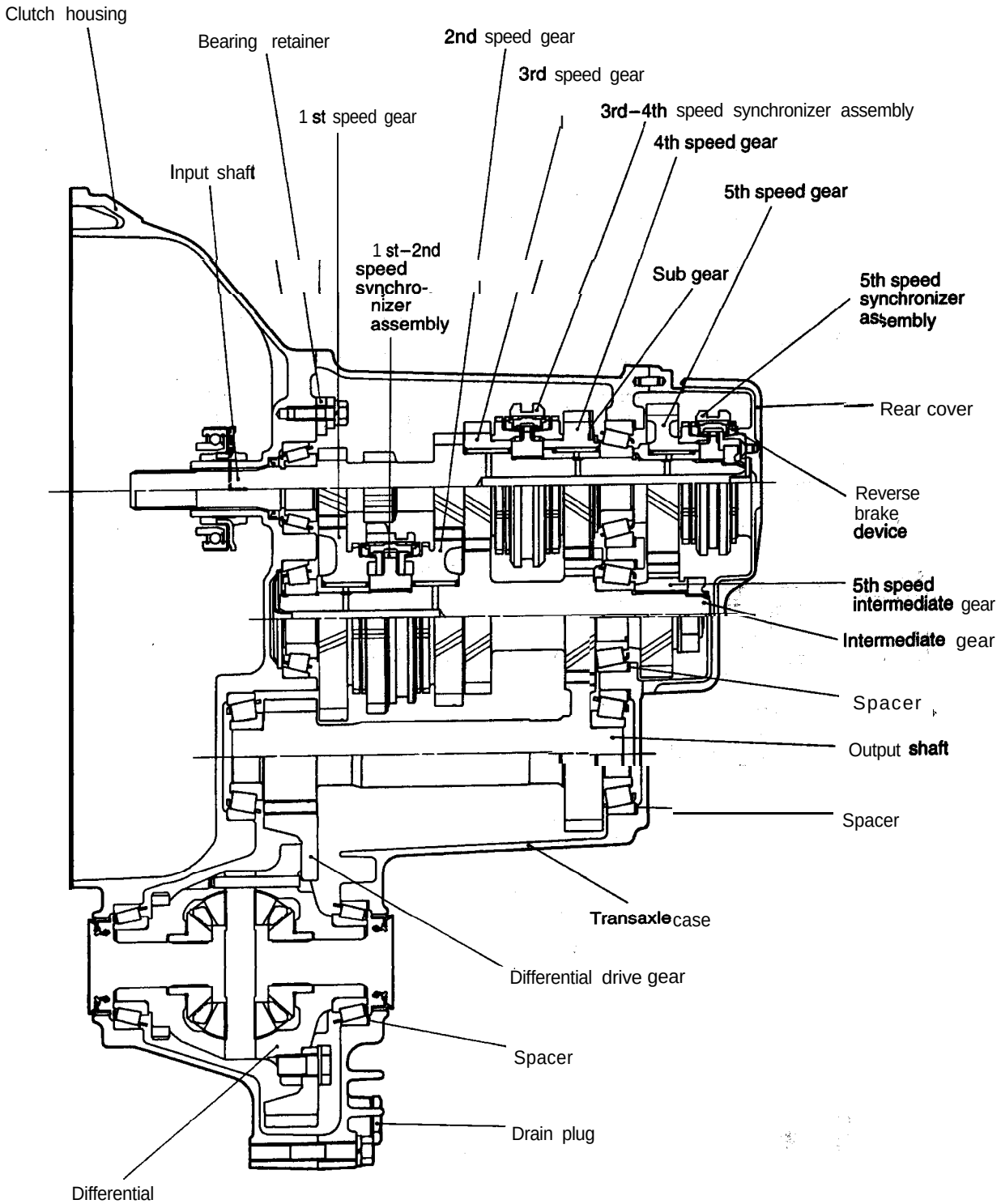
SECTIONAL VIEW – F5M33



ZTFIM0025

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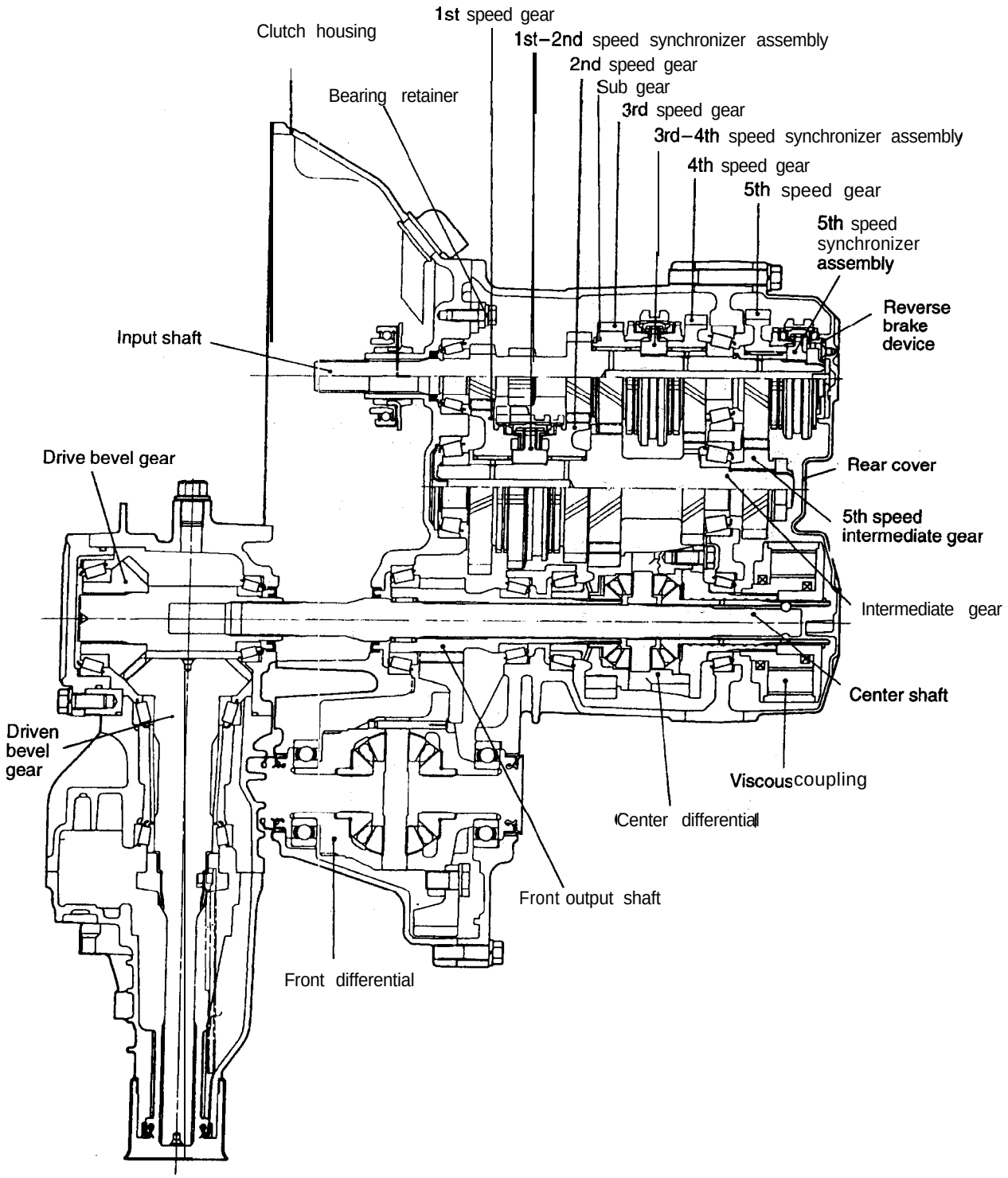
SECTIONAL VIEW – W5M33



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SPECIFICATIONS

22200020140

TRANSAXLE MODEL TABLE

Transaxle model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model"
F5M31-2-VVXT	A	29/36	3.625	D34A	4G64
F5M33-2-SPZT	B	29/36	4.153	D32A	4G63-DOHC Turbo
W5M33-2-MUZT	C	29/36	3.908	D33A	4G63-DOHC Turbo

GEAR RATIO TABLE

Items	A	B	C
1st	3.166	3.090	3.083
2nd	1.833	1.833	1.684
3rd	1.240	1.217	1.115
4th	0.896	0.888	0.833
5th	0.731	0.741	0.666
Reverse	3.166	3.166	3.166
Transfer		–	1.090

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SERVICE SPECIFICATIONS <F5M31, F5M33>

22200030044

Items	Standard value
Differential case preload mm (in.)	0.05–0.10 (.0020 –.0040)
Differential pinion backlash mm (in.)	0.025–0.150 (.00098–.00591)
Input shaft front bearing end play <F5M31> mm (in.)	0.01–0.12 (.0004–.0047)
Input shaft end play <F5M33> mm (in.)	0–0.05 (0–.0020)
Input shaft rear bearing end play mm (in.)	0–0.09 (0–.0035)
Intermediate gear bearing end play <F5M33> mm (in.)	0.01–0.14 (.0004–.0055)
Intermediate gear bearing end play <F5M31> mm (in.)	0.01–0.11 (.0004–.0044)
Intermediate gear preload mm (in.)	0.05–0.10 (.0020–.0040)
Output shaft preload mm (in.)	0.05–0.10 (.0020–.0040)

SERVICE SPECIFICATIONS <W5M33>

Items	Standard value
Center differential case end play mm (in.)	0.08–0.13 (.0031–.0051)
Center differential side gear end play mm (in.)	0.05–0.25 (.0020 –.0100)
Front differential case end play mm (in.)	0.05–0.17 (.0020–.0067)
Front differential pinion backlash mm (in.)	0.025–0.150 (.00098 –.00591)
Front output shaft preload mm (in.)	0.08–0.13 (.0031–.0051)
Input shaft end play mm (in.)	0–0.05 (0–.0020)
Input shaft front bearing end play mm (in.)	0.01–0.12 (.0004–.0047)
Input shaft rear bearing end play mm (in.)	0–0.09 (0–.0035)
Intermediate gear bearing end play mrn (in.)	0.01–0.14 (.0004–.0055)
Intermediate gear preload mm (in.)	0.08–0.13 (.0031–.0051)
Transfer bevel gear set backlash mm (in.)	0.08–0.13 (.0031–.0051)
Transfer drive bevel gear rotating torque Nm (ft.lbs.)	1.7-2.5 (1.23–1.81)
Transfer driven bevel gear rotating torque Nm (ft.lbs.)	1.0–1.7 (0.72–1.23)
Viscous coupling end play mm (in.)	0.10–0.26 (.0039–.0102)

SNAP RINGS AND SPACERS FOR ADJUSTMENT

Snap ring (For adjustment of input shaft front bearing end play)

Thickness mm (in.)	identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
2.24 (.0882)	None	MD706537	2.38 (.0937)	Brown	MD706539
2.31 (.0909)	Blue	MD706538			

Snap ring (For adjustment of input shaft rear bearing end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.40 (.0551)	Blue	MD723276	1.60 (.0630)	Yellow	MD723278
1.45 (.0571)	Purple	MD730889	1.65 (.0650)	Brown	MD730891
1.50 (.0591)	Red	MD723277	1.70 (.0670)	Green	MD723279
1.55 (.0610)	White	MD730890	1.75 (.0689)	Orange	MD730892

Spacer: F5M33, W5M33 (For adjustment of input shaft end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.80 (.0315)	80	MD727661	1.16 (.0457)	K	MD710455
0.83 (.0327)	83	MD720937	1.19 (.0468)	L	MD710456
0.86 (.0338)	86	MD720938	1.22 (.0480)	G	MD700271
0.89 (.0350)	89	MD720939	1.25 (.0492)	M	MD716457
0.92 (.0362)	92	MD720940	1.28 (.0504)	N	MD710458
0.95 (.0374)	95	MD720941	1.31 (.0561)	E	MD706574
0.98 (.0386)	98	MD720942	1.34 (.0527)	0	MD710459
1.01 (.0398)	01	MD720943	1.37 (.0539)	P	MD710460
1.04 (.0409)	04	MD720944	1.40 (.0551)		MD706573
1.07 (.0421)	07	MD720945	1.43 (.0563)	Q	MD710461
1.10 (.0433)	J	MD710454	1.46 (.0575)	R	MD710462
1.13 (.0445)	D	MD700270			

Snap ring: F5M33 (For adjustment of intermediate rear front bearing end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.40 (.0551)	None	MD703779	1.60 (.0630)	Blue	MD703781
1.50 (.0591)	Brown	MD703780			

Snap ring: F5M31 (For adjustment of intermediate gear front bearing end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.40 (.0551)	Blue	MD723276	1.60 (.0630)	Yellow	MD723278
1.50 (.0591)	Red	MD723277	1.70 (.0670)	Green	MD723279

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Spacer: F5M31, F5M33 (For adjustment of intermediate gear end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.62 (.0244)	62	MD736754	1.01 (.0398)	01	MD724149
0.65 (.0256)	65	MD736755	1.04 (.0409)	04	MD724150
0.68 (.0268)	68	MD735659	1.07 (.0421)	07	MD724151
0.71 (.0280)	71	MD735660	1.10 (.0433)	10	MD724152
0.74 (.0291)	74	MD735661	1.13 (.0445)	13	MD724153
0.77 (.0303)	77	MD735662	1.16 (.0457)	16	MD724154
0.80 (.0315)	80	MD724142	1.19 (.0468)	19	MD724155
0.83 (.0327)	83	MD724143	1.22 (.0480)	22	MD724156
0.86 (.0338)	86	MD724144	1.25 (.0492)	25	MD724157
0.89 (.0350)	89	MD724145	1.28 (.0504)	28	MD724158
0.92 (.0362)	92	MD724146	1.31 (.0516)	31	MD724159
0.95 (.0374)	95	MD724147	1.34 (.0527)	34	MD724160
0.98 (.0386)	98	MD724148	1.37 (.0539)	37	MD724161

Spacer: W5M33 (For adjustment of intermediate gear preload)

Thickness mm (in.)	Identification syrnbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.80 (.0315)	80	MD720948	1.13 (.0445)	13	MD720959
0.83 (.0327)	83	MD720949	1.16 (.0457)	16	MD720960
0.86 (.0338)	86	[illegible]	1.19 (.0468)	19	MD720961
0.89 (.0350)	89	MD720951	1.22 (.0480)	22	MD720962
0.92 (.0362)	92	MD720952	1.25 (.0492)	25	MD712346
0.95 (.0374)	95	MD720953	1.28 (.0504)	28	MD712347
0.98 (.0386)	98	MD720954	1.31 (.0515)	31	MD712348
1.01 (.0398)	01	MD720955	1.34 (.0527)	34	MD712349
1.04 (.0409)	04	MD720956	1.37 (.0539)	37	MD712329
1.07 (.0421)	07	MD720957	1.40 (.0551)	40	
1.10 (.0433)	10	MD720958	1.43 (.0563)	43	MD712331

Spacer: F5M31, F5M33 (For adjustment of output shaft end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Pan No.
0.83 (.0327)	83	MD720937	1.10 (.0433)	J	MD710454
0.86 (.0338)	86	MD720938	1.13 (.0445)	D	MD700270
0.89 (.0350)	89	MD720939	1.16 (.0457)	K	MD710455
0.92 (.0362)	92	MD720940	1.19 (.0468)	L	MD710456
0.95 (.0374)	95	MD720941	1.22 (.0480)	G	MD700271
0.98 (.0386)	98	MD720942	1.25 (.0492)	M	MD710457
1.01 (.0398)	01	MD720943	1.28 (.0504)	N	MD710456
1.04 (.0409)	04	MD720944	1.31 (.0516)	E	MD706574
1.07 (.0421)	07	MD720945	1.34 (.0527)	0	MD710459

Spacer: W5M33 (For adjustment of front differential case end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.56 (.0220)	56	MD727658	1.01 (.0398)	01	MD720943
0.65 (.0256)	65	MD727659	1.10 (.0433)	J	MD710454
0.74 (.0291)	74	MD727660	1.19 (.0468)	L	MD710456
0.83 (.0327)	83	MD720937	1.28 (.0504)	N	MD710458
0.92 (.0362)	92	MD720940	1.37 (.0539)	P	MD710460

Spacer: F5M31, F5M33 (For adjustment of front differential case end play)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.80 (.0315)	80	MD727661	0.92 (.0362)	92	MD720940
0.83 (.0327)	83	MD720937	0.95 (.0374)	95	MD720941
0.86 (.0338)	86	MD720938	0.98 (.0386)	98	MD720942
0.89 (.0350)	89	MD720939	1.01 (.0398)	01	MD710455
1.04 (.0409)	04	MD720944	1.16 (.0457)	K	MD710456
1.07 (.0421)	07	MD720945	1.19 (.0468)	L	MD700271
1.10 (.0433)	J	MD710454	1.22 (.0480)	G	MD710457
1.13 (.0445)	D	MD700270	1.25 (.0492)	M	

Spacer (For adjustment of front differential pinion backlash)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.75–0.82 (.0295–.0323)	–	MA180862	1.01–1.08 (.0398–.0425)		MA180675
0.83–0.92 (.0327–.0362)	–	MA180861	1.09–1.16 (.0429–.0457)	–	MA180876
0.93–1.00 (.0366–.0394)		MA180860			

Spacer: W5M33 (For adjustment of front output shaft preload)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.28 (.0504)	B28	MD726167	1.61 (.0634)	B61	MD724334
1.31 (.0516)	B31	MD726168	1.64 (.0646)	B64	MD724335
1.34 (.0527)	B34	MD726169	1.67 (.0657)	B67	MD724336
1.37 (.0539)	B37	MD724326	1.70 (.0669)	B70	MD724337
1.40 (.0551)	B40	MD724327	1.73 (.0681)	B73	MD724338
1.43 (.0563)	B43	MD724328	1.76 (.0692)	B76	MD724339
1.46 (.0575)	B46	MD724329	1.79 (.0705)	B79	MD724340
1.49 (.0587)	B49	MD724330	1.82 (.0716)	B82	MD724341
1.52 (.0598)	B52	MD724331	1.85 (.0728)	B85	MD724342
1.55 (.0610)	B55	MD724332	1.88 (.0740)	B88	MD724343
1.58 (.0622)	B58	MD724333	1.91 (.0751)	B91	MD724344

Snap ring: W5M33 [For adjustment of viscous coupling end play (with VCU)]

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.3 (.051)	Orange	MD727650	1.7 (.067)	White	MD720689
1.4 (.055)	Red	MD720686	1.8 (.071)	Yellow	MD720690
1.5 (.059)	Blue	MD720687	1.9 (.075)	Green	MD727651
1.6 (.063)	None	MD720688			

Spacer: W5M33 (For adjustment of center differential pinion backlash front side)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
2.09–2.16 (.0823–.0850)	0	MD741413	2.51–2.58 (.0988–.1016)	5	MD741408
2.17–2.24 (.0854–.0882)	9	MD741412	2.59-2.66 (.1020–.1047)	4	MD741407
2.25-2.32 (.0886–.0913)	8	MD741411	2.67-2.74 (.1050–.1079)	3	MD741406
2.33-2.42 (.0917–.0953)	7	MD741410	2.75-2.82 (.1083–.1110)	2	MD741405
2.43–2.50 (.0597–.0984)	6	MD741409			

Spacer: W5M33 (For adjustment of center differential case preload)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.13 (.0445)	13	MD736928	1.49 (.0587)	49	MD718524
1.16 (.0457)	16	MD736929	1.52 (.0598)	52	MD718525
1.19 (.0468)	19	MD736751	1.55 (.0610)	55	MD718526
1.22 (.0480)	22	MD736931	1.58 (.0622)	58	MD718527
1.25 (.0492)	25	MD726166	1.61 (.0634)	61	MD718528
1.28 (.0504)	28	MD718517	1.64 (.0646)	64	MD718529
1.31 (.0516)	31	MD718518	1.67 (.0657)	87	MD718530
1.34 (.0527)	34	MD718519	1.70 (.0669)	70	MD718531
1.37 (.0539)	37	MD718520	1.73 (.0681)	73	MD721959
1.40 (.0551)	40	MD718521	1.76 (.0692)	76	MD721960
1.43 (.0563)	43	MD718522	1.79 (.0705)	79	MD721961
1.46 (.0575)	46	MD718523			

Spacer: W5M33 (For adjustment of center differential pinion backlash, rear side)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.59–0.66 (.0232–.0260)	74	MD724974	0.93–1.00 (.0366–0.394)	78	MD720678
0.67–0.74 (.0264–.0291)	50	MD724950	1.01–1.08 (.0398–.0425)	76	MD720676
0.75–0.82 (.0295–.0323)	80	MD720680	1.09–1.16 (.0429–.0457)	77	MD720677
0.83–0.92 (.0327–.0362)	79	MD720679	1.17–1.24 (.0421–.0488)	49	MD724949

Spacer: **W5M33** (For adjustment of drive bevel gear mount)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.34 (.0528)	34	MD723600	1.52 (.0598)	52	MD723606
1.37 (.0539)	37	MD723601	1.55 (.0610)	55	MD723607
1.40 (.0551)	40	MD723602	1.58 (.0622)	58	MD723608
1.43 (.0563)	43	MD723603	1.61 (.0634)	61	MD723609
1.46 (.0575)	46	MD723604	1.64 (.0646)	64	MD726170
1.49 (.0587)	49	MD723605	1.67 (.0657)	67	MD726171

Spacer: **W5M33** (For adjustment of drive bevel gear preload)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.28 (.0504)	B28	MD726167	1.58 (.0622)	B58	MD724333
1.31 (.0516)	B31	MD726168	1.61 (.0634)	B61	MD724334
1.34 (.0528)	B34	MD726169	1.64 (.0646)	B64	MD724335
1.37 (.0539)	B37	MD724326	1.67 (.0657)	B67	MD724336
1.40 (.0551)	B40	MD724327	1.70 (.0669)	B70	MD724337
1.43 (.0563)	B43	MD724328	1.73 (.0681)	B73	MD724338
1.46 (.0575)	B46	MD724329	1.76 (.0693)	B76	MD724339
1.49 (.0587)	B49	MD724330	1.79 (.0705)	B79	MD724340
1.52 (.0598)	B52	MD724331	1.82 (.0717)	B82	MD724341
1.55 (.0610)	B55	MD724332	1.85 (.0728)	B85	MD724342

Spacer: **W5M33** (For adjustment of drive bevel gear mount)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
0.13 (.0051)	13	MD720353	0.34 (.0134)	34	MD720360
0.16 (.0063)	16	MD720354	0.37 (.0146)	37	MD720361
0.19 (.0075)	19	MD720355	0.40 (.0157)	40	MD720362
0.22 (.0087)	22	MD720356	0.43 (.0169)	43	MD720363
0.25 (.0098)	25	MD720357	0.46 (.0181)	46	MD720364
0.28 (.0110)	28	MD720358	0.49 (.0193)	49	MD720365
0.31 (.0122)	31	MD720359	0.52 (.0205)	52	MD720366

Spacer: **W5M33** (For adjustment of driven bevel gear preload)

Thickness mm (in.)	Identification symbol	Part No.	Thickness mm (in.)	Identification symbol	Part No.
1.19 (.0469)	19	MD726172	1.58 (.0622)	58	MD722093
1.22 (.0480)	22	MD722081	1.61 (.0634)	61	MD722094
1.25 (.0492)	25	MD722082	1.64 (.0646)	64	MD722095
1.28 (.0504)	28	MD722083	1.67 (.0657)	67	MD722096
1.31 (.0516)	31	MD722084	1.70 (.0669)	70	MD722097
1.34 (.0528)	34	MD722085	1.73 (.0681)	73	MD722098
1.37 (.0539)	37	MD722086	1.76 (.0693)	76	MD722099
1.40 (.0551)	40	MD722087	1.79 (.0705)	79	MD722100
1.43 (.0563)	43	MD722088	1.82 (.0717)	82	MD722101
1.46 (.0575)	46	MD722089	1.85 (.0728)	85	MD722102
1.49 (.0587)	49	MD722090	1.88 (.0740)	88	MD722103
1.52 (.0598)	52	MD722091	1.91 (.0752)	91	MD722104
1.55 (.0610)	55	MD722092	1.94 (.0764)	94	MD722105

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TORQUE SPECIFICATIONS

Items	Nm	ft.lbs.
Transaxle		
Backup light switch	33	24
Bearing retainer bolt	19	14
Bell housing cover mounting bolt	9	7
Center differential lock actuator mounting bolt <W5M33>	19	14
Center differential lock indicator lamp switch <W5M33>	33	24
Center differential shift lever mounting bolt <W5M33>	19	14
Differential drive gear bolt	135	98
Input shaft lock nut	150	109
Interlock plate bolt	24	18
Intermediate gear lock nut	150	109
Oil drain plug	33	24
Oil filler plug	33	24
Output gear mounting bolt	75	55
Poppet plug	36	27
Rear cover bolt <W5M33>	39	29
Rear cover bolt <F5M31,F5M33>	19	14
Restrict ball	33	24
Reverse brake cone machine screw	7	5
Reverse idler gear shaft bolt	49	36
Reverse shift lever assembly attaching bolt	19	14
Select lever mounting bolt	19	14
Shift cable bracket mounting bolt	19	14
Speedometer sleeve bolt	4	3
Starter motor mounting bolt	27	20
Stopper bracket bolt	19	14
Transaxle case tightening bolt	39	29
Transaxle mount bracket mounting bolt	70	51
Transaxle mounting bolt [10 mm diameter bolt]	49	36
Transaxle mounting bolt [8 mm diameter bolt]	27	20
Transaxle mounting bolt [6 mm diameter bolt]	11	8
Transaxle switch <F5M31,F5M33>	33	24

Items	Nm	ft.lbs.
Transfer		
Cover mounting bolt	9	7
Driven bevel gear lock nut	150	109
Extension housing	19	14
Oil drain plug	33	24
Oil filler plug	33	24
Transfer case adapter mounting bolt	39	29
Transfer cover mounting bolt	39	29
Transfer mounting bolt	59	42

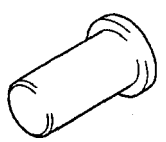
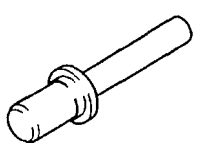
SEALANTS AND ADHESIVES

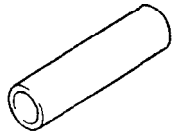
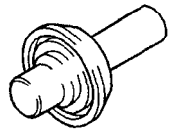
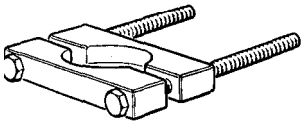
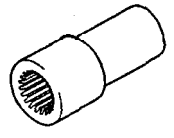
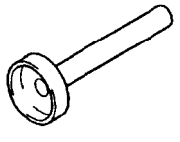
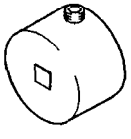
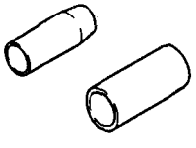
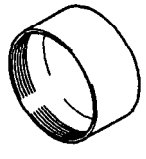
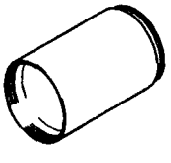
22200040054

Items	Specified sealants and adhesives	Quantity
Transaxle case – rear cover mating surfaces	Mitsubishi genuine sealant Part No.MD997740 or equivalent	As required
Transaxle case – clutch housing mating surfaces		
Adapter-transaxle case mating surfaces <W5M33>		
Adapter – rear cover mating surfaces <W5M33>		
Output gear bolt <W5M33>	3M STUD Locking No.4170 or equivalent	As required
Differential drive gear bolts		
Bearing retainer bolt (Countersink head bolt only)		
Air breather	3M SUPER WEATHERSTRIP No.8001 or equivalent	As required
Transfer extension housing – adapter mating surfaces	Mitsubishi genuine sealant Part No.MD997740 or equivalent	As required
Transfer cover gasket	3M ATD Part No.8660 or equivalent	As required

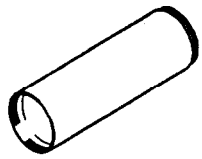
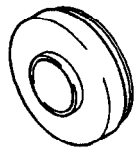
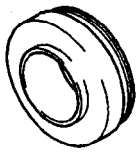
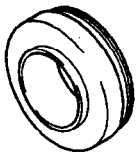
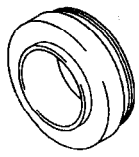
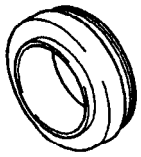
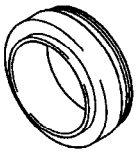
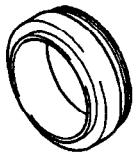
SPECIAL TOOLS

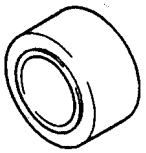
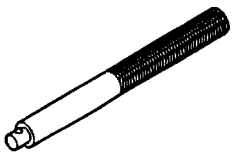
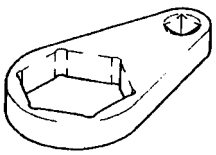
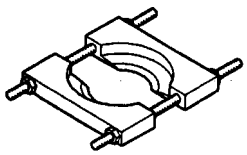
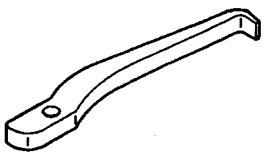
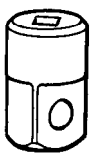
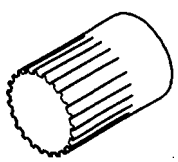
22200060050

Tool	Tool number and name	Supersession	Application
	MD998304 Oil seal installer	MD998304-01	Installation of transfer extension housing oil seal,
	MD998321 Oil seal installer	MD998321-01	Installation of input shaft oil seal

Tool	Tool number and name	Supersession	Application
	MD998323 Bearing installer	General service tool	Installation of input shaft bearing
	MD998325 Differential oil seal installer	MD998325-01	Installation of differential oil seal
	MD998801 Bearing remover	MD998348-01	Removal of gears and bearings of input shaft, intermediate gear and output shaft
	MD998802 Input shaft holder	MD998802-01	Installation and removal of input shaft and intermediate gear lock nut
	MD998803 Differential oil seal installer	General service tool	Installation of differential oil seal <W5M33>
	MD998806 Wrench adapter	MD998806-01	Adjustment of tooth contact and inspection of turning drive torque <W5M33>
	MD998808 Snap ring installer	MD998808-01	Installation of input shaft rear snap ring
	MD998812 Installer cap	General service tool	Use with installer and adapter
	MD998813 Installer – 100	General service tool	Use with installer cap and adapter

TSB Revision

Tool	Tool number and name	Supersession	Application
	MD998814 Installer – 200	MIT304180	Use with installer cap and adapter
	MD998816 Installer adapter (30)	General service tool	Installation of each bearing
	MD998817 Installer adapter (34)	MD998817-01	
	MD998818 Installer adapter (38)	MD998818	
	MD998819 Installer adapter (40)	MD998819	
	MD998820 Installer adapter (42)	MIT 215013	
	MD998822 Installer adapter (46)	MD998822-01	
	MD998824 Installer adapter (50)	General service tool	
	MD998825 Installer adapter (52)	General service tool	

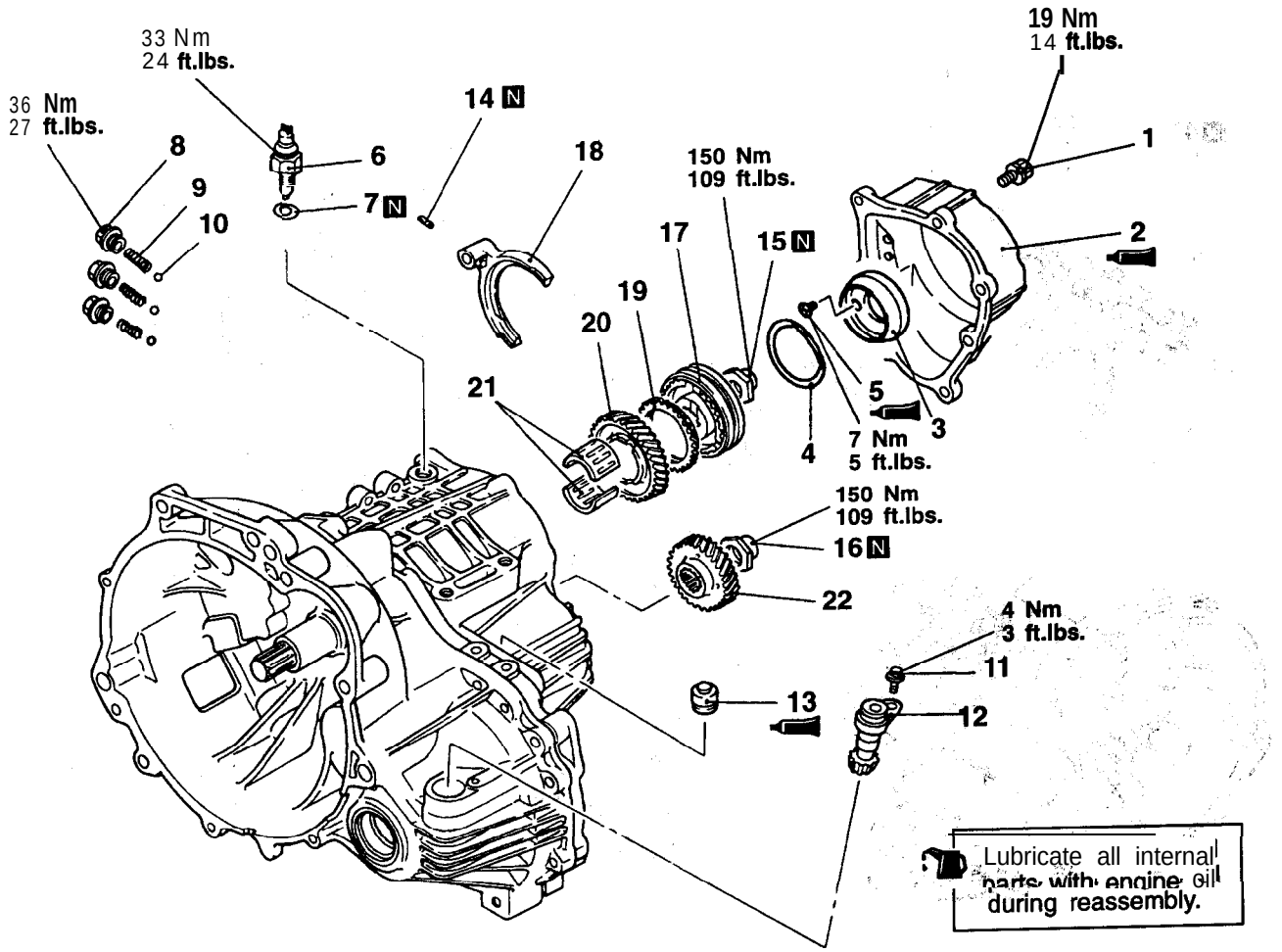
Tool	Tool number and name	Supersession	Application
	MD998827 Installer adapter (56)	–	Installation of each bearing
	MD998833 Oil seal installer	–	Installation of transfer case oil seal
	MB990938 Handle	MB990938-01	
	MD998834 Special spanner	–	Installation and removal of driver bevel gear lock nut <W5M33>
	MD998917 Bearing remover	MD998917-01	Removal of intermediate gear bearing
	MD999566 Claw	General service tool	Removal of bearing outer race
	MB990326 Preload socket	General service tool	Measurement of drive bevel gear shaft rotating torque <W5M33>
	MB991144 Side gear holding tool	MB991144	

TSB Revision

TRANSAXLE

22200100059

DISASSEMBLY AND REASSEMBLY – F5M31

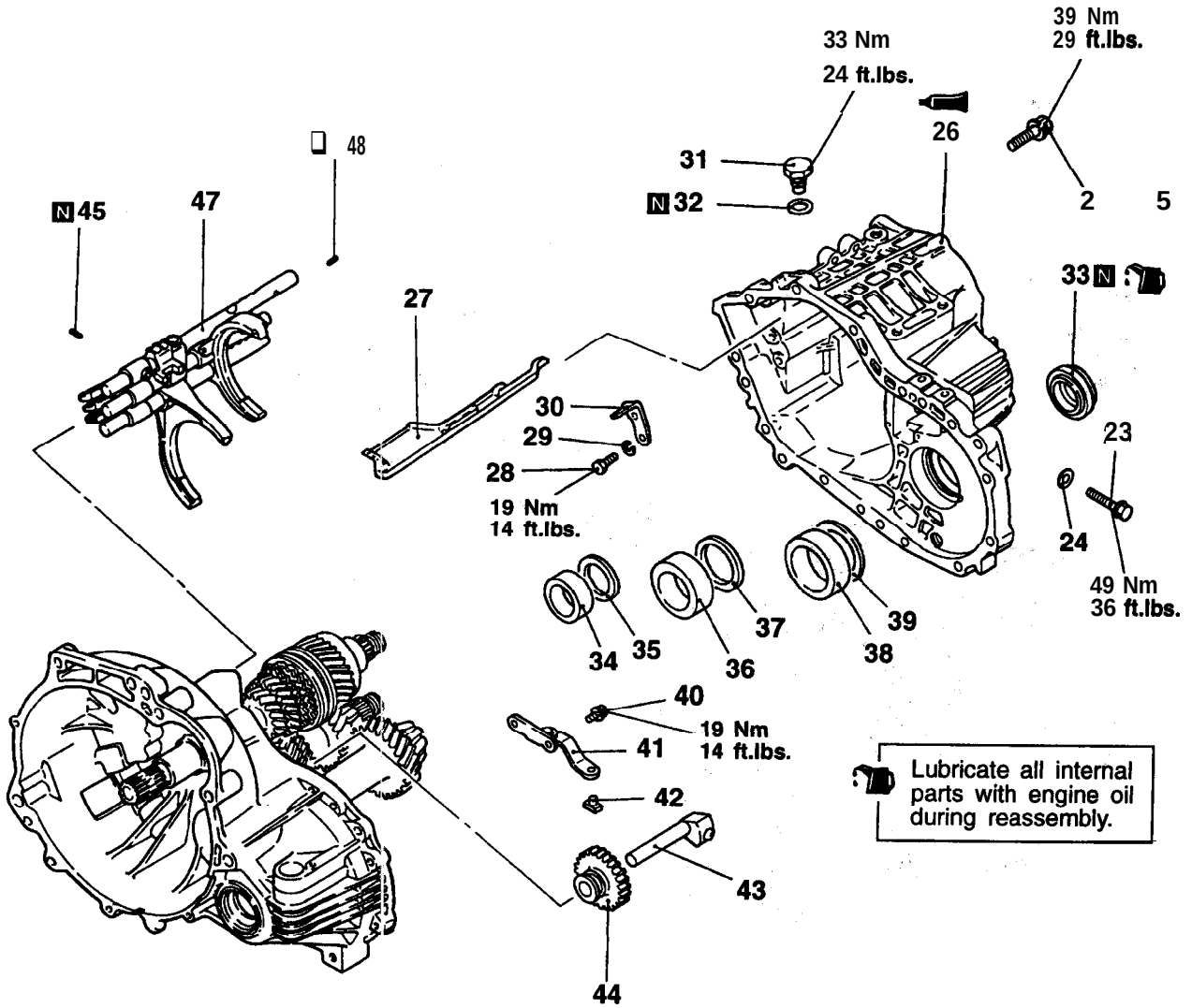


ZTFM0078

Disassembly steps

1. Bolt
▶O◀ 2. Rear cover
3. Reverse brake cone
▶X◀ 41 Wave spring
▶P◀ 5. Machine screw
6. Backup light switch
7. Gasket
8. Poppet plug
9. Poppet spring
10. Poppet ball
11. Bolt
12. Speedometer. driven gear assembly
▶N◀ 13. Air breather
▶M◀ 14. Spring pin
◀A▶ ▶L◀ 15. Lock nut
◀A▶ ▶L◀ 16. Lock nut
17. 5th speed synchronizer assembly
18. 5th speed shift fork
19. Synchronizer ring
20. 5th speed gear
21. Needle bearing
22. 5th speed intermediate gear

TSB Revision

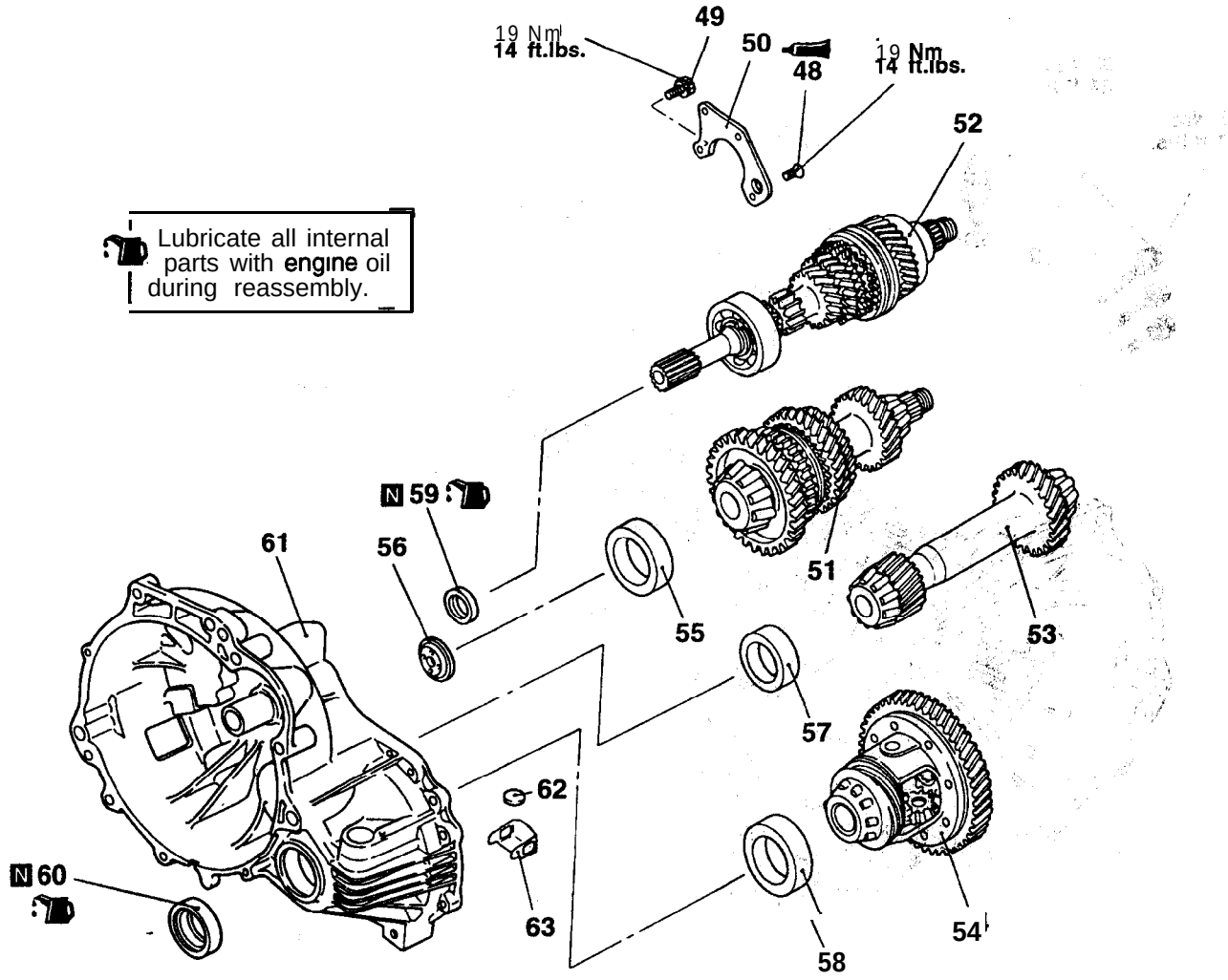


2210010

Disassembly steps

- ▶K◀ 23. Reverse idler gear shaft bolt
- 24. Gasket
- **25.** Bolt
- ▶J◀ 26. Transaxle case
- 27. Oil guide
- **28.** Bolt
- 29. Spring washer
- 30. Stopper bracket
- 31. Restrict ball assembly
- 32. Gasket
- ▶I◀ **33.** Oil seal
- 34. Bearing outer race
- ▶H◀ 35. Spacer
- 36. Bearing outer race
- ▶H◀ 37. Spacer
- 38. Bearing outer race
- ▶H◀ **39. Spacer**
- **40. Bolt**
- **41.** Reverse shift lever **assembly**
- **42.** Reverse shift lever shoe
- ▶G◀ 43. Reverse idler gear shaft
- 44. Reverse idler gear
- ▶F◀ 45. Spring pin
- ▶F◀ 46. Spring pin
- ◀B▶ ▶E◀ 47. Shift rail assembly

TSB Revision



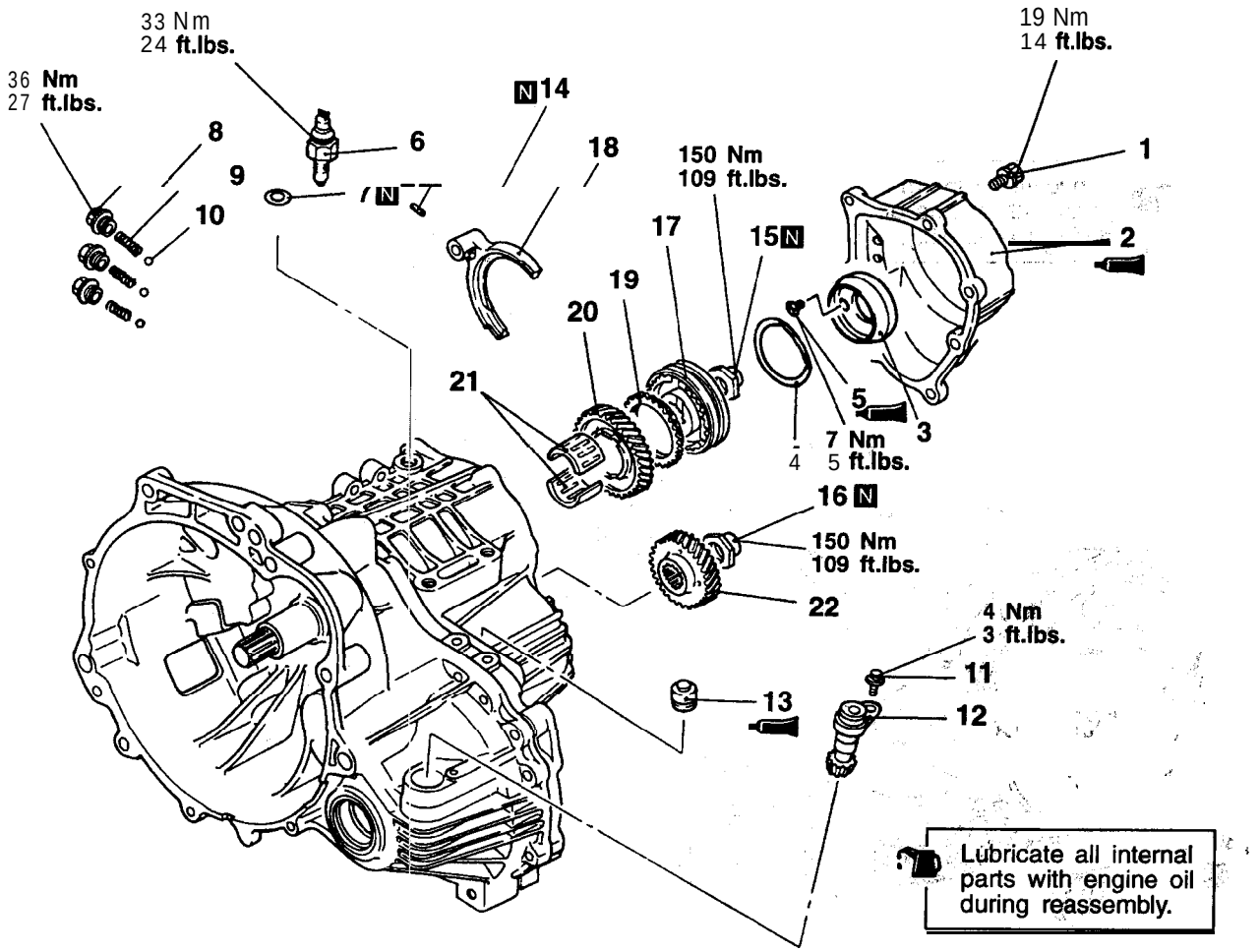
ZTFM0079

Disassembly steps

- ▶D◀ **48. Bolt**
- **49. Bolt**
- **50.** Bearing retainer
- ◀C▶ ▶C◀ 51. Intermediate gear assembly
- ◀C▶ ▶C◀ **52.** Input shaft assembly
- 53. Output shaft assembly
- 54. Differential gear assembly
- 55. Bearing outer race
- 56. Oil guide
- 57. Bearing outer race
- 58. Bearing outer race'
- ▶B◀ 59. Oil seal
- ▶A◀ **60.** Oil seal
- 61. Clutch housing assembly
- 62. Magnet
- 63. Magnet holder

TSB Revision

DISASSEMBLY AND REASSEMBLY – F5M33

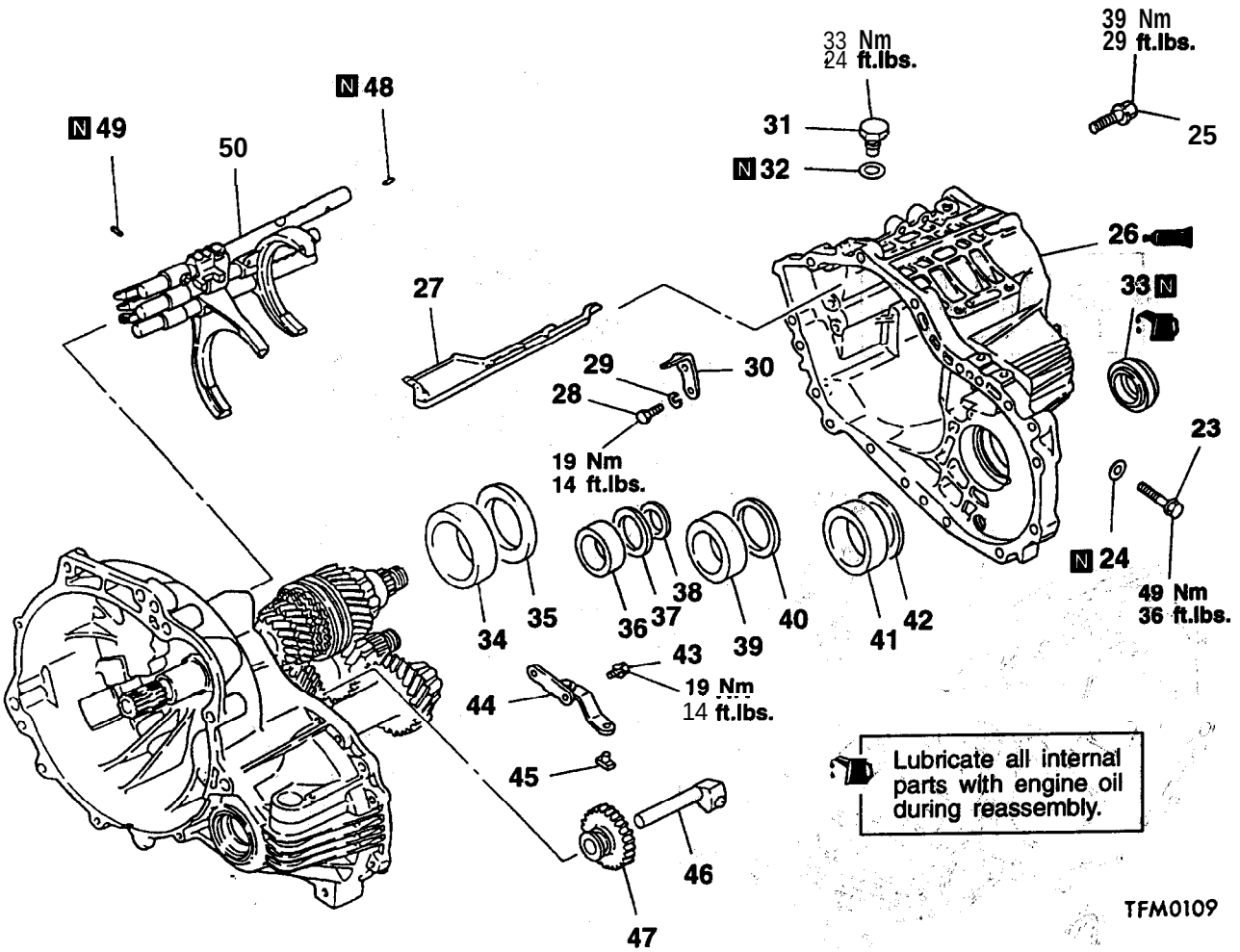


ZTFM0078

Disassembly steps

1. Bolt
▶O◀ 2. Rear cover
3. Reverse brake cone
▶X◀ 4. Wave spring
▶P◀ 5. Machine screw
6. Backup light switch
7. Gasket
8. Poppet plug
9. Poppet spring
10. Poppet ball
11. Bolt
12. Speedometer driven gear assembly
▶N◀ 13. Air breather
▶M◀ 14. Spring pin
◀A▶ ▶L◀ 15. Lock nut
◀A▶ ▶L◀ 16. Lock nut
17. 5th speed synchronizer assembly
1.8. 5th speed shift fork
19. Synchronizer ring
20. 5th speed gear
21. Needle bearing
22. 5th speed intermediate gear

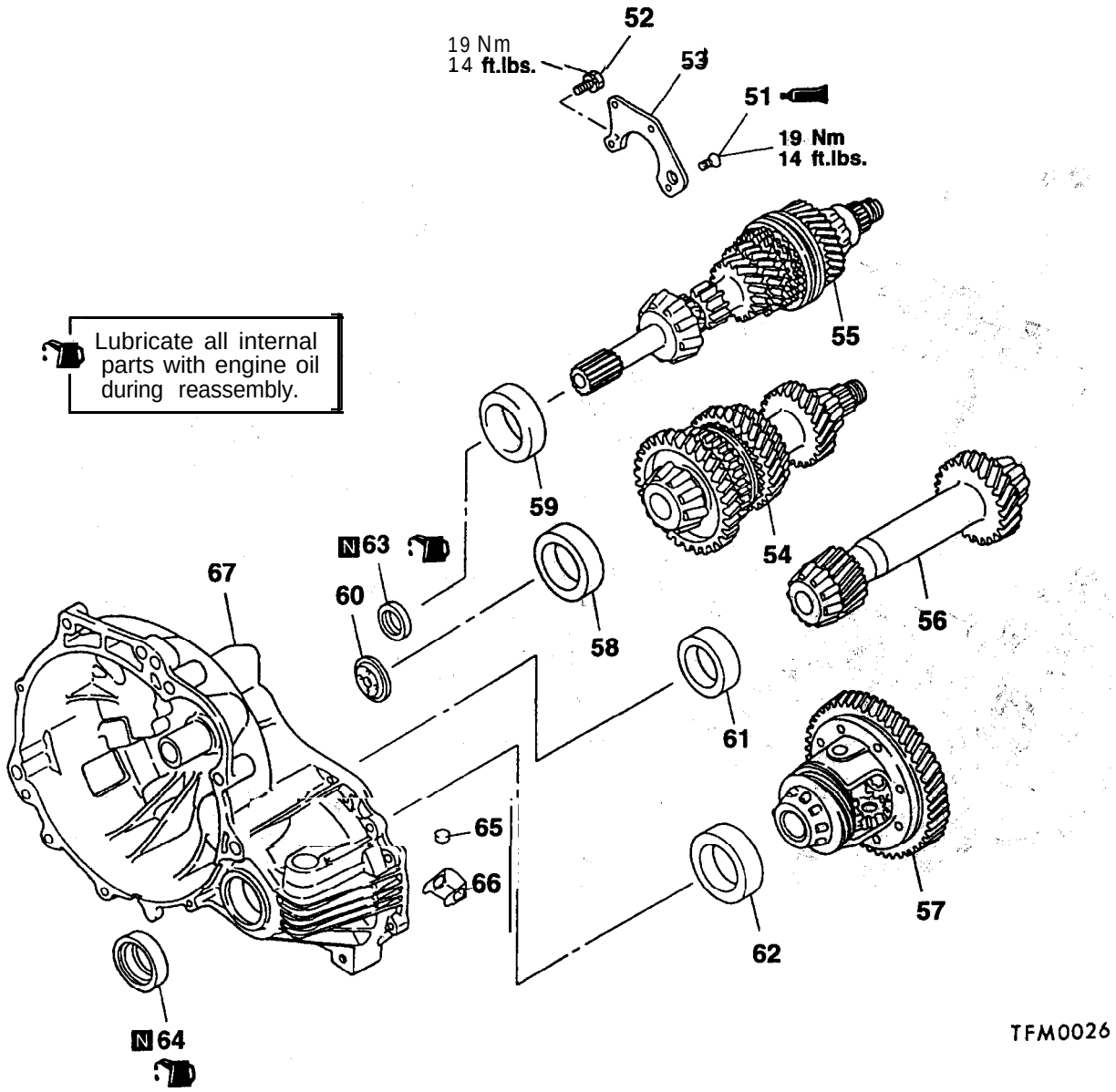
TSB Revision



Disassembly steps

- ▶K◀ 23. Reverse idler gear shaft bolt
- 24. Gasket
- 25. Bolt
- ▶J◀ 26. Transaxle case
- 27. Oil guide
- 28. Bolt
- 29. Spring washer
- 30. Stopper bracket
- 31. Restrict ball assembly
- 32. Gasket
- ▶I◀ 33. Oil seal
- 34. Bearing outer race
- ▶H◀ 35. Spacer
- 36. Bearing outer race
- ▶H◀ 37. Spacer
- 38. Filter
- 39. Bearing outer race
- ▶H◀ 40. Spacer
- 41. Bearing outer race
- ▶H◀ 42. Spacer
- 43. Bolt
- 44. Reverse shift lever assembly
- 45. Reverse shift lever shoe
- ▶G◀ 46. Reverse idler gear, shaft
- 47. Reverse idler gear
- ▶F◀ 48. Spring pin
- ▶F◀ 49. Spring pin
- ◀B▶ ▶F◀ 50. Shift rail assembly

TSB Revision

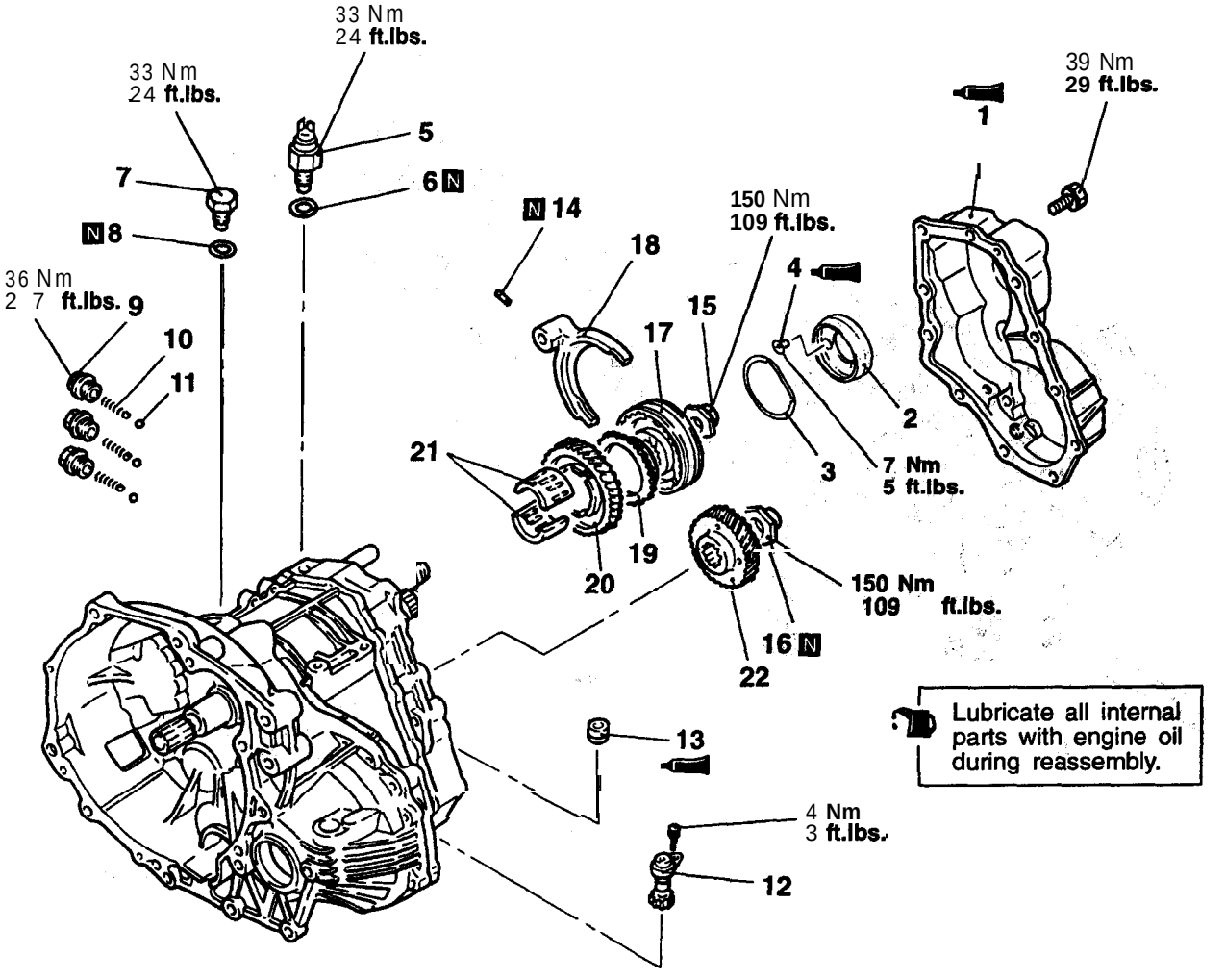


Disassembly steps

- ▶D◀ **51. Bolt**
- **52. Bolt**
- **53.** Bearing retainer
- ◀C▶ ▶C◀ 54. Intermediate gear assembly
- ◀C▶ ▶C◀ 55. Input shaft assembly
- 56. Output shaft assembly
- 57. Differential gear assembly
- 58. Bearing outer race
- 59. Bearing outer race
- 60. Oil guide
- 61. Bearing outer race
- 62. Bearing outer **race**
- ▶B◀ **63.** Oil seal
- ▶A◀ **64.** Oil seal
- 65. Magnet
- 66. Magnet holder
- 67. Clutch housing assembly

TSB Revision I

DISASSEMBLY AND REASSEMBLY – W5M33

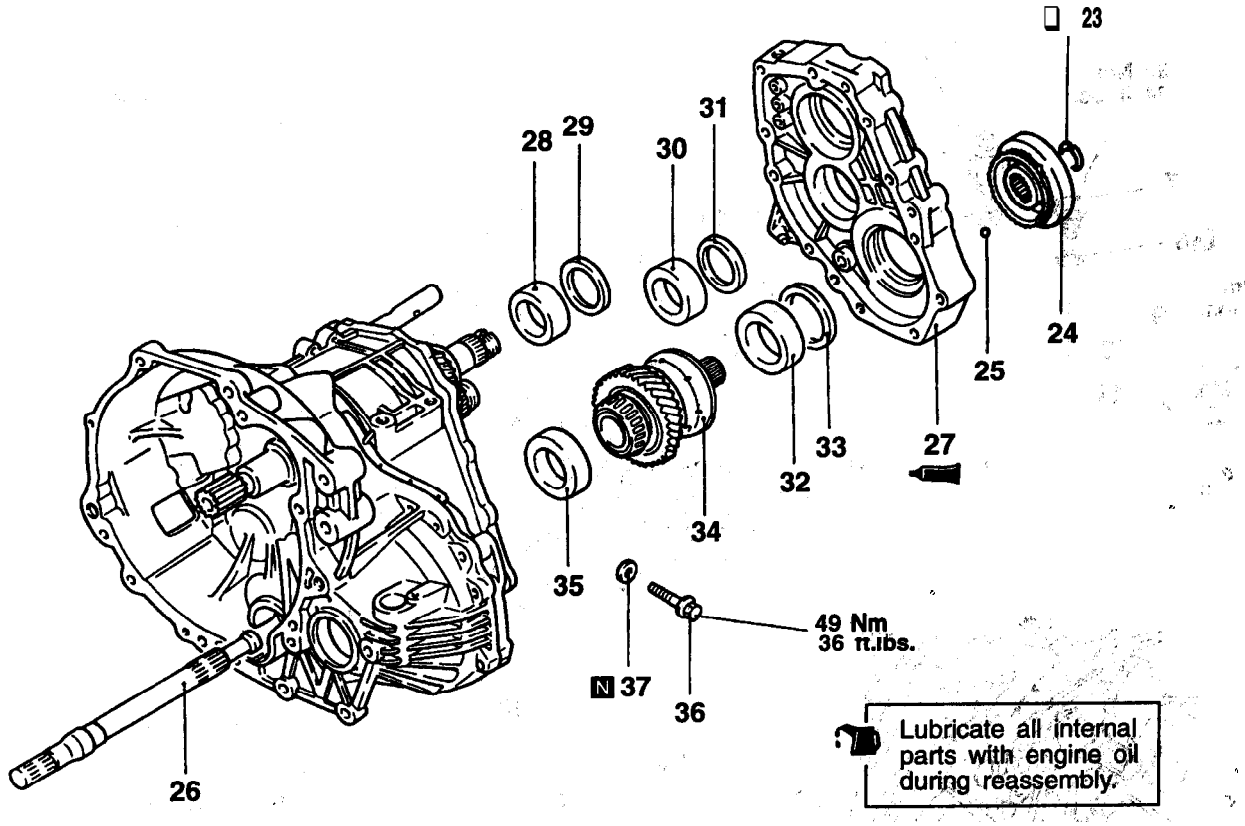


ZTFM0028

Disassembly steps

- ▶O◀ 1. Rear cover
- 2. Reverse bracket cone
- ▶X◀ 3. Wave spring
- ▶P◀ 4. Machine screw .
- 5. Backup light switch
- 6. Gasket
- 7. Restrict ball assembly
- 8. Gasket
- 9. Poppet plug
- 10. Poppet spring
- 11. Poppet ball
- 12. Speedometer driven gear assembly
- ▶N◀ 13. Air breather
- ▶M◀ 14. Spring pin
- ◀A▶ ▶L◀ 15. Lock nut
- ◀A▶ ▶L◀ 16. Lock nut
- 17. 5th speed synchronizer assembly
- 18. Shift fork
- 19. Synchronizer ring
- 20. 5th speed gear
- 21. Needle bearing.
- 22. 5th speed intermediate gear

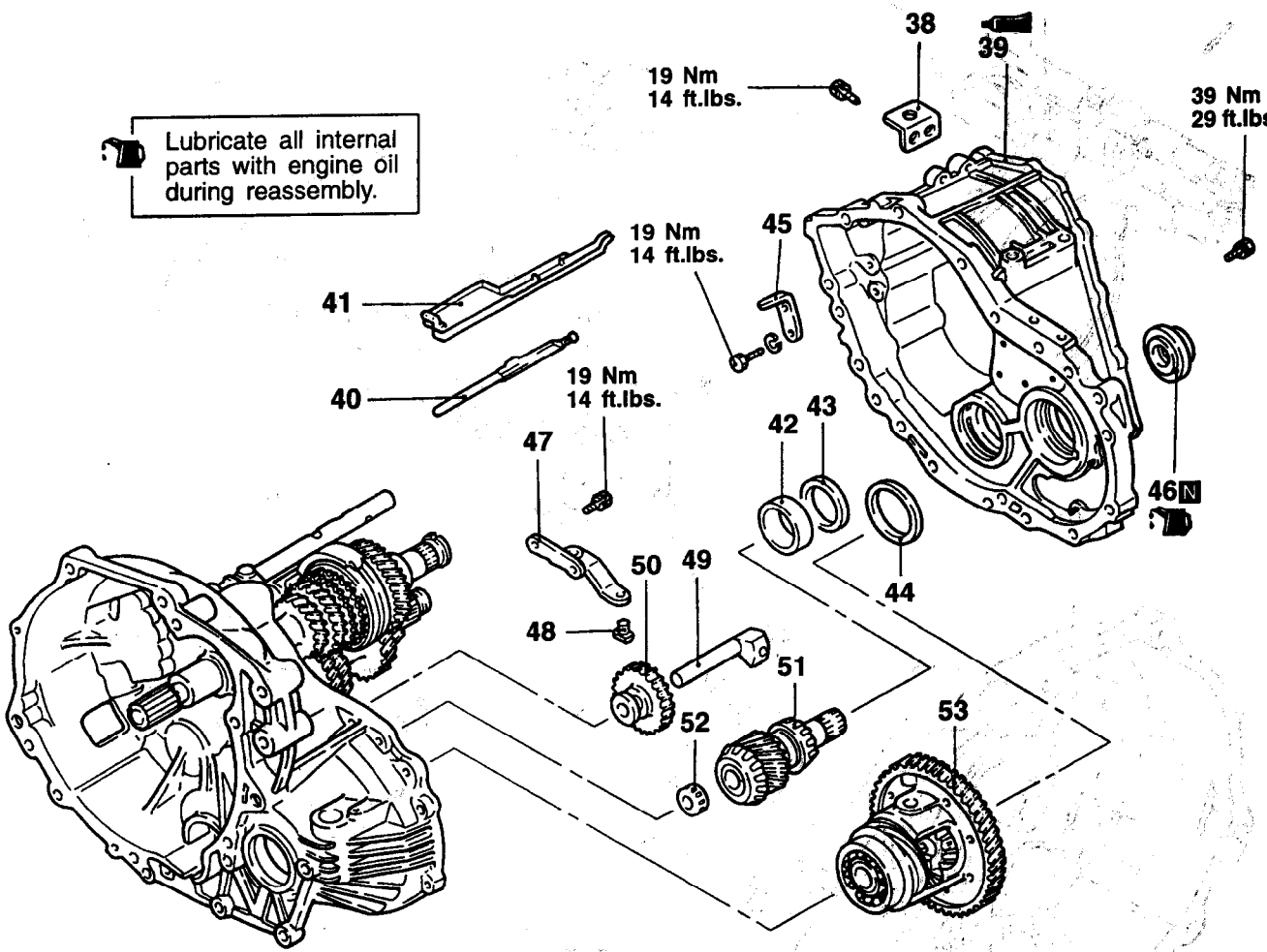
TSB Revision



Disassembly steps

- ▶W◀ 23. Snap ring
- 24. Viscous coupling
- ▶V◀ 25. Steel ball
- 26. Center shaft
- ▶U◀ 27. Transaxle case adapter
- ◀D▶ 28. Outer case
- ▶T◀ 29. Spacer
- 30. Outer race
- ▶T◀ 31. Spacer
- 32. Outer race
- ▶T◀ 33. Spacer
- 34. Center differential
- ◀D▶ 35. Outer race
- ▶K◀ 36. Reverse idler gear shaft bolt
- 37. Gasket

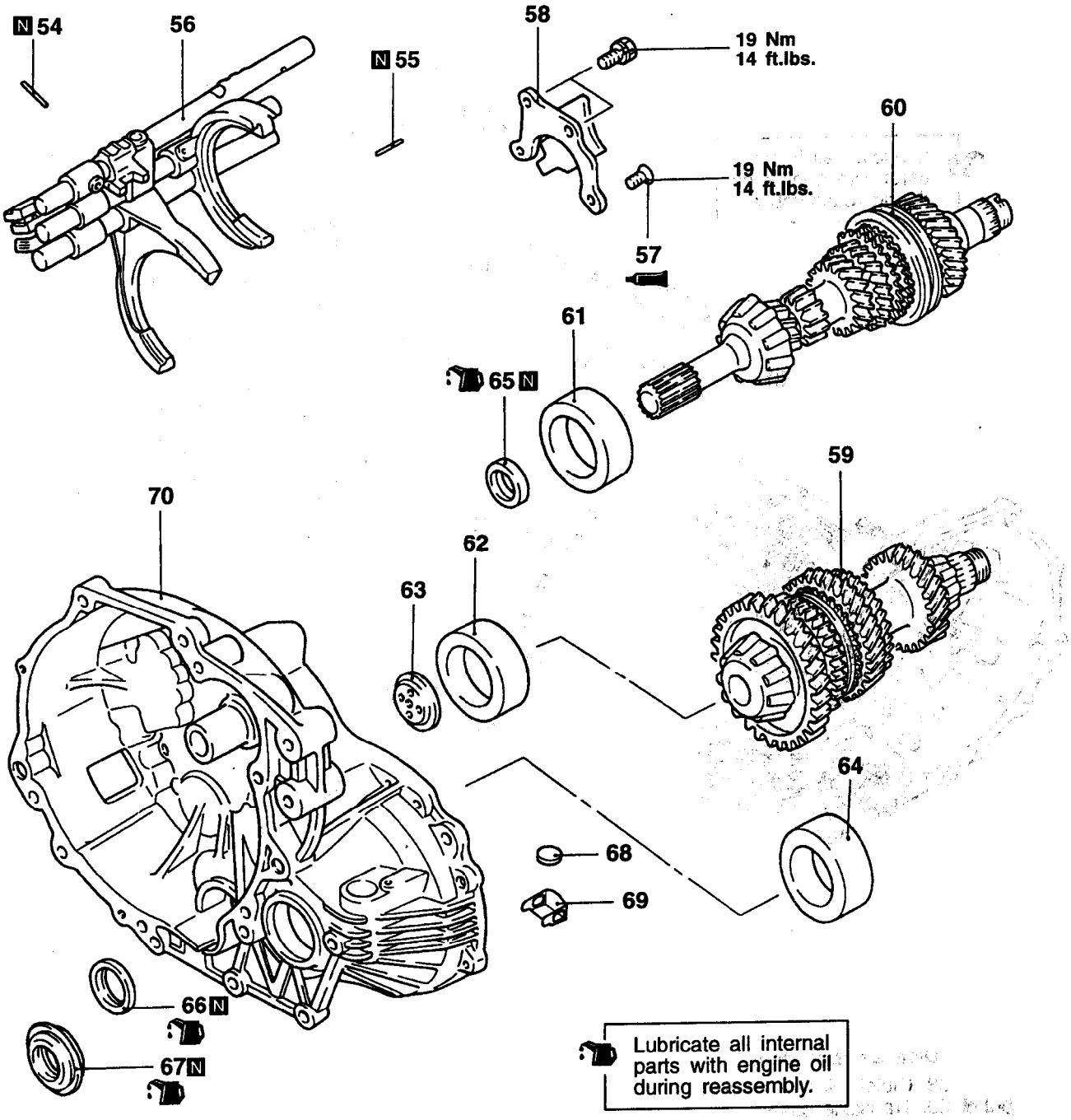
TSB Revision



Disassembly steps

38. Clutch oil line bracket
▶J◀ 39. Transaxle case
40. Oil guide
41. Oil guide
42. Outer race
▶S◀ 43. Spacer
▶S◀ 44. Spacer
45. Stopper bracket
▶I◀ **46.** Oil seal
47. Reverse shift lever assembly
48. Reverse shift lever shoe
49. Reverse idler gear shaft
50. Reverse idler gear
51. Front output shaft assembly
52. Needle bearing
53. Front diff erential

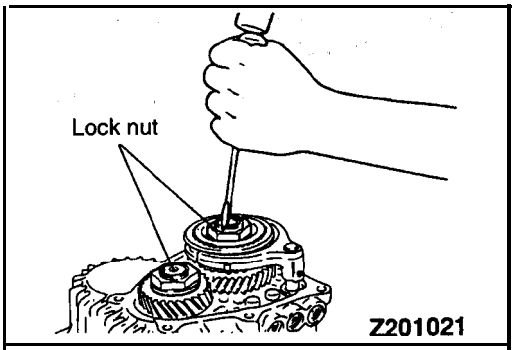
TSB Revision



Disassembly steps

- ▶F◀ 54. Spring pin
- ▶F◀ 55. Spring pin
- ◀B▶ ▶E◀ 56. Shift rail assembly
- ▶D◀ 57. Bolt
- 58. Bearing retainer
- ◀C▶ ▶C◀ 59. Intermediate gear assembly
- ◀C▶ ▶C◀ 60. Input shaft assembly
- ◀D▶ 61. Outer race
- ◀D▶ 62. Outer race
- 63. Oil guide
- ◀D▶ 64. Outer race
- ▶B◀ 65. Oil seal
- ▶Q◀ 66. Oil seal
- ▶R◀ 67. Oil seal
- 68. Magnet
- 69. Magnet holder
- 70. Clutch housing assembly

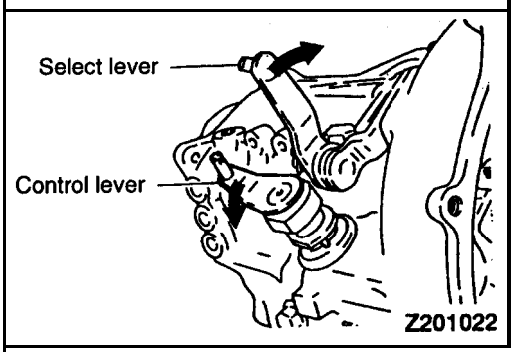
TSB Revision



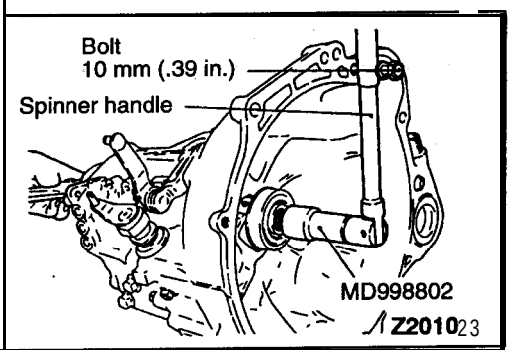
DISASSEMBLY SERVICE POINTS

◀A▶ LOCK NUTS FOR INPUT SHAFT / INTERMEDIATE GEAR REMOVAL

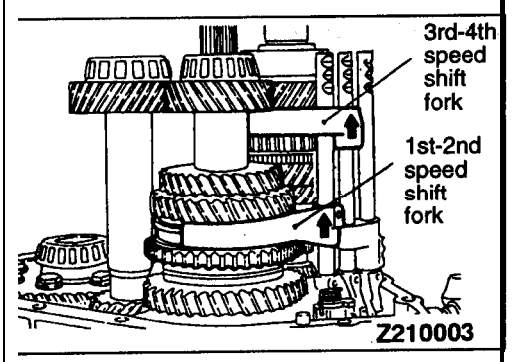
(1) Unstake lock nuts of the input shaft and intermediate gear.



(2) Shift the transaxle in reverse using the control lever and select lever.

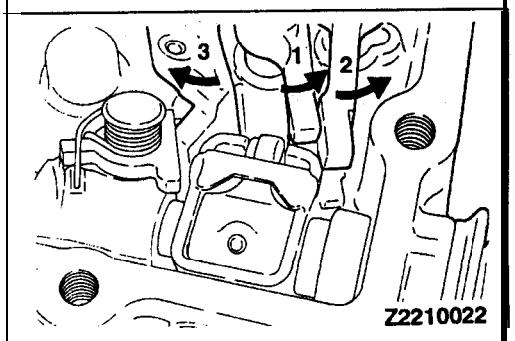


(3) Install the special tool onto the input shaft.
(4) Screw a bolt [10 mm (.39 in.)] into the bolt hole around clutch housing and attach a spinner handle to the special tool.
(5) Remove the lock nut, while using the bolt as a spinner handle stopper.

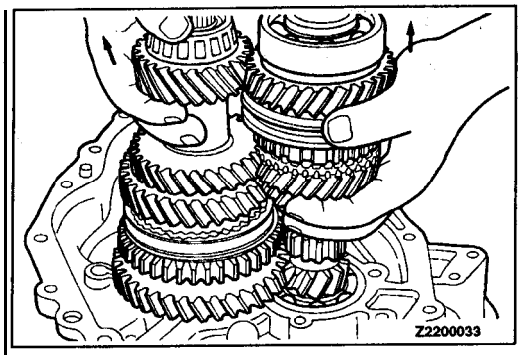


◀B▶ SHIFT RAIL ASSEMBLY REMOVAL

(1) Shift the 1st-2nd speed shift fork to the 2nd speed.
(2) Shift the 3rd-4th speed shift fork to the 4th speed.

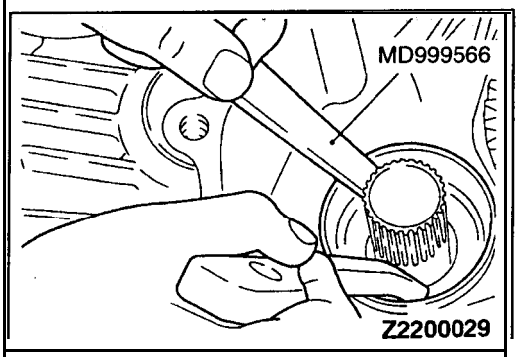


(3) Remove the shift rail assembly as shown in the illustration so as not to hit the interlock plate and control finger.



◀C▶ INTERMEDIATE GEAR ASSEMBLY / INPUT SHAFT ASSEMBLY REMOVAL

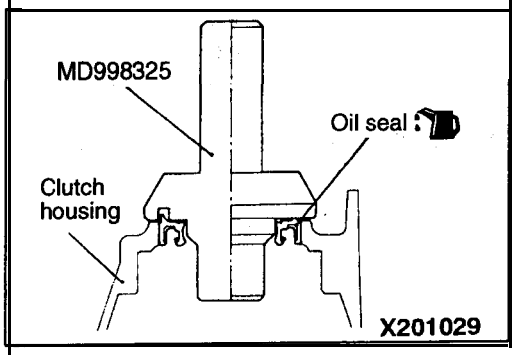
Lift up the input shaft assembly and remove the intermediate gear assembly.



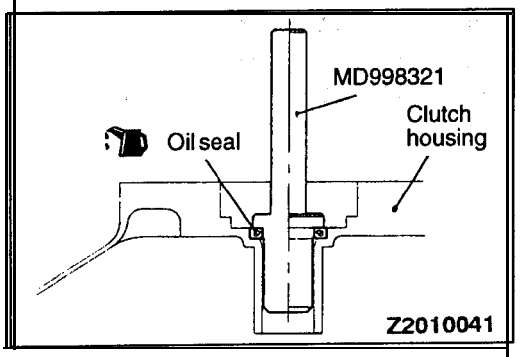
◀D▶ BEARING OUTER RACE REMOVAL

REASSEMBLY SERVICE POINTS

▶A◀ OIL SEAL FOR DRIVE SHAFT INSTALLATION

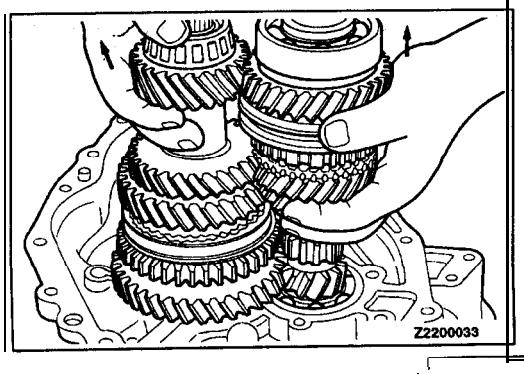


▶B◀ OIL SEAL FOR INPUT SHAFT FRONT INSTALLATION

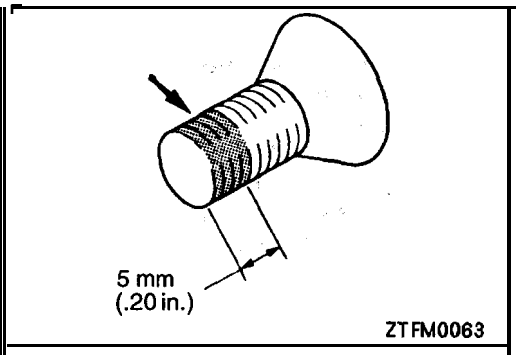


▶C◀ INTERMEDIATE GEAR ASSEMBLY / INPUT SHAFT ASSEMBLY INSTALLATION.

Lifting up the input shaft assembly, install it simultaneously with the intermediate gear assembly.

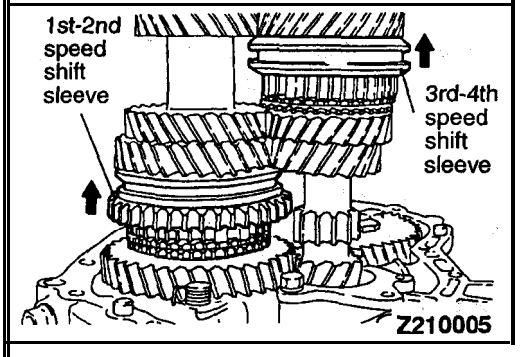


TSB Revision



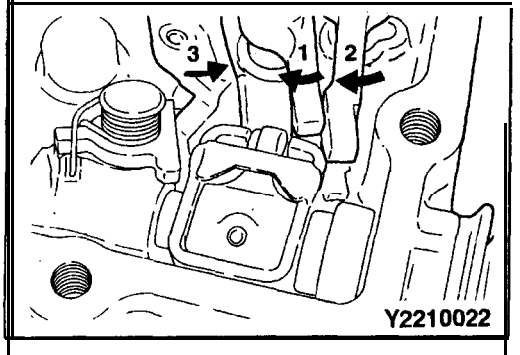
▶D◀ SEALANT APPLICATION TO BEARING RETAINER MOUNTING BOLT

Specified sealant:
3M STUD Locking No.4170 or equivalent

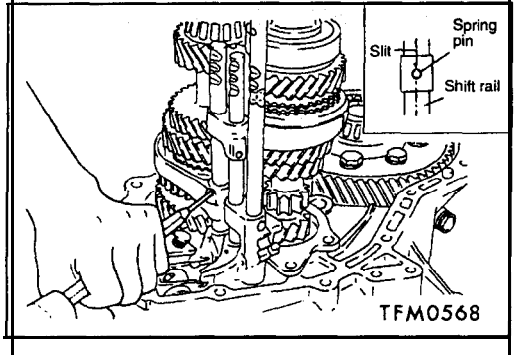


▶E◀ SHIFT RAIL ASSEMBLY INSTALLATION

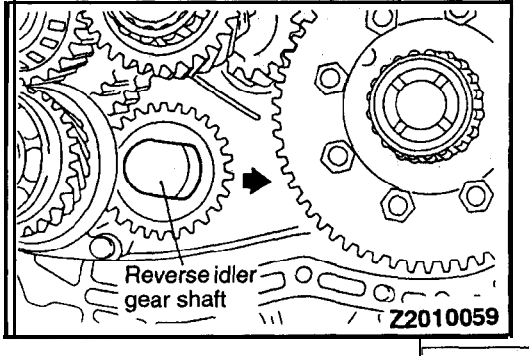
(1) Set the 1st-2nd speed shift sleeve at 2nd speed.
(2) Set the 3rd-4th speed shift sleeve at 4th speed.
(3) Install the shift fdrks to respective sleeves.



(4) Insert the shift rail into the shift fork hole, while turning so as to prevent the shift lug from interfering with the stopper plate.
(5) Turn the shift rail to engage shift lug.



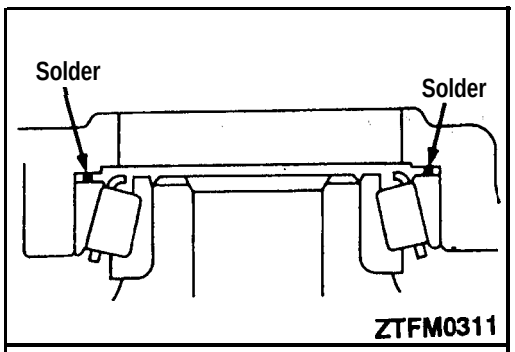
▶F◀ SPRING PINS FOR 1ST-2ND SPEED SHIFT FORK / 3RD-4TH SPEED SHIFT FORK INSTALLATION

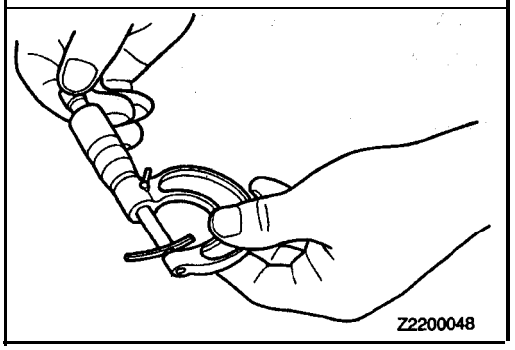


▶G◀ REVERSE IDLER GEAR SHAFT INSTALLATION

Install in the direction as illustrated.

TSB Revision





▶H◀ SPACERS SELECTION

(1) Place solder with a length of approximately 10 mm (.39 in.) and a diameter of approximately 1.6 mm (.063 in.) in the spacer mounting pasition.
(2) Tighten the case mounting' bolt to the specified torque.
(3) Remove the case and then take out the solder. If the solder is not broken, use solder with a larger diameter to carry out the operations in (1) and (2).

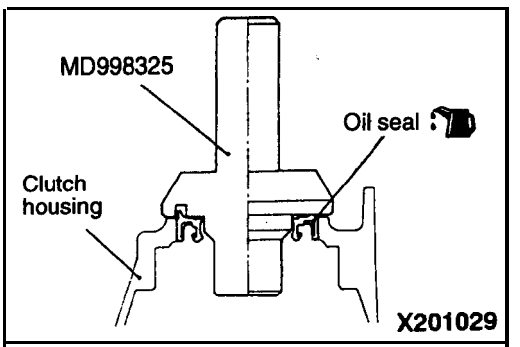
(4) Measure the thickness of the crushed solder with a micrometer, and select and install a spacer of thickness that gives standard end play and preload.

Standard 'value:

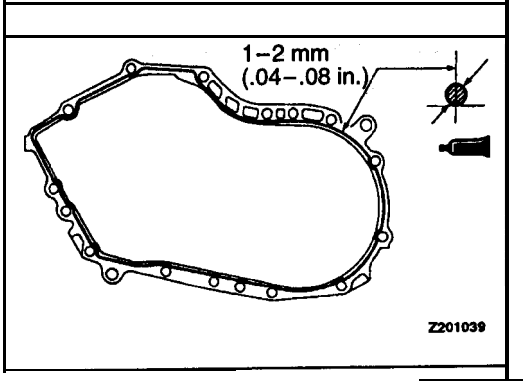
Input shaft end play <F5M33> .
0 – 0.05mm (0 – .0020 in.)
Intermediate gear preload
0.05–0.10 mm (.0020–.0040 in.)

Output shaft preload
0.05–0.10 mm (.0020–.0040 in.)

Differential case preload
Preload
0.05–0.10 mm (.0020–.0040 in.)



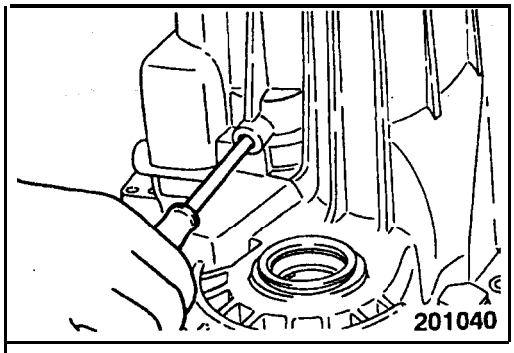
▶I◀ OIL SEAL FOR DRIVE SHAFT INSTALLATION



▶J◀ SEALANT APPLICATION TO TRANSAXLE' CASE

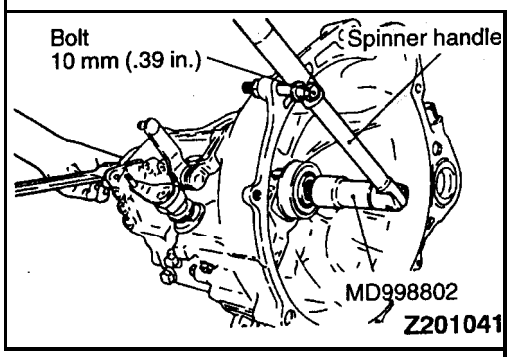
Squeeze out sealant from the tube uniformly without excess or discontinuity.

Specified sealant:
Mitsubishi genuine sealant part No.MD997740 or equivalent



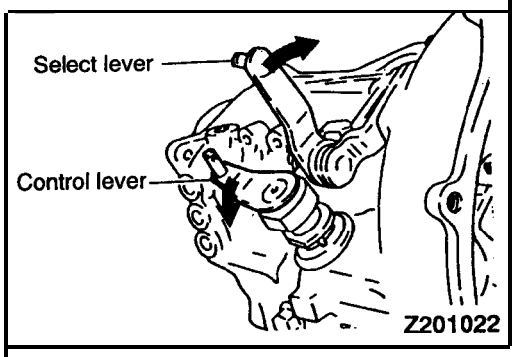
▶K◀ REVERSE IDLER GEAR SHAFT BOLT INSTALLATION

(1) Center the shaft with a Phillips screwdriver [shaft diameter 8 mm (.31 in.)] or the like.
(2) Tighten the reverse idler gear shaft bolt to the specified torque.

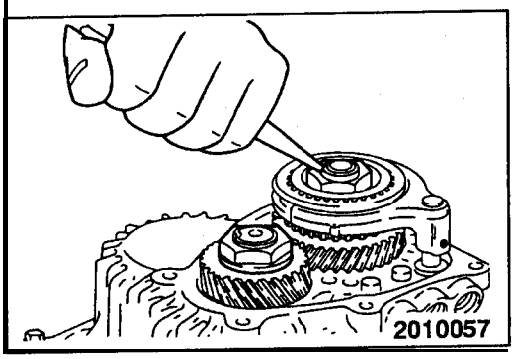


▶L◀ LOCK NUTS FOR INPUT SHAFT / INTERMEDIATE GEAR INSTALLATION

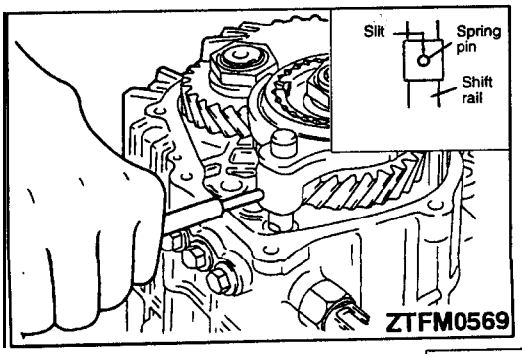
(1) Install the special tool onto the input shaft.
(2) Screw a bolt [IO mm (.39 in.)] into the hole around clutch housing and attach a spinner handle to the special tool.



(3) Shift the transaxle in reverse using control lever and select lever.
(4) Tighten the lock nut to the specified torque, while using the bolt attached in the above step as a spinner handle stopper.

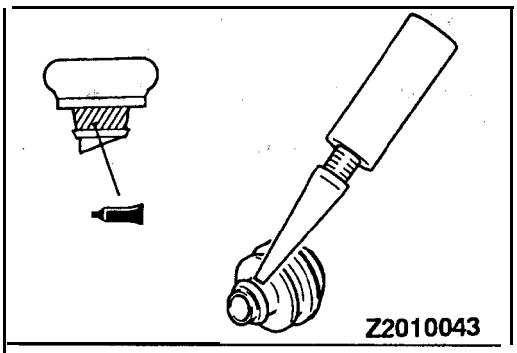


(5) Stake the lock nut.



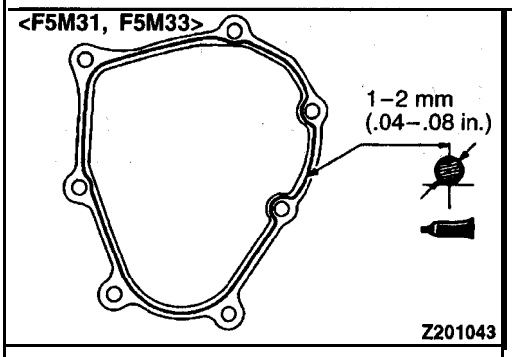
▶M◀ SPRING PIN FOR OD-R SHIFT FORK INSTALLATION

TSB Revision



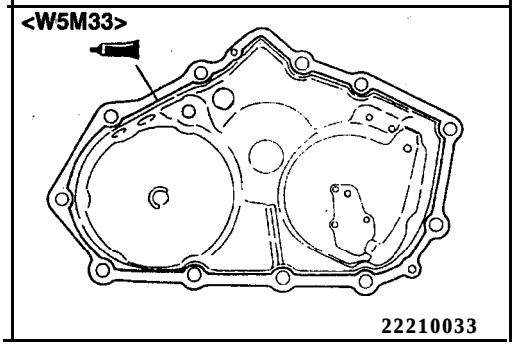
▶N◀ SEALANT APPLICATION TO AIR' BREATHER

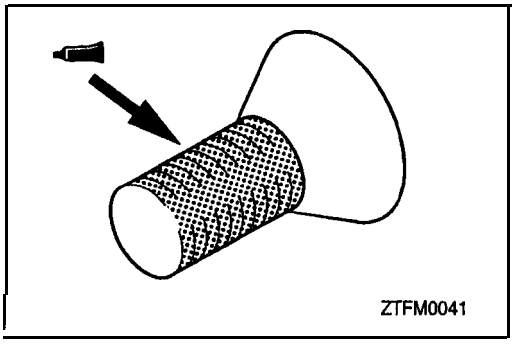
Specified sealant:
3M SUPER WEATHERSTRIP No.8001 'or equivalent



▶O◀ SEALANT APPLICATION TO REAR COVER

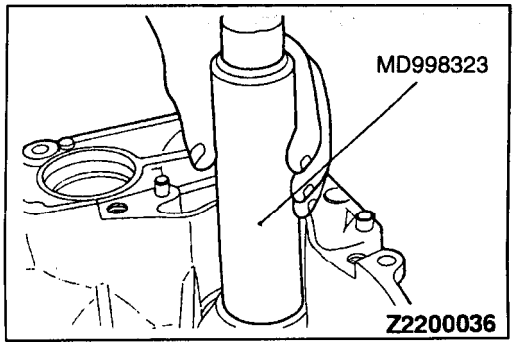
Specified sealant:
Mitsubishi genuine sealant Part No.MD997740 or equivalent





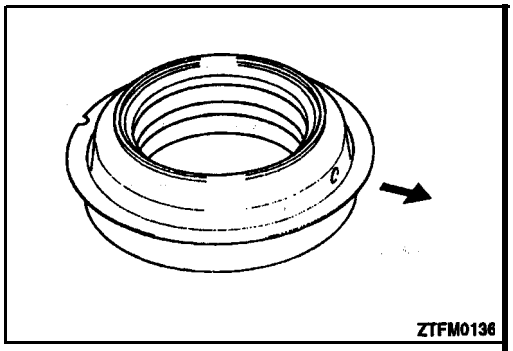
▶P◀ SEALANT APPLICATION TO MACHINE SCREW

Specified sealant:
3M STUD Locking No.4170 or equivalent



▶Q◀ OIL SEAL INSTALLATION

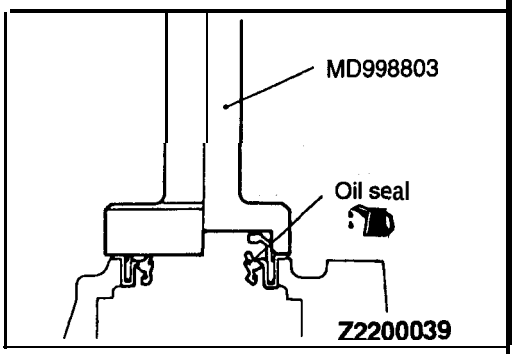
TSB Revision


ZTFM0136

▶R◀ OIL SEAL INSTALLATION

Install the oil seal flange part so that the 3-mm (.12-in.) hole faces the bottom of the transaxle.

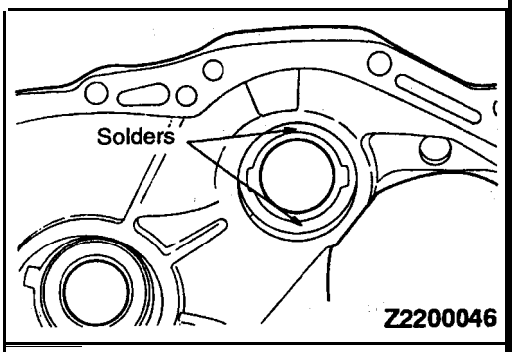
Caution
Apply transmission oil to the oil seal lip before installing.



Z2200039

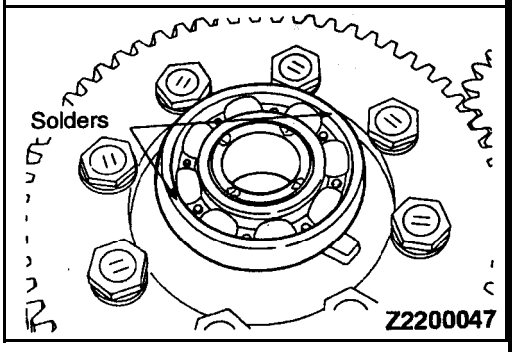
▶S◀ SPACERS INSTALLATION

(1) Place two pieces of solder measuring about 10 mm (.39 in.) in length and 3 mm (.12 in.) in diameter at illustrated locations on the transaxle and install each outer race.



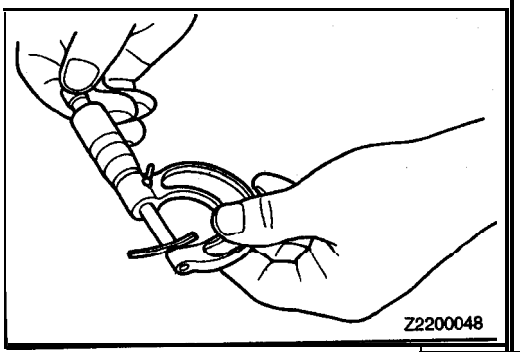
Z2200046

(2) Place two pieces of solder measuring about 10 mm (.39 in.) in length and 3 mm (.12 in,) in diameter on the bearing outer race as shown in illustration.



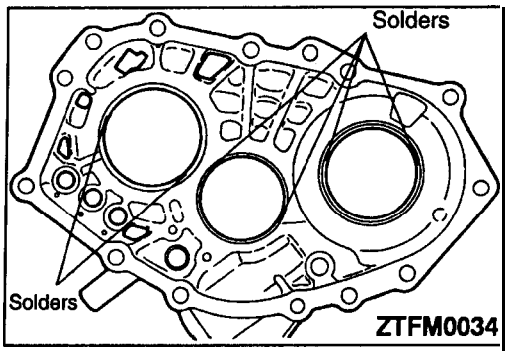
Z2200047

(3) install the transaxle case and tighten the bolts to the specified torque.
(4) Remove the transaxle case and remove the solder.


Z2200048

(5) Measure the thickness of the crushed solder with a micrometer and select and install a- spacer of. thickness that gives standard preload and end play.

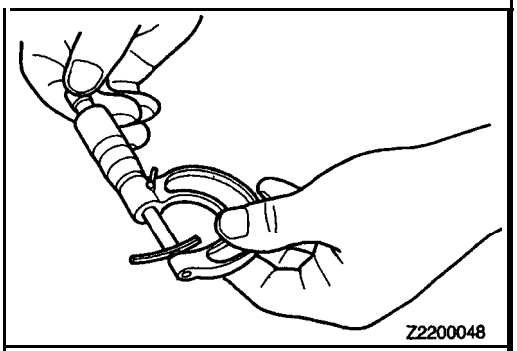
Standard value:
Front output shaft bearing preload:
0.08–0.13 mm (.0031–.0051 in.)
Front differential case end play:
0.05–0.17 mm (.0020–.0067 in.)



▶T◀ SPACERS INSTALLATION

(1) Place two pieces of solder measuring about 10 mm (.39 in.) in length and 3 mm (.12 in.) in diameter at illustrated locations on the transaxle case adapter assembly and install outer races.
(2) Install the transaxle case adapter assembly and rear cover and tighten the bolts to the specified torque.
(3) Remove the transaxle case adapter assembly and rear cover.
(4) Remove outer races and remove the solder. Measure the thickness of the crushed solder with a micrometer, and select and install a spacer of thickness that gives standard end play and preload.

Standard value:
Intermediate gear preload:
0.08–0.13 mm (.0031–.0051 in.)
Center differential case preload:
0.08–0.13 mm (.0031–.0051 in.)
Input shaft end play:
0–0.05 mm (0–.0020 in.)

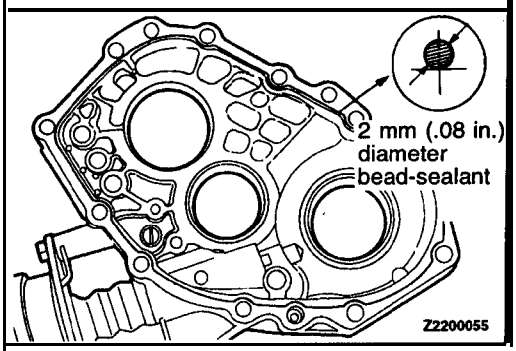


▶U◀ TRANSAXLE CASE ADAPTER ASSEMBLY INSTALLATION

Apply the specified sealant (liquid gasket) to the transaxle case side of the transaxle case adapter, assembly.

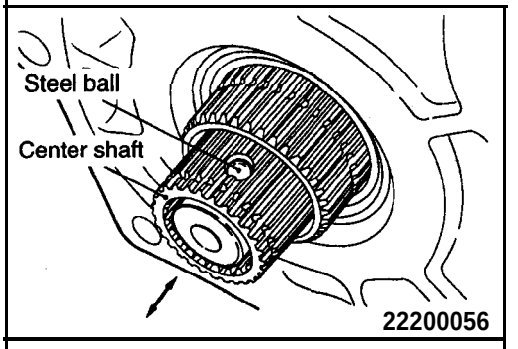
Specified sealant:
Mitsubishi genuine sealant Part No.MD997740 or equivalent

Caution
Squeeze out sealant from the tube uniformly without excess or discontinuity.



▶V◀ STEEL BALLS INSTALLATION

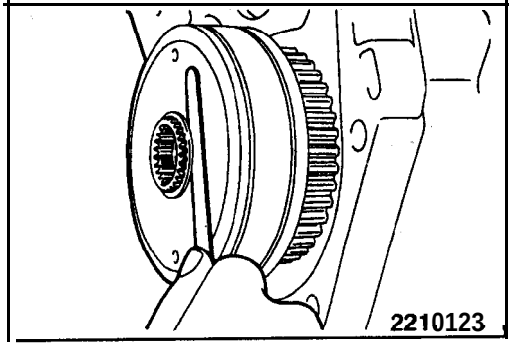
Move the center shaft so that the steel balls, are securely seated in the grooves.

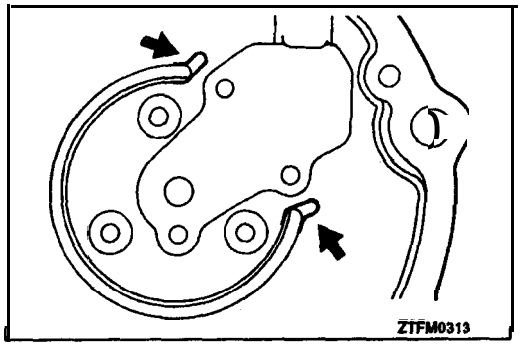


▶W◀SNAP RING INSTALLATION

Choose a snap ring that gives the standard end play of the viscous coupling and install it.

Standard value:
Viscous coupling: 0.10–0.26 mm (.0039–.0102 In.)





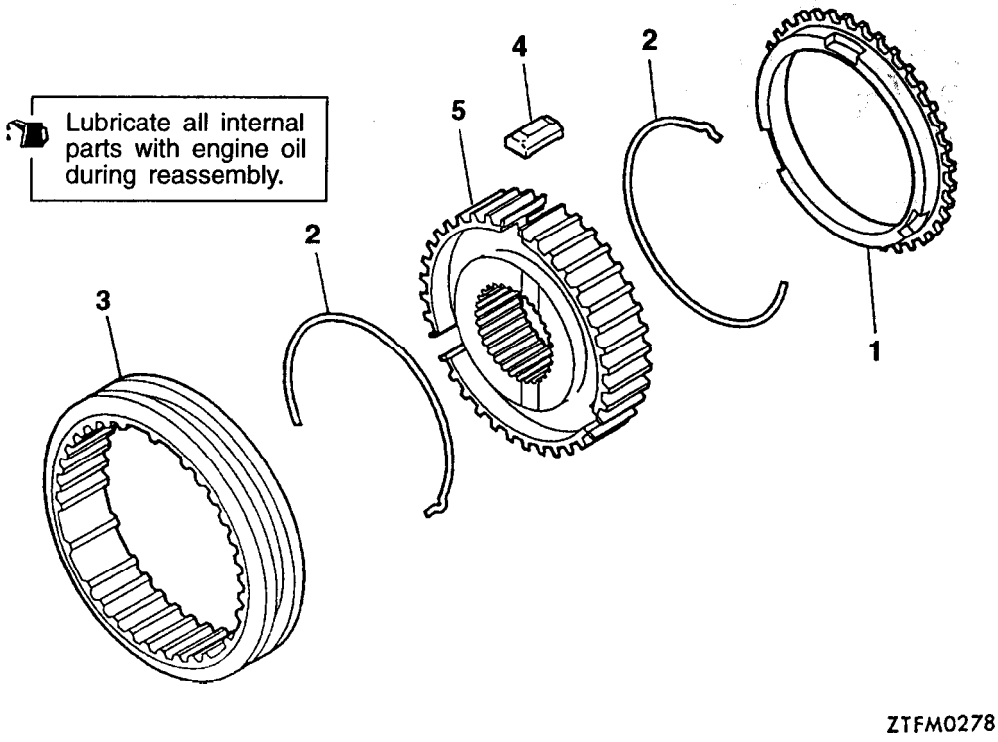
▶X◀ WAVE SPRING INSTALLATION

Install the wave spring so that the clasps come to the indicated position in the illustration.

5TH-SPEED SYNCHRONIZER

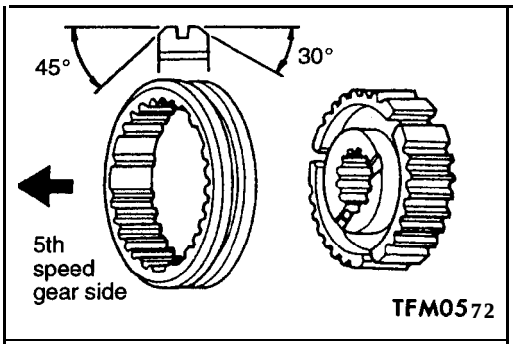
22200130041

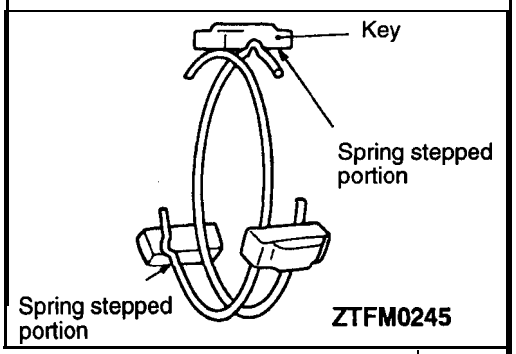
DISASSEMBLY AND REASSEMBLY



Disassembly steps

1. Reverse brake ring
▶B◀ 2. Synchronizer spring
▶A◀ 3. Synchronizer sleeve
4. Synchronizer key
▶A◀ 5. Synchronizer hub





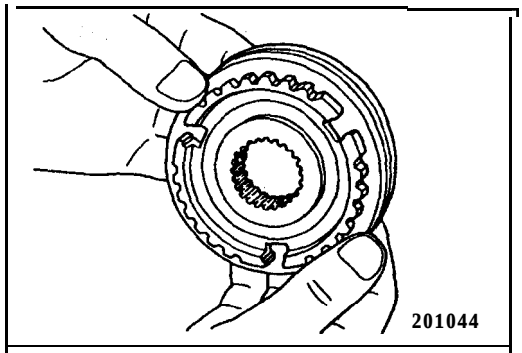
REASSEMBLY SERVICE POINTS

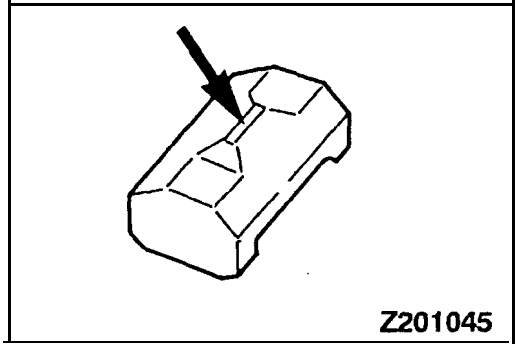
▶A◀ SYNCHRONIZER HUB / SYNCHRONIZER SLEEVE INSTALLATION

▶B◀ SYNCHRONIZER SPRING INSTALLATION

When installing the synchronizer springs, be sure to position each spring with respect to the keys as illustrated.

TSB Revision


201044


Z201045

INSPECTION

22200140044

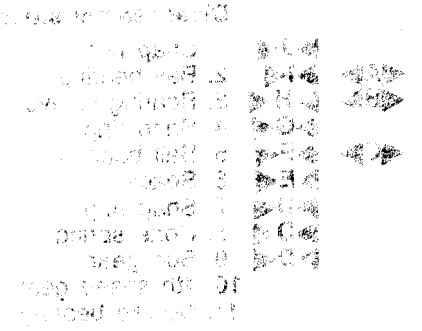
SYNCHRONIZER SLEEVE AND HUB

(1) Combine the synchronizer sleeve and hub, and check that they slide smoothly.
(2) Check that the sleeve is free from damage at its inside front and rear ends.
(3) Check for wear of the hub front end (surface in contact with the 5th speed gear).

Caution
When replacing, replace the synchronizer hub and sleeve as a set.

SYNCHRONIZER KEY AND SPRING

(1) Check for wear of the synchronizer key center protrusion.
(2) Check the spring for weakness, deformation and breakage.

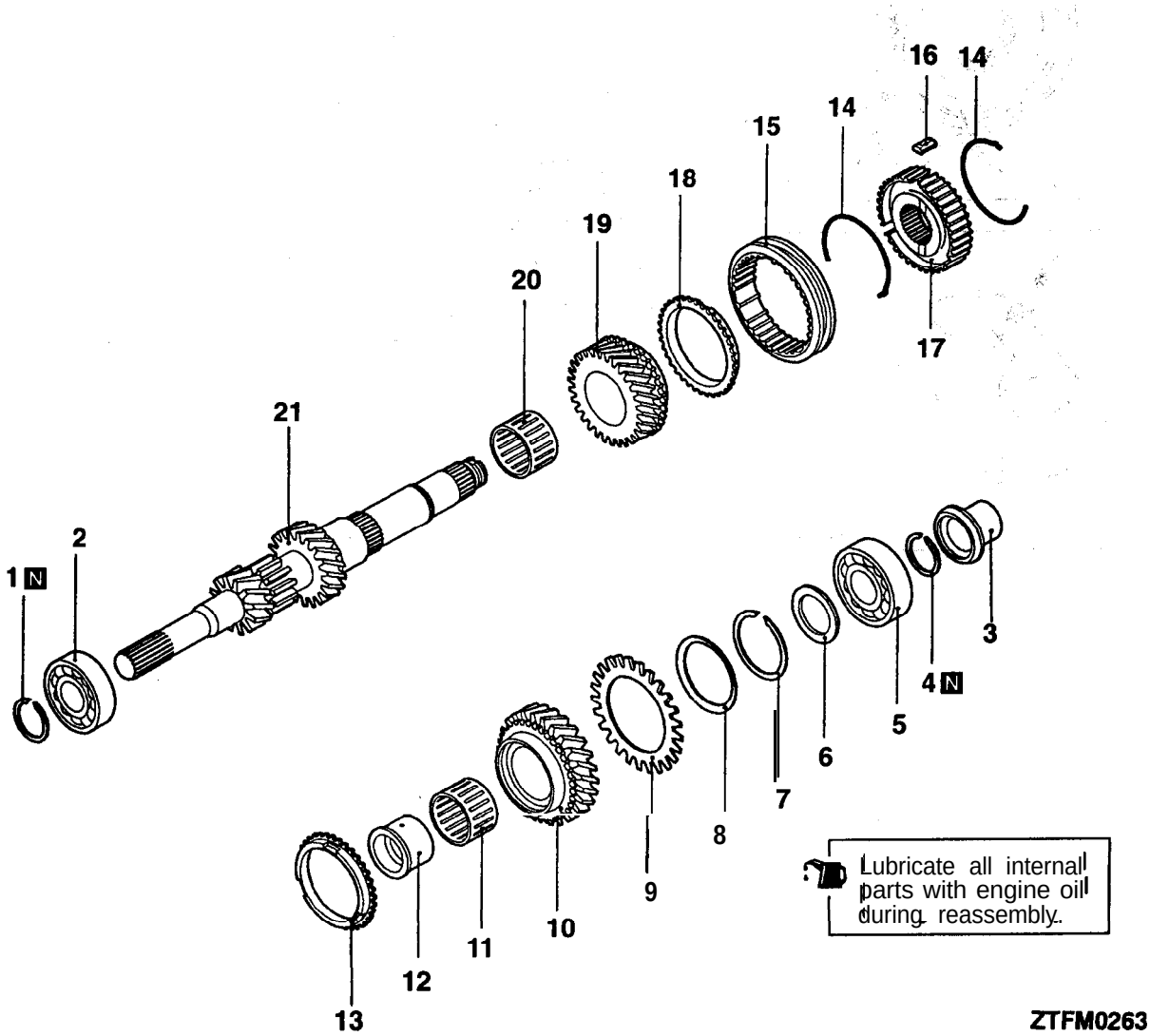


TSB Revision

INPUT SHAFT

22200160040

DISASSEMBLY AND REASSEMBLY – F5M3

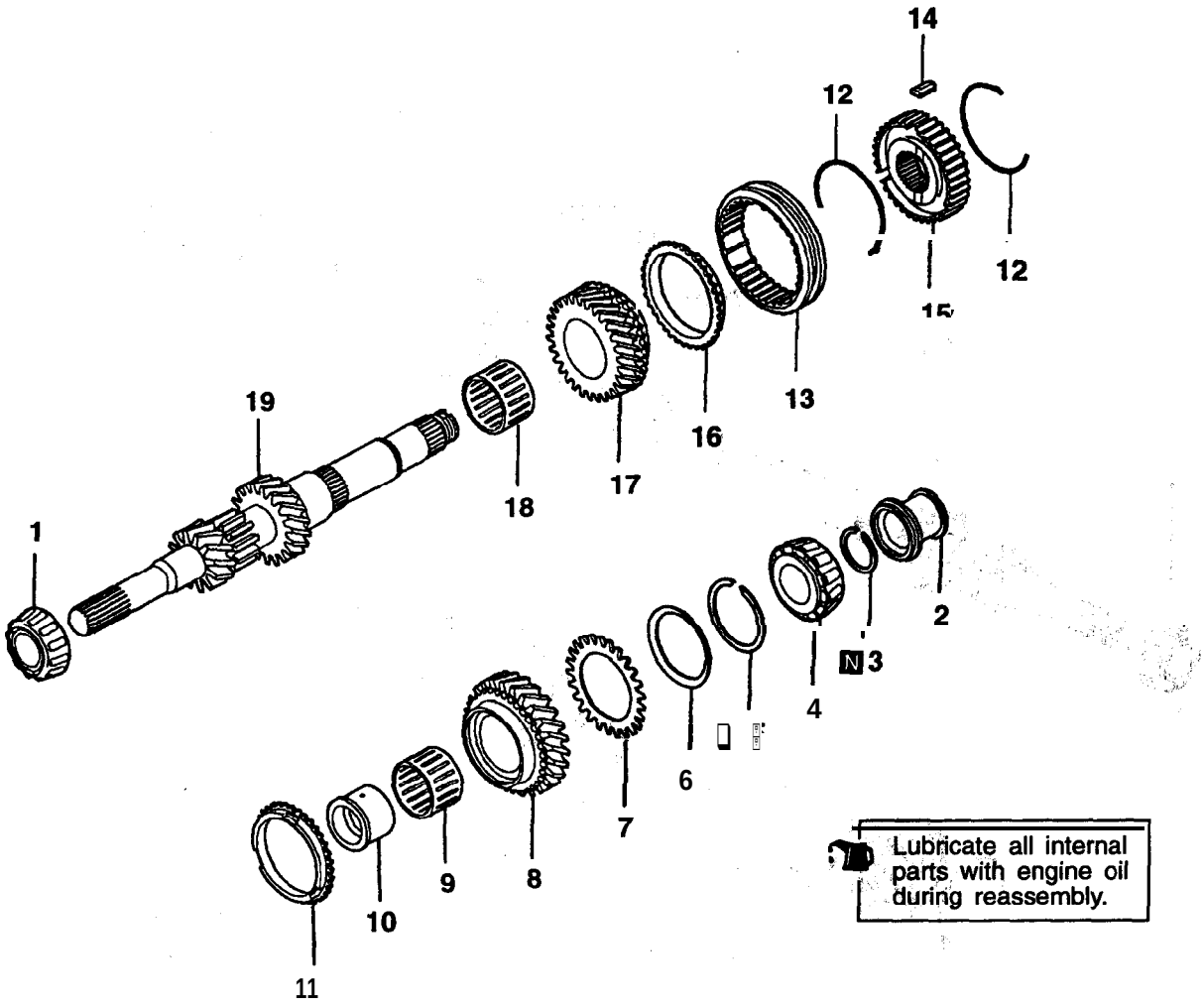


Disassembly steps

- ▶J◀ 1. Snap ring
- ◀A▶ ▶I◀ 2. Ball bearing
- ◀B▶ ▶H◀ 3. Bearing sleeve
- ▶G◀ 4. Snap ring
- ◀C▶ ▶F◀ 5. Ball bearing
- ▶E◀ 6. Spacer
- ↗ Dd 7. Snap ring
- ▶D◀ 8. Cone spring
- ▶D◀ 9. Sub gear
- 10. 4th speed gear
- 11. Needle bearing
- ▶C◀ 12. Bearing sleeve
- 13. Synchronizer ring
- ▶B◀ 14. Synchronizer spring
- ▶A◀ 15. 3rd-4th speed synchronizer sleeve
- ▶B◀ 16. Synchronizer key
- ▶A◀ 17. 3rd-4th speed synchronizer hub
- 18. Synchronizer ring
- ◀C▶ 19. 3rd speed gear
- 20. Needle bearing
- 21. Input shaft

TSB Revision

DISASSEMBLY AND REASSEMBLY – F5M33

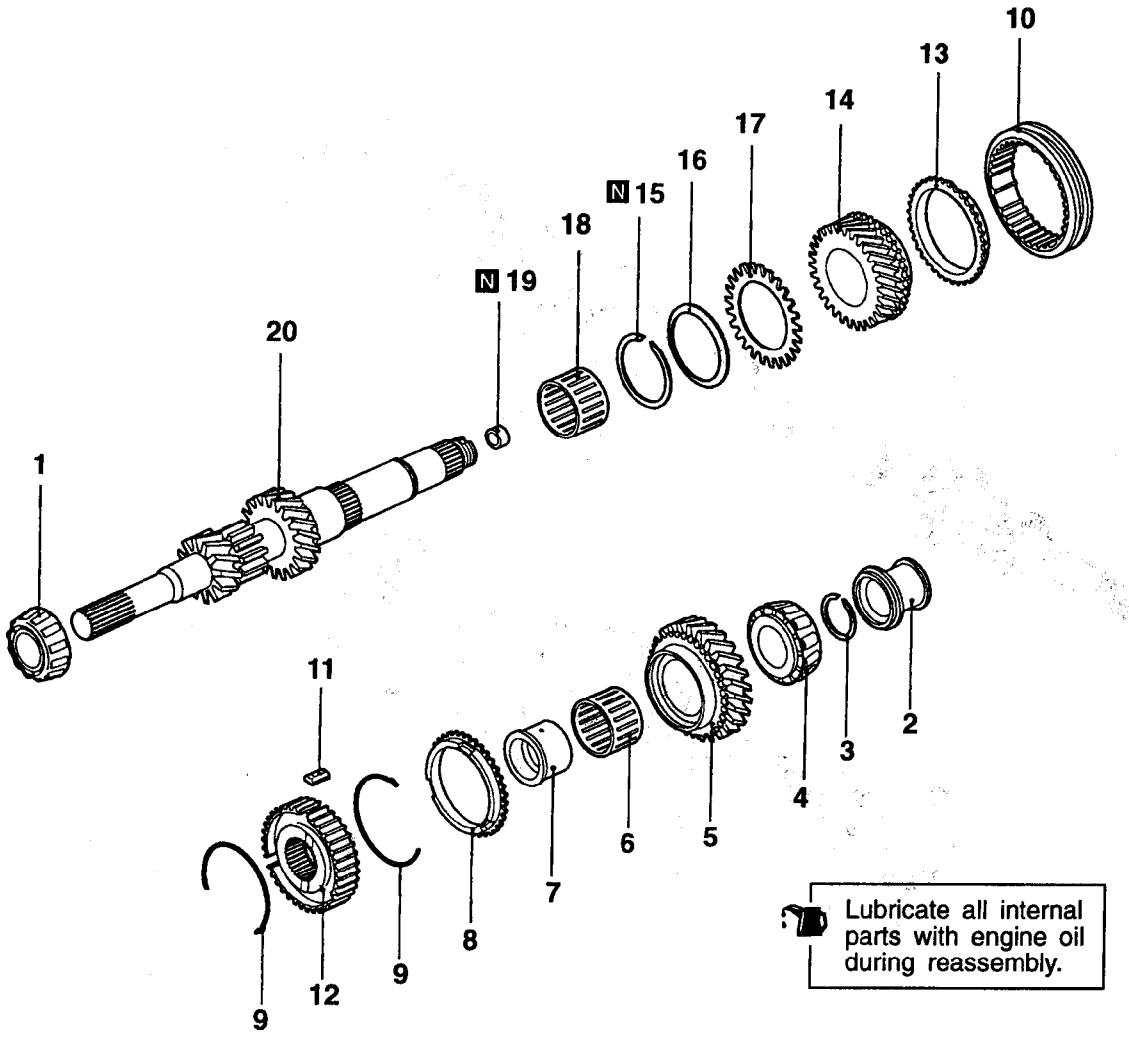


Disassembly steps

◀A▶ ▶I◀ 1. Taper roller bearing
◀B▶ ▶H◀ 2. Bearing sleeve
▶G◀ 3. Snap ring
◀C▶ ▶F◀ 4. Taper roller bearing
▶D◀ 5. Snap ring
▶D◀ **6.** Cone spring
▶D◀ **7.** Sub gear
8. 4th speed gear
9. Needle bearing
▶C◀ 10. Bearing sleeve
11. Synchronizer ring
▶B◀ 12. Synchronizer spring
▶A◀ **13. 3rd-4th** synchronizer **sleeve**
▶B◀ 14. Synchronizer key
▶A◀ 15. **3rd-4th synchronizer** hub
16. Synchronizer ring
◀C▶ **17. 3rd speed** gear
18. Needle bearing
19. Input shaft

TSB Revision

DISASSEMBLY AND REASSEMBLY – W5M33

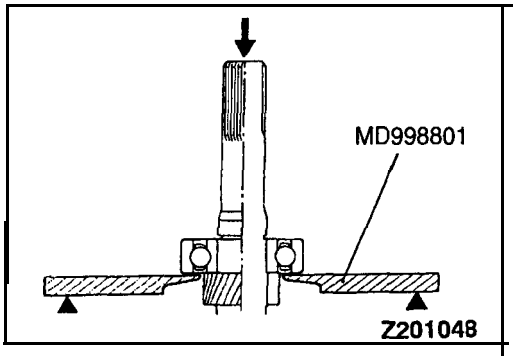


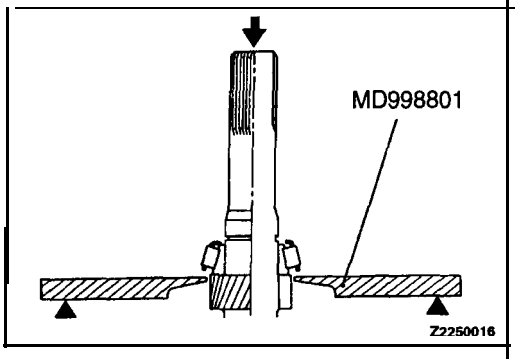
ZTFM0256

Disassembly steps

◀A▶ ▶I◀ 1. Taper roller bearing
◀B▶ ▶H◀ 2. Bearing sleeve
▶G◀ 3. Snap ring
◀C▶ ▶F◀ 4. Taper roller bearing
5. 4th speed gear
6. Needle bearing
▶C◀ 7. Bearing sleeve
8. Synchronizer ring
▶B◀ 9. Synchronizer spring
▶A◀ 10. 3rd-4th speed synchronizer sleeve
▶B◀ 11. Synchronizer key
▶A◀ 12. 3rd-4th speed synchronizer hub
13. Synchronizer ring
◀C▶ 14. 3rd speed gear
▶D◀ 15. Snap ring
▶D◀ 16. Cone spring
▶D◀ 17. Sub gear
18. Needle bearing
19. Oil seal
20. Input shaft

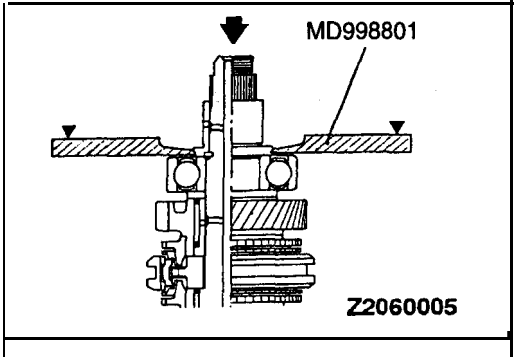
TSB Revision



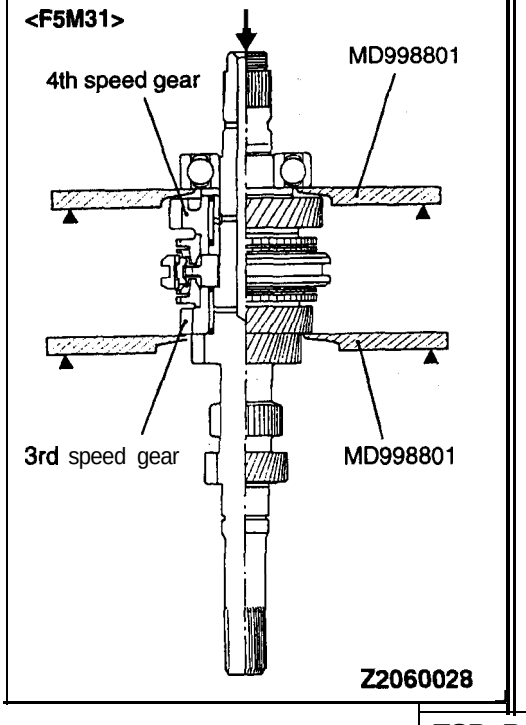


DISASSEMBLY SERVICE POINTS

◀A▶ FRONT BALL BEARING / FRONT TAPER ROLLER BEARING, REMOVAL

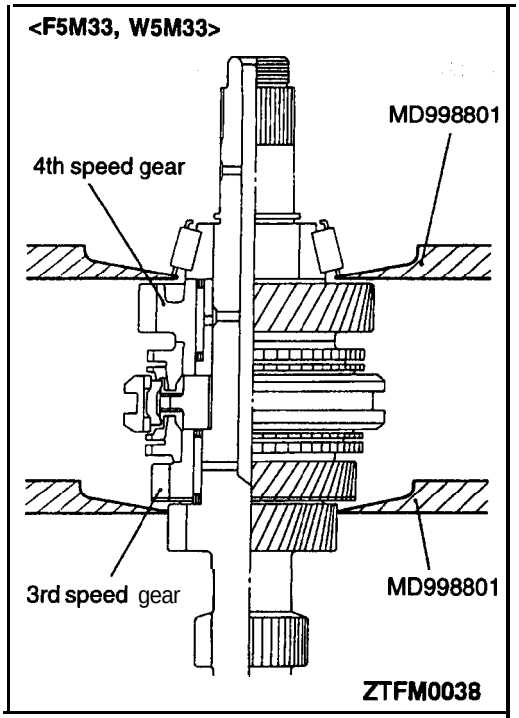


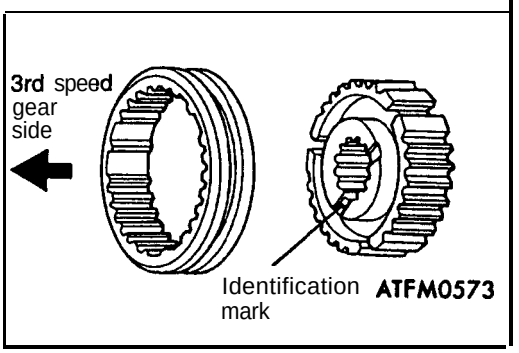
◀B▶ BEARING SLEEVE FOR 5TH SPEED GEAR REMOVAL



◀C▶ REAR BALL BEARING / TAPER ROLLER BEARING / 3RD SPEED GEAR REMOVAL

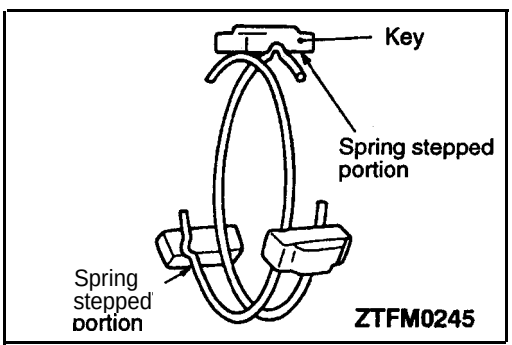
TSB Revision





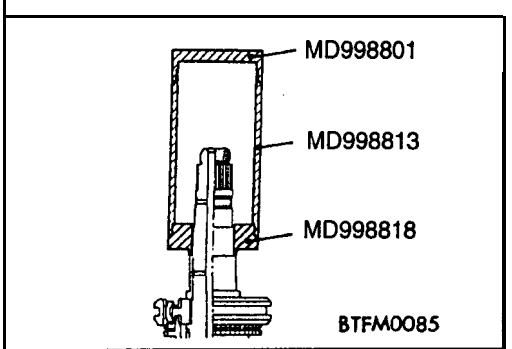
REASSEMBLY SERVICE POINTS

▶A◀ 3RD-4TH SPEED SYNCHRONIZER HUB / 3RD-4TH SPEED SYNCHRONIZER SLEEVE INSTALLATION



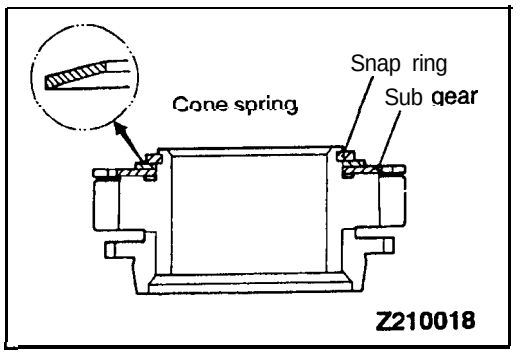
▶B◀ SYNCHRONIZER SPRING / SYNCHRONIZER KEY INSTALLATION

When installing the synchronizer springs, be sure to position each spring with respect to the keys as illustrated.

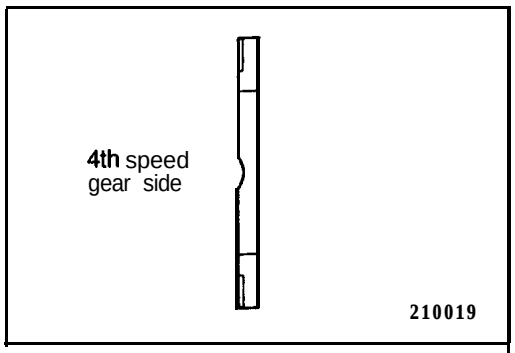


▶C◀ BEARING SLEEVE FOR 4TH SPEED GEAR INSTALLATION

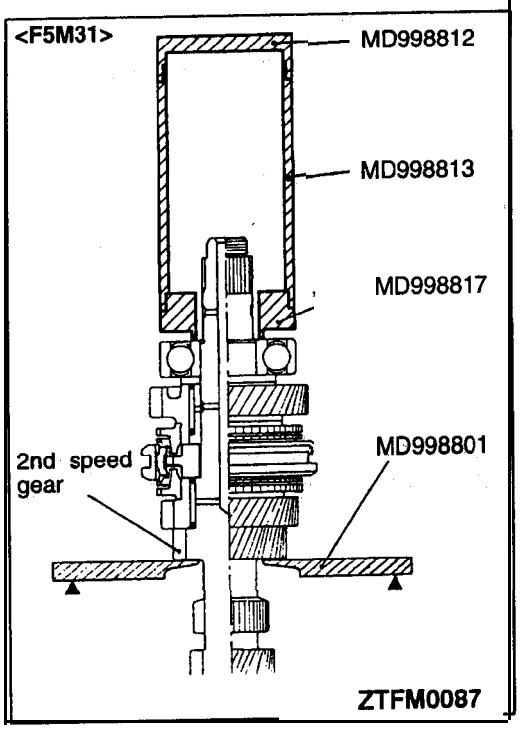
TSB Revision



▶D◀ SUB GEAR / CONE SPRING / SNAP RING INSTALLATION

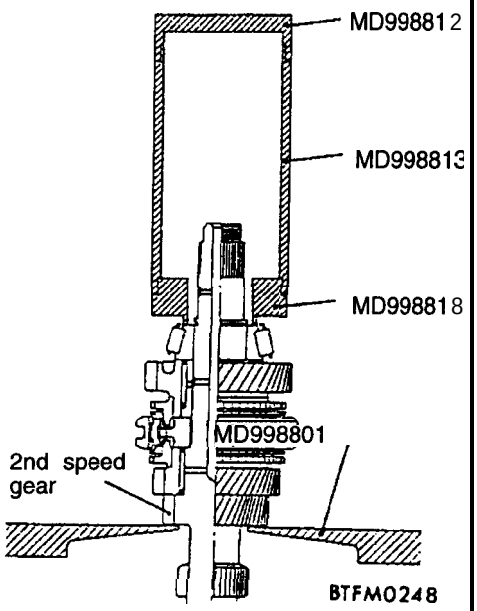


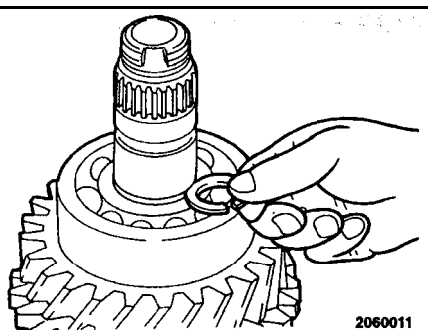
▶E◀ SPACER INSTALLATION

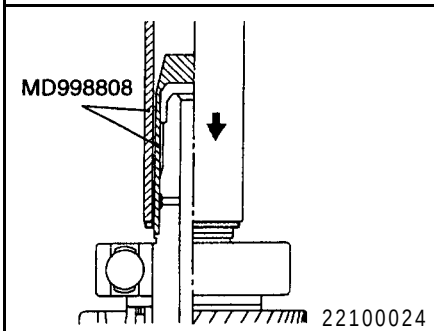


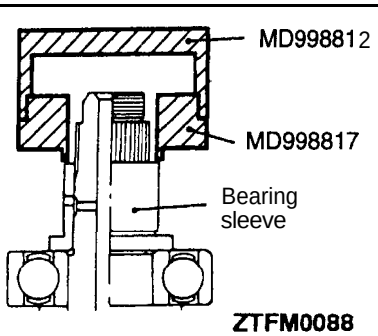
▶F◀ REAR BALL BEARING INSTALLATION

<F5M33, W5M33>









▶G◀ SNAP RING INSTALLATION

Select the thickest snap ring that can be fitted in the snap ring groove.

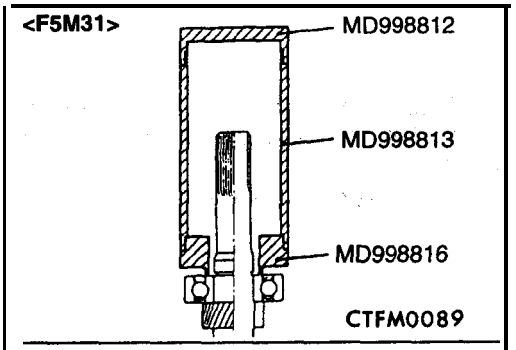
Standard value:

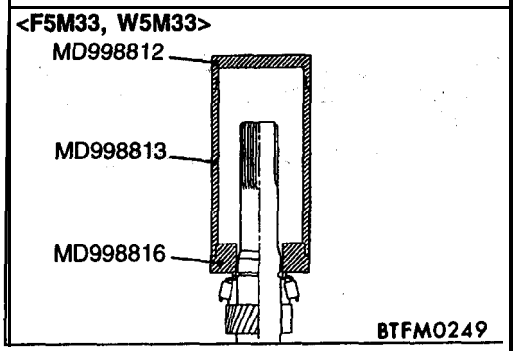
Input shaft rear bearing end play
0–0.09 mm (0–.0035 in.)

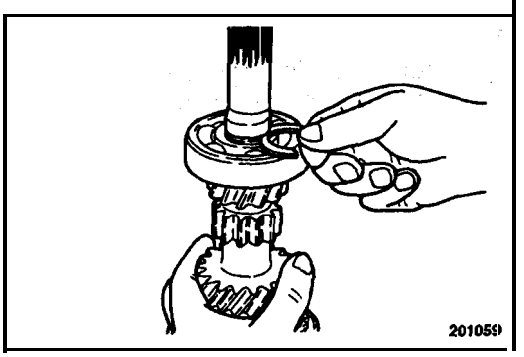
Caution
- **Do not reuse the snap ring.**
- **The snap ring may be opened too wide by pliers, resulting in improper installation of the sleeve.**

▶H◀ BEARING SLEEVE FOR 5TH SPEED GEAR INSTALLATION

Caution
When press-fitting the sleeve to the input shaft, make sure that the sleeve flange is closely fitted to the bearing.







▶I◀ FRONT BALL BEARING / FRONT TAPER ROLLER BEARING INSTALLATION

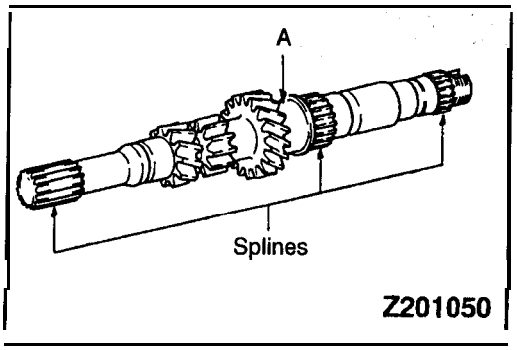
▶J◀ SNAP RING INSTALLATION'

Snap rings are available in three, different thickness. Select the thickest one that fits in the snap ring groove.

Standard value:

input shaft front bearing end play
0.01–0.12 mm (.0004–.0047 in.)

Caution
Do not damage the input shaft oil seal contacting portion.

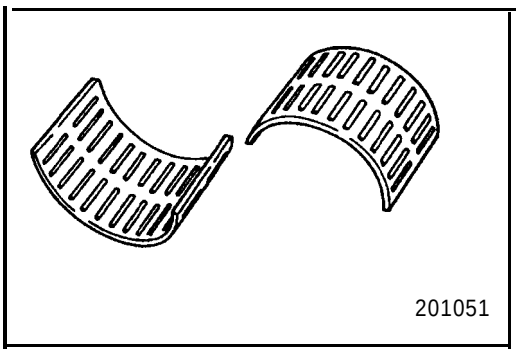


INSPECTION

22200170043

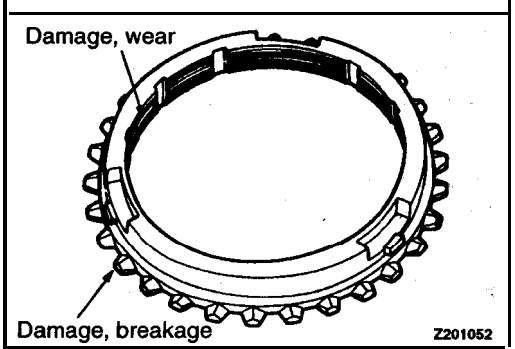
INPUT SHAFT

(1) Check the outer surface of the input shaft where the needle bearing is mounted for damage, abnormal wear and seizure [portion A].
(2) Check the splines for damage and wear.



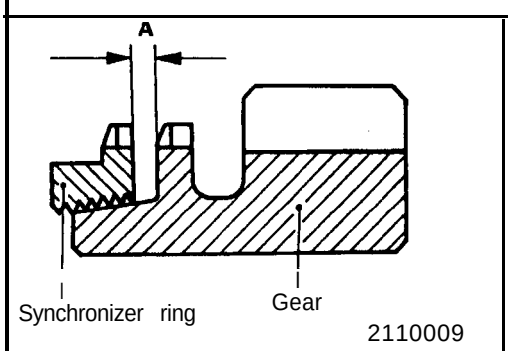
NEEDLE BEARING

(1) Combine the needle bearing with the shaft or bearing sleeve and gear and check that it rotates smoothly without abnormal noise or play.
(2) Check the needle bearing cage for deformation.



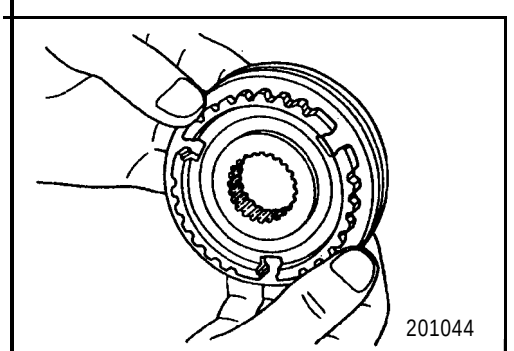
SYNCHRONIZER RING

(1) Check the clutch gear teeth for damage and breakage.
(2) Check the internal surface for damage, wear and broken threads.



(3) Force the synchronizer ring toward the clutch gear and check clearance "A". Replace if it is out of specification.

Limit: 0.5 mm (.020 in.)

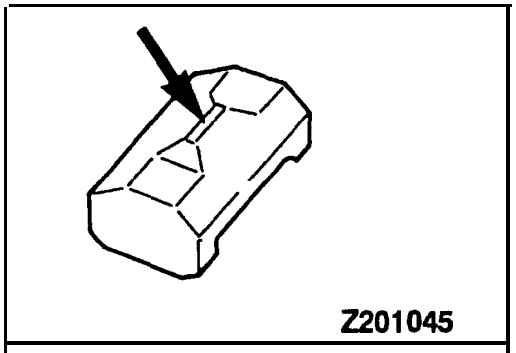


SYNCHRONIZER SLEEVE AND HUB

(1) Combine the synchronizer sleeve and hub and check that they slide smoothly.
(2) Check that the sleeve is free from damage at its inside front and rear ends.
(3) Check for wear of the hub end surfaces (in contact with each speed gear).

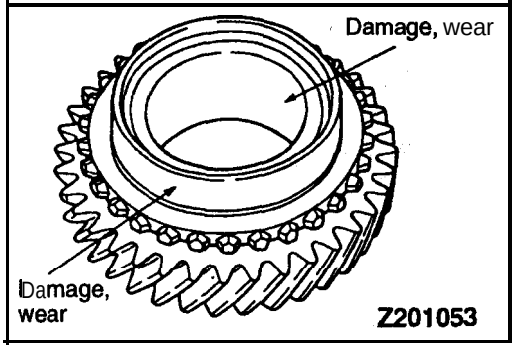
Caution
When replacing, replace the synchronizer hub and sleeve as a set.

TSB Revision


Z201045

SYNCHRONIZER KEY AND SPRING

(1) Check for wear of the synchronizer key center protrusion.
(2) Check the spring for weakness, deformation and breakage.



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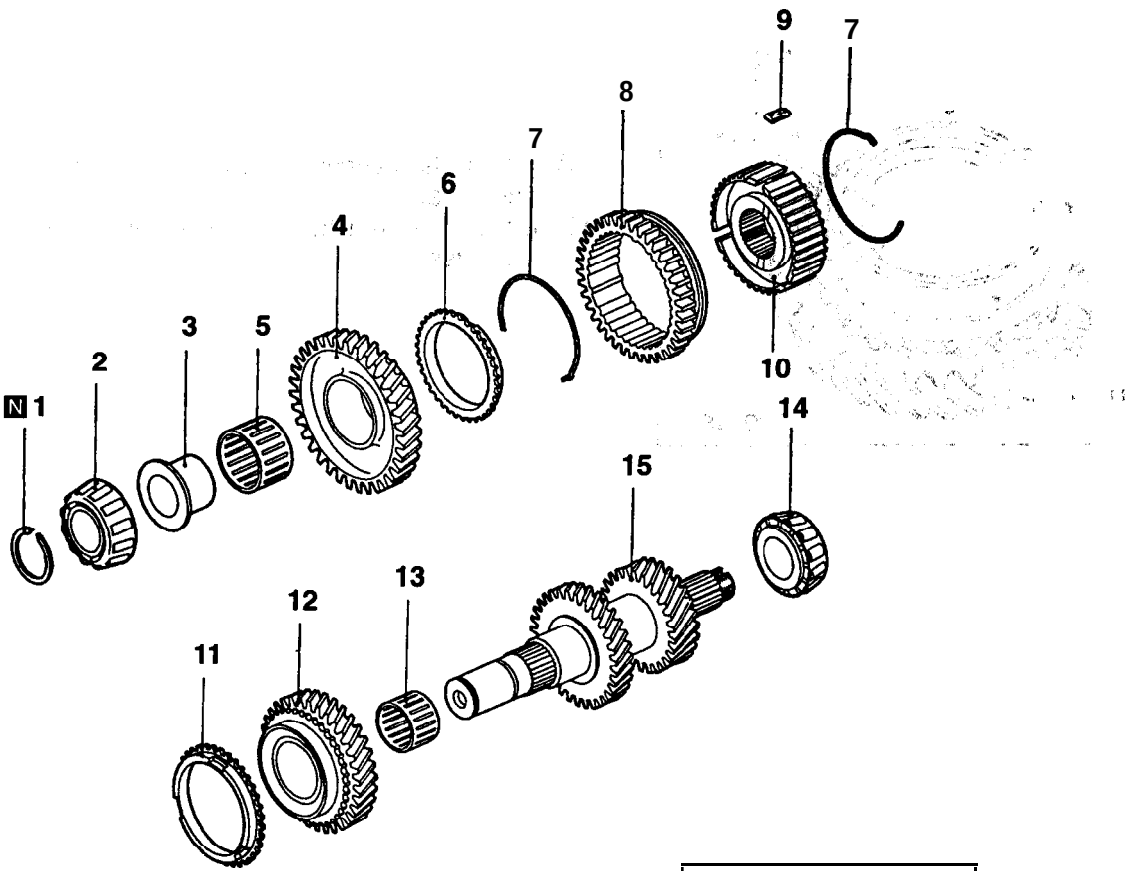
SPEED GEARS

(1) Check the synchronizer cone for rough surface, damage and wear.
(2) Check the gear bore and front and rear ends for damage and wear.

INTERMEDIATE GEAR

2220018004~

DISASSEMBLY AND REASSEMBLY – F5M31, W5M33



Lubricate all internal parts with engine oil during reassembly.

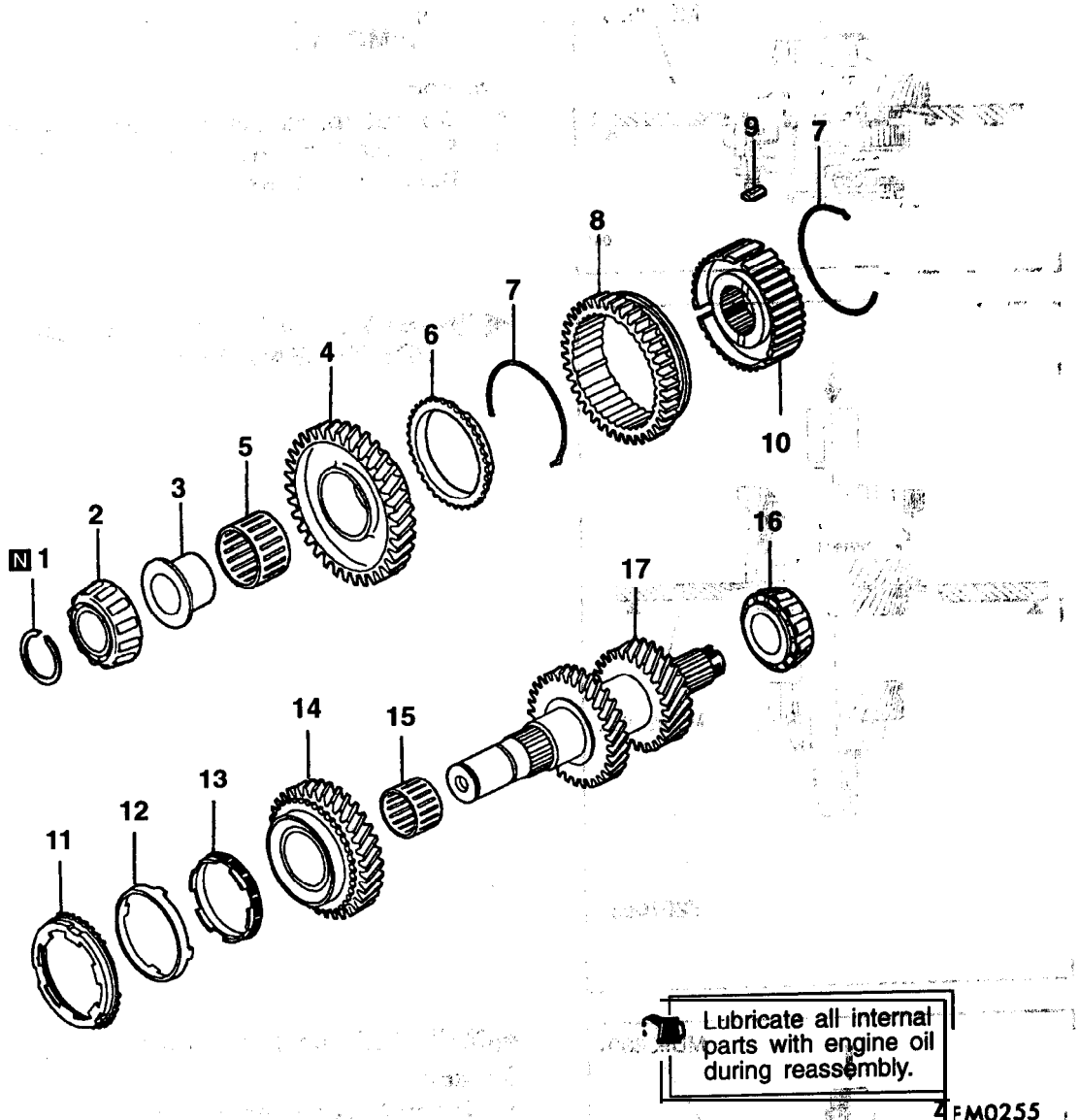
ZTFM0254

Disassembly steps

- ▶G◀ 1. Snap ring
- ◀A▶ ▶F◀ 2. Taper roller bearing
- ▶E◀ 3. Bearing sleeve
- ◀A▶ 4. 1st speed gear
- 5. Needle bearing
- ▶B◀ 6. Synchronizer ring
- ▶D◀ 7. Synchronizer spring
- ▶C◀ 8. 1st-2nd speed synchronizer sleeve
- ▶C◀ 9. Synchronizer key
- ◀B▶ ▶C◀ 10. 1st-2nd speed synchronizer hub
- ▶B◀ 11. Synchronizer ring
- ◀B▶ 12. 2nd speed gear
- 13. 2nd speed gear bearing
- ◀C▶ ▶A◀ 14. Taper roller bearing
- 15. Intermediate gear

TSB Revision

DISASSEMBLY AND REASSEMBLY – F5M33

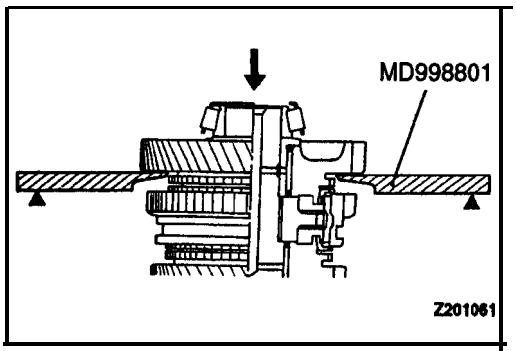


Disassembly steps

- ▶G◀ 1. Snap ring
- ◀A▶ ▶F◀ 2. Taper roller bearing
- ▶E◀ 3. Bearing sleeve
- ◀A▶ 4. 1st speed gear
- 5. Needle bearing
- ▶B◀ 6. Synchronizer ring
- ▶D◀ 7. Synchronizer spring
- ◀B▶ ▶C◀ 8. 1st-2nd speed synchronizer sleeve
- ▶C◀ 9. Synchronizer key
- ▶C◀ 10. 1st-2nd speed synchronizer hub
- 11. Synchronizer outer ring
- 12. Synchronizer cone
- 13. Synchronizer inner ring
- ◀B▶ 14. 2nd speed gear
- 15. Needle bearing
- ◀C▶ ▶A◀ 16. Taper roller bearing
- 17. Intermediate gear

7

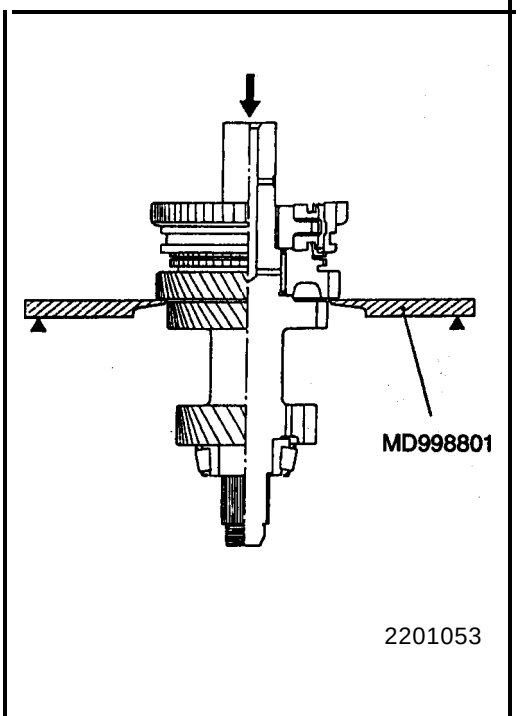
TSB Revision



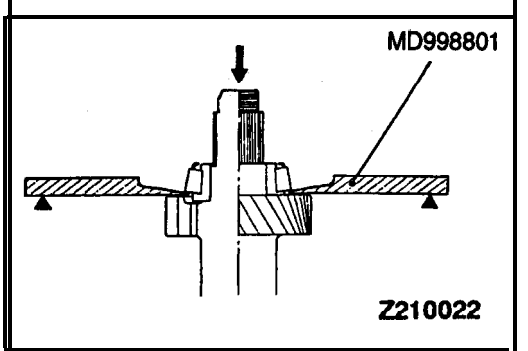
DISASSEMBLY SERVICE POINTS

◀A▶ TAPER ROLLER BEARING / 1ST SPEED GEAR REMOVAL

Caution
- **Do not reuse the bearing removed from the shaft.**
- **Replace the inner and outer races of the taper roller bearing as a set.**

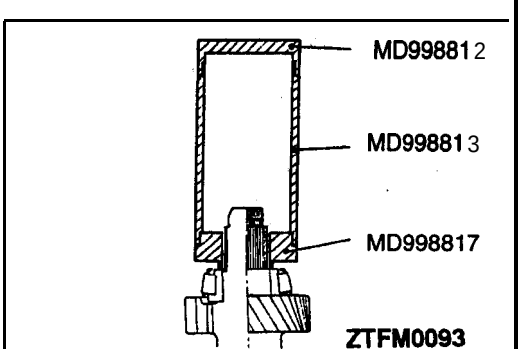


◀B▶ 1ST-2ND SPEED SYNCHRONIZER HUB / 2ND SPEED GEAR REMOVAL



◀C▶ TAPER ROLLER BEARING REMOVAL

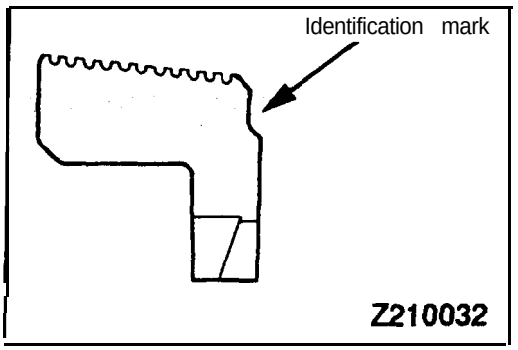
Caution
- **Do not reuse the bearing removed from the shaft.**
- **Replace the inner and outer races of the taper roller bearing as a set.**



REASSEMBLY SERVICE POINTS

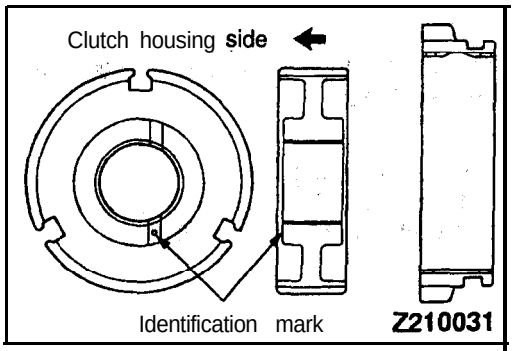
▶A◀ TAPER ROLLER BEARING INSTALLATION

Caution
When installing the bearing, push the inner race only.



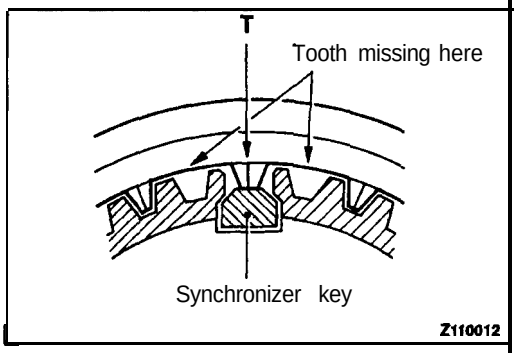
▶B◀ SYNCHRONIZER RINGS FOR 1ST SPEED GEAR, 2ND SPEED GEAR INSTALLATION .

The 1st speed gear and 2nd speed gear of synchronizer rings have an identification mark.

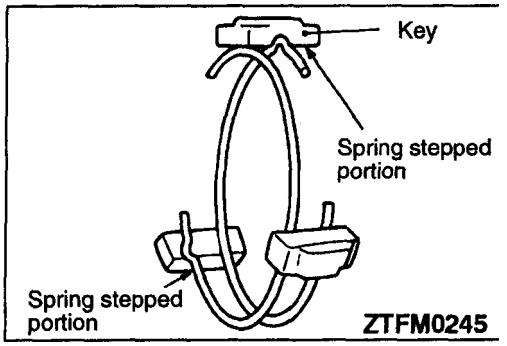


▶C◀ 1 ST-2ND SPEED SYNCHRONIZER HUB / SYNCHRONIZER KEY / 1ST-2ND SYNCHRONIZER SLEEVE INSTALLATION

(1) Combine the 1st–2nd speed synchronizer hub and sleeve as illustrated.

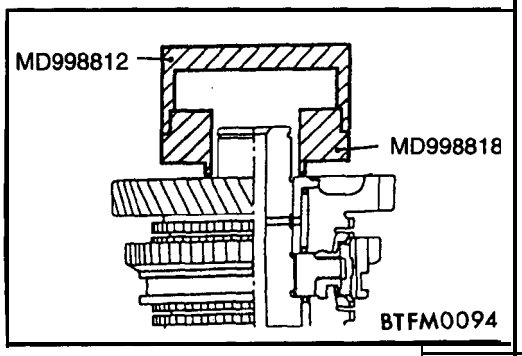


(2) The synchronizer sleeve has tooth missing at six portions. Assemble the hub to the sleeve in such a way that the center tooth "T" between two missing teeth will touch the synchronizer key.

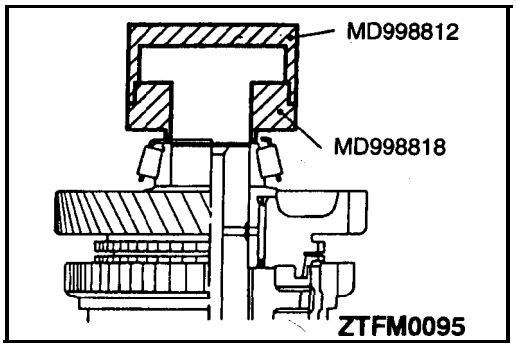


▶D◀ SYNCHRONIZER SPRING INSTALLATION

When installing the synchronizer springs, be sure to position each spring with respect to the keys as illustrated.

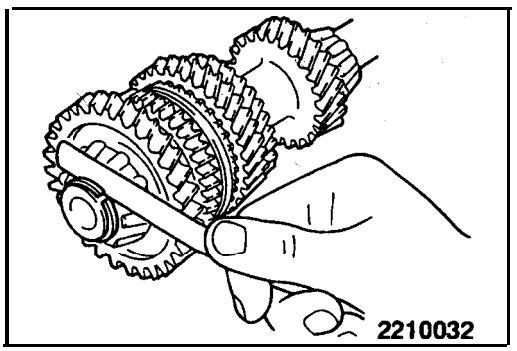


▶E◀ BEARING SLEEVE INSTALLATION



▶F◀ TAPER ROLLER BEARING INSTALLATION

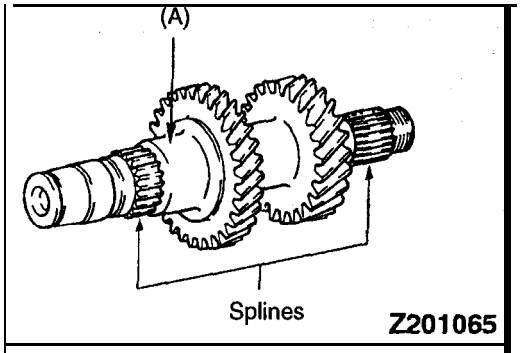
Caution
When installing the bearing, push the. inner race only.



▶G◀SNAP RING INSTALLATION

Select and install the snap ring that gives standard intermediate gear bearing end play.

Standard, value:
Intermediate gear bearing end play:
0.01–0.14 mm (.0004–.0055 in.) <F5M33, W5M33>
0.01–0.11 mm (.0004–.0044 in.) <F5M31>

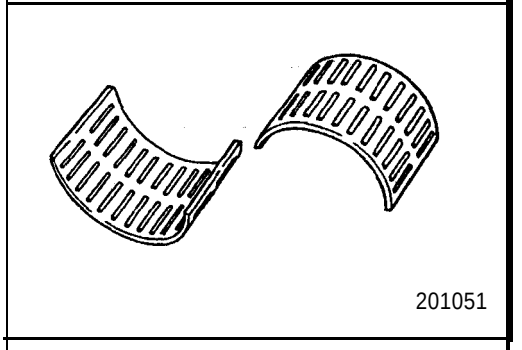


INSPECTION

22200200049

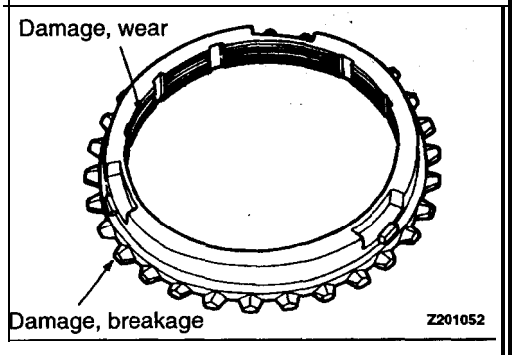
INTERMEDIATE GEAR

(1) Check the outer surface of the intermediate gear where the needle bearing is mounted' for damage, abnormal wear and seizure [portion (A)].
(2) Check the splines for damage and wear.



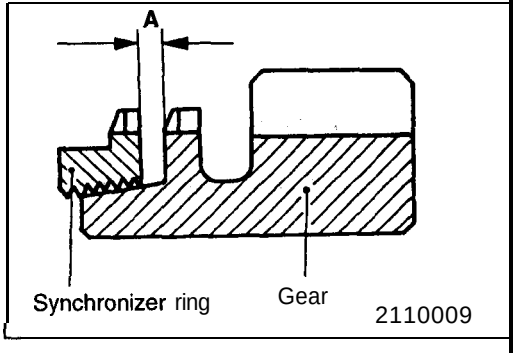
NEEDLE BEARING

(1) Combine the needle bearing with the shaft or bearing' sleeve and gear and check that it rotates Smoothly without abnormal noise or play.
(2) Check the needle bearing cage for' deformation.



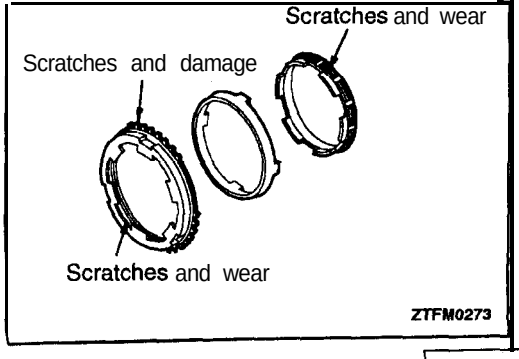
SYNCHRONIZER RING

(1) Check the clutch gear teeth for damage and breakage.
(2) Check the internal surface for damage,, wear and broken threads.



(3) Force the synchronizer ring toward the clutch gear and check clearance "A". Replace if it is out of specification.

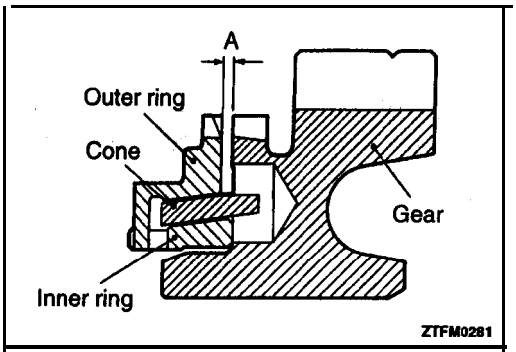
Limit: 0.5 mm (.020 in.)



SYNCHRONIZER OUTER RING, INNER RING AND CONE

(1) Check that there are no scratches of damage on the clutch gear teeth and cone surface.
(2) Check that there are no scratches, wear or peeling on the paper lining surface.

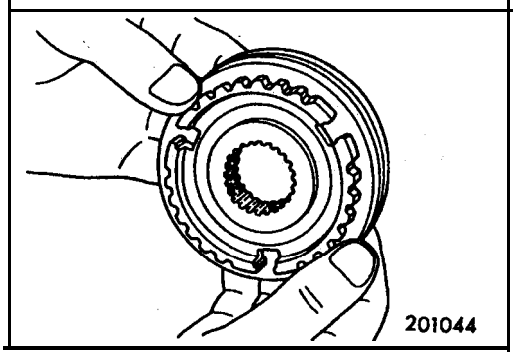
TSB Revision



(3) Install the outer ring, inner ring and cone, and press them onto the clutch gear. Check clearance "A", and replace if "A" is below the limit value.

Limit: 0.5 mm (.020 in.)

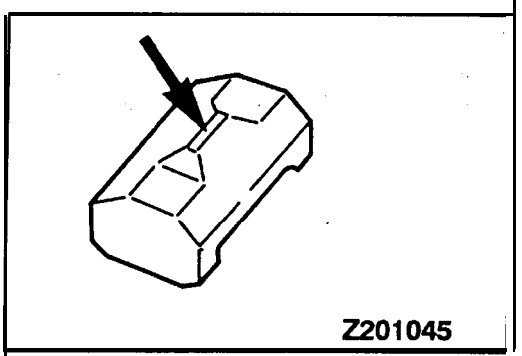
Caution
Replace the outer ring, inner ring and cone, as a set.



SYNCHRONIZER SLEEVE AND HUB

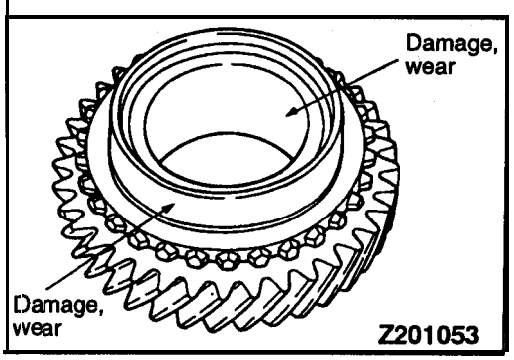
(1) Combine the synchronizer sleeve and hub and check that they slide smoothly.
(2) Check that the sleeve is free from damage at its inside front and rear ends.
(3) Check for wear of the hub end surface (in contact with each speed gear).

Caution
Replace the synchronizer hub and sleeve as a set.



SYNCHRONIZER KEY AND SPRING

(1) Check for wear of the synchronizer key center protrusion.
(2) Check the spring for weakness, deformation and breakage.



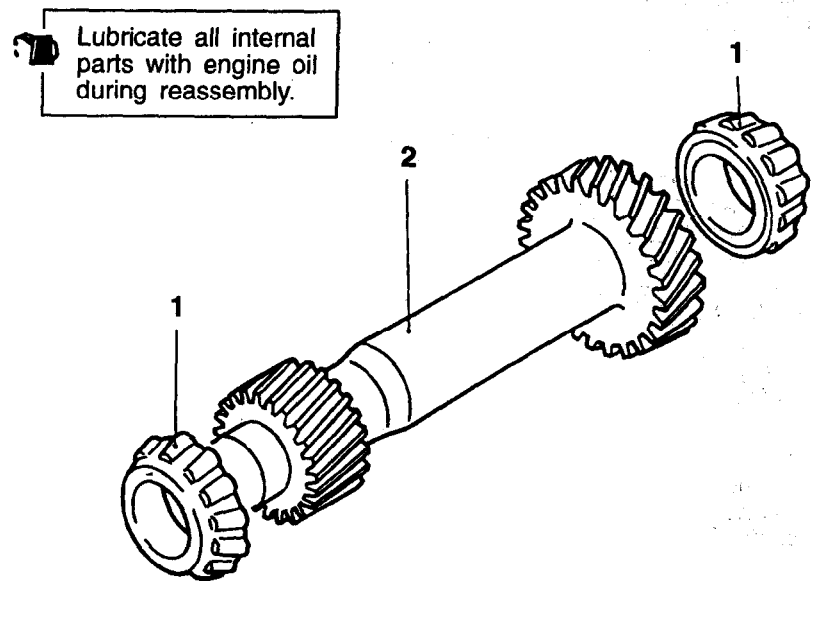
SPEED GEARS

(1) Check the bevel gear and clutch gear teeth for damage and wear.
(2) Check the synchronizer cone for rough surface, damage and wear.
(3) Check the gear bore and front arid rear ends for damage and wear.

OUTPUT SHAFT <F5M31, F5M33>

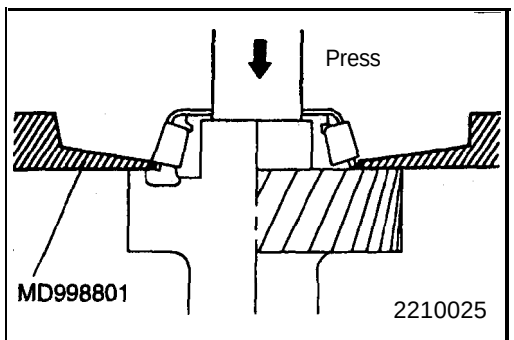
22200220052

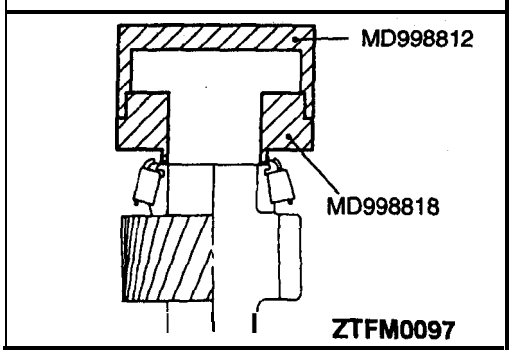
DISASSEMBLY AND REASSEMBLY



Disassembly steps

◀A▶ ▶A◀ 1. Taper roller bearing
2. Output shaft





DISASSEMBLY SERVICE POINT

◀A▶ TAPER ROLLER BEARINGS REMOVAL

Caution

- **Do not reuse the bearings removed from the shaft.**
- **Replace the inner and outer races of the taper roller bearing as a set.**

REASSEMBLY SERVICE POINT

▶A◀ TAPER ROLLER BEARINGS INSTALLATION

Caution

When installing the bearing, push the inner race only.

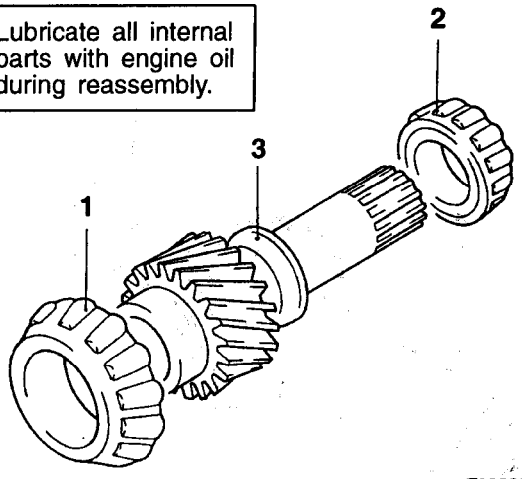
TSB Revision

FRONT OUTPUT SHAFT <W5M33>

22201150039

DISASSEMBLY AND REASSEMBLY

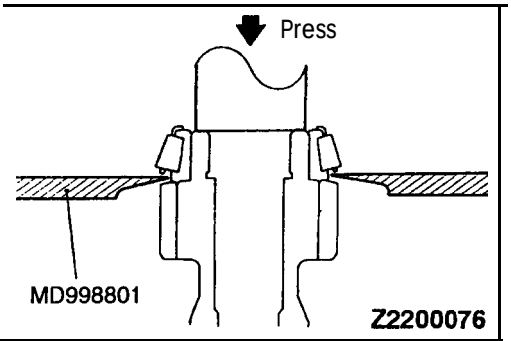
Lubricate all internal parts with engine oil during reassembly.



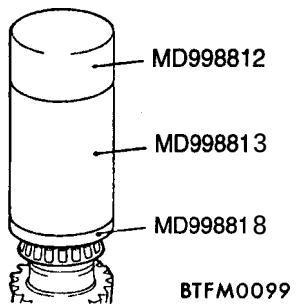
Z2200075

Disassembly steps

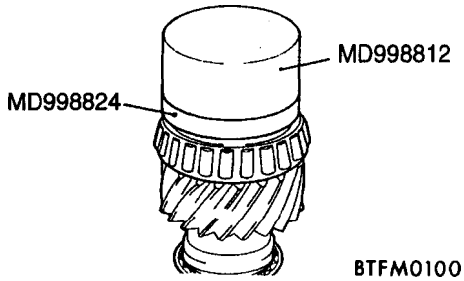
◀A▶ ▶B◀ 1. Taper roller bearing
◀A▶ ▶A◀ 2. Taper roller bearing
3. Front output shaft



Z2200076



BTFM0099



BTFM0100

DISASSEMBLY SERVICE POINT

◀A▶ TAPER ROLLER BEARINGS REMOVAL

Remove the taper roller bearings using the special tool.

NOTE
(1) Do not reuse the bearing removed' from 'the shaft.
(2) Replace the inner and outer races of the taper roller bearing as a set.

REASSEMBLY SERVICE POINTS

▶A◀ TAPER ROLLER BEARINGS INSTALLATION

Install the taper roller bearing using the special tool.

NOTE
Apply the special tool to the inner race only when 'installing' the bearing.

▶B◀ TAPER ROLLER BEARINGS INSTALLATION

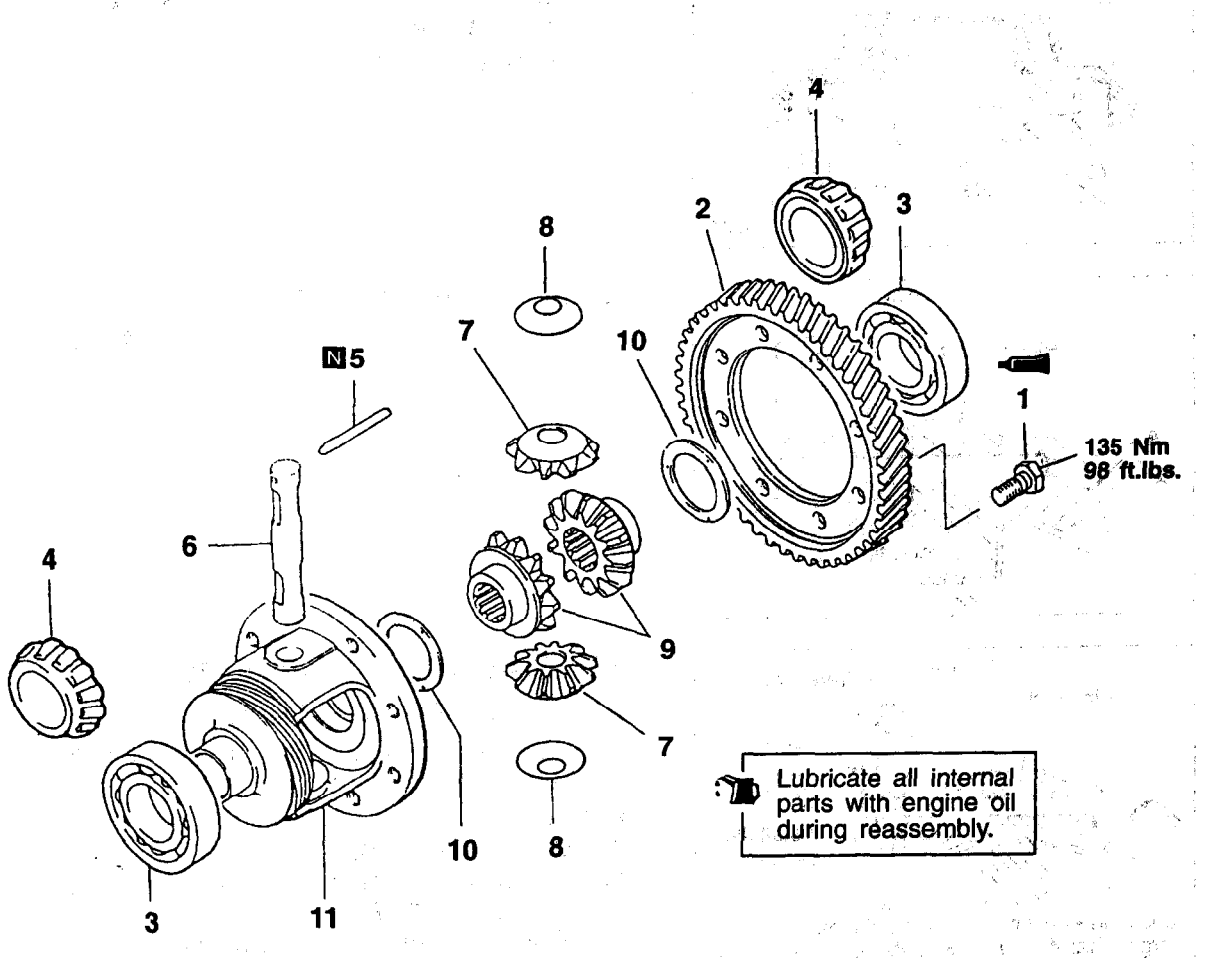
Install the taper roller bearing using the special tool.

NOTE
Apply 'the special tool to the inner race only when installing' the bearing.

DIFFERENTIAL

22200250051

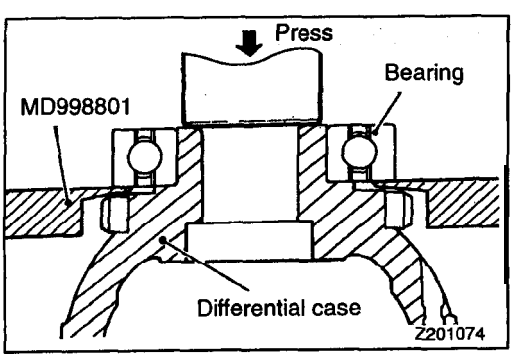
DISASSEMBLY AND REASSEMBLY



2160119

Disassembly steps

- ▶D◀ 2. Differential drive gear
- ◀A▶ ▶C◀ 3. Ball bearing <W5M33>
- ◀B▶ ▶B◀ 4. Taper roller bearing <F5M31, F5M33>
- ◀C▶ ▶A◀ 5. Lock pin
- 6. Pinion shaft
- 8. Washer
- 9. Side gear
- 10. Spacer
- 11. Differential case

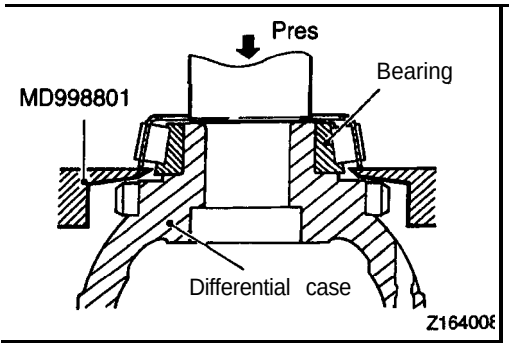


DISASSEMBLY SERVICE POINTS

◀A▶ BALL BEARINGS REMOVAL

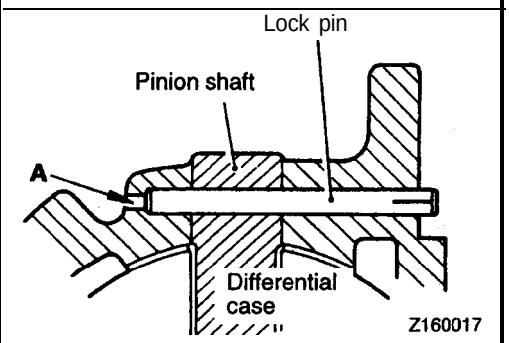
Caution
Do not reuse the bearing 'removed 'from the shaft.

TSB **Revision**



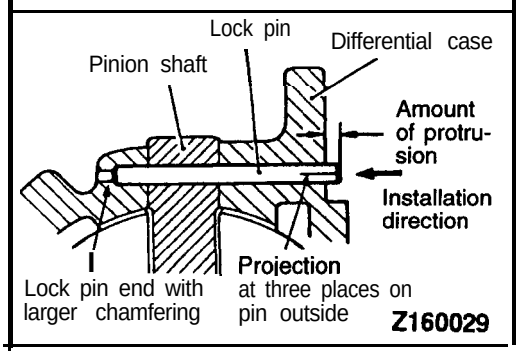
◀B▶ TAPER ROLLER BEARING REMOVAL

Caution
- **Do not reuse the bearing removed from the shaft.**
- **Replace the inner and outer races of the taper roller bearing as a set.**



◀C▶ LOCK PIN REMOVAL

Drive out the lock pin from the hole A using a punch.

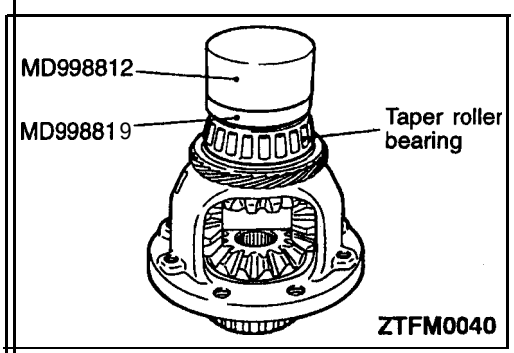


REASSEMBLY SERVICE POINTS

▶A◀ LOCK PIN INSTALLATION

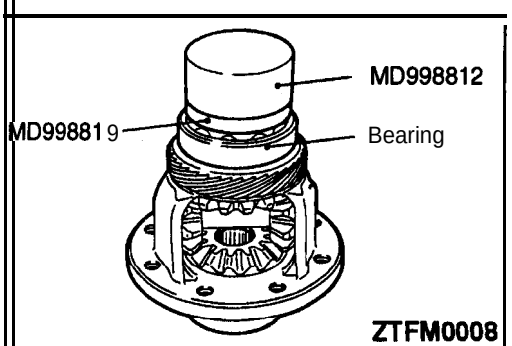
Align the pinion shaft lock pin hole with the case lock pin hole and insert the lock pin.

Caution
1. **Do not reuse the lock pin.**
2. **The lock pin must not protrude more than 3 mm (.12 in.). <F5M31, F5M33>**
3. **The lock pin head must be sunk from the flange surface of the differential case. <W5M33>**

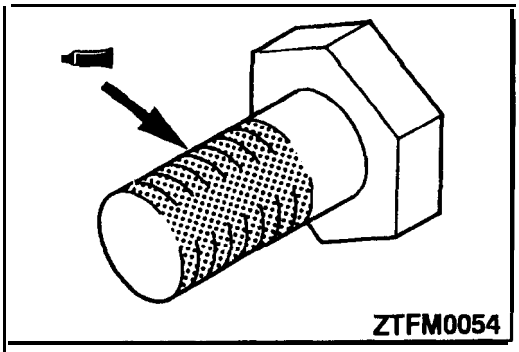


▶B◀ TAPER ROLLER BEARINGS INSTALLATION

Caution
When press-fitting the bearings, push the inner race only.



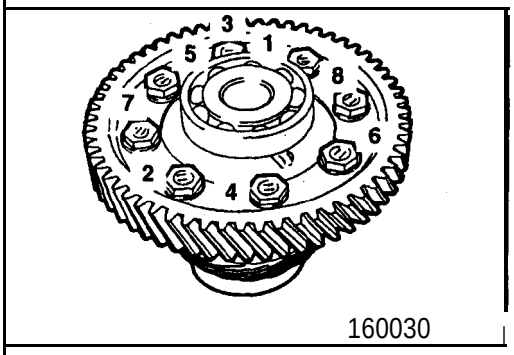
▶C◀ BALL BEARINGS INSTALLATION



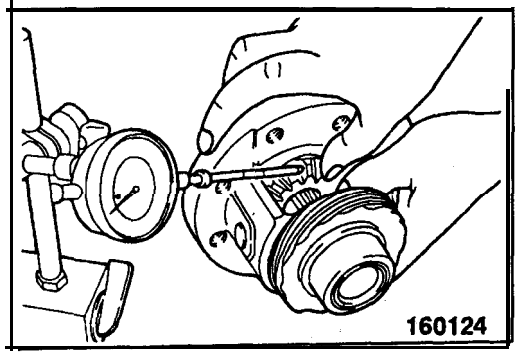
▶D◀ **BOLTS** JNSTALLATION

(1) Apply the specified sealant to the bolt threads.

Specified sealant:
3M Stud Locking No.4170 or equivalent



(2) Tighten to the specified torque while following the order given in the illustration.



INSPECTION

22200260047

ADJUSTMENT OF PINION BACKLASH

Measure the backlash between the side gears and pinions. Adjust for same backlash of both side gears.

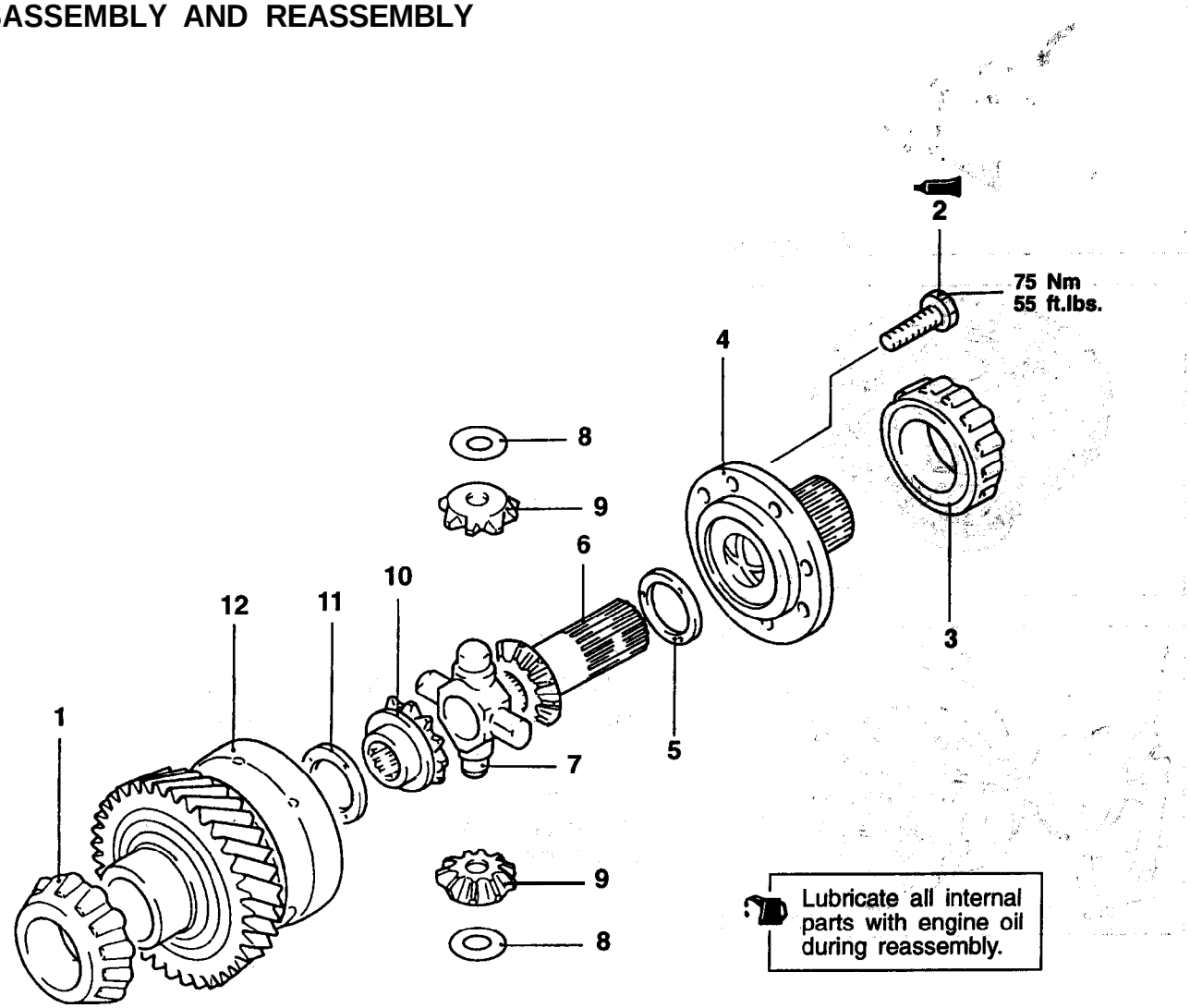
Standard value: 0.025–0.150 mm (.00098–.00591 in.)

If backlash is out of specification, disassemble again and using correct spacer, reassemble and adjust.

CENTER DIFFERENTIAL <W5M33>

22200280036

DISASSEMBLY AND REASSEMBLY

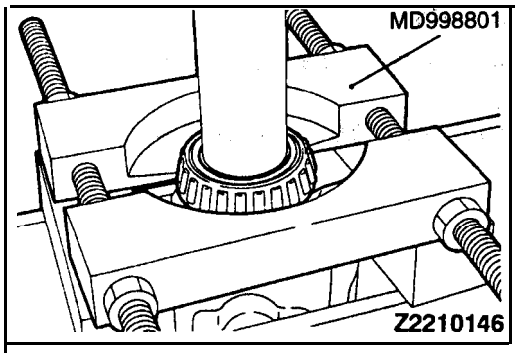


22250015

Disassembly steps

◀A▶ ▶D◀ 1. Taper roller bearing
▶C◀ 2. Bolt
◀A▶ ▶B◀ 3. Taper roller bearing
4. Output gear
▶A◀ 5. Spacer
6. Side gear
7. Pinion shaft
8. Washer
9. Pinion
10. Side gear
▶A◀ 11. Spacer
12. Center differential case

TSB Revision

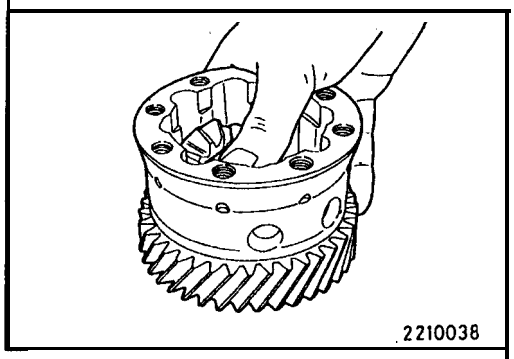


DISASSEMBLY SERVICE POINT

◀A▶ TAPER ROLLER BEARINGS REMOVAL

Remove the taper roller bearings using the special tool.

NOTE
(1) Do not reuse the bearing removed from the shaft.
(2) Replace the inner and outer races of the taper roller bearing as a set.

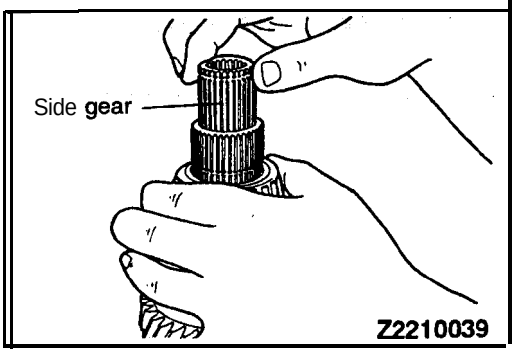


REASSEMBLY SERVICE POINTS

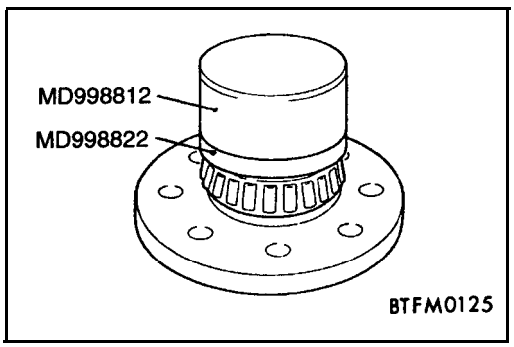
▶A◀ SPACERS INSTALLATION

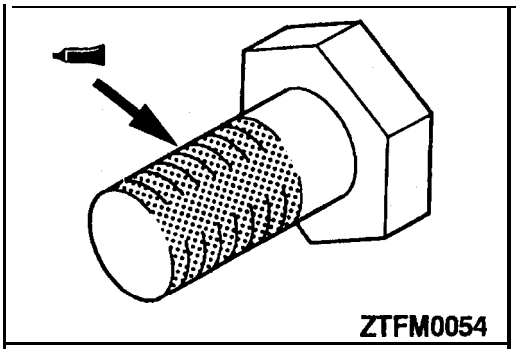
(1) Install the spacer, side gear, pinion gear, washer and pinion shaft to the center differential case.
(2) Holding down the pinion shaft, select the spacer of maximum thickness that allows the pinion gear to turn lightly and install it to the shaft.
(3) Install the side gear, spacer and output gear and tighten the bolt to the specified torque.
(4) Select the spacer of maximum thickness that allows the side gear to turn lightly and install it.
(5) Check that both side gears turn lightly.

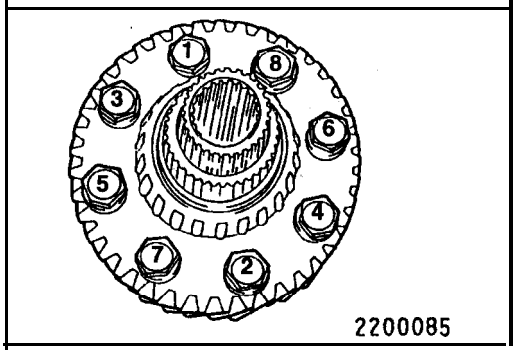
Standard, value:
Center differential side gear end play:
0.05–0.25 mm (.0020–.0010 in.)



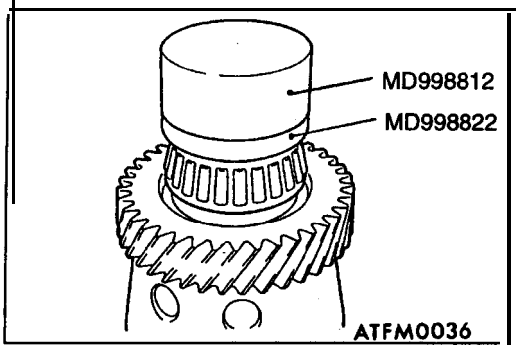
▶B◀ TAPER ROLLER BEARINGS INSTALLATION




ZTFM0054



2200085



ATFM0036

▶C◀ BOLTS INSTALLATION

(1) Apply the specified sealant to the bolt threads.

Specified sealant:
3M Stud Locking No.4170 or equivalent

(2) Tighten to the specified torque while following the order given in the illustration.

▶D◀ TAPER ROLLER BEARINGS INSTALLATION

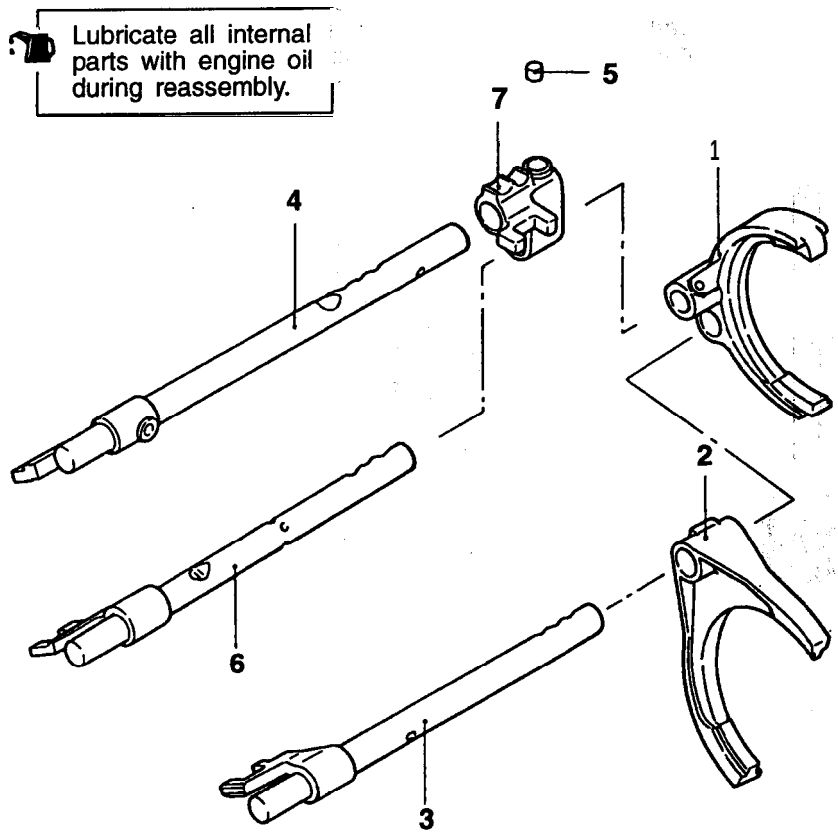
NOTE
Apply the special tool to the inner race only when installing the bearing.

TSB Revision

SHIFT FORK

22290310049

DISASSEMBLY AND REASSEMBLY

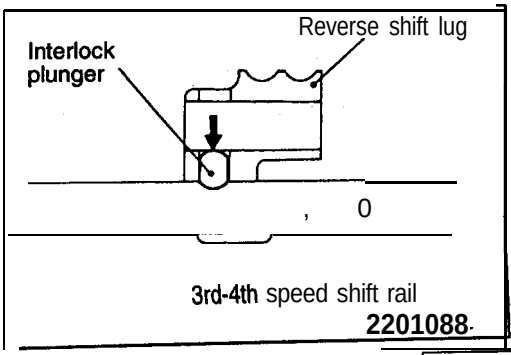


Z210027

Disassembly steps

1. 3rd-4th speed shift fork
2. 1st-2nd speed shift fork
3. 3rd-4th speed shift rail
4. 5th-reverse speed shift rail

▶A◀ 5. Interlock plunger
6. 3rd-4th speed shift rail
7. Reverse shift lug



REASSEMBLY SERVICE POINT

▶A◀ INTERLOCK PLUNGER INSTALLATION

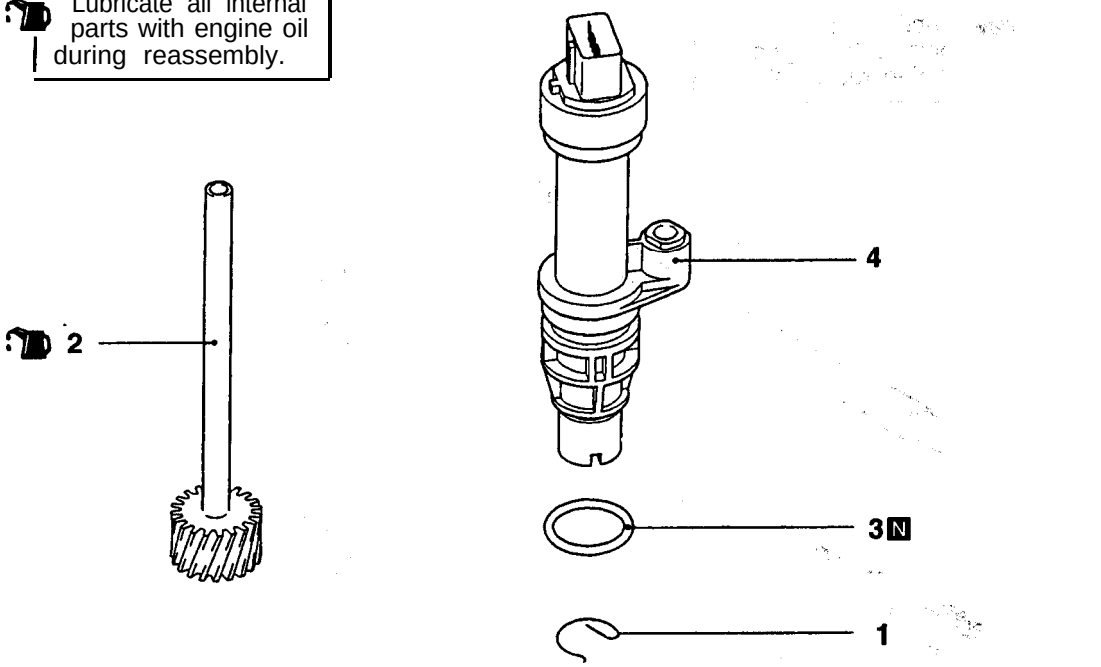
TSB Revision

SPEEDOMETER GEAR

22200340048

DISASSEMBLY AND REASSEMBLY

Lubricate all internal parts with engine oil during reassembly.



ATFM0580

Disassembly steps

1. e-clip
▶A◀ 2. Speedometer driven gear
3. O-ring
4. Sleeve

REASSEMBLY SERVICE POINT

▶A◀ SPEEDOMETER DRIVEN GEAR INSTALLATION

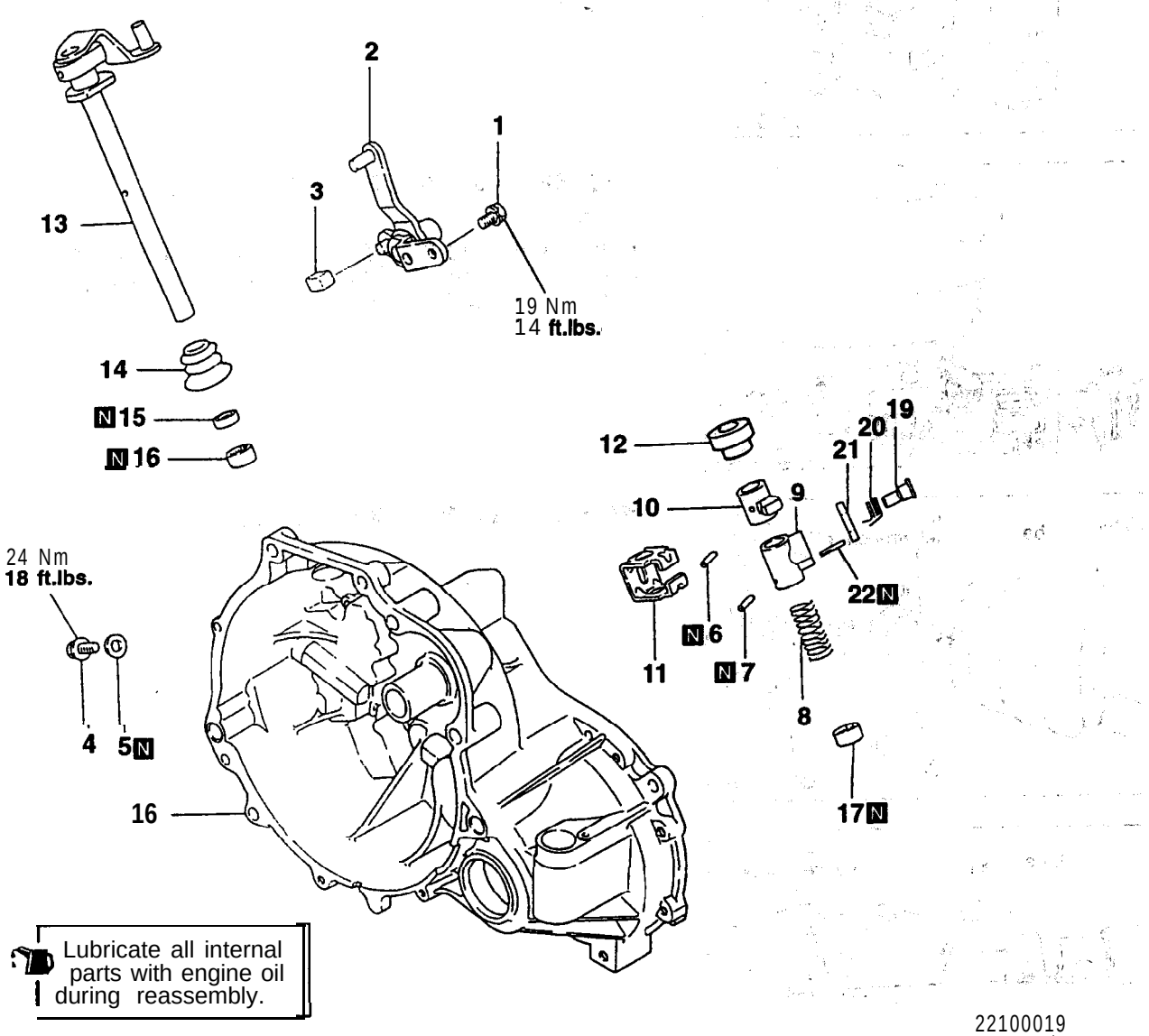
Apply gear oil sparingly to the speedometer driven gear shaft and insert the shaft.

TSB Revision

CLUTCH HOUSING

22200370054

DISASSEMBLY AND REASSEMBLY

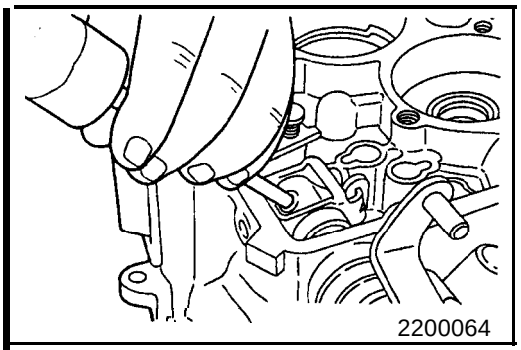


22100019

Disassembly steps

1. Bolt
2. Select lever assembly
3. Select lever shoe
4. Interlock plate bolt
5. Gasket
6. Lock pin ◀A▶ ▶C◀ ◀B▶ ▶C◀
7. Spring pin
8. Neutral return spring
9. Stopper body
10. Control finger
11. Interlock plate
12. Neutral return spring assembly
13. Control shaft
14. Control shaft boot
15. Oil seal ▶B◀
16. Needle bearing ◀C▶ ▶A◀
17. Needle, bearing ◀C▶ ▶A◀
18. Clutch housing
19. Pin
20. Return spring
21. Stopper plate
22. Spring pin

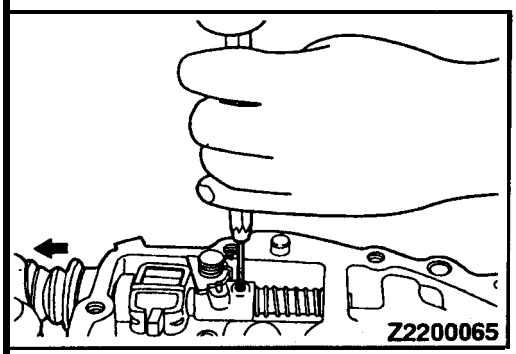
TSB Revision


2200064

DISASSEMBLY SERVICE POINTS

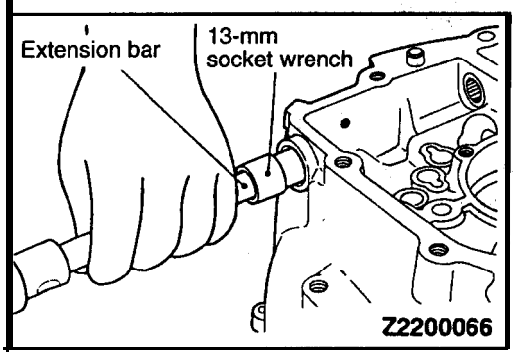
◀A▶ LOCK PIN REMOVAL

Caution
When removing the lock pin, turn the control lever to such position that the lock pin will not contact the clutch housing.


Z2200065

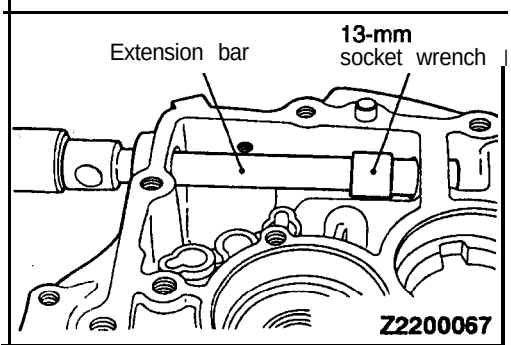
◀B▶ SPRING PIN REMOVAL

Caution
When removing the spring pin, pull the control shaft in the direction illustrated so that the spring pin will not contact the clutch housing.

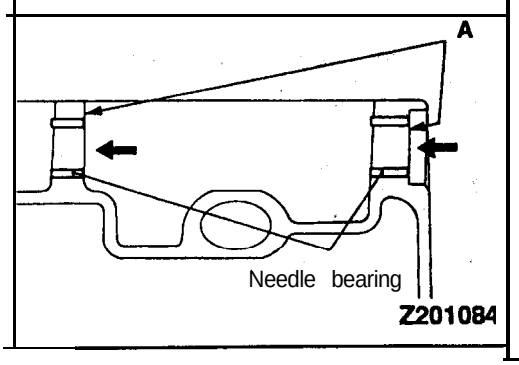


Z2200066

◀C▶ NEEDLE BEARING REMOVAL



Z2200067

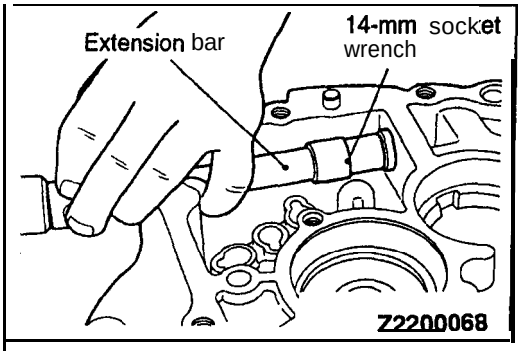


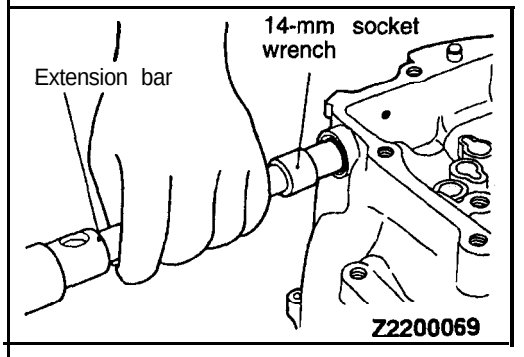
Z201084

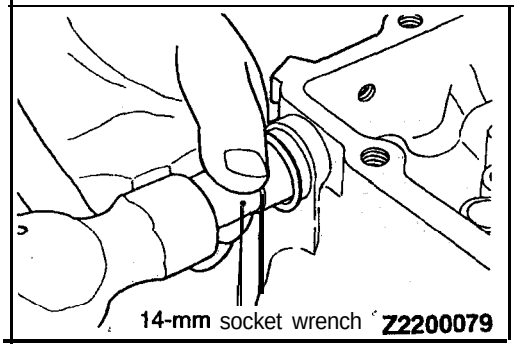
REASSEMBLY SERVICE POINTS

▶A◀ NEEDLE BEARING INSTALLATION

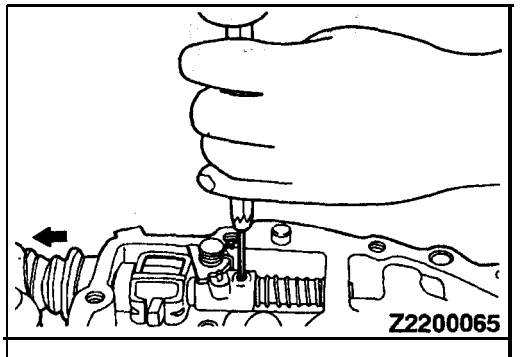
(1) Install the needle bearing flush with the surface A of the clutch housing using a socket wrench.
(2) Install with the part type stamped side facing the surface A.

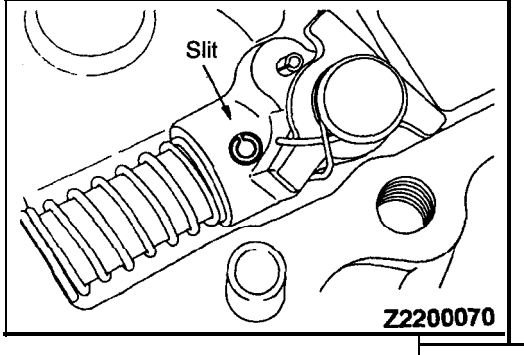






▶B◀ OIL SEAL INSTALLATION





▶C◀ SPRING PIN / LOCK PIN INSTALLATION

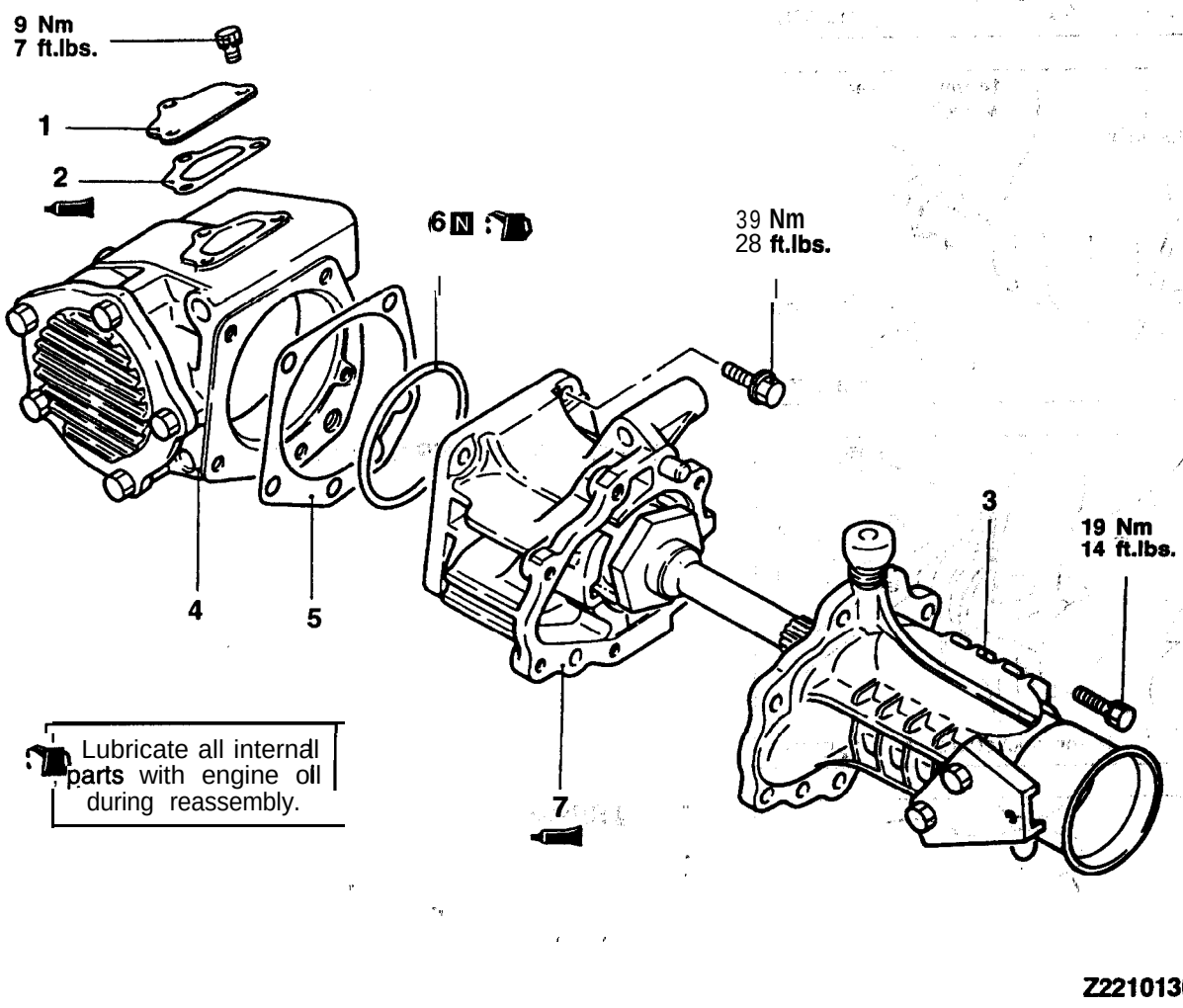
Caution

- **Do not reuse the spring pin and lock pin.**
- **Install the spring pin In such a way its slit will be at right angle to the control shaft center.**

TRANSFER <W5M33>

22200400036

DISASSEMBLY AND REASSEMBLY

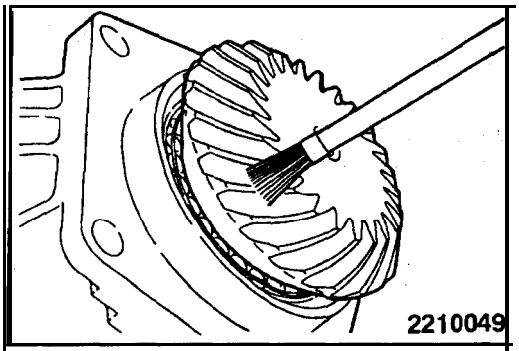


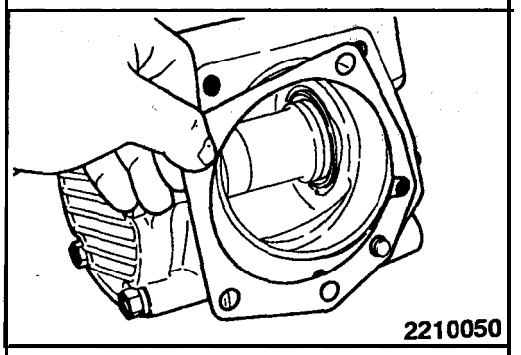
Z2210130

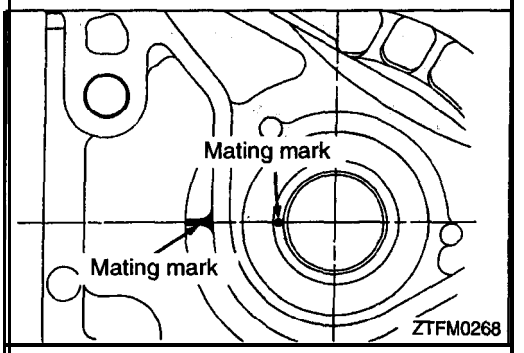
Disassembly steps

1. Cover
▶C◀ 2. Cover gasket
▶B◀ 3. Extension housing assembly
4. Transfer case sub assembly
5. Spacer
▶A◀ 6. O-ring
7. Transfer case adapter sub-assembly

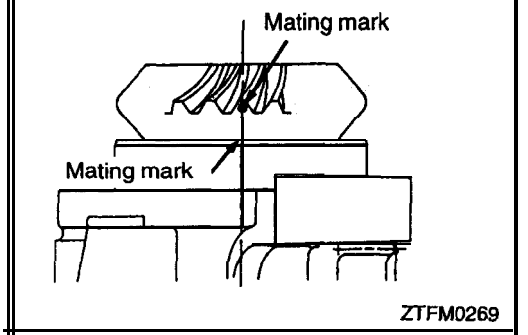
TSB Revision


2210049

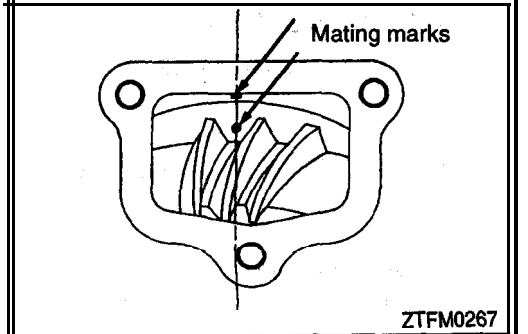

2210050



ZTFM0268



ZTFM0269



ZTFM0267

REASSEMBLY SERVICE POINTS

BACKLASH ADJUSTMENT,

(1) Apply a light and uniform coat of machine blue or red lead to the driven bevel gear teeth (both sides) using a brush.

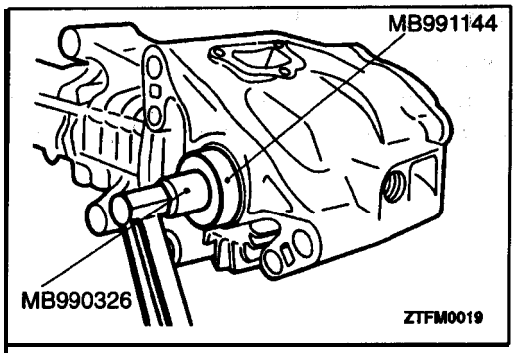
(2) install the spacer that has been used.

(3) Align the transfer case and drive bevel gear mating marks.

(4) Align the transfer case adapter and drive bevel gear mating marks.

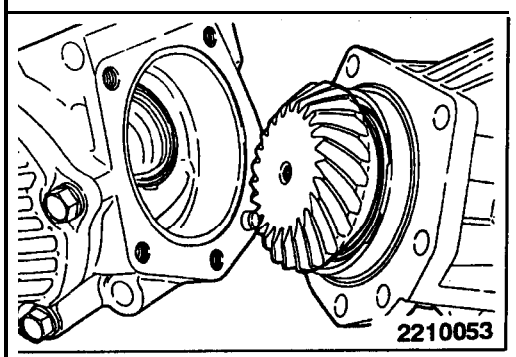
(5) Assemble the transfer case and transfer case adapter and tighten to the specified torque.

(6) With the mating marks" aligned as in step (3), confirm that the transfer case and drive bevel gear mating marks are matched looking from the cover.'



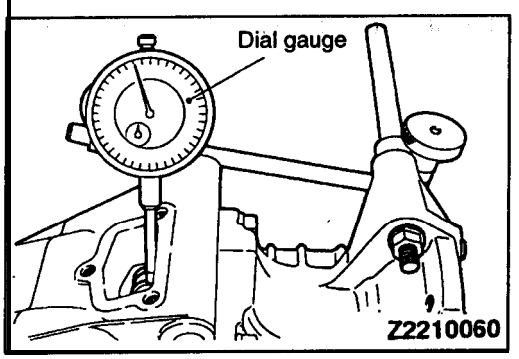
(7) Turn the drive bevel gear shaft (one. forward turn, one reverse turn) using the special tool.

NOTE.
Do not turn the drive bevel gear shaft more than one turn in either direction as this will 'cause an unclear tooth contact pattern.



(8) Check to see if the drive bevel gear tooth contact is normal.

NOTE
Refer to the TOOTH CONTACT ADJUSTMENT PROCEDURES on page 22B-70 for the standard tooth contact.

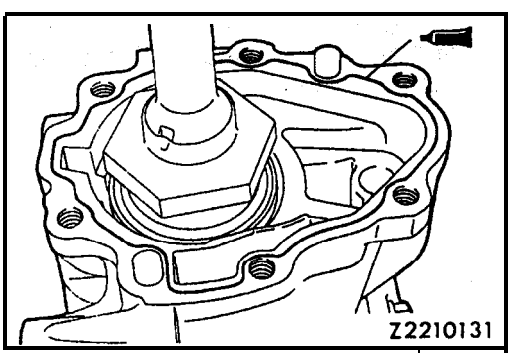


(9) Check to see if the drive bevel gear and driven bevel backlash is as specified.

Standard value: Bevel gear set backlash 0.08–0.13 mm (.0031–.0051 in.)

▶A◀ O-RING INSTALLATION'

Caution
Apply transmission oil to the Q-ring, before installation.

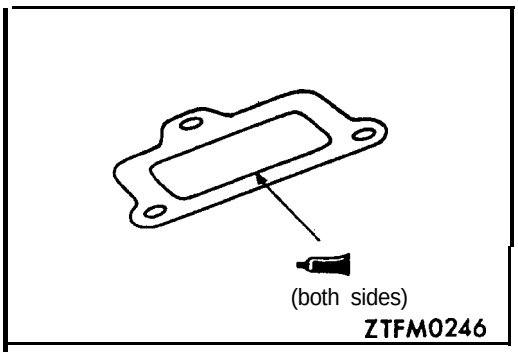


▶B◀ EXTENSION H O U S I N G INSTALLATION .

Apply sealant to the adapter flange surface and install the extension housing.

Specified sealant:
Mitsubishi genuine Sealant Part No.MD997740 or equivalent

NOTE
Squeeze out sealant from the 'tube uniformly and continuously in adequate amount.

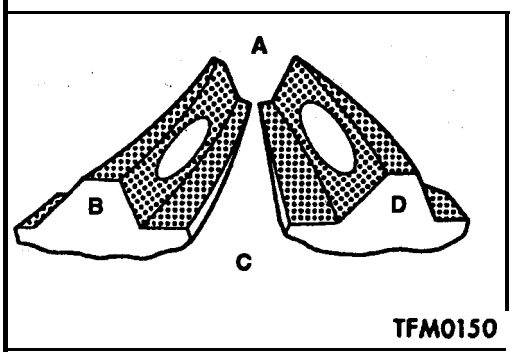


▶C◀ SEALANT APPLICATION TO COVER GASKET

Specified sealant:
3M ATD Part No.8660 or equivalent

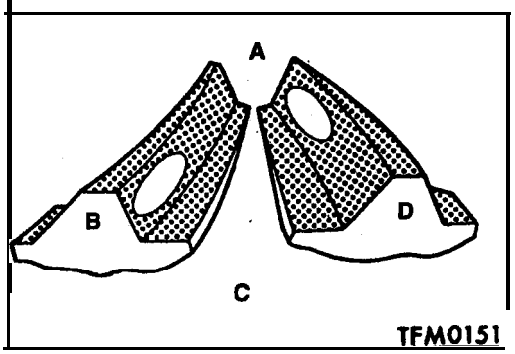
TOOTH CONTACT ADJUSTING PROCEDURES

1. Standard tooth contact pattern

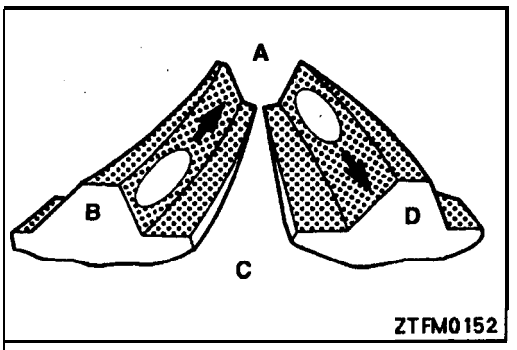


A .... Small end side
B .... Drive side tooth face
(Side on which force acts when running forward)
C .... Big end side
D .... Coast side tooth face
(Side on which force acts when reversing)

2. Tooth contact pattern, produced when drive bevel gear height is too large

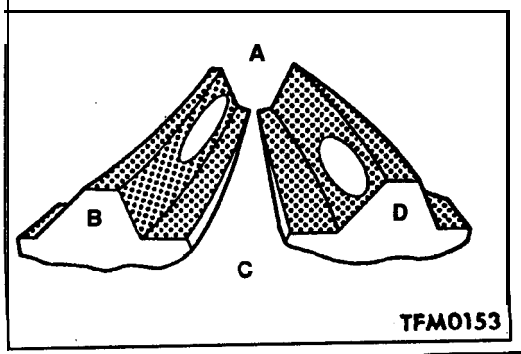


Cause
The driven bevel is too close to the drive bevei gear.

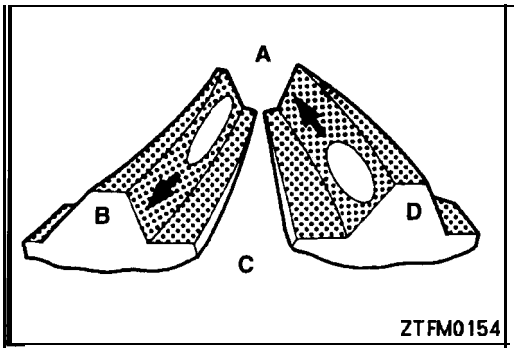


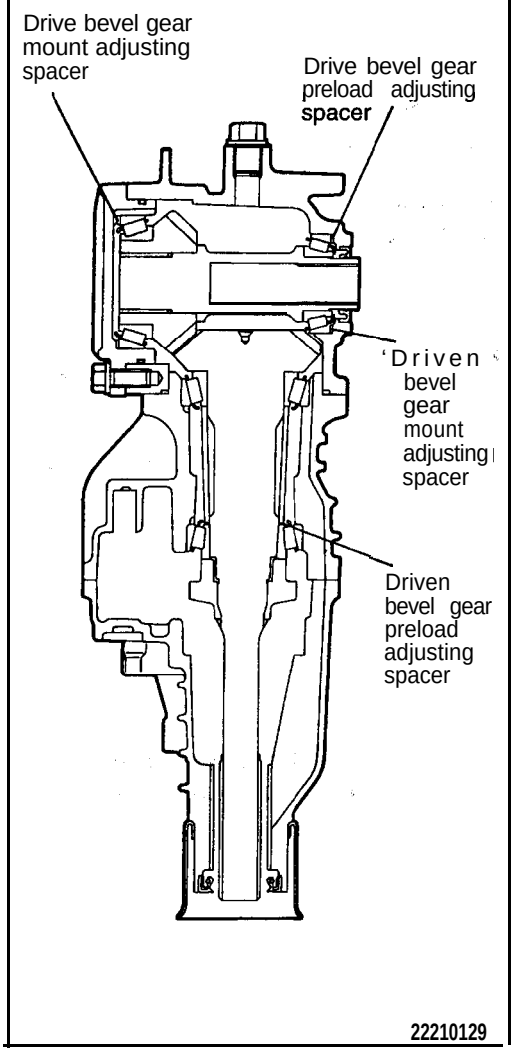
Remedy
Use thicker bevel gear mount adjusting spacer to separate the driven bevel gear more from the drive bevel gear.

3. Tooth contact pattern produced when driven bevel gear height is too small



Cause
The driven bevel, gear is too separated from the drive bevel gear.





Remedy

Use thinner driven bevel gear mount adjusting spacer, to briiig the driven bevel gear more closer to the drive bevel gear.

NOTE

(1) If' correct tooth contact cannot be obtained even by change of the driven bevel gear mount adjusting spacer, increase or decrease; or decrease the drive bevel gear preload adjusting, spacer and the drive bevel gear mount adjusting spacer as described below and then adjust tooth contact again.

- When the driven 'bevel gear height is too small even if the thinnest driven bevel gear mount adjusting spacer 0.13 mm (.0051 in.) is used:

  Replace the drive bevel gear mount adjusting spacer that is in use with one that is one rank thicker and replace the drive bevel preload adjusting spacer that is in use with one that is one rank 'thinner.

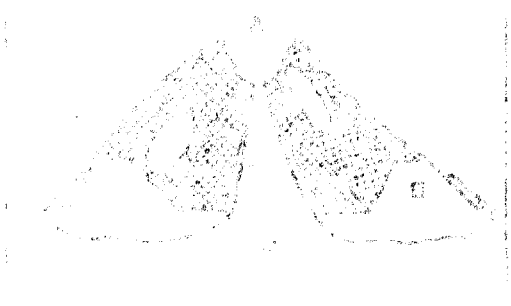
- When the driven bevel gear height is too large even if the thickest driven bevel gear mount adjusting spacer 0.52 mm (.0205 in.) is used:

  Replace the drive. bevel gear mount adjusting spacer that is in use with one that is one rank thinner and replace the drive bevel gear preload adjusting spacer

equal or close to the standard pattern is obtained.

to the standard pattern by above adjustment, replace the drive bevel gear and driven bevel gear as a set

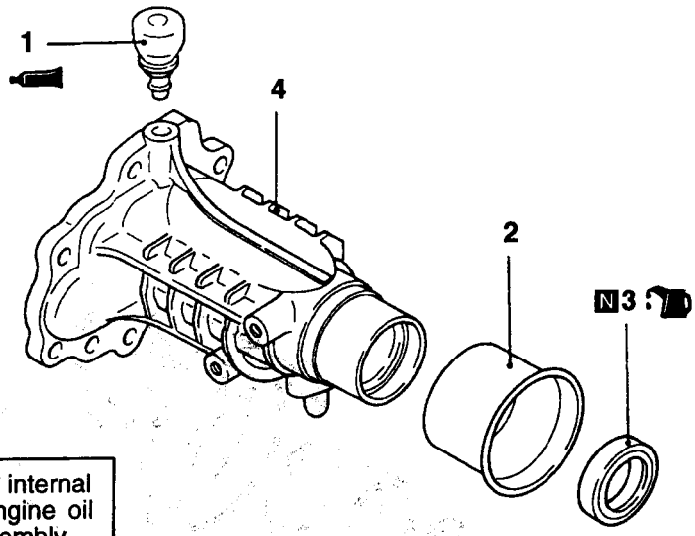
tooth contact.



EXTENSION HOUSING <W5M33>

22200430035

DISASSEMBLY AND REASSEMBLY

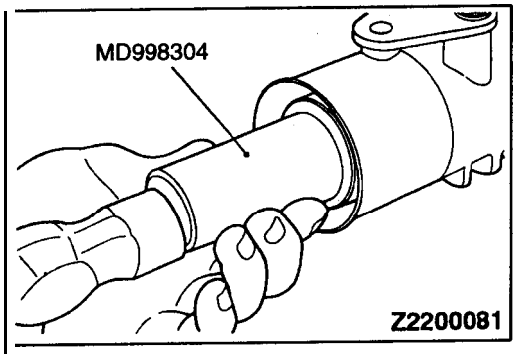


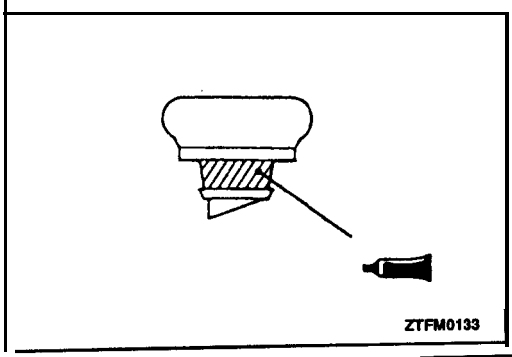
Lubricate all internal parts with engine oil during reassembly.

ZTFA0602

Disassembly steps

▶B◀ 1. Air bleeder
2. Dust seal guard
▶A◀ 3. Oii seal
4. Extention housing





REASSEMBLY SERVICE POINTS

▶A◀ OIL SEAL INSTALLATION

▶B◀ AIR BLEEDER INSTALLATION

Install the air bleeder applying sealant to the inserting portion.

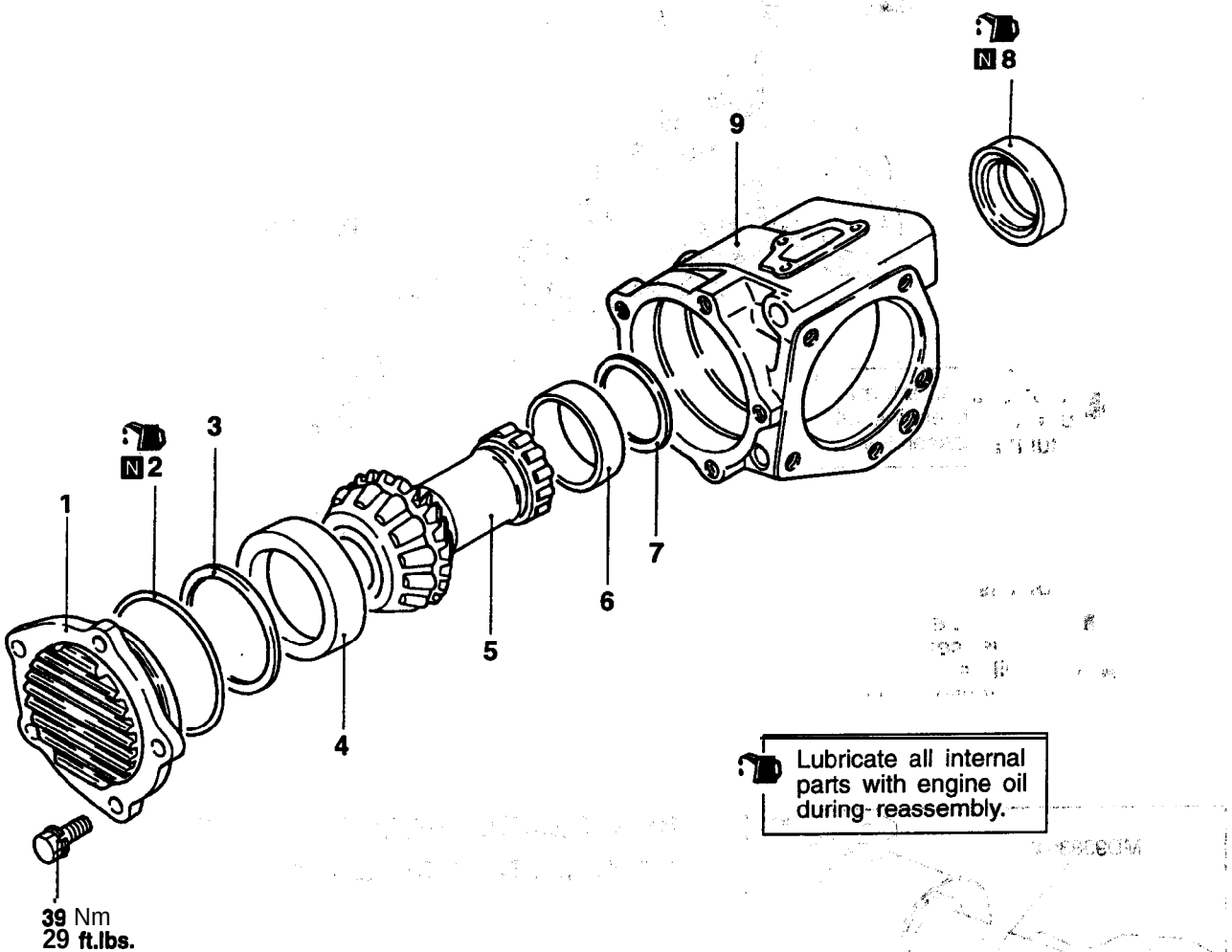
Specified sealant:
3M SUPER WEATHERSTRIP **No.8001 or equivalent**

TSB Revision

TRANSFER CASE <W5M33>

22200460034

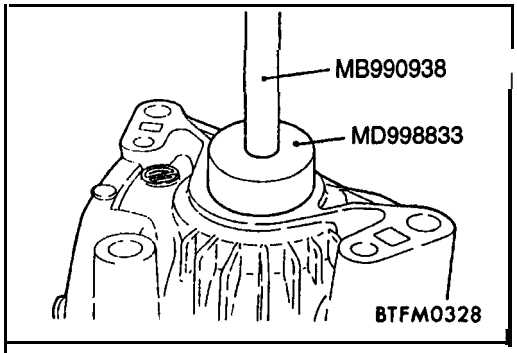
DISASSEMBLY AND REASSEMBLY

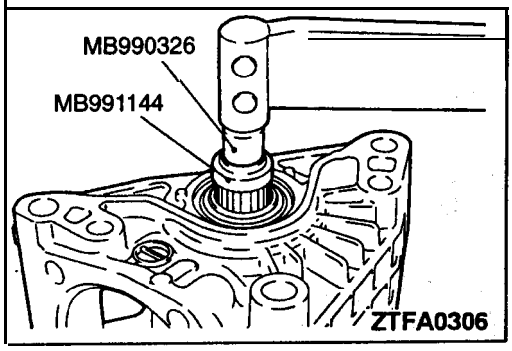


Disassembly steps

1. Transfer cover
▶C◀ ▶B◀ 2. O-ring
3. Spacer
4. Outer race
5. Drive bevel gear assembly
6. Outer race
▶B◀ 7. Spacer
▶A◀ 6. Oil seal
9. Transfer case

TSB Revision





REASSEMBLY SERVICE POINTS

▶A◀ OIL SEAL INSTALLATION

▶B◀ SPACER SELECTION

(1) Use the existing spacer to assemble the transfer case.
(2) Using the special tool, check that the bevel gear rotating drive torque is within the standard value.

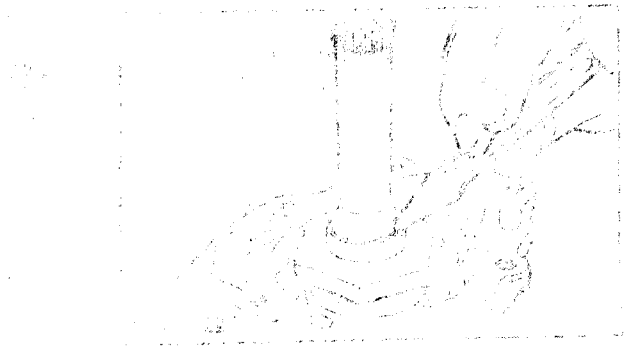
Standard value: 1.7–2.5 Nm (1.23–1.81 ft.lbs.)

(3) If the rotating drive torque is outside of the standard value, adjust using adjusting spacers.

NOTE
For adjustment, use two spacers of which thickness is as close as possible to each other.

▶C◀ O-RING INSTALLATION

Caution
Apply transmission oil to the O-ring before installation.

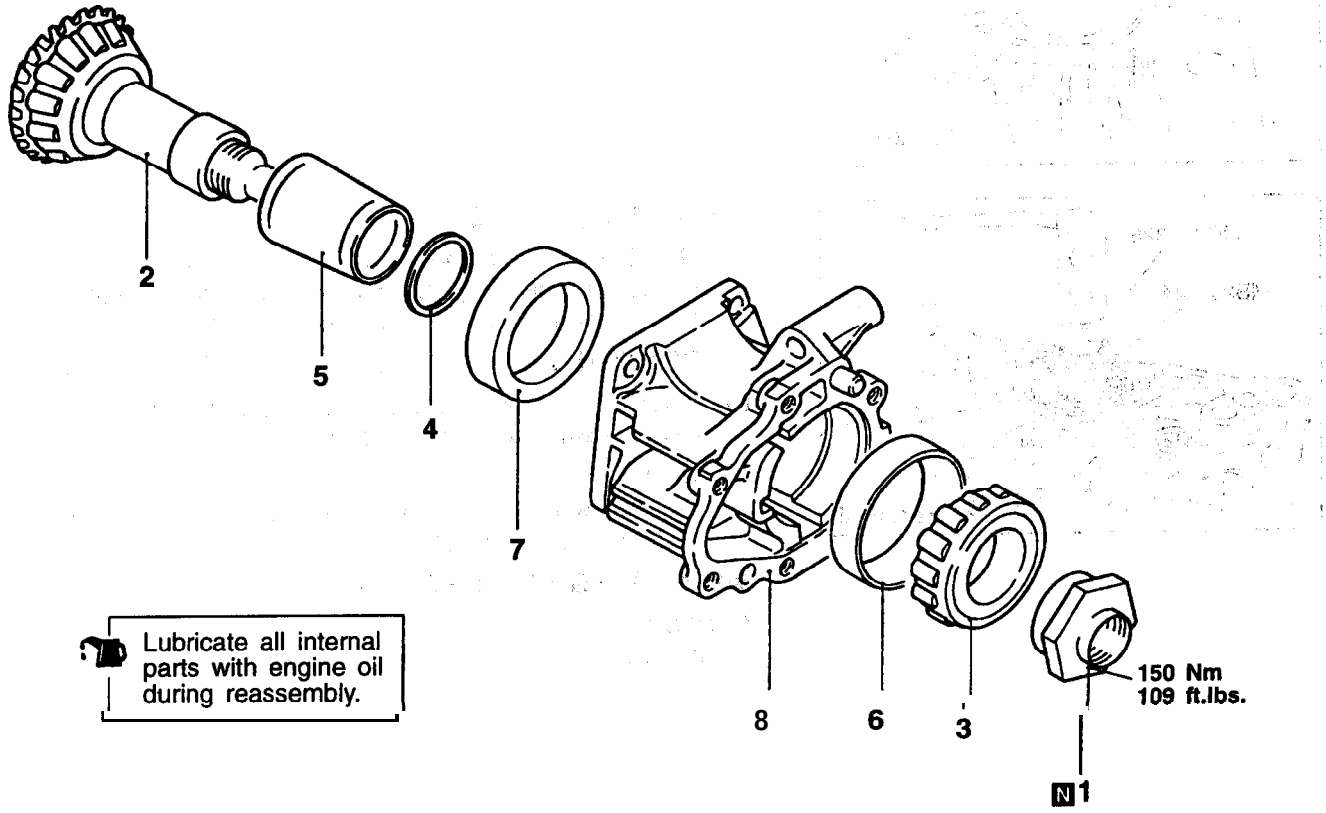


TSB Revision

TRANSFER CASE ADAPTER <W5M33>

22200490033

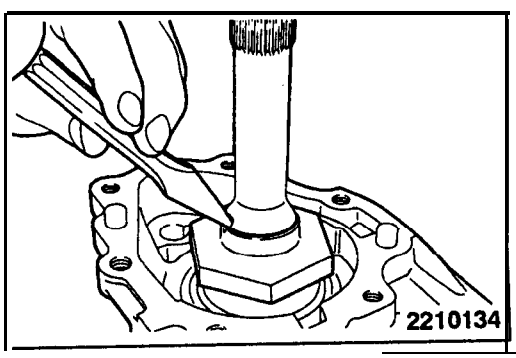
DISASSEMBLY AND REASSEMBLY



22210133

Disassembly steps

◀A▶ ▶C◀ 1. Lock nut
2. Driven bevel gear assembly
▶B◀ 3. Taper roller bearing
▶A◀ 4. Spacer
5. Collar
6. Outer race
7. Outer race
6. Transfer case assembly

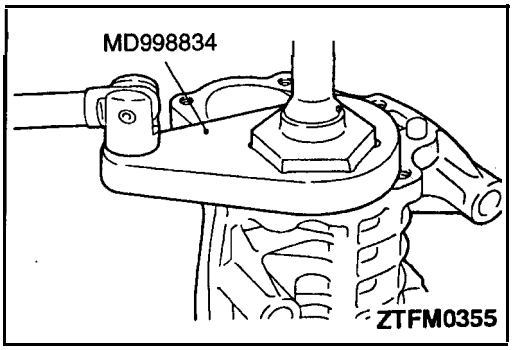


DISASSEMBLY SERVICE POINTS

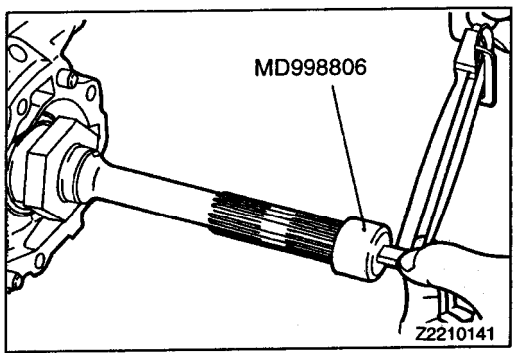
◀A▶ LOCK NUT REMOVAL

(1) Unlock the lock nut. (Straighten the bent nut.)

TSB Revision



(2) Holding the driven bevel gear, in a vise and using the special tool, remove the lock nut.



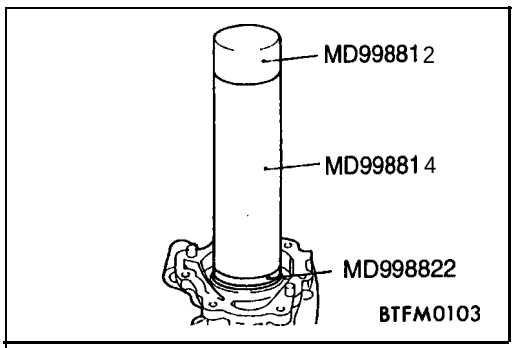
REASSEMBLY SERVICE POINTS

▶A◀ SPACER SELECTION

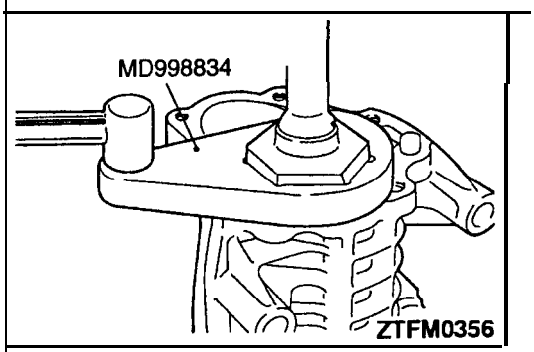
(1) Use the exisfing spacer to assemble the transfer case adapter.
(2) Using the special tool, check that the bevel gear rotating drive torque is within standard value.

Standard value: 1.0–1.7 Nm (0.72–1.23 ft.lbs.)

(3) If the rotating drive torque is outside of the standard value, adjust using adjusting spacers.

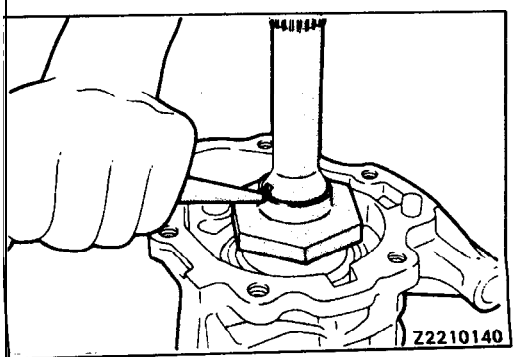


▶B◀ TAPER ROLLER BEARING INSTALLATION



▶C◀ LOCK NUT INSTALLATION

(1) Holding the driven bevel gear in a vise and using the special tool, tighten the lock nut to the specified torque.



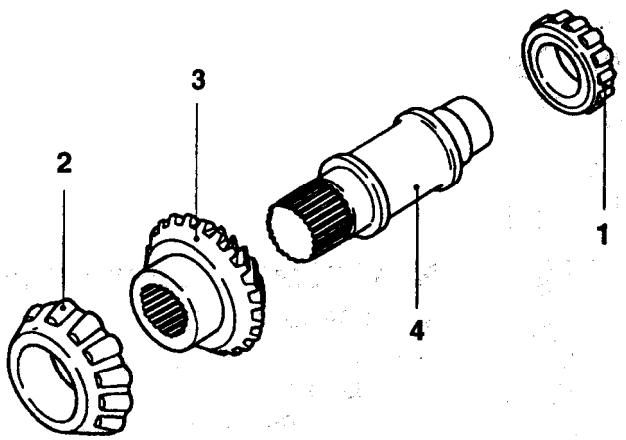
(2) Caulk the lock nut at two positions.

TSB Revision

DRIVE BEVEL GEAR <W5M33>

22200520039

DISASSEMBLY AND REASSEMBLY

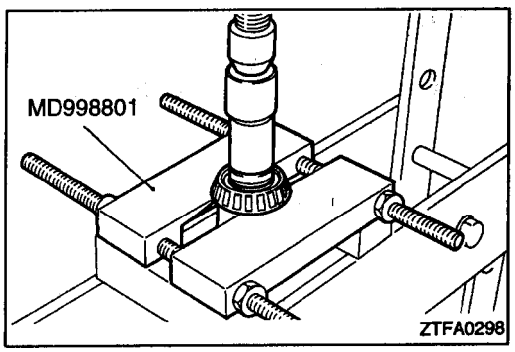


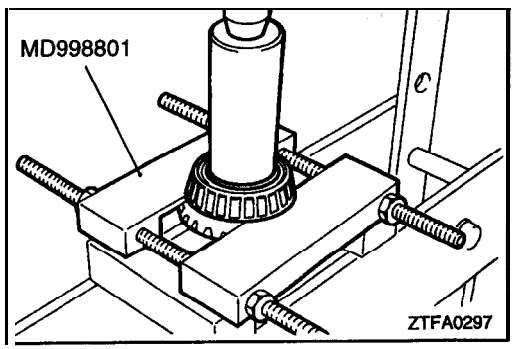
Lubricate all internal parts with engine oil during reassembly.

22210142

Disassembly steps

◀A▶ ▶B◀ 1. Taper roller bearing
◀A▶ ▶B◀ 2. Taper roller bearing
◀B▶ ▶A◀ 3. Drive bevel gear
4. Drive bevel gear shaft

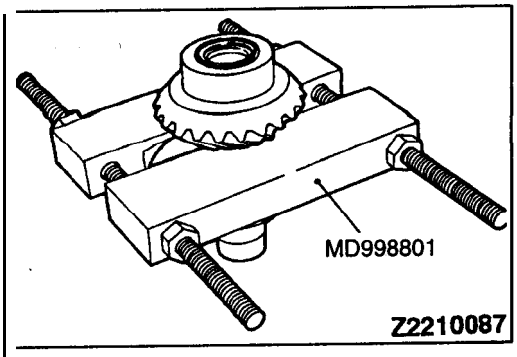




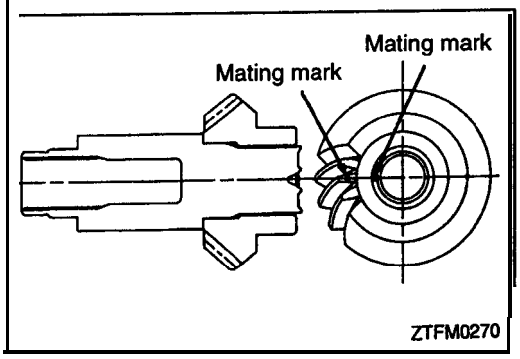
DISASSEMBLY SERVICE POINTS'.

◀A▶ TAPER ROLLER BEARING REMOVAL

TSB Revision



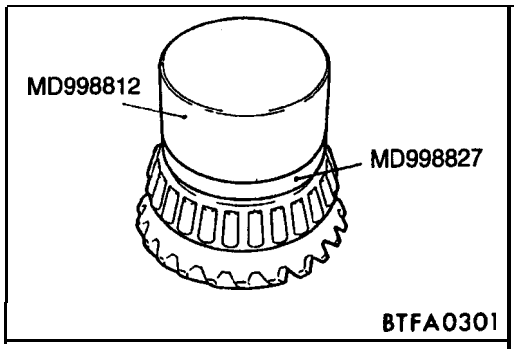
◀B▶ DRIVE BEVEL GEAR REMOVAL



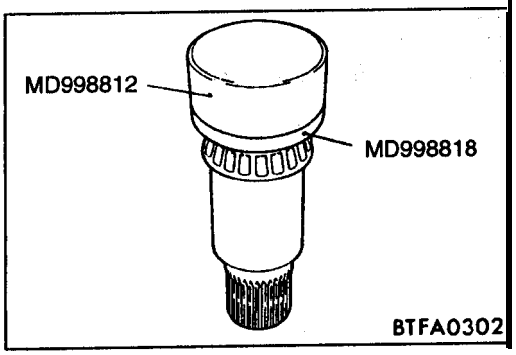
REASSEMBLY SERVICE POINTS

▶A◀ TRANSFER DRIVE BEVEL GEAR INSTALLATION

Install the drive bevel gear and drive bevel gear shaft with the mating marks aligned.



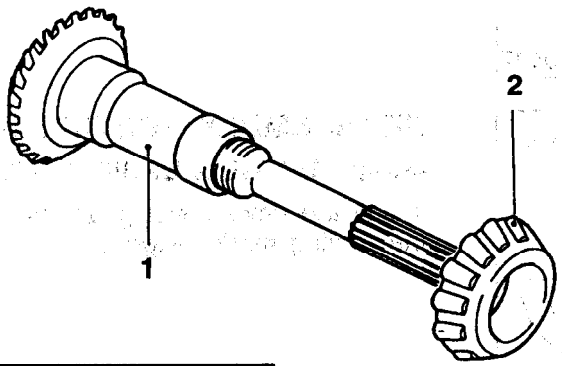
▶B◀ TAPER ROLLER BEARING INSTALLATION



DRIVEN BEVEL GEAR <W5M33>

22200550038

DISASSEMBLY AND REASSEMBLY

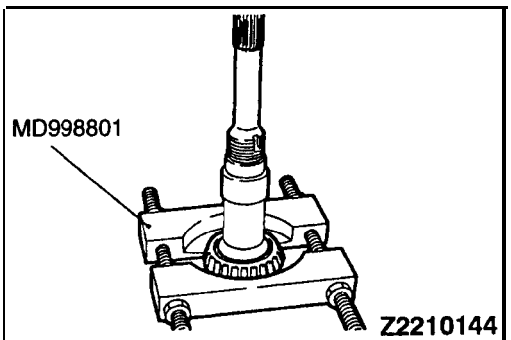


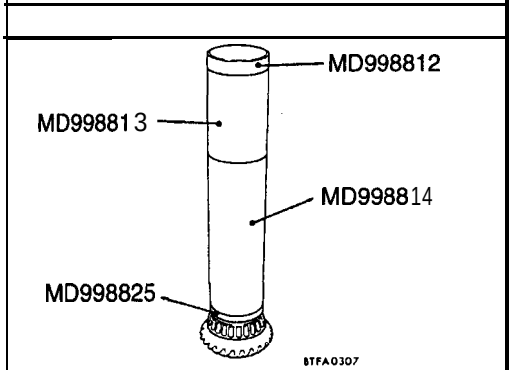
Lubricate all internal parts with engine oil during reassembly.

Z2210143

Disassembly **steps**

1. Driven bevel gear
◀A▶ ▶A◀ 2. Taper roller bearing





DISASSEMBLY SERVICE POINT

◀A▶ TAPER ROLLER BEARING REMOVAL

REASSEMBLY SERVICE POINT

▶A◀ TAPER ROLLER BEARING INSTALLATION

TSB Revision.

MANUAL TRANSAXLE OVERHAUL <F5MC1>

CONTENTS

22219000016

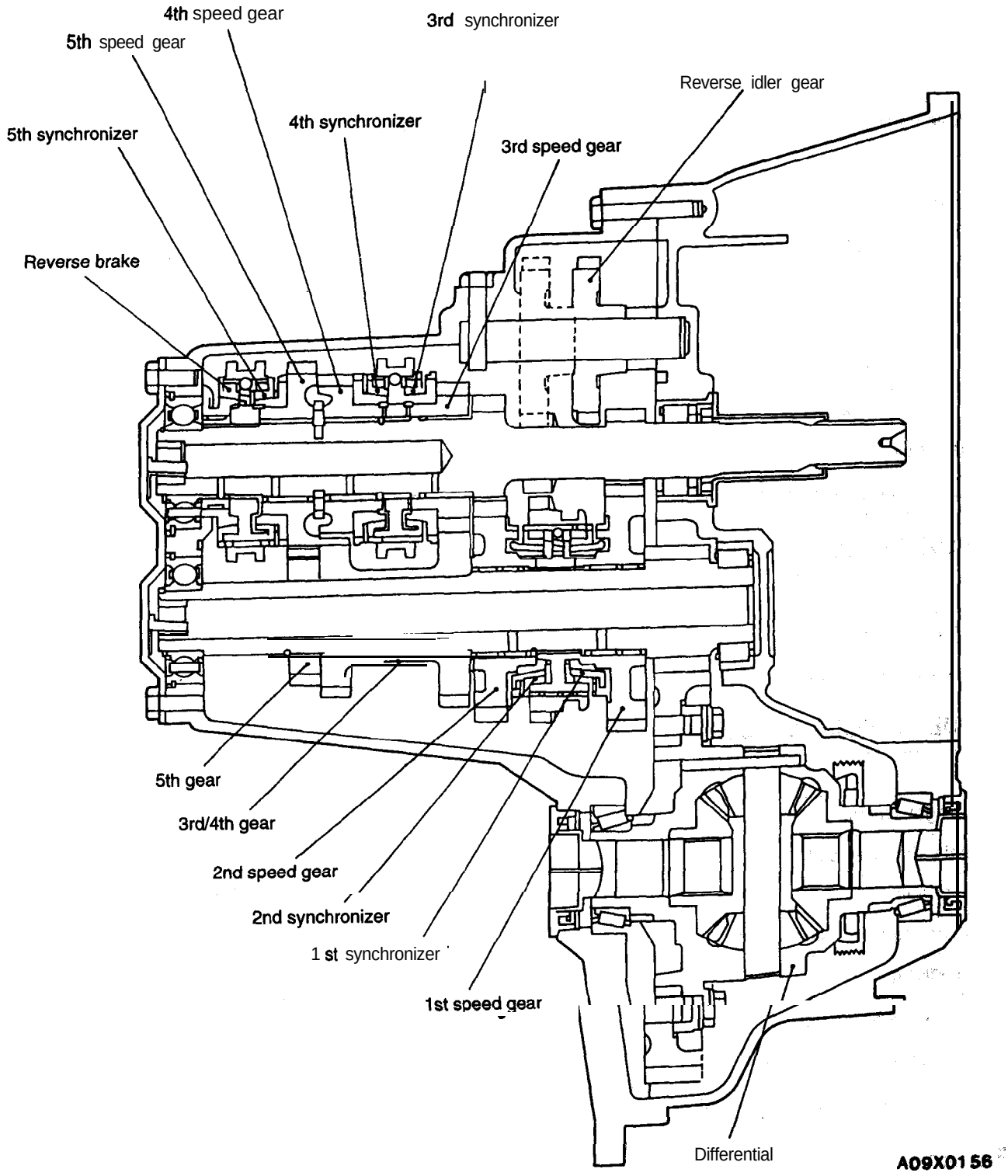
GENERAL INFORMATION

22210010018

The F5MC1 transaxle internal components can only be serviced by separating the gear case from the bellhousing case. The transaxle output shaft is serviced as a unit, no, disassembly and reassembly is possible. Damage to the transaxle may results.

TSB Revision

SECTIONAL VIEW



TSB Revision

SPECIFICATIONS

22210020028

GENERAL SPECIFICATIONS

Items		Specifications	
Model		F5MC1-1 -QPAF	F5MC1-1 -QQAF
Applicable engine		420A	420A
Type		5-speed floor shift	5-speed floor shift
Gear ratio	1st	3.54	3.54
	2nd	2.13	2.13
	3rd	1.36	1.36
	4th	1.03	1.03
	5th	0.81	0.81
	Reverse	3.94	3.94
Final gear ratio		3.55	3.55
Speedometer gear ratio (driven/drive)		28/36	29/36

SERVICE SPECIFICATIONS

22210030014

Items	Specifications
Differential side gear end play mm (in.)	0.25–0.33 (.0098–.0130)
Differential case preload mm (in.)	0.18 (.0071)

TORQUE SPECIFICATIONS

22210040017

Items	N·m	ft.lbs.
Back-up light switch	24	18
Differential ring gear bolt	81	60
End cover bolt	29	21
Output bearing race retaining strap	11	9.6
Reverse idler gear bolt	26	19
Reverse fork bracket bolt	11	9.6
Shift cable bracket-transaxle	28	20
Transaxle case – clutch housing bolt	29	21

SEALANTS

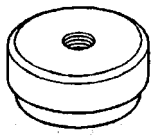
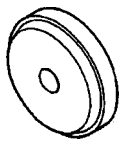
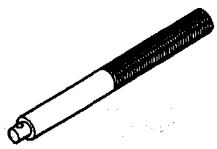
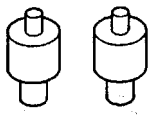
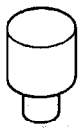
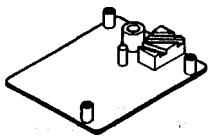
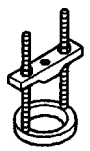
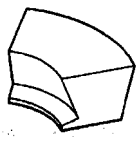
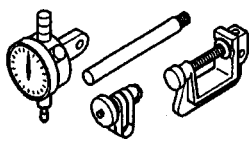
22210050010

Items	Specified sealant	Quantity
End cover and bolts	Loctite 18718 or equivalent	As required
Clutch housing to transaxle case	Loctite 51817 or equivalent	As required
Clutch housing to transaxle case bolts	Loctite 51817 or equivalent	As required

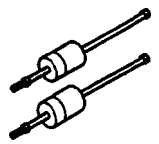
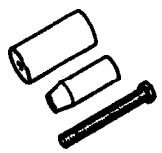
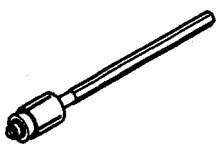
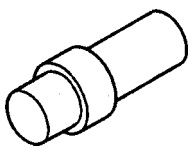
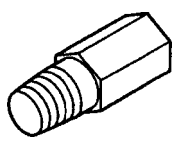
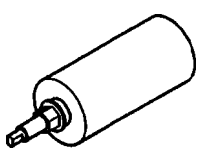
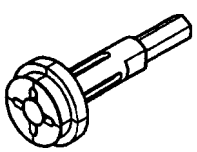
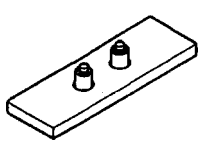
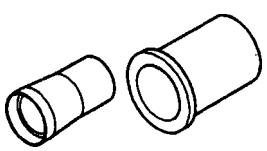
TSB Revision

SPECIAL TOOLS

22210060013

Tool	Tool number and name	Supersession	Application
	MB990927 Installer adapter	–	Removal of input shaft bearing and sleeve.
	MB990933 Installer adapter		Installation of output bearing race and differential bearing race.
	MB990938 Installer bar	MB990938-01	Use with MB990926, MB990933.
	MB995023 Bearing remover & installer	5785-1	Installation and removal of input shaft bearing, output shaft bearing.
	MB995024 Bearing remover & installer	5785-2	
	MB995025 Bearing remover & installer	5785-3	
	MB995028 Puller press	C-293	Removal of differential bearing.
	MB995029 Puller blocks adapter	C-293-45	
	MB995030 Dial indicator set	C-3339	Adjustment of differential side gear.

TSB Revision

Tool	Tool number and name	Supersession	Application
	MB995031 Puller set	C-3752	Removal of shifter rail bushing, shifter crossover bushing, shifter selector shaft.
	MB995033 Seal installer	C-4680-1	Installation of input shaft bearing and sleeve.
	MB995038 Differential bearing torque tool	C-4995	Checking of different/al bearing end play, differential bearing turning torque.
	MB995039 Adapter	C-4996	Removal of differential bearing. Adjustment of differential side gear end play.
	MB995040 Bushing remover	6786	Removal of shifter rail bushing, shifter selector shaft.
	MB995048 Cup remover	L-4518-1	Removal of diffeiential bearing race.
	MB995052 Bearing race remover	6787	Removal of output bearing race.
	MB995056 Bearing remover & installer	6768	Removal of input shaft bearing and output shaft bearing.
	MB995058 Bearing installer	C-4992-1	Installation of input shaft bearing, output bearing.

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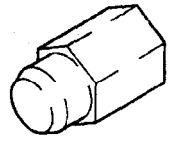
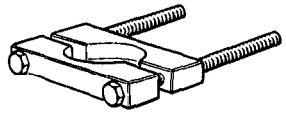
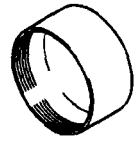
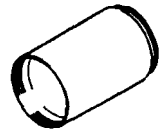
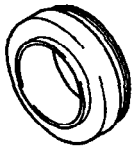
Tool	Tool number and name	Supersession	Application
	MD998343 Adapter	MD998343-01	Installation of shifter rail bushing, shifter selector shaft.
	MD998801 Bearing remover	MD998348-01	Installation and removal of each bearing, synchronizer.
	MD998812 Installer cap	General service tool	Use with MD998812, MD998821.
	MD998813 Installer – 100	General service tool	Use with MD998812, MD998821.
	MD998821 Installer adapter (44)	–	Installation of 3–4 speed synchronizer, 5 speed synchronizer and differential bearing cone.
	MD998826 Installer adapter (54)	–	Installation of axle shaft oil seal.

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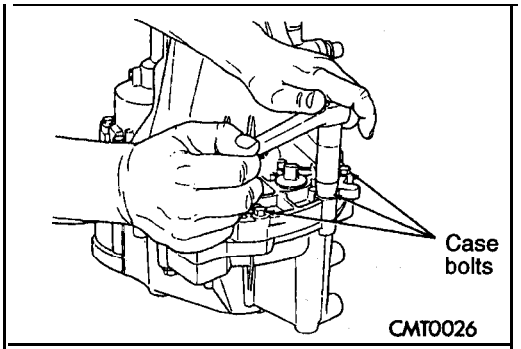
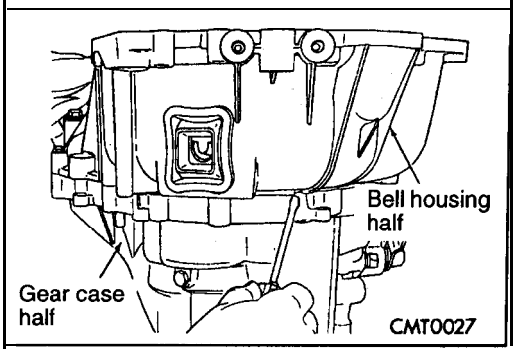
CASE DISASSEMBLY

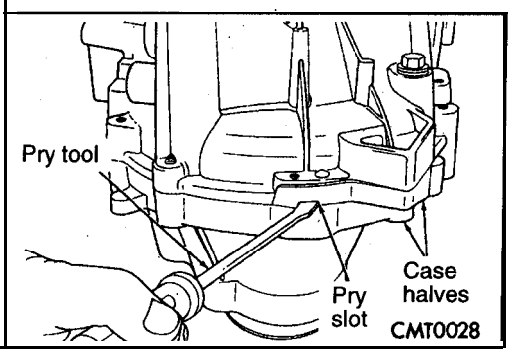
22210070016

(1) Place transaxle on bench.
(2) Remove shift levers. Remove transaxle case half bolts.'

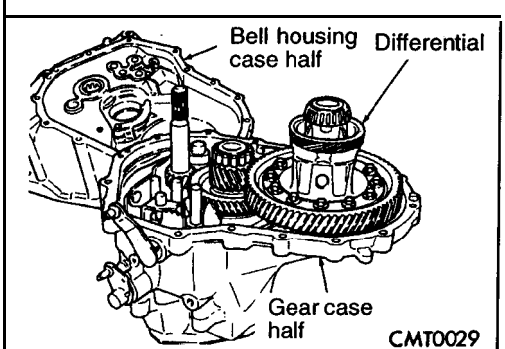


(3) Place two screwdrivers in the slots provided in the case halves near the dowels. Separate the case halves.'

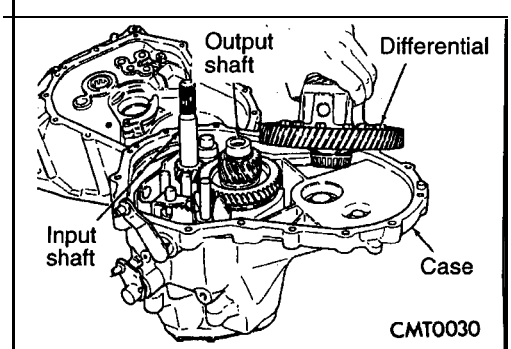


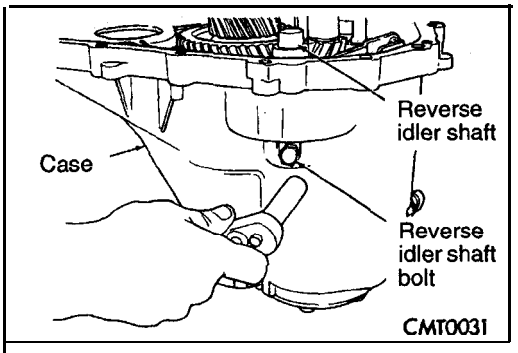


(4) Remove bell housing case half, from gear case half.

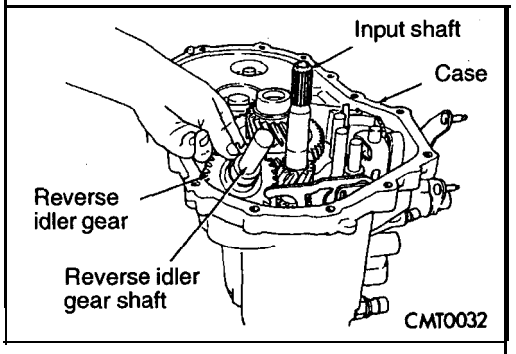


(5) Remove output shaft roller bearing from output shaft.
(6) Remove differential assembly.

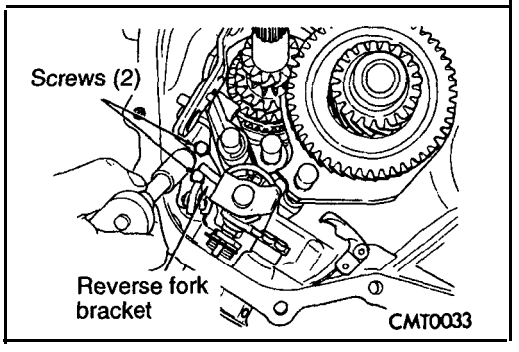




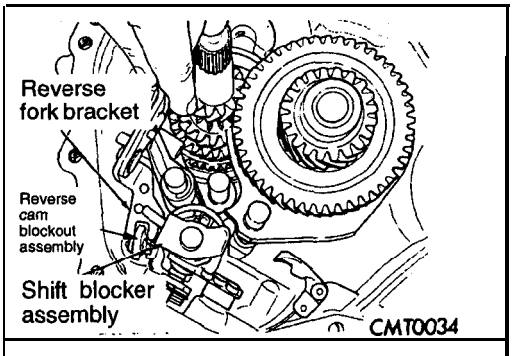
(7) Remove reverse idler shaft **bolt.**



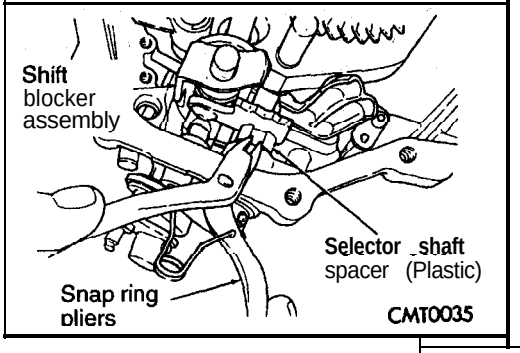
Remove reverse idler gear.



(8) Remove two screws retaining **reverse** fork bracket.



Remove reverse fork bracket and reverse cam **blockout** assembly.



(9) Using snap ring pliers, remove **selector** shaft **spacer.**

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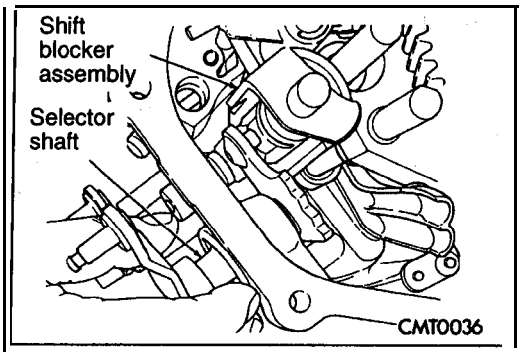
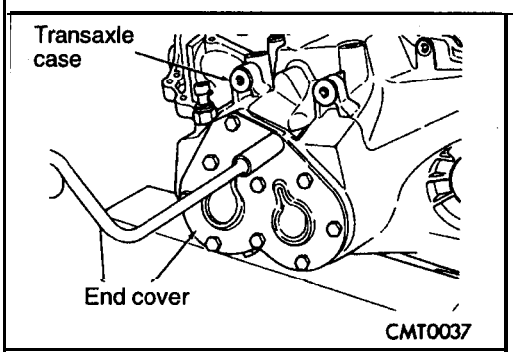
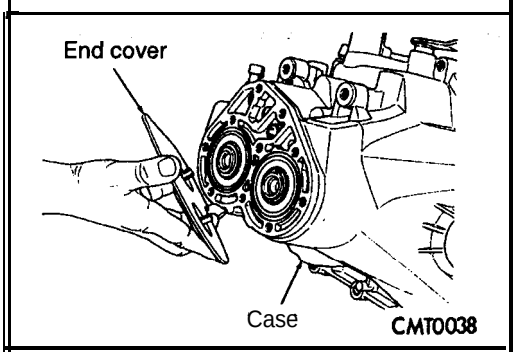
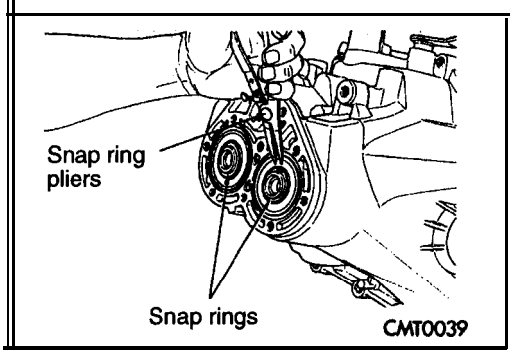


(10) Pull the selector shaft shift pin out of the slot in the blocker, assembly. Turn selector shaft up and out of the way.

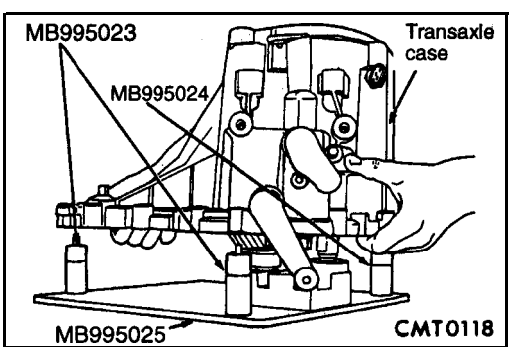


(11) Remove transaxle end cover.

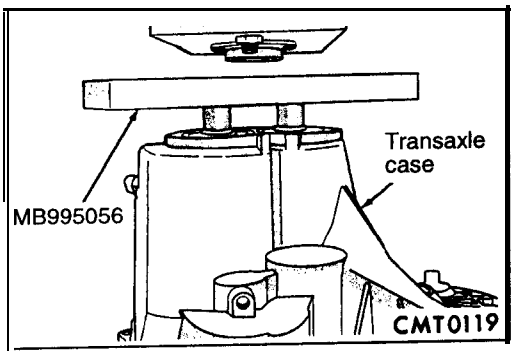




(12) Remove two snap rings retaining the output shaft and the input shaft to the bearing.

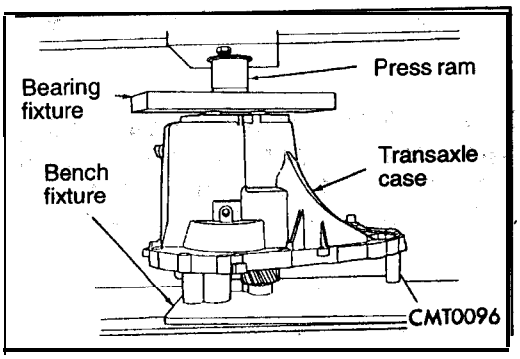


(13) Using bench fixture and shims provided (MB995023, MB995024, MB995025), turn transaxle over., Install transaxle onto bench fixture. Verify shim spacers are in position on bench fixture. Install transaxle into shop press.



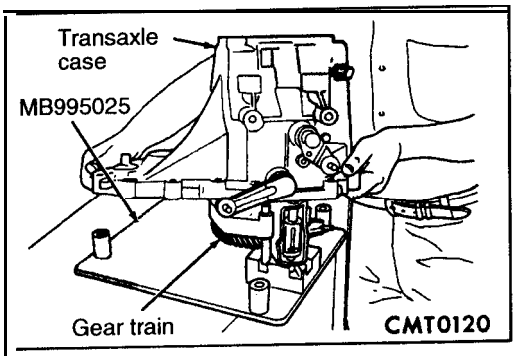
(14) Install bearing fixture (MB995056) onto transaxle end bearings. Verify tool is property aligned to input and output shaft.

Caution
The oil dams in the input and output shaft can be damaged while pressing on the shafts if the bearing fixture is not properly used.

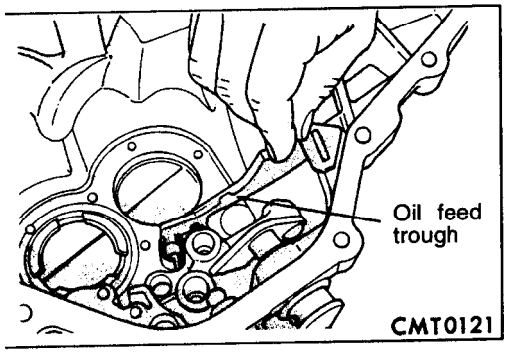


(15) Install transaxle gear case and bench fixture onto shop press. Press output and input shaft assemblies out of case.

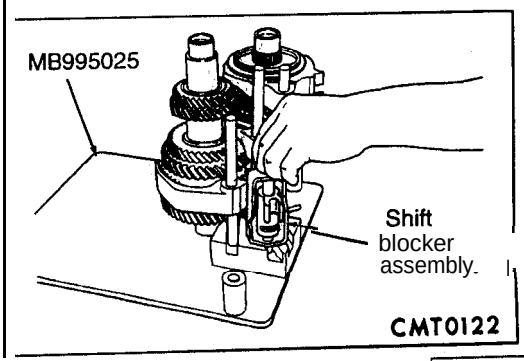
(16) Remove transaxle from press.



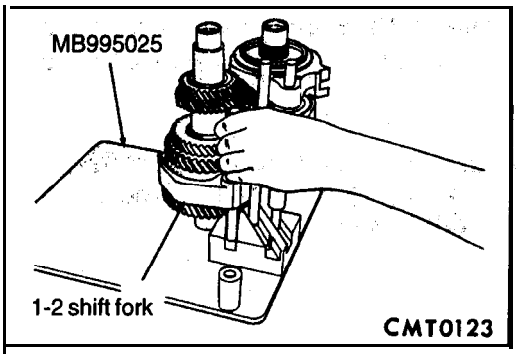
(17) Carefully remove transaxle case from the shaft assemblies and bench fixture.



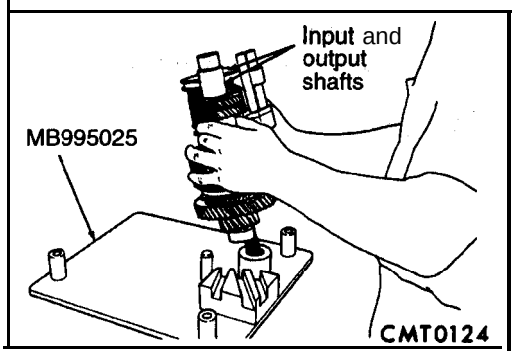
(18) Make sure the oil feed trough to end bearings is not damaged.



(19) Remove the shift blocker assembly from the bench fixture.

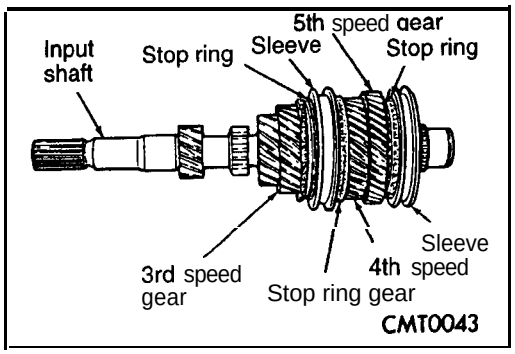


(20) Remove the 1-2 shift fork from the output shaft.



(21) Remove input and output shaft assemblies from bench fixture.

Caution
The output shaft assembly is serviced as an assembly. Do not try to repair any component on the output shaft. If the 1/2 synchronizer or gear fails, it is necessary to replace the complete output shaft assembly.



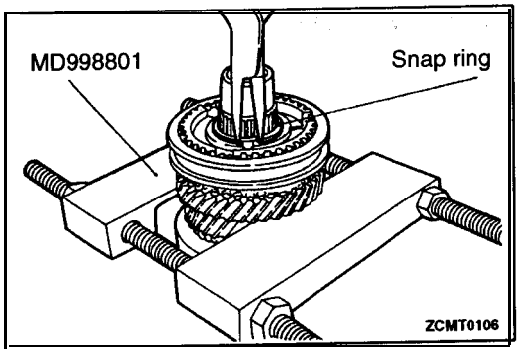
INPUT SHAFT DISASSEMBLY

22210080019

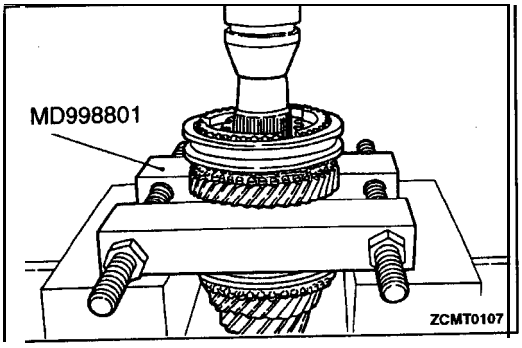
Before disassembly of the input shaft, it is necessary to check the synchronizer stop ring gap. Use a feeler gauge to measure the gaps between the stop rings and the speed gears. The correct gaps are listed below:, ,

1st 1.04–1.72 mm (.0409–.0677 in.)
2nd 0.94–1.72 mm (.0370–.0677 in.)
3rd 1.37-1.93 mm (.0539–.0760 in.)
4th 1.41-1.97 mm (.0555–.0776 in.)
5th 1.37-1.93 mm (.0539–.0760 in.)

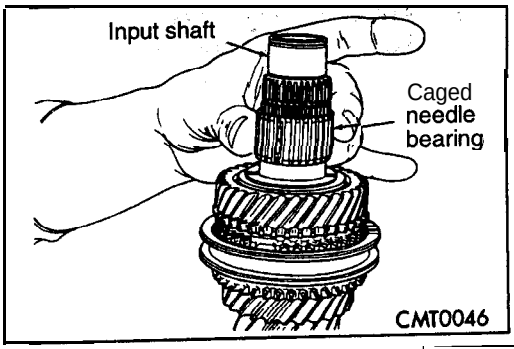
If a stop ring gap does not fall within. the specifications it must be insepcted for wear and replaced. If the 1st or 2nd synchronizer stop ring is worn beyond specifications, the complete output shaft assembly must be replaced.
The input shaft incorporates the 3rd, 4th, and 5th speed. gears and synchronizers on the assembly..



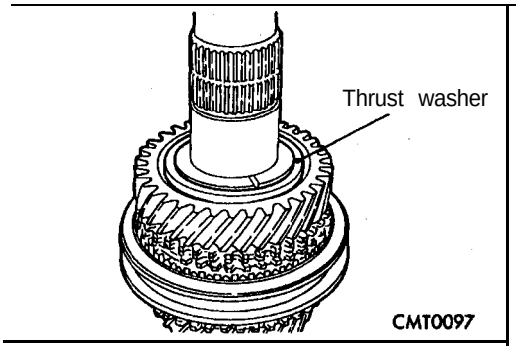
(1) Install MD998801 behind 5th speed gear. Remove snap ring at 5th synchronizer hub on input shaft,



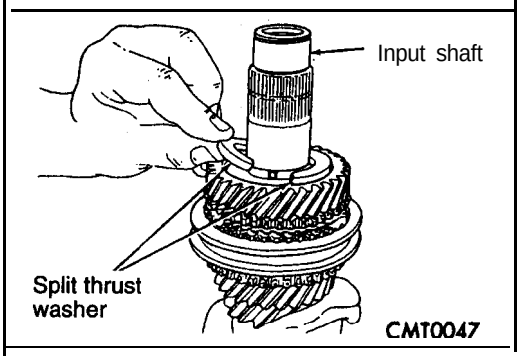
(2) Remove synchronizer and gear using shop press.



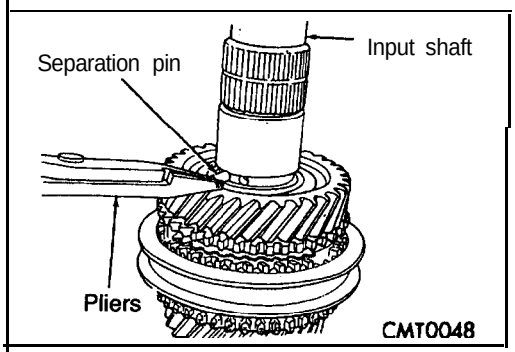
(3) Remove caged needle bearing.



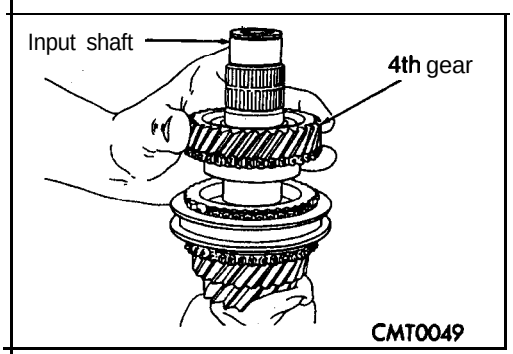
(4) Remove 4-5 gears split thrust washer ring.



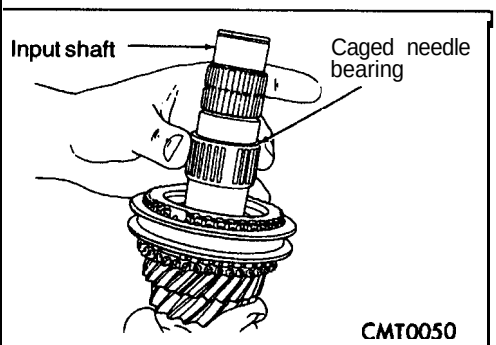
(5) Remove split thrust washer.



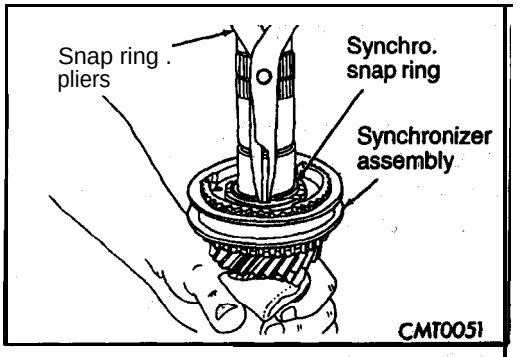
(6) Remove split thrust washer separation pin.



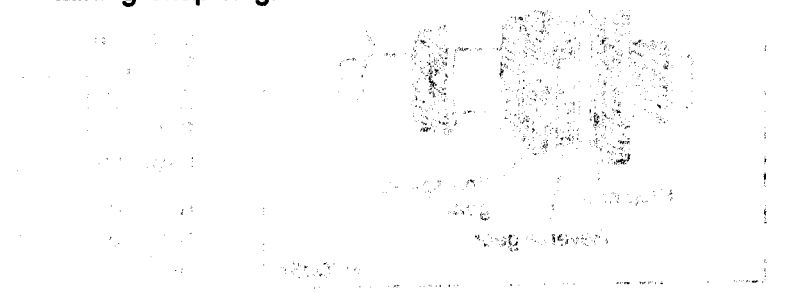
(7) Remove 4th gear.

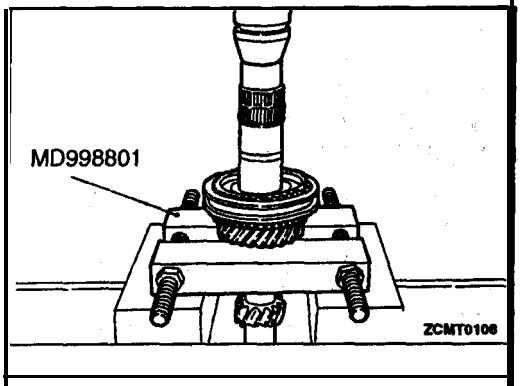


(8) Remove 4th gear caged needle bearing. Check the caged needle bearing for a broken retention spring.

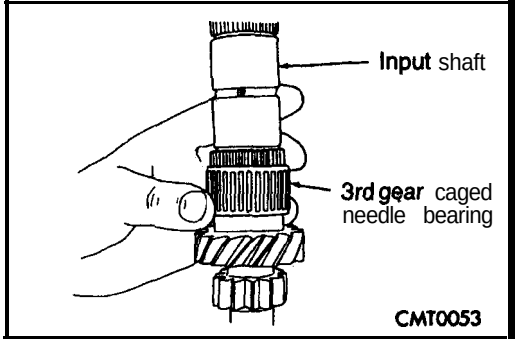


(9) Remove blocking ring. Remove 3/4 synchronizer hub retaining snap ring.



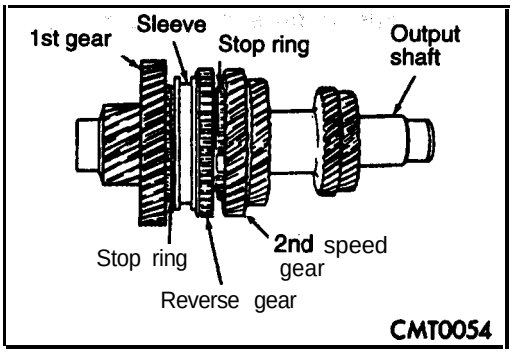


(10) Install input shaft in shop press. Using MD998801 to remove 3/4 synchronizer and 3rd gear.



(11) Remove 3rd gear caged needle bearing. Check the caged needle bearing for a broken retention spring.

(12) Inspect the input shaft for worn or damaged bearing races or chipped gear teeth. Replace as necessary.



OUTPUT GEAR DISASSEMBLY 22210090012

Caution
The output shaft assembly is serviced as an assembly. Do not try to repair any component on the output shaft. If the 1/2 synchronizer or gear fails, it is necessary to replace the complete output shaft assembly.

It is necessary to check the synchronizer stop ring gap. Use a feeler gauge to measure the gaps between the stop rings and the speed gears.
The correct gaps are listed below:

1st 1.04–1.72 m m (.0409–.0677 in.)
2nd 0.94–1.72 mm (.0370–.0677 in.)
3rd 1.37–1.93 m m (.0539–.0760 in.)
4th 1.41–1.97 m m (.0555–.0776 in.)
5th 1.37-1.93 mm (.0539–.0760 in.)

If a stop ring gap does not fall within the specifications it must be inspected for wear and replaced. If the 1st and 2nd synchronizer stop ring is worn beyond specifications, the complete output shaft assembly must be replaced.
The output shaft incorporates the 1st and 2nd gears and synchronizers on the assembly.

TRANSAXLE CLEANING AND CHECK

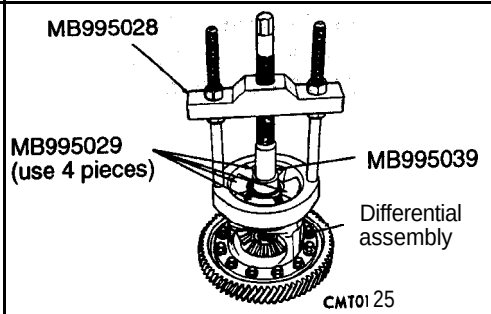
22210100012

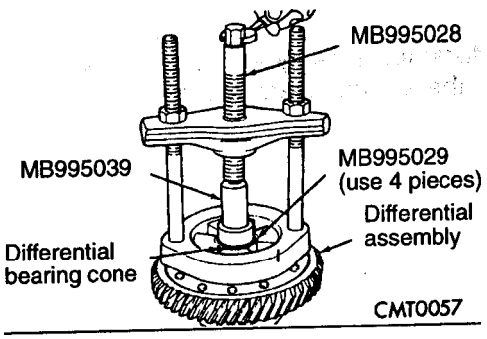
Clean the gears, bearings, shafts, synchronizers, thrust washers, oil feeder, shifter mechanism, gear case, and bellhousing with solvent. Dry all parts except the bearings with compressed air. Allow the bearings to either air dry or wipe them dry with clean shop towels.
Inspect the gears, bearings, shafts and thrust washers.
Replace the bearings and cups if the rollers are worn, chipped, cracked, flat spotted or brinnelled, or if the bearing cage is damaged or distorted. Replace the thrust washers if cracked, chipped, or worn. Replace the gears if the teeth are chipped, cracked, or wore thin. Inspect the synchronizers. Replace the sleeve if worn or damaged in any way. Replace the stop rings if the friction material is burned, flaking off, or worn. Check the condition of the synchronizer keys and springs. Replace these parts if worn, cracked, or distorted.

DIFFERENTIAL OVERHAUL . . 22210110015

DISASSEMBLY

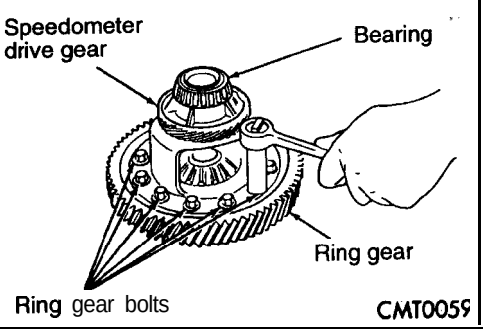
(1) Remove differential bearing cone.



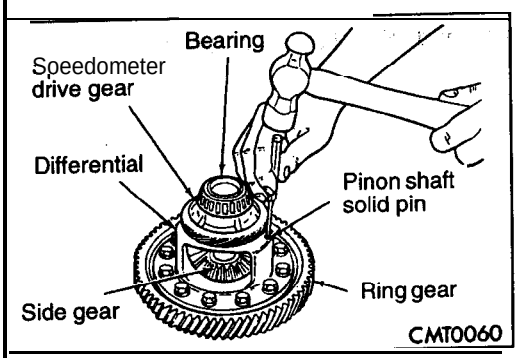


(2) Remove ring gear bolts and ring gear.
(3) Pry the speedometer drive gear off of the differential case using a flat blade pry tool.

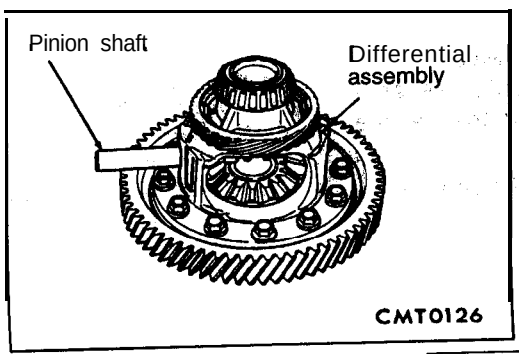
NOTE
The speedometer drive gear must be remove from the differential case in order to service the differential gears.



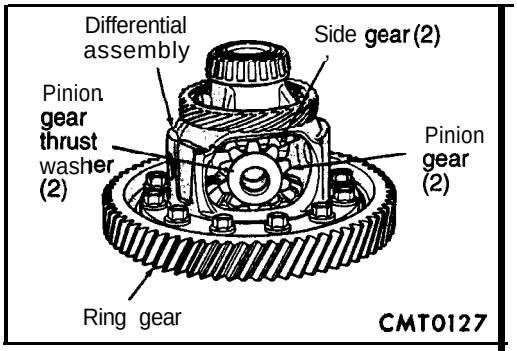
(4) Remove pinion shaft solid pin.



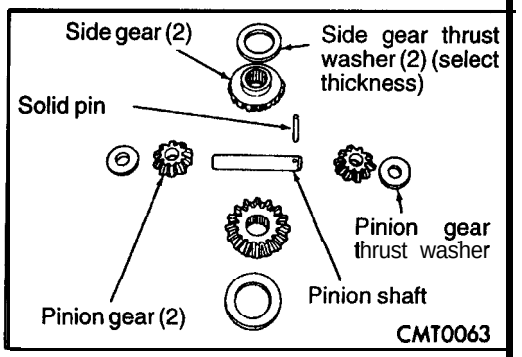
(5) Remove pinion shaft.



TSB Revision

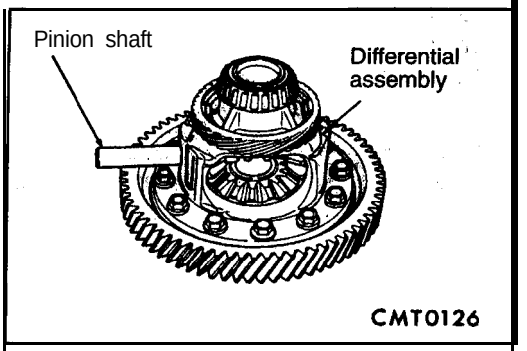


(6) Rotate side gears to opening in differential.
(7) Remove pinion gears, side gears' and thrust washers by rotating side gears to opening in case.

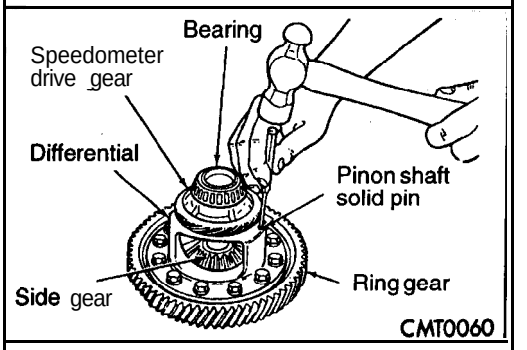


REASSEMBLY

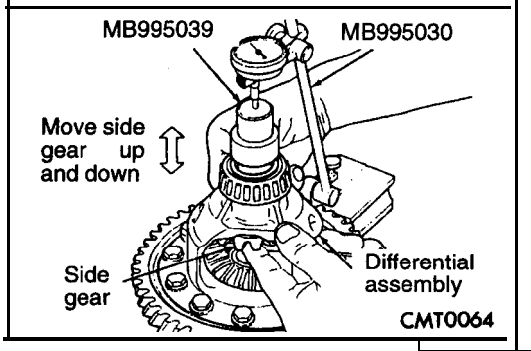
(1) Assemble the differential side gears, pinion gears and pinion gears with the pinion gears washers.



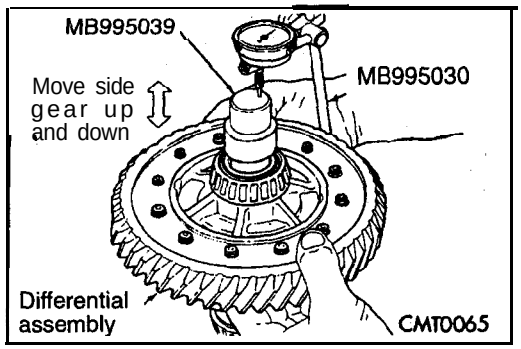
(2) Install pinion shaft.



(3) Stake pinion shaft solid pin with a suitable chisel.



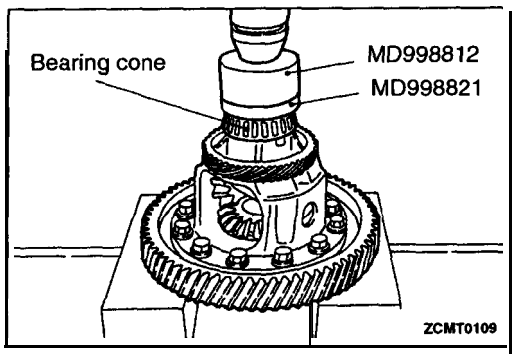
(4) Rotate the assembly two full revolutions both clockwise and counterclockwise.'
(5) Set up dial indicator as shown and record end play.
(6) Rotate side gear 90 degrees and record another end play.
(7) Again, rotate side gear 90 degrees and record a final: end play.

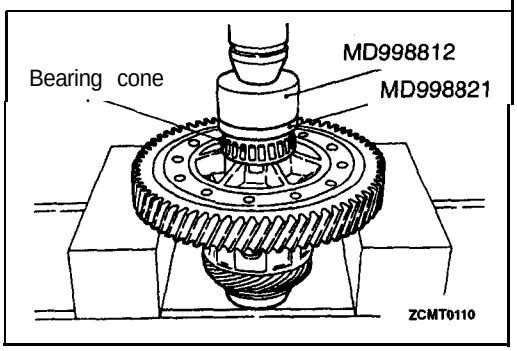


(6) Using the smallest end play record, shim that side gear to within 0.25 mm (.001 in.) to 0.33 mm (.013 in.).
(9) The other side gear should be checked using the same procedure.

NOTE
Side gear end play must be within 0.25 mm (.001 in.) to 0.33 mm (.013 in.). Five select thrust washers are available:
0.69 mm (.027 in.), 0.61 mm (.032 in.), 0.94 mm (.037 in.), 1.07 mm (.042 in.) and 1.19 mm (.047 in.)

(10) After the end play is measured and adjusted, replace speedometer drive gear with a new one.
(11) Install drive gear lip downward.





(12) Install differential bearing cone.

SYNCHRONIZER OVERHAUL

22210130011

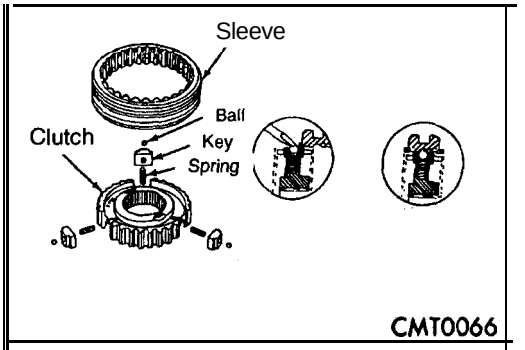
DISASSEMBLY

Place synchronizer in a clean shop,, towel and Wrap. Press on inner hub. Carefully open up shop. towel and remove springs, balls, keys, hub, and sleeve.

CLEAN

22210140014

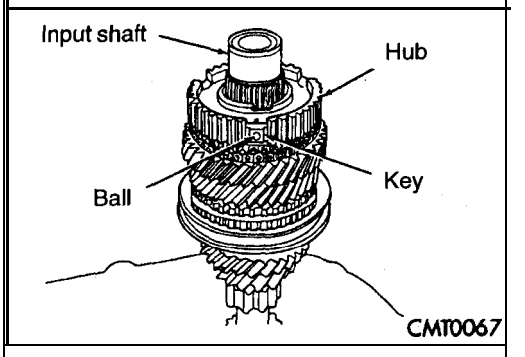
Do not attempt to clean the blocking rings in solvent. The friction material will become contaminated. Place synchronizer components in a suitable holder and clean with solvent. Then let them air, dry.



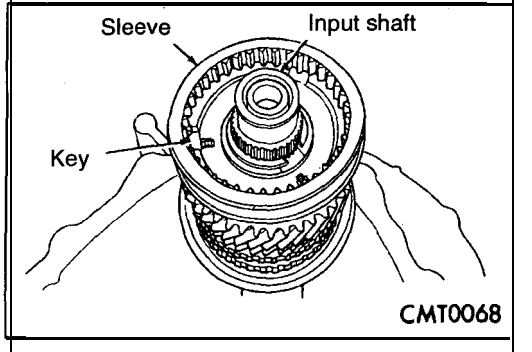
ASSEMBLY

22210160010

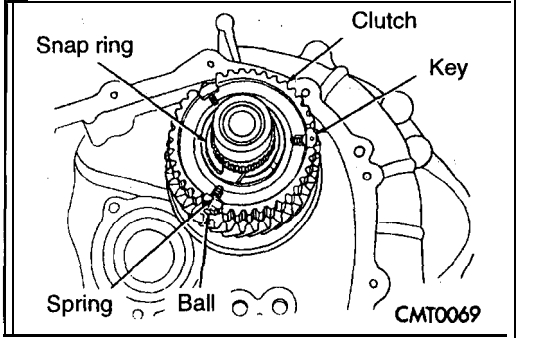
(1) Position synchronizer hub onto a suitable holding fixture (input shaft). The synchronizer hubs are directional. The hubs must be installed with the **U** facing upward.
(2) Install springs into hub slot
(3) Insert key into hub and spring.



(4) Apply petroleum jelly to the hole in the key. **Insert** balls into each key.



(5) Slide sleeve over the hub and depress balls as you carefully slip the sleeve into position.



(6) Line up stop ring tang over the keys in the hub. Install' stop rings. Center the keys and balls by pushing on both stop rings.

INSPECT

22210150017

Proper inspections of components involved:
Teeth, for wear, scuffed, nicked, burred or broken teeth keys, for wear or distortion.
Balls and springs, for distortion, cracks or wear'
If any of these conditions exists in these **components,** replace as necessary.

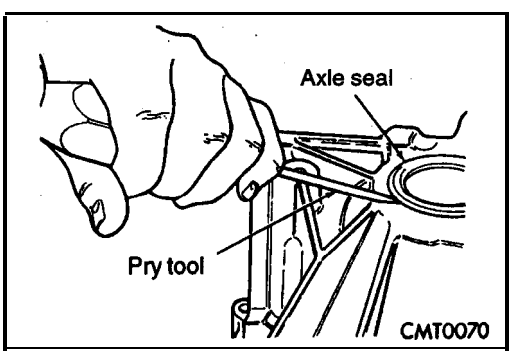
TSB Revision

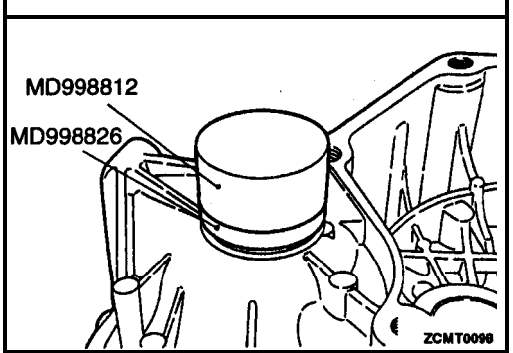
SHIFTER RAILS OVERHAUL 22210170013

(1) Disassemble the transaxle case using the procedures' provided in this group.
(2) Remove shifter rails from the geartrain.
(3) To service the 5/R shift rail, remove the C-clip retaining the reverse shift lever arm. Remove the 5th "shift fork roll pin and remove the 5th shift fork.
Remove the shift lug roll pin and remove the shift lug.' Replace parts as necessary.
(4) To service the 3/4 shift rail, remove the roll pin retaining' the 3/4 shift fork. Remove the shift fork.,, Remove the shift lug roll pin and remove shift lug. Replace parts as, necessary.
(5) To service the 1/2 shift rail, remove the roll pin retaining, the 1/2 shift fork. Remove the shift fork and replace parts as necessary.

GEAR CASE OVERHAUL 22210180016

The sealant used to seal the transaxle case halves is Loctite 51817 or equivalent. The sealant used for the bearing end plate cover is Loctite 18718 or equivalent.
The components that are left in the gear cases when the gear train is pulled out are the:
Axle shaft seals
Output bearing race and retainer
Input bearing and sleeve
Differential bearing cones
Shifter rail bushings
Shifter shafts
Shifter shaft seals
Shifter shaft bushings
Rear bearing oil feed trough





AXLE SHAFT SEALS 22210200019

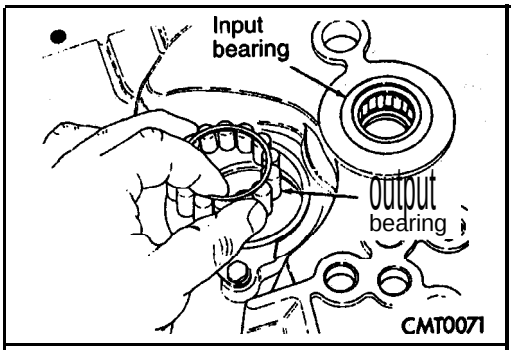
REMOVAL

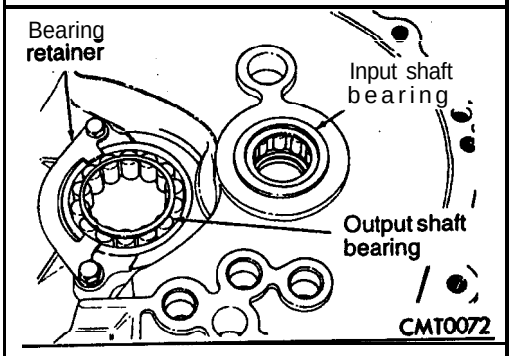
(1) Insert a flat blade pry tool at outer edge of axle shaft seal.
(2) Tap on the pry tool with a small hammer and remove axle shaft seal.

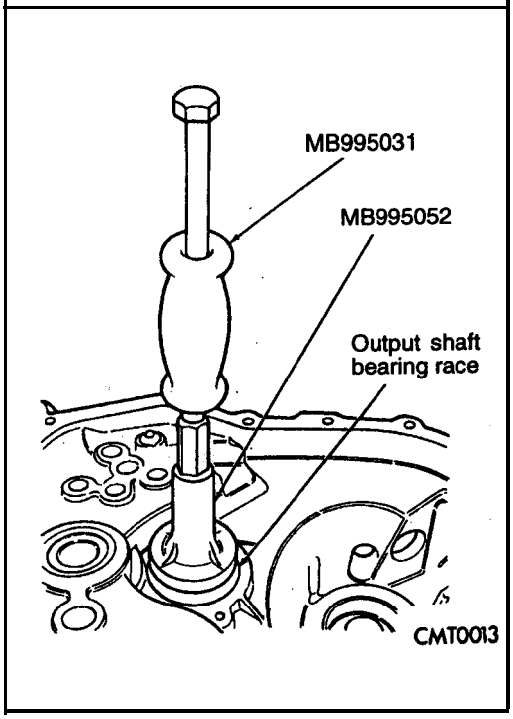
INSTALLATION 22210210012

(1) Clean axle shaft seal bore of any excess sealant.
(2) Align axle shaft seal with axle shaft seal bore.
(3) Install axle seal on tool MD998812, MD998826 and insert into axle shaft seal bore.
(4) Tap seal into position.

TSB Revision







OUTPUT BEARING

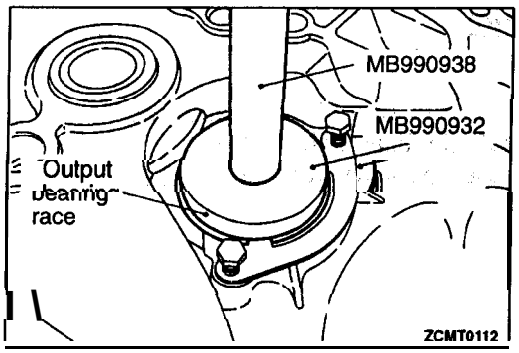
22210230018

REMOVAL

(1) Note the position of the output shaft bearing. The bearing is not identical end to end. Remove caged roller bearing from output bearing "race.

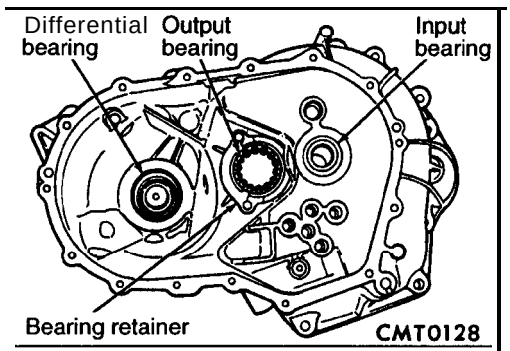
(2) Remove screws at output bearing retainer strap.

(3) Install tool MB995031, MB995052. Tighten tool to output bearing race.



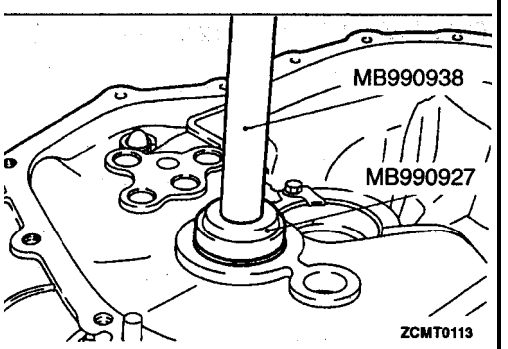
INSTALLATION 22210240011

(1) Line up output bearing race to race bore.
(2) Insert tool MB990933, MB990938 into output bearing race. Tap race into bore. Position bearing retaining stlap. Tighten bolts to' 11 Nm (9.6 ft.lbs.).



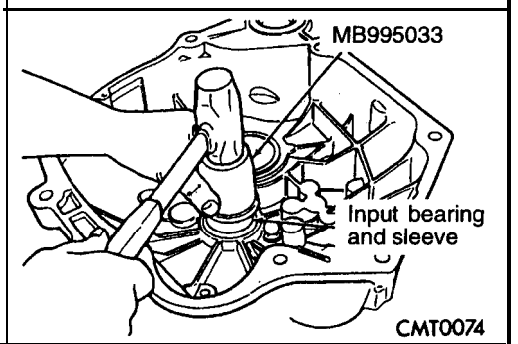
INPUT BEARING AND SLEEVE 22210250014

The input bearing is a one-piece bearing and sleeve unit. The sleeve is the slide point for the clutch release bearing and lever.



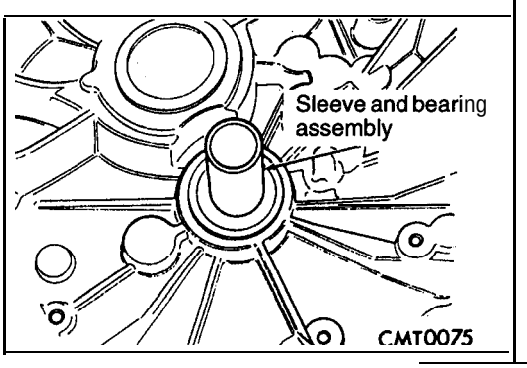
REMOVAL 22210260017

(1) Install tool MB990927, MB990938 over input bearing on. the gear case side of the transaxle clutch housing.
(2) Tap the input bearing out of the housing.'

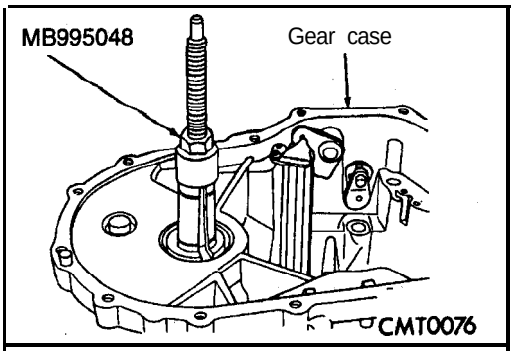


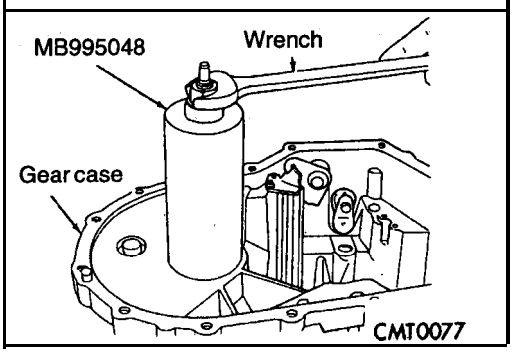
INSTALLATION 22210270010

(1) Apply coating of Loctite sealant on bearing outer diameter. Position sleeve and bearing assembly at input bearing bore.
(2) Install tool MB995033 over input bearing.



(3) Using the spacer tool and shop press, install input bearing into bore until it is fully seated.





DIFFERENTIAL BEARING CUPS 22210290016

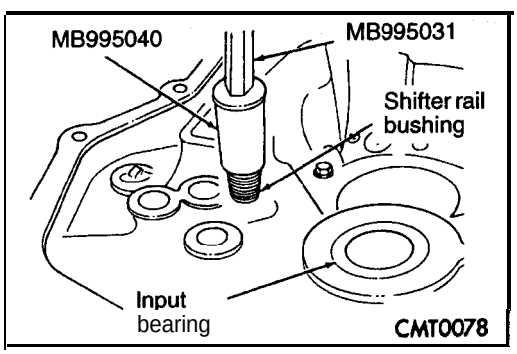
REMOVAL

(1) Install MB995048 into the differential bearing cup.

(2) Install the tool cup over the tool.
(3) Tighten the tool until the race is removed from the case.

INSTALLATION 22210300016

(1) Position the bearing cup into the case.
(2) Install the bearing cup onto MB990933.
(3) Using MB990933, MB990938 driver, install differential bearing cup into the transaxle case.



SHIFTER RAIL BUSHINGS 22210320012

REMOVAL

(1) Thread tool MB995040 into shifter rail bushing.
(2) Install MB995031 onto tool.
(3) Remove bushing using slide hammer and tool assembly.

INSTALLATION 22210330015

(1) Line up replacement bushing in bore.
(2) Using tool MD998343, tap bushing into bore until flush with the chamfer in the case.

SHIFTER SHAFT SEALS 22210340018

It is not necessary to remove the shifter shafts from the transaxle to service the shifter shaft seals.

REMOVAL 22210350011

(1) Using a pick tool, pry up on the shifter shaft seal and remove seal from bore.

INSTALLATION 22210360014

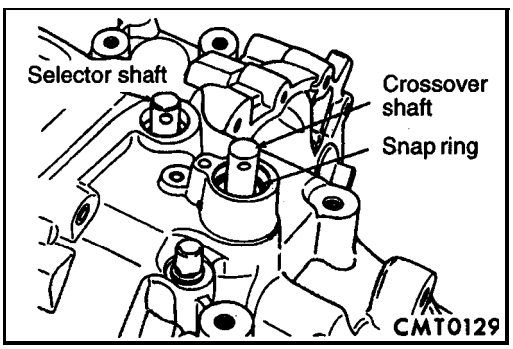
(1) Position new shifter shaft seal in bore.
(2) Install shifter shaft seal into bore using an appropriate size deep well socket.

SHIFTER SELECTOR SHAFT 22210380010

REMOVAL

(1) With the transaxle disassembled, remove the selector shaft by pushing on the shaft from the outside and pulling shaft out from the inside.

Reverse removal procedure to install selector shaft.



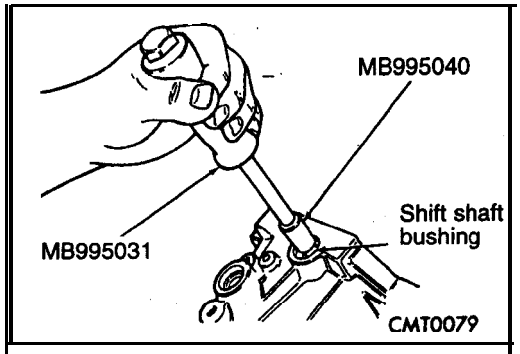
SHIFTER CROSSOVER SHAFT 22210400013

REMOVAL

(1) With the transaxle disassembled, remove the crossover shaft seal.
(2) Using snap ring pliers, remove the snap ring at the crossover shaft bore.
(3) Push the crossover shaft in the case and remove the crossover assembly.

Reverse removal procedure to install crossover shaft.

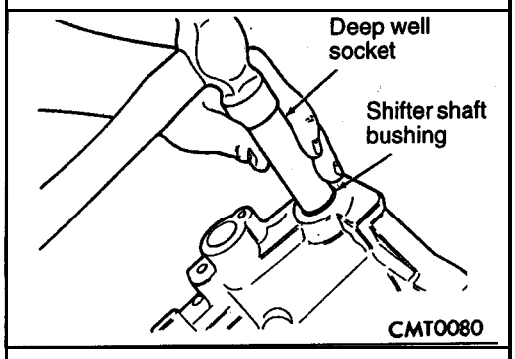
TSB Revision



SHIFTER SELECTOR SHAFT BUSHING 22210420019

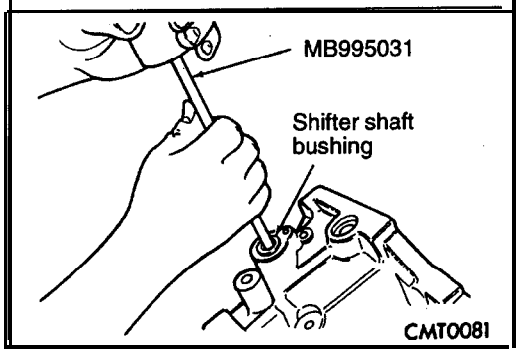
REMOVAL

(1) Thread MB995040 into bushing.
(2) Install MB995031 onto tool and remove bushing using slide hammer.



INSTALLATION 22210430012

(1) Position replacement bushing over selector shaft bore.
(2) Using an appropriate size deep well socket, install bushing in selector shaft bore.



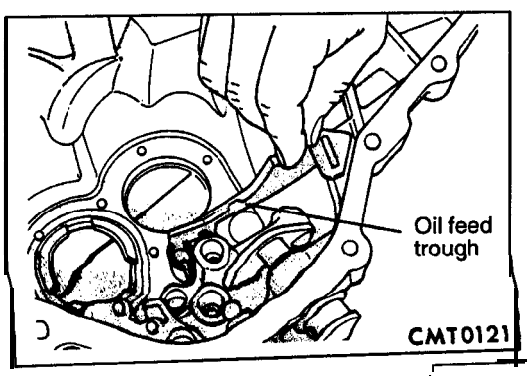
SHIFTER CROSSOVER SHAFT BUSHING 22210520016

REMOVAL

(1) Install MB995031 through the crossover bushing.
(2) Thread nut and washer onto MB995031.
(3) Using the MB995031, remove the crossover shaft bushing.

INSTALLATION 22210530019

(1) Position the replacement crossover shaft bushing over the crossover shaft bushing bore.
(2) Using an appropriate size deep well socket, install the crossover shaft bushing into the bushing bore.



REAR BEARING OIL FEED TROUGH 22210450018

REMOVAL

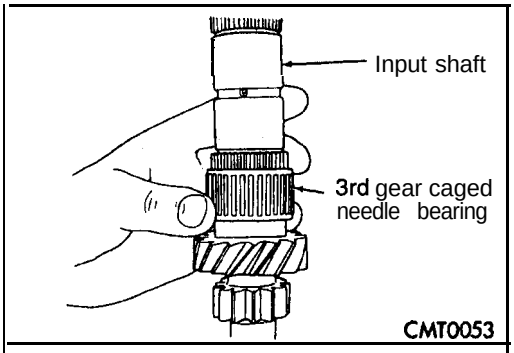
The bearing oil feed trough is retained in the case by a pin that is molded into the case and clips that are part of the trough.
(1) Using light plier pressure, squeeze the clips together at the rear of the trough.
(2) Slide the trough over the retaining' pin that locates the trough in the case.

Reverse removal procedure to install oil feed trough.

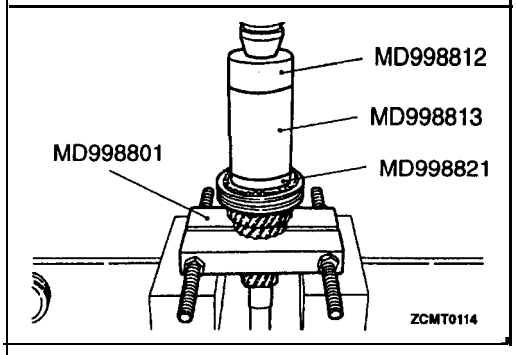
INPUT SHAFT REASSEMBLY 22210460011

The snap rings that are used on the input shaft are available in select fit sizes. Use the thicknest snap ring that will fit in each 'snap ring groove.

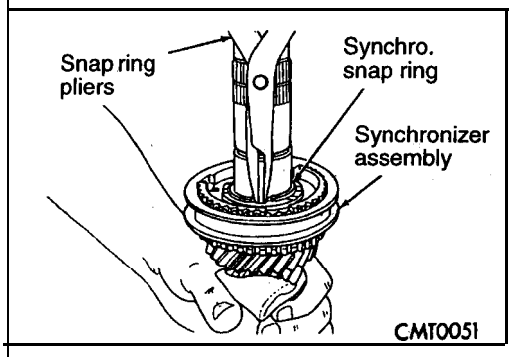
(1) Place input shaft into shop press.
(2) Install 3rd gear caged needle bearing on input shaft.



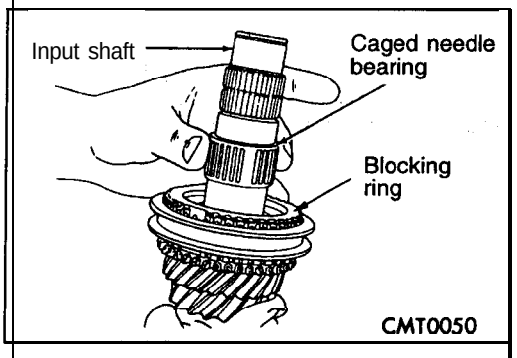
(3) Install 3rd gear and 3/4 synchronizer onto input shaft. Install MD998812, MD99881 3, MD998821 over input shaft and press on synchronizer hub and 3rd gear. The synchronizer hub has the letter "U" stamped on the top face of the hub.
This designates that the hub must be installed with the "U" facing upward.



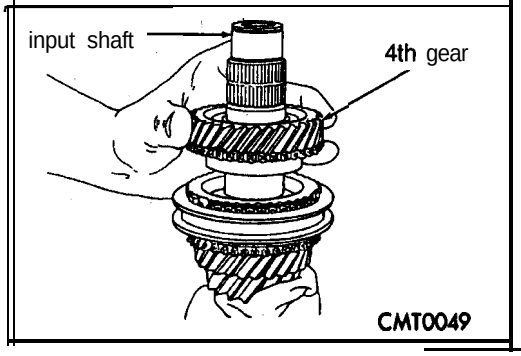
(4) Install 3/4 synchronizer snap ring into slot on input shaft.

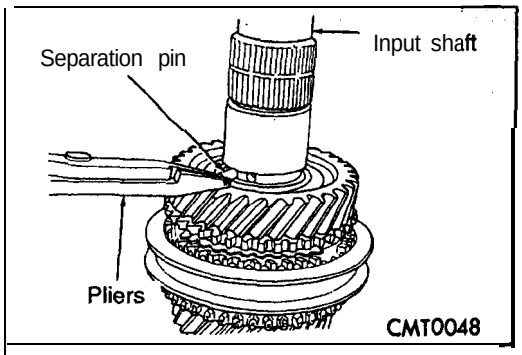


(5) Install blocking ring into 3/4 synchronizer. Install 4th gear caged needle bearing.

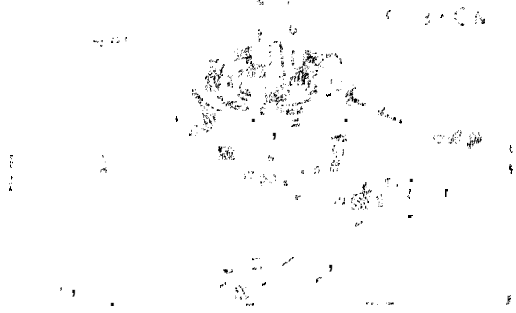


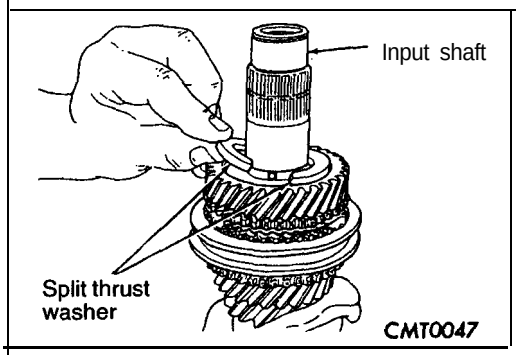
(6) Install 4th gear onto input shaft.



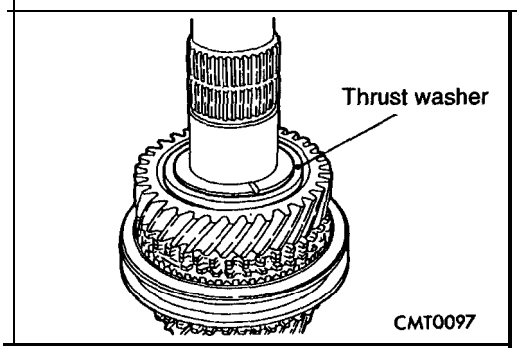


(7) Install 4/5 split thrust washer separation pin.

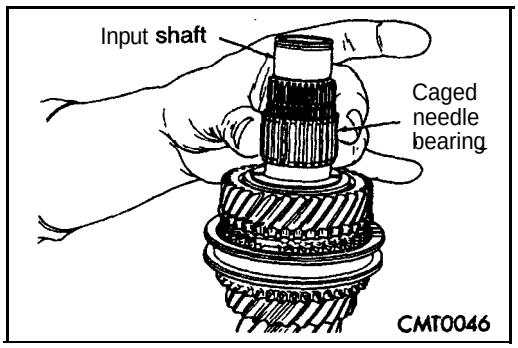




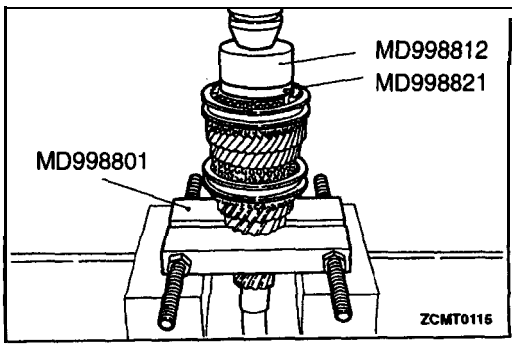
(8) Install split thrust washer onto input shaft.



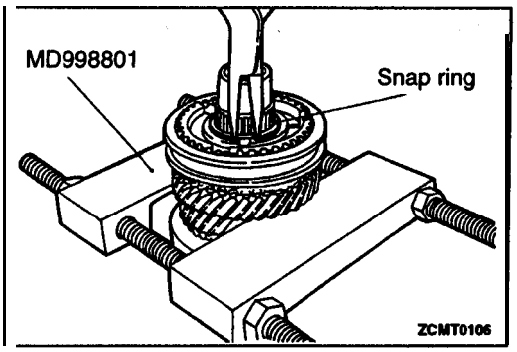
(9) Install split thrust washer retaining ring.



(10) Install 5th gear caged needle bearing.

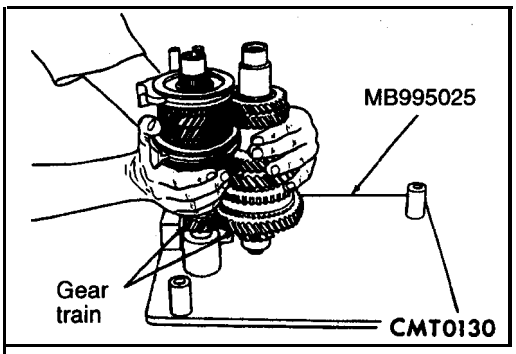


(11) Using MD998812, MD998821, install 5th speed gear and synchronizer. The 5th gear synchronizer hub has the letter "S" stamped on the top face of the hub. This designates that hub must be installed with the "S" facing upward.



(12) Install 5th gear synchronizer snap ririg.

TSB Revision

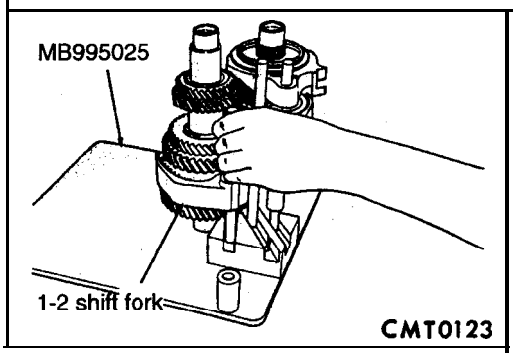


CASE REASSEMBLY

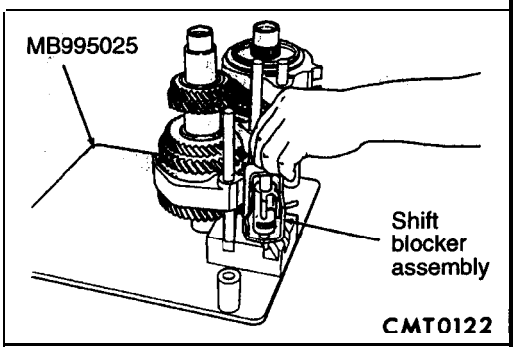
22210470014

The sealant used to seal the transaxle case halves is Loctite 51617 or equivalent.
The sealant used for the bearing end plate cover is Loctite 18718 or equivalent.

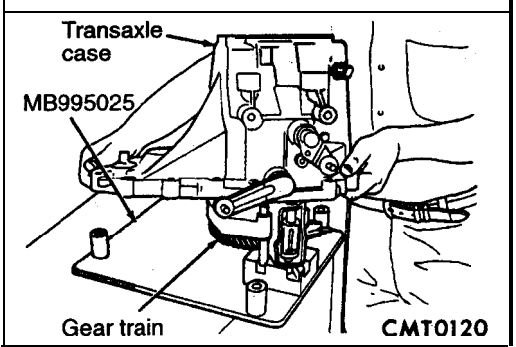
(1) Verify bench fixture shims are removed from bench fixture. Install output and input gear into pallet fixture (MB995025).



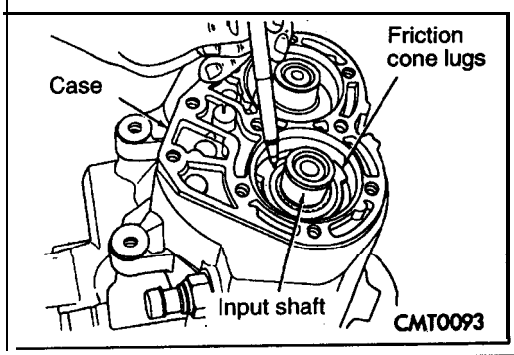
(2) Install shift rails and forks. into bench fixture.



(3) Install shift blocker assembly into bench fixture.

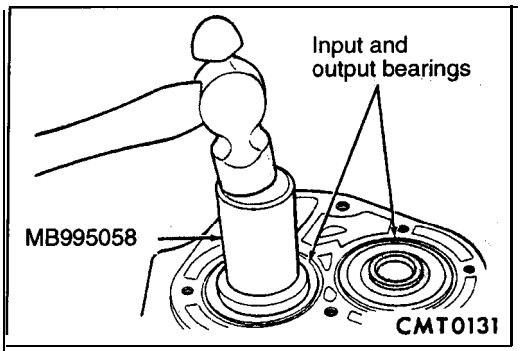


(4) Install gear case half over pallet fixture. Line up shift finger over 3/4 lug.

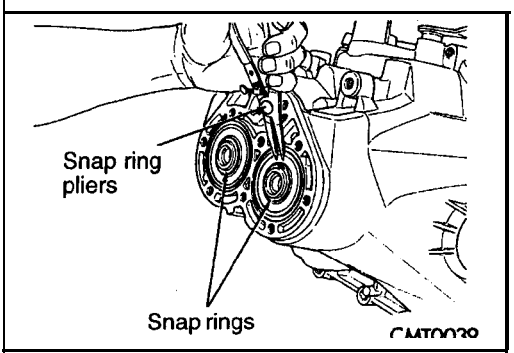


(5) Line up reverse brake friction cone lug to the slots in the gear case. Verify reverse brake shim is in position.

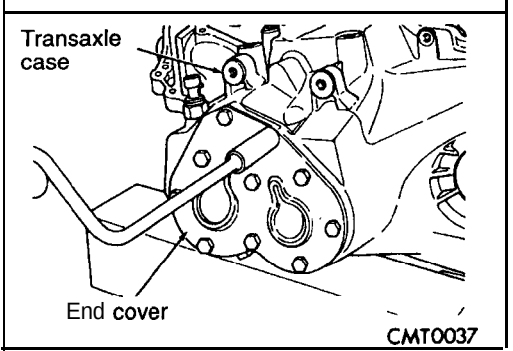
TSB Revision



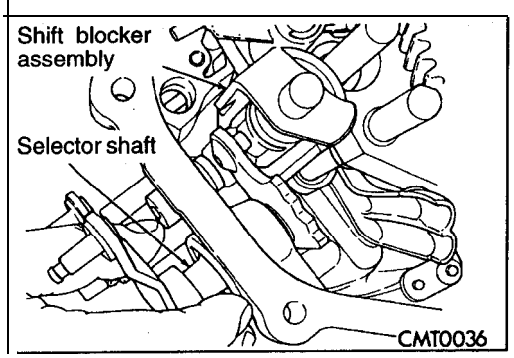
(6) Position input and output bearings on the shafts. Using MB995058, press input and output shaft bearings until they bottom into the case and against the shafts.



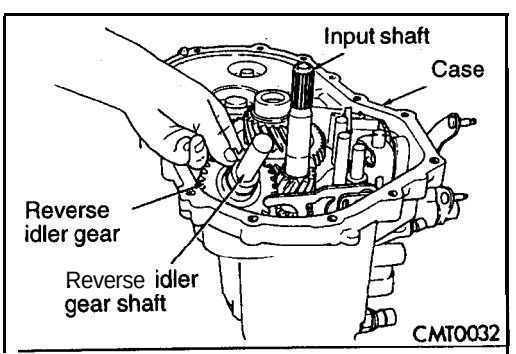
(7) Install shaft snap rings at input and output bearings.



(8) Apply Loctite 18718 or equivalent to end cover outer edge and around bolt holes. Install end cover onto gear case. Tighten end cover bolts to 29 Nm (21 ft.lbs.) torque.
(9) Remove gear case from bench fixture.
(10) Install gear case in a holding fixture with end cover facing down.

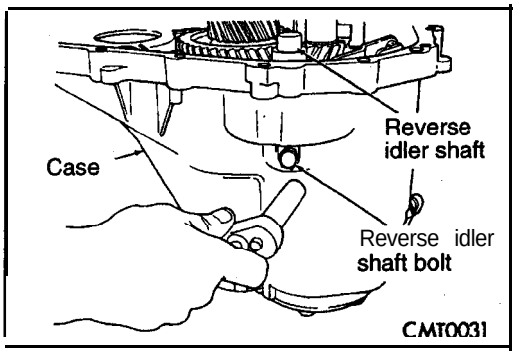


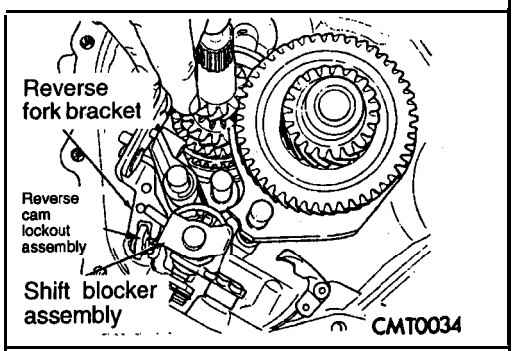
(11) Turn selector shaft into slot on shift, blocker assembly.
(12) Push selector shaft spacer clip onto selector shaft. Install shift levers.



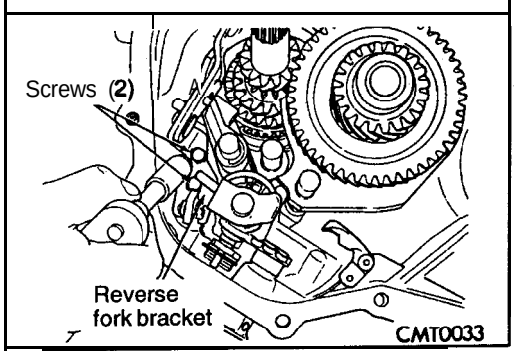
(13) Install reverse idler gear and shaft. Install bolt into shaft. Tighten bolt on shaft to 26 Nm (19 ft.lbs.) torque.

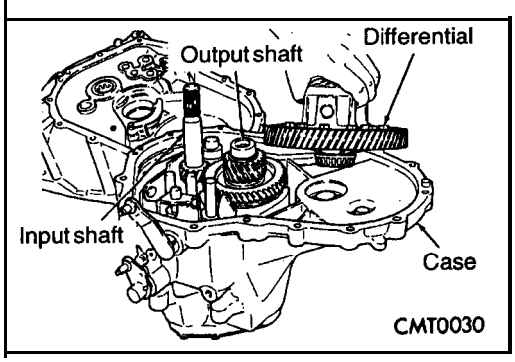
TSB Revision





(14) Install reverse fork bracket and reverse cam lockout assembly. Tighten screws to 11 Nm (9.6 ft.lbs.) torque.





(15) Install differential into gear case.

BEARING ADJUSTMENT PROCEDURE 22210480017

GENERAL RULES ON SERVICING BEARINGS

(1) Take extreme care when removing, and installing bearing cups and cones. Use only an arbor press for installation, as a hammer may not properly* align the bearing cup or cone.
Burrs or nicks on the bearing seat will give a false end play reading while gauging. for proper shims. Improperly seated bearing cups and cones are subject to low mileage' failure.

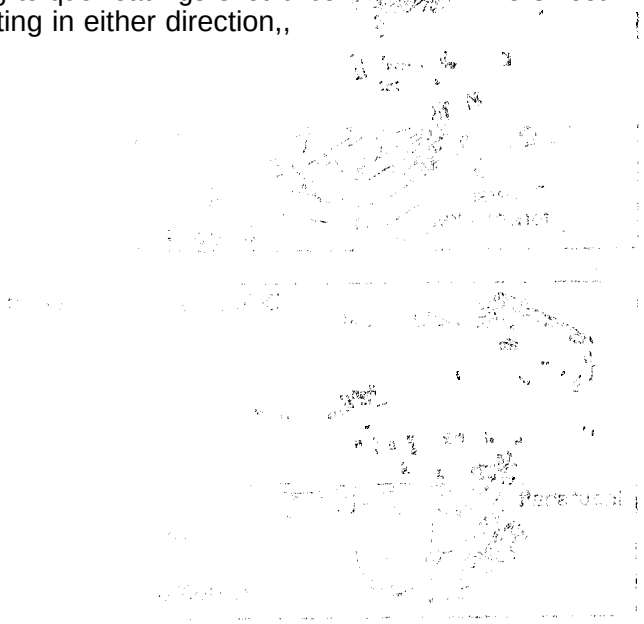
(2) Bearing cups and 'cones should be replaced if they show signs of pitting or heat distress., If distress is seen on' either the cup or bearing rollers, both cup and cone must be replaced.

(3) Bearing preload and drag torque specifications must be maintained to avoid premature' bearing failures. Used (original) bearing may lose up to 50% of the original drag torque offer break in. All bearing, adjustments must be made with no other component interference or gear intermesh.

(4) Replace bearings as a pair. For example, if one differential bearing is defective, replace both differential. bearings. If one input shaft bearing is defective; 'replace both input shaft bearings.

(5) Bearing cones must not be reused if removed.

(6) Turning torque readings should be obtained while smoothly rotating in either direction,,

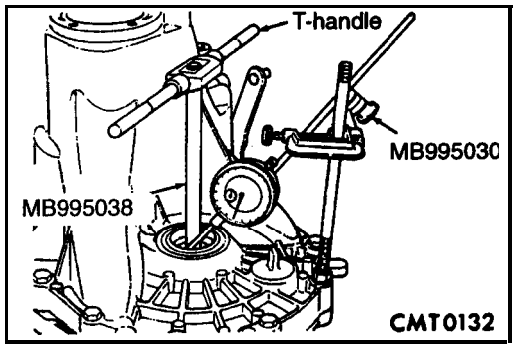


DIFFERENTIAL BEARING PRELOAD ADJUSTMENT

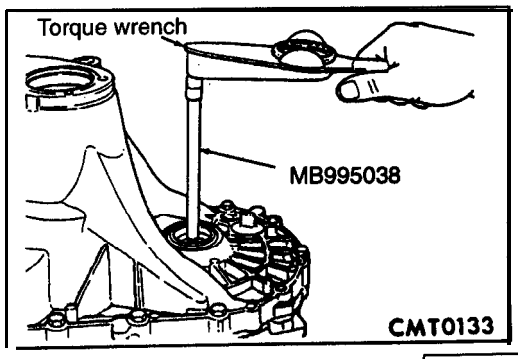
22210500010

True bearing turning torque readings can only be obtained with the gear train removed from the case.

(1) Remove bearing cup and existing shim from clutch bell-housing case.
(2) Press in new bearing cup into bell housing case (or use a cup that has been ground down on the outer edge for ease of measurement).
(3) Press in new bearing cup into gear case side.
(4) Lubricate differential bearings with SAE 5W-30 engine oil. Install differential assembly in transaxle gear case. Install clutch bell housing over gear case. Install and torque case bolts to 29 Nm (21 ft.lbs.).
(5) Position transaxle with bell housing facing down on work-bench with C-clamps. Position dial indicator.



(6) Apply a medium load to differential with MB995038 and a T-Handle, in the downward direction. Roll differential assembly back and forth many times. This will settle the bearings. Zero dial indicator. To obtain end play readings, apply a medium load in the upward direction while rolling differential assembly back and forth. Record end play.
(7) The shim required for proper bearing preload is total of end play and (constant) preload of 0.18 mm (.0071 in.).
(8) Remove case bolts. Remove clutch bell housing differential bearing cup. Install shim(s) selected in step (7). Then press the bearing cup into clutch bell housing.
(9) Install and torque case bolts to 26 Nm (19 ft.lbs.).



(lO)Using MB995038 and an inch-pound torque wrench, check turning torque of the differential assembly clockwise and counterclockwise. The turning torque should be 68 to 136 Ncm (6 to 12 in.lbs). If the turning torque is too high, install a 0.5 mm (.0020 in.) thinner shim. If the turning torque is too low, install a 0.5 mm (.020 in.) thicker shim.
(11) Recheck turning torque. Repeat Step (10) until the proper turning torque is obtained.

TSB Revision

NOTES