# MANUAL TRANSMISSION

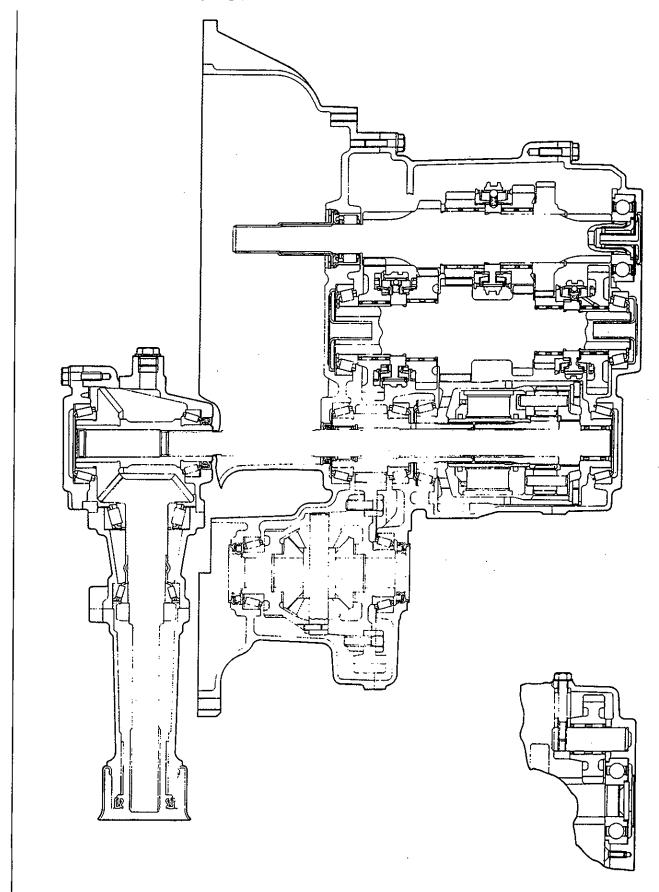
# MODEL W5MG1, W6MG1

#### **CONTENTS**

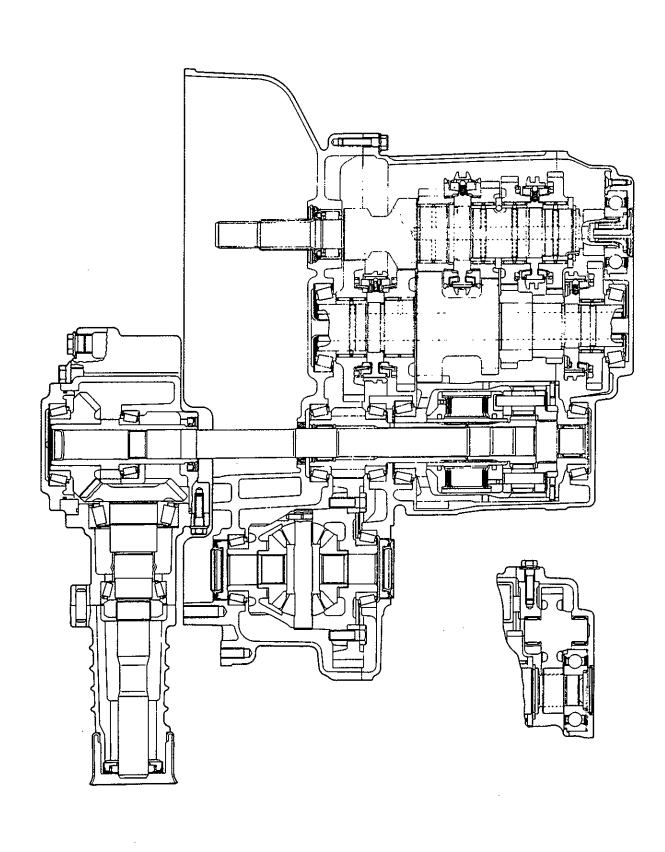
GEN	NERAL INFORMATION	22C- 0-3
1.	SPECIFICATIONS	22C- 1-1
	TRANSMISSION MODEL TABLE	22C- 1-1
	GEAR RATIO TABLE	22C- 1-1
	SERVICE SPECIFICATIONS	
	TORQUE SPECIFICATIONS	
	SEALANTS AND ADHESIVES	
	LUBRICANTS	
	ADJUSTMENT SPACERS	
2.	SPECIAL TOOLS	
	TRANSMISSION	
4.	INPUT SHAFT	
5.		
6.		
7.		
۶. 8.	CENTER DIFFERENTIAL	
9.		
10.		
11.		
	SPEEDOMETER GEAR	
12.	TRANSFER	22C-13-1
15.	Inaivoten	

# **GENERAL INFORMATION**

# **SECTIONAL VIEW <W5MG1>**



# **SECTIONAL VIEW <W6MG1>**



# 1. SPECIFICATIONS

### **TRANSMISSION MODEL TABLE - MODEL 1993**

	Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC	W5MG1-2-FNCR	А	27/36	3.972	Z16A	6G72
EXP	W5MG1-2-FNCR	А	27/36	3.972	Z16A	6G72
AUS	W5MG1-1-FNCR	A	27/36	3.972	Z16A	6G72

# **TRANSMISSION MODEL TABLE – MODEL 1994**

	Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC	W5MG1-3-FNCR	А	27/36	3.972	Z16A	6G72
EXP	W6MG1-0-GNCR	В	27/36	4.155	Z16A	6G72
AUS	W6MG1-0-GNCR	В	27/36	4.155	Z16A	6G72

# TRANSMISSION MODEL TABLE - MODEL 1995, 1996

	Transmission model	Gear ratio	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
EC	W5MG1-3-FNBR	А	27/36	3.972	Z16A	6G72
	W6MG1-0-LNAR	В	28/36	4.155	Z16A	6G72
EXP	W5MG1-2-FNCR	А	27/36	3.972	Z16A	6G72
AUS	W5MG1-2-FNCR	А	27/36	3.972	Z16A	6G72

#### **GEAR RATIO TABLE**

Α	В	
3.071	3.266	
1.739	1.904	
1.103	1.241	
0.823	0.918	
0.659	0.733	
_	0.589	
3.076	3.153	
0.814	1.083	
	3.071 1.739 1.103 0.823 0.659 — 3.076	3.071 3.266 1.739 1.904 1.103 1.241 0.823 0.918 0.659 0.733 - 0.589 3.076 3.153

## **SERVICE SPECIFICATIONS**

mm (in.)

Items	Standard
Input shaft rear bearing end play	0.02 – 0.05 (0.0008 – 0.0020)
Intermediate gear preload	
	0.20 - 0.30 (0.0079 - 0.0118) W6MG1
Center differential preload	0.10 – 0.20 (0.0039 – 0.0079) W5MG1
	0.15 - 0.20 (0.0059 - 0.0079) W6MG1
Front output shaft preload	0.15 – 0.25 (0.0059 – 0.0098) W5MG1
	0.10 - 0.15 (0.0039 - 0.0059) W6MG1
Front differential preload	
·	0.15 – 0.20 (0.0039 – 0.0079) W6MG1

## **TORQUE SPECIFICATIONS**

Items	Nm	kgm	ft.lbs.
Input shaft rear bearing retainer mounting bolt	. 10	1.0	7.2
Reverse idler gear shaft bolt (W5MG1)	25	2.5	18
Reverse idler gear shaft retainer bolt (W6MG1)	. 25	2.5	18
Input shaft lock bolt	. 95	9.5	69
Stopper plate mounting bolt	. 10	1.0	7.2
Clutch housing - transmission case tightening bolt	25	2.5	18
Transmission case – rear cover tightening bolt	25	2.5	18
Shift shaft mounting bolt	10	1.0	7.2
Shift shaft hexagon bolt (W5MG1)	23	2.3	17
Detent (W6MG1)	30	3.0	22
Guide bolt (W6MG1)	20	2.0	14
Oil tank mounting bolt (W6MG1)	7	0.7	5.1
Reverse shift damper	33	3.3	24
Select lever mounting bolt	25	2.5	18
Poppet cover mounting bolt	10	1.0	7.2
Backup light switch	32	3.2	23
Speedometer gear mounting bolt	4	0.4	2.9
Transmission – transfer tightening bolt	86	8.6	62
Transmission mount bracket attaching bolt	70	7	51
Shift cable bracket mounting bolt	19	1.9	14
Retainer stopper plate mounting bolt	23	2.3	17
Oil level checking plug	7.5	0.75	5.4

## **SEALANTS AND ADHESIVES**

Items	Specified sealant and adhesive		
Input shaft lock bolt			
Rear cover – transmission case tightening bolt			
Stopper plate mounting bolt			
Transmission case – clutch housing tightening bolt			
Clutch housing – shift shaft tightening bolt	LOCTITE No.242 or equivalent		
Shift shaft hexagon bolt			
Select lever mounting bolt			
Poppet cover mounting bolt			
Reverse idler gear shaft bolt			
Reverse shift damper			
Rear cover – transmission case mating surface			
Transmission case - clutch housing mating surface	LOCTITE 17430 or MITSUBISHI genuine		
Clutch housing – shift shaft mating surface	sealant Part No. MD997740 or equivalent		
Poppet cover – rear cover mating surface			

## **LUBRICANTS**

Items	Specified lubricants		
·	MITSUBISHI genuine grease Part No. 0101011 or equivalent		
Transfer drive gear shaft splines			
Synchronizer cone surfaces	Hypoid gear oil API GL-4, SAE 75W – 85W or 80W		

# **ADJUSTMENT SPACERS**

Part name	Thickness mm (in.)
Adjustment of input shaft rear bearing end play	0.15 (0.0059) 0.20 (0.0079) 0.30 (0.0118) 0.40 (0.0157) 0.50 (0.0197)
Adjustment of intermediate shaft preload	0.20 (0.0079) 0.25 (0.0098) 0.30 (0.0118) 0.50 (0.0197)
Adjustment of center differential preload	0.20 (0.0079) 0.25 (0.0098) 0.30 (0.0118) 0.50 (0.0197)
Adjustment of front output shaft preload	0.10 (0.0039) 0.15 (0.0059) 0.20 (0.0079) 0.50 (0.0197) 1.00 (0.0394)
Adjustment of front differential preload	0.10 (0.0039) 0.15 (0.0059) 0.20 (0.0079) 0.30 (0.0118) 0.50 (0.0197)

**NOTES** 

# 2. SPECIAL TOOLS

Tool	Number	Name	Use
	MB990934	Installer adapter	Installation of bearing outer race.
	MB990936	Installer adapter	Installation of bearing outer race.
	MB990937	Installer adapter	Installation of bearing outer race.
	MB990938	Handle	Use with installer adapter and bearing outer race installer.
	MB991550	Bearing outer race installer	Installation of bearing outer race (W5MG1).
	MB991551	Bearing outer race installer	Installation of bearing outer race.
	MB991577	Bearing outer race installer	Installation of bearing outer race (W6MG1).

Tool	Number	Name	Use
	MB991578	Rear cover puller assembly	Removal of rear cover (W5MG1, W6MG1).
	MB991580	Rear cover puller adapter set	Removal of rear cover (W6MG1).
	MB991589	Working base assembly (5M/T)	Removal and installation of input shaft lock bolt and installation of rear cover (W5MG1, W6MG1).
	MB991591	Working base adapter kit	Removal and installation of input shaft lock bolt and installation of rear cover (W6MG1).
	MD998304	Oil seal installer	Installation of oil seal.
	MD998320	Oil seal installer	Installation of oil seal.
	MD998325	Differential oil seal installer	Installation of oil seal.

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Tool	Number	Name	Use		
	MD998349	Oil seal installer	Removal and installation of input shaft front bearing.		
	MD998369	Oil seal installer	Installation of needle bearing.		
	MD998801	Bearing remover	Removal of bearing sleeve and bearing inner race.		
	MD998803	Differential oil seal installer	Installation of oil seal.		
	MD998812	Installer cap	Use with installer and installer adapter.		
	MD998813	Installer – 100	Use with installer cap and installer adapter.		
	MD998814	Installer – 200	Use with installer cap and installer adapter.		

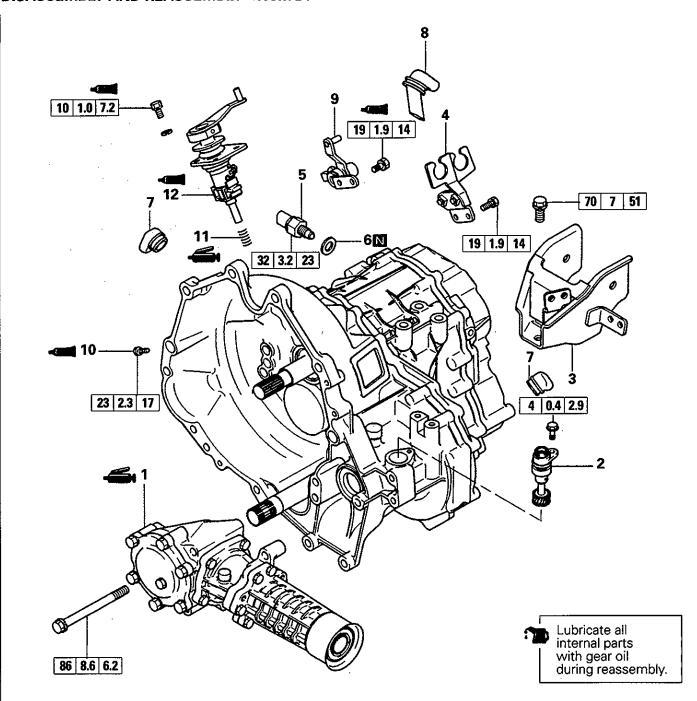
Tool	Number	Name	Use
	MD998820	Installer adapter (42)	Installation of bearing sleeve and bearing inner race.
	MD998821	Installer adapter (44)	Installation of 5th-reverse synchronizer hub.
	MD998822	Installer adapter (46)	Installation of bearing sleeve and bearing inner race.
	MD998823	Installer adapter (48)	Installation of reverse synchronizer hub and bearing inner race.
	MD998824	Installer adapter (50)	Installation of 3rd – 4th synchronizer hub, bearing sleeve, 5th speed gear and oil seal.
	MD998825	Installer adapter (52)	Installation of bearing sleeve and bearing inner race.
	MD998826	Installer adapter (54)	Installation of 5th – 6th synchronizer and 1st – 2nd synchronizer hub.

Tool	Number	Name	Use
	MD998827	Installer adapter (56)	Installation of spacer ring and bearing inner race.
	MD998829	Installer adapter (60)	Installation of 3rd – 4th synchronizer.
	MD998917	Bearing remover	Removal of bearing sleeve and bearing inner race.
	MD999566	Claw	Removal of bearing outer race.

**NOTES** 

# 3. TRANSMISSION

#### DISASSEMBLY AND REASSEMBLY <W5MG1>



#### **Disassembly steps**

▶AA 1. Transfer

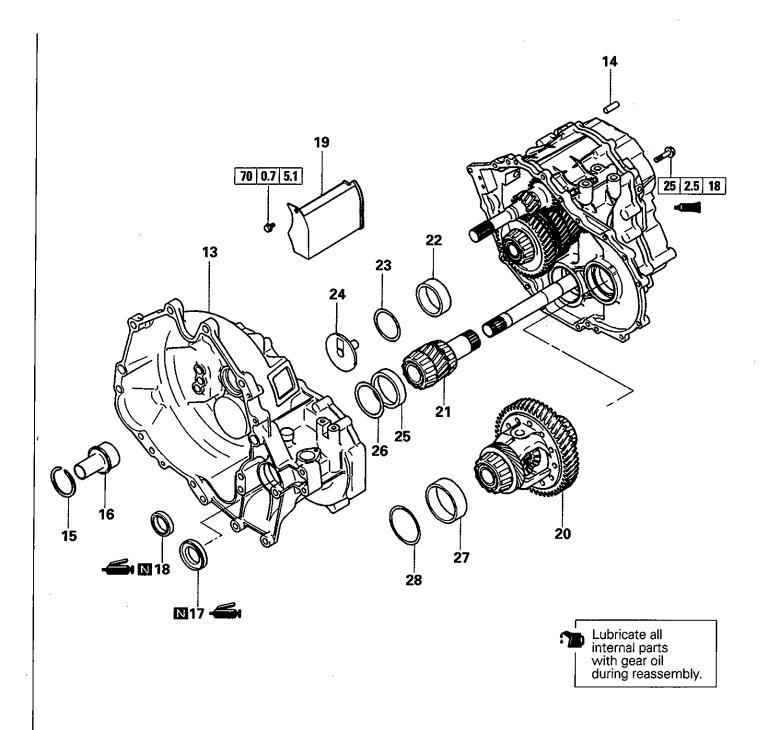
- 2. Speedometer gear
- 3. Transmission mount bracket
- 4. Shift cable bracket
- 5. Backup light switch
- 6. Gasket

7. Cover A

8. Cover B

♦¥♦ 9. Select lever ♦V♦10. Shift shaft hexagon bolt

11. Return spring



#### **Disassembly steps**

♦\$ 13. Clutch housing
14. Straight pin
15. Snap ring
♦C♦ ♦R 16. Input shaft front bearing
♦Q 17. Oil seal
♦P 18. Oil seal

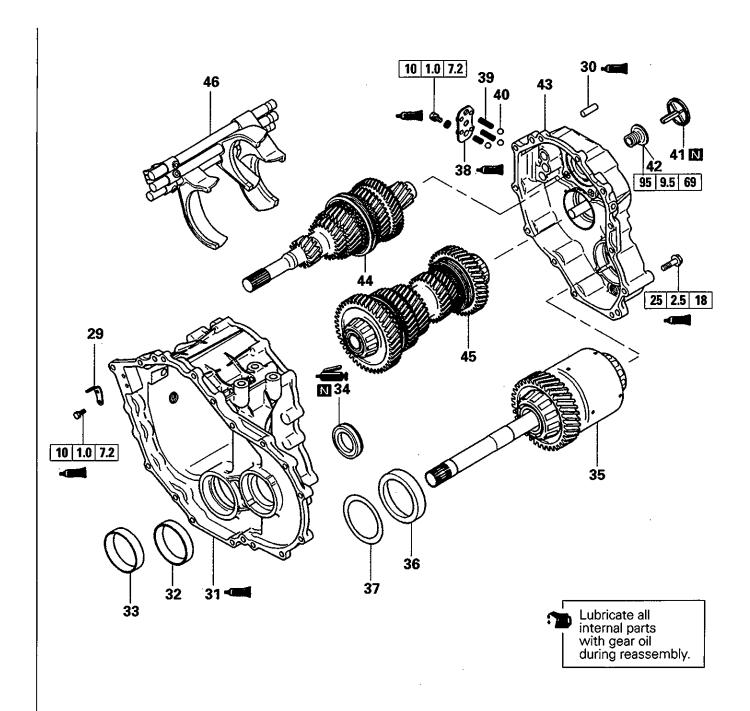
19. Oil tank

20. Front differential 21. Front output shaft

♦D♦ ♦0 22. Bearing outer race ♦E 23. Spacer ♦N 24. Oil guide

♦D♦ ♦M♦25. Bearing outer race
 ♦E♦ 26. Spacer
 ♦D♦ ♦L♦ 27. Bearing outer race
 ♦E♦ 28. Spacer

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#### Disassembly steps

**♦K4**29. Stopper plate 30. Straight pin

♦J∢31. Transmission case ♦I♠ 32. Bearing outer race ♦I♠33. Bearing outer race

∳G∳34. Oil seal

35. Center differential \$\rightarrow\$ \$\rig

♦E♦37. Spacer ♦D♦38. Poppet cover

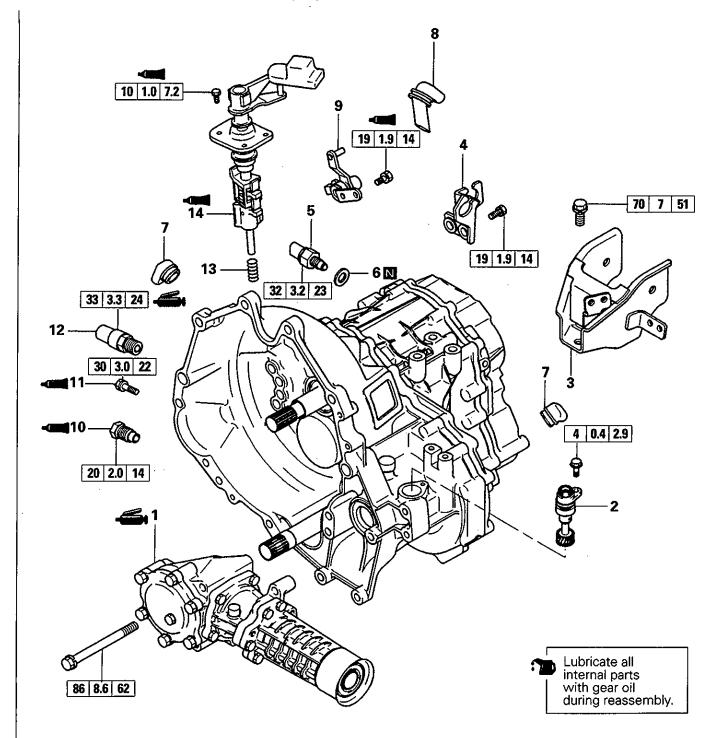
39. Poppet spring

40. Poppet ball ⟨₱⟩ ♦€♦41. Input shaft rear seal cap ⟨₲⟩ ♦₿♦42. Input shaft lock bolt ⟨₦⟩ ♦₳♦43. Rear cover

44. Input shaft

45. Intermediate gear 46. Shift rail and fork

#### **DISASSEMBLY AND REASSEMBLY <W6MG1>**



#### Disassembly steps

▶AA 1. Transfer

Speedometer gear
 Transmission mount bracket
 Shift cable bracket

5. Backup light switch

6. Gasket 7. Cover A

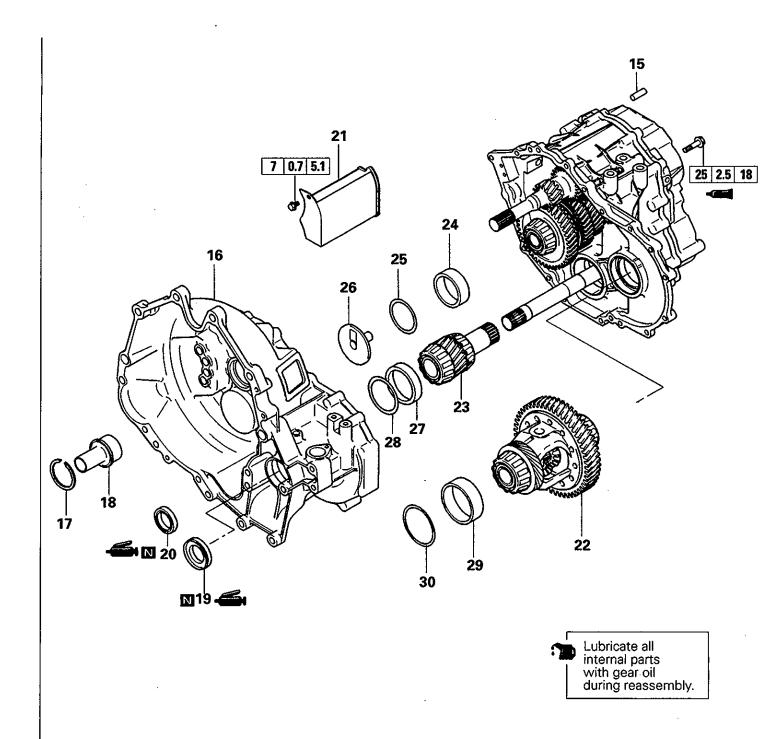
8. Cover B

**Y** 9. Select lever **X** 10. Detent

**♦W**•11. Guide bolt

♦U♦ 12. Reverse shift damper 13. Return spring ♦A♦ ♦T♦ 14. Shift shaft

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#### Disassembly steps

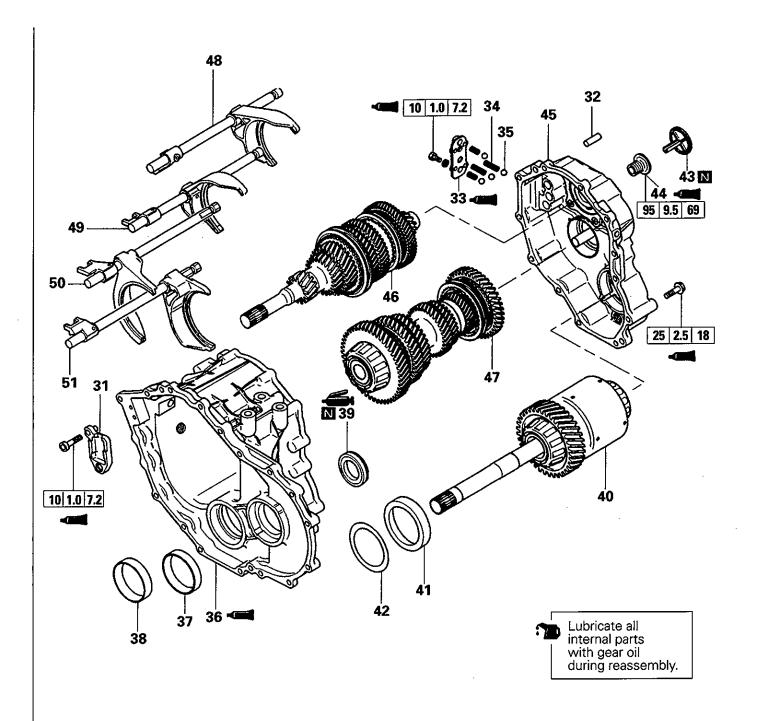
⟨B⟩ 15. Straight pin
 ♦S♦16. Clutch housing
 17. Snap ring
 ⟨C⟩ ♦R♦18. Input shaft front bearing
 ♦Q♦19. Oil seal
 ♦P♦20. Oil seal

21. Oil tank

22. Front differential

23. Front output shaft

⟨D⟩ ♦0 24. Bearing outer race ♦E 25. Spacer ♦N 26. Oil guide ⟨D⟩ ♦M 27. Bearing outer race ♦E 28. Spacer ⟨D⟩ ♦L 29. Bearing outer race ♦E 30. Spacer



#### **Disassembly steps**

▶K♦31. Stopper plate 32. Straight pin▶D♦33. Poppet cover

άEὸ

34. Poppet spring

35. Poppet ball

▶J♦36. Transmission case ▶I♦37. Bearing outer race ▶I♦38. Bearing outer race

♦G439. Oil seal

40. Center differential

♦F 41. Bearing outer race

♦E442. Spacer ♦F♦ ♦C443. Input shaft rear seal cap ♦G♦ ♦B444. Input shaft lock bolt

å**H**ộ **∮A**∮45. Rear cover

46. Input shaft

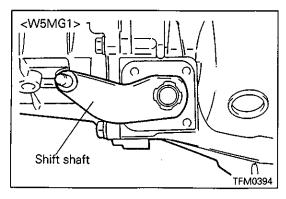
47. Intermediate gear 48. 5th – 6th shift rail and fork

49. 3rd – 4th shift rail and fork 50. 1st – 2nd shift rail and fork

51. Reverse shift rail and fork

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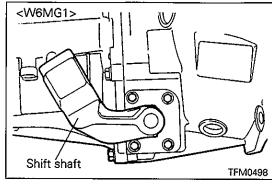
Added



# DISASSEMBLY SERVICE POINTS

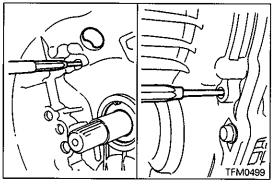
#### **♦A♦** SHIFT SHAFT REMOVAL

(1) Set the shift shaft in neutral position and pull out the shaft.

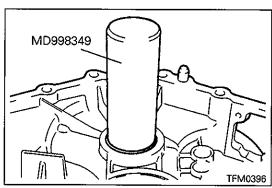


#### **♦B♦** STRAIGHT PIN REMOVAL

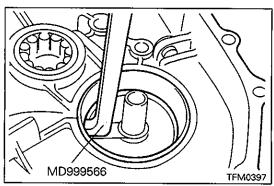
(1) Drive off the straight pin as shown in the illustration.

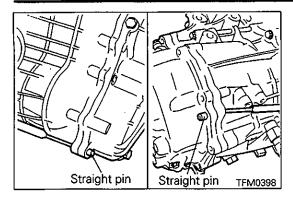


**♦CD** INPUT SHAFT FRONT BEARING REMOVAL



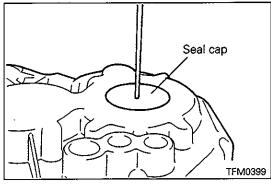
**♦D♦** BEARING OUTER RACE REMOVAL





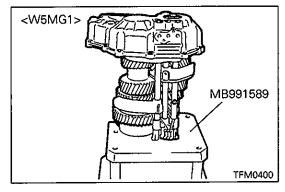
#### **⟨E⟩** STRAIGHT PIN REMOVAL

(1) Drive off the straight pin as shown in the illustration.



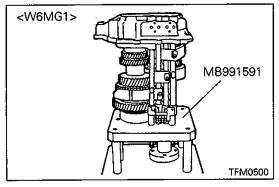
#### **⟨IF|⟩** INPUT SHAFT REAR SEAL CAP REMOVAL

(1) Remove the seal cap by striking its center using a nail or the like that has a sharp end.

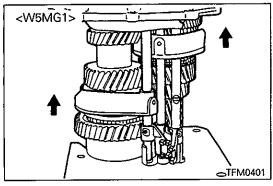


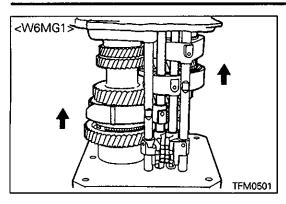
#### **⟨GC⟩** INPUT SHAFT LOCK BOLT REMOVAL

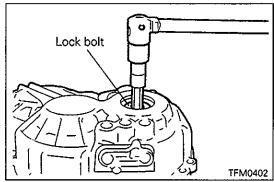
(1) Set the rear cover, input shaft and intermediate shaft to the Special Tool.



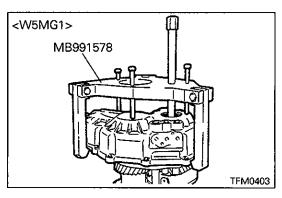
(2) Shift the sleeves as shown in the illustration to engage gears to fix the shaft.



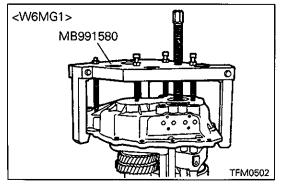




(3) Remove the lock bolt.

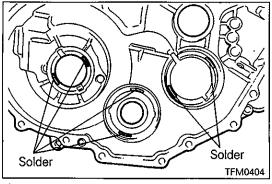


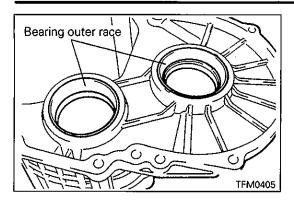
**♦H♦** REAR COVER REMOVAL



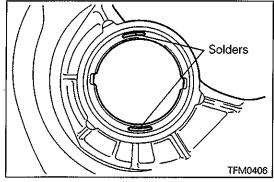
# ADJUSTMENT BEFORE REASSEMBLY SPACER SELECTION

(1) Place solders [approx. 10 mm (0.39 in.) in length and 1.6 mm (0.063 in.) in diameter] in the clutch housing as shown in the illustration and install the bearing outer races.

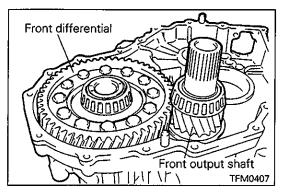




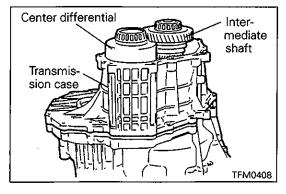
(2) Install the bearing outer race in the transmission case as shown in the illustration.



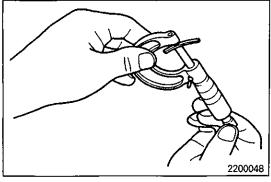
(3) Place solders [approx. 10 mm (0.39 in.) in length and 1.6 mm (0.063 in.) in diameter] in the transmission case as shown in the illustration and install the bearing outer race.



(4) Install the front output shaft and front differential to the clutch housing.



- (5) Install the center differential, intermediate shaft and transmission case.
- (6) Install the rear cover and tighten the bolts to the specified torque.



(7) Measure the thickness of the crushed solders using a micrometer. Based on the measurement, select the appropriate spacer to adjust the preload within the standard value.

#### Standard value:

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Center differential preload	
0.10-0.20 mm (0.0039-0.0079 in.)	W5MG1
0.15-0.20 mm (0.0059-0.0079 in.)	W6MG1
Front output shaft preload	
0.15-0.25 mm (0.0059-0.0098 in.)	W5MG1
0.10-0.15 mm (0.0039-0.0059 in.)	W6MG1
Front differential preload	
0.15-0.25 mm (0.0059-0.0098 in.)	W5MG1
0.15-0.20 mm (0.0059-0.0079 in.)	

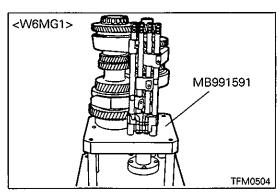
(8) If solder were not crushed, use solders with larger diameter and repeat the above procedure (1) through (6).

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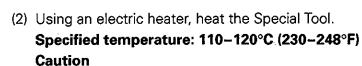
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# REASSEMBLY SERVICE POINTS A REAR COVER INSTALLATION

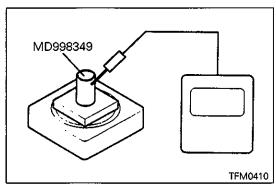
(1) Set the intermediate shaft, input shaft and shift rail and fork to the Special Tool.



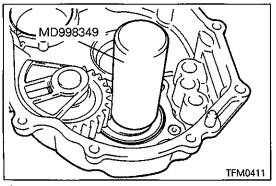
<W5MG1>



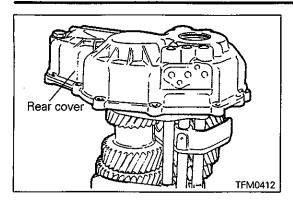
Be careful not to burn yourself.



(3) Place the heated Special Tool on the input shaft rear bearing inner race position of the rear cover for approx. 10 minutes.



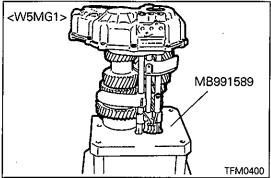
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(4) Remove the Special Tool and install the rear cover.

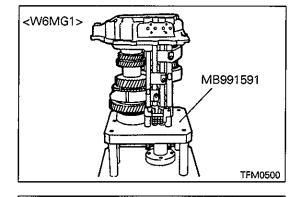
#### Caution

• Never touch the Special Tool with bare hands.

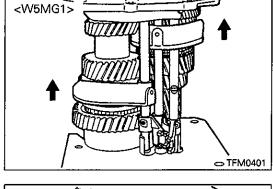


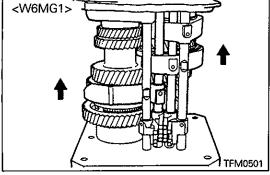
#### **▶B**♦ INPUT SHAFT LOCK BOLT INSTALLATION

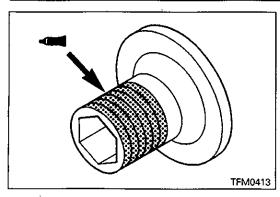
(1) Set the rear cover, input shaft and intermediate shaft to the Special Tool.



(2) Shift the sleeves as shown in the illustration to engage gears to fix the shaft.

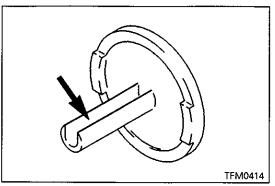






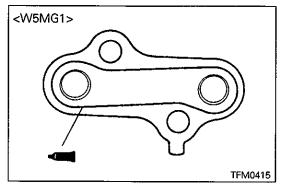
(3) Apply sealant to the lock bolt threads and tighten the bolt to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent



#### **♦C** INPUT SHAFT REAR SEAL CAP INSTALLATION

(1) Position the groove of the seal cap toward the upper side of the transmission and strike in the seal cap until it becomes flat with the rear cover.

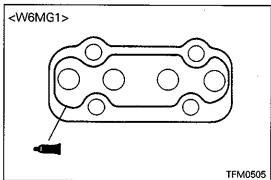


#### **▶D** ◆ POPPET COVER INSTALLATION

(1) Apply sealant to the poppet cover as shown in the illustration.

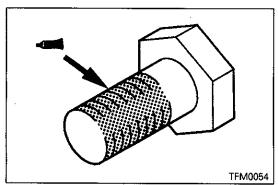
Specified sealant: LOCTITE 17430 or MITSUBISHI genuine sealant Part No. MD997740 or equivalent

(2) Set the bolts to the poppet cover.



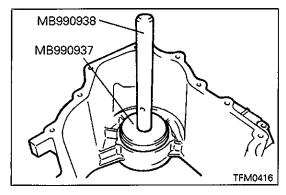
(3) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent

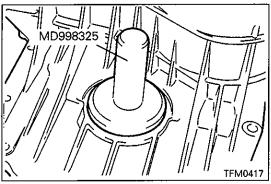


#### **▶E** SPACER INSTALLATION

(1) Install the previously selected spacers. (See "ADJUST-MENT BEFORE REASSEMBLY").



F4 BEARING OUTER RACE INSTALLATION

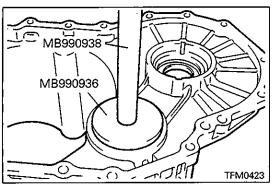


#### **♦G** OIL SEAL INSTALLATION

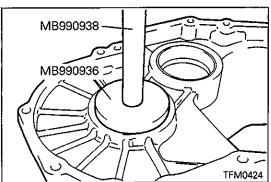
(1) After installing the oil seal, apply grease to the oil seal lips.

Specified grease:

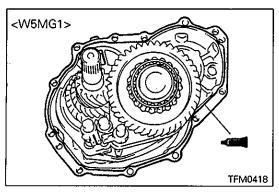
MITSUBISHI genuine grease Part No. 0101011 or equivalent

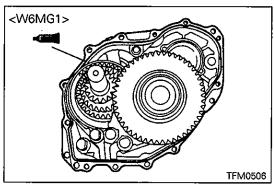


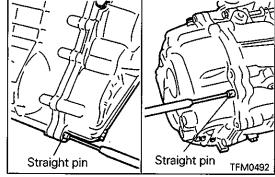
**♦H**♠ BEARING OUTER RACE INSTALLATION

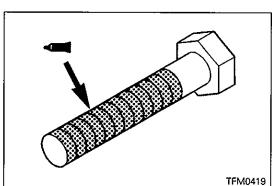


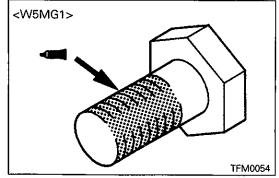
**▶! BEARING OUTER RACE INSTALLATION** 











**▶J** TRANSMISSION CASE INSTALLATION

(1) Apply sealant to the rear cover as shown in the illustration.

Specified sealant:

LOCTITE 17430 or MITSUBISHI genuine sealant Part No. MD997740 or equivalent

Caution

Squeeze out the sealant uniformly without excess or discontinuity.

(2) Drive in the straight pin as shown in the illustration.

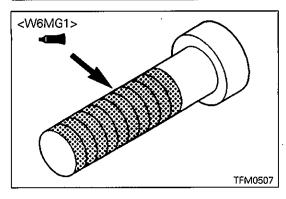
(3) Apply sealant to the bolt threads and tighten the bolt to the specified torque.

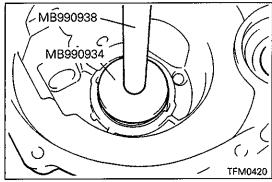
Specified sealant: LOCTITE No. 242 or equivalent

#### **▶K STOPPER PLATE INSTALLATION**

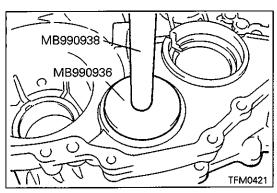
- (1) Install the bolts to the stopper plate.
- (2) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent

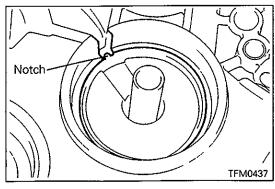




**▶L** BEARING OUTER RACE INSTALLATION



**▶M** ■ BEARING OUTER RACE INSTALLATION

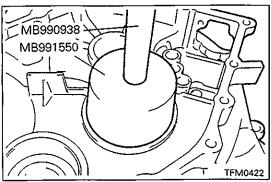


#### **♦N**♠ OIL GUIDE INSTALLATION

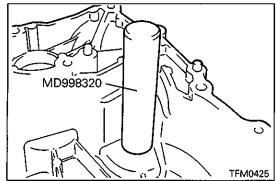
(1) Align the notch of the oil guide with the position shown in the illustration.

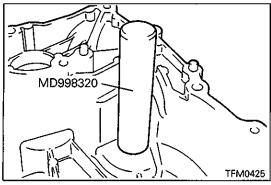
#### Caution

• If the oil guide is damaged, replace it with a new one.

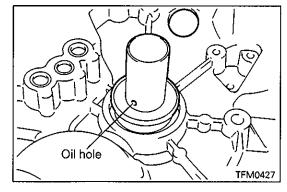


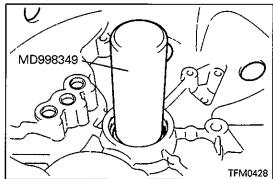
**▶0 ♦** BEARING OUTER RACE INSTALLATION

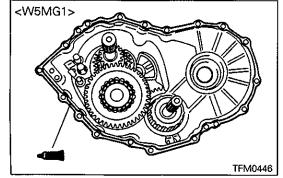




# MD998803 TFM0426







#### **∌**P4 **OIL SEAL INSTALLATION**

(1) After installing the oil seal, apply grease to the oil seal lips.

#### Specified grease:

MITSUBISHI genuine grease Part No. 0101011 or equivalent

#### 104 **OIL SEAL INSTALLATION**

(1) After installing the oil seal, apply grease to the oil seal lips.

#### Specified grease:

MITSUBISHI genuine grease Part No. 0101011 or equivalent

#### INPUT SHAFT FRONT BEARING INSTALLATION

(1) Install the input shaft front bearing with its oil hole toward the bottom of the transmission.

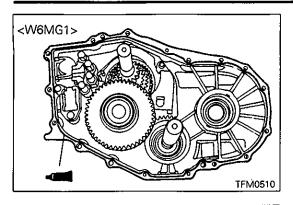
#### **CLUTCH HOUSING INSTALLATION**

(1) Apply sealant to the transmission case as shown in the illustration.

#### Specified sealant:

**LOCTITE 17430 or MITSUBISHI genuine sealant** Part No. MD997740 or equivalent

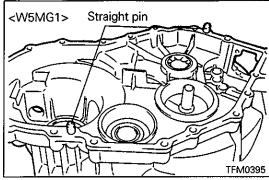
Squeeze out the sealant uniformly without excess and discontinuity.



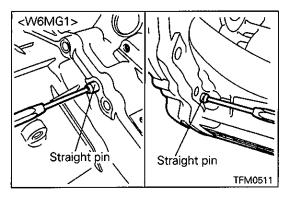
(2) Install the clutch housing.

#### Caution

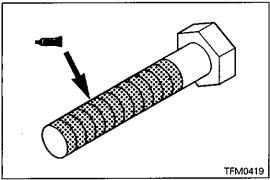
 Be careful not to damage the center shaft oil seal by the center shaft.



(3) Drive in the straight pins to the positions shown in the illustration. <W5MG1>

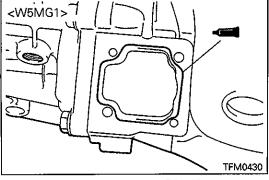


(4) Drive in the straight pin as shown in the illustration. <W6MG1>



(5) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent



#### T SHIFT SHAFT INSTALLATION

(1) Apply sealant to the clutch housing as shown in the illustration.

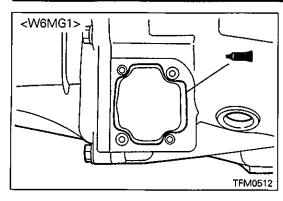
#### Specified sealant:

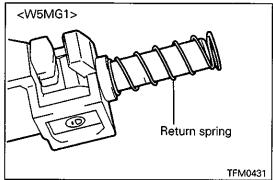
LOCTITE 17430 or MITSUBISHI genuine sealant Part No. MD997740 or equivalent

#### Caution

 Squeeze out the sealant uniformly without excess and discontinuity.

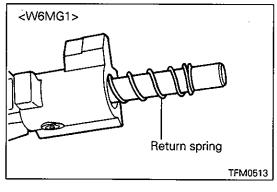
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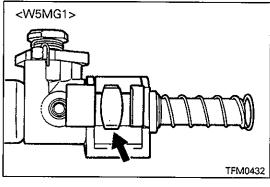


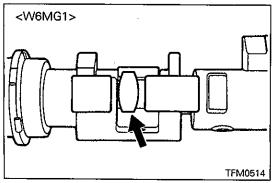
(2) Apply grease to the return spring and attach it to the shift shaft.

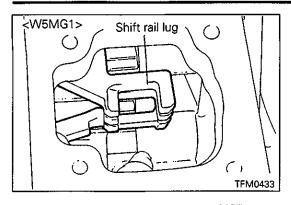
Specified grease:
MITSUBISHI genuine grease
Part No. 0101011 or equivalent



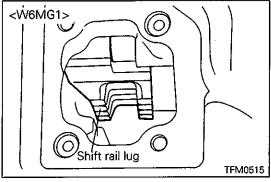
(3) Set the shift shaft as shown in the illustration.





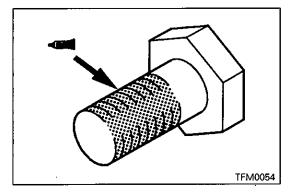


(4) Install the shift shaft while passing its tab in the grooves of shift rail lugs as shown in the illustration.



(5) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

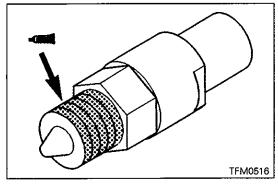
Specified sealant: LOCTITE No. 242 or equivalent



#### **▶U** REVERSE SHIFT DAMPER INSTALLATION

(1) Apply sealant to the threads of the reverse shift damper and tighten it to the specified torque.

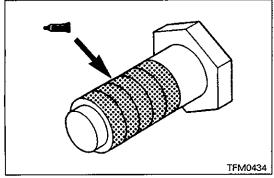
Specified sealant: LOCTITE No. 242 or equivalent

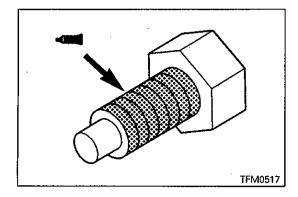


#### **▶V4** SHIFT SHAFT HEXAGON BOLTS INSTALLATION

(1) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent

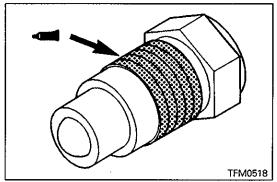




#### **♦W GUIDE BOLT INSTALLATION**

(1) Apply sealant to the bolt threads and tighten the bolt to the specified torque.

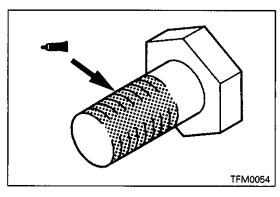
Specified sealant: LOCTITE No. 242 or equivalent



#### **♦X DETENT INSTALLATION**

(1) Apply sealant to the threads of the detent and tighten it to the specified torque.

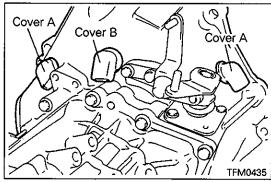
Specified sealant: LOCTITE No. 242 or equivalent



#### **▶Y SELECT LEVER INSTALLATION**

(1) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent



#### **▶Z** COVER INSTALLATION

(1) Install the cover as shown in the illustration.

#### **♦AA** TRANSFER INSTALLATION

(1) Apply grease to the transmission and transfer splines.

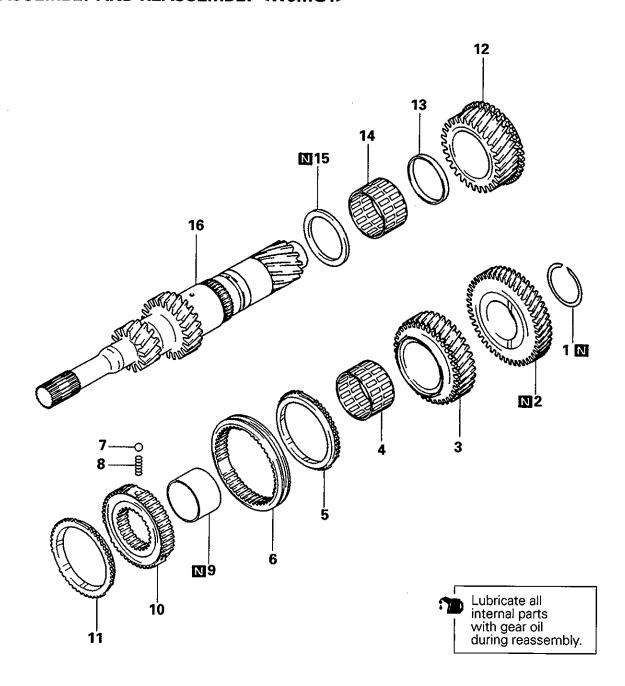
Specified grease:

MITSUBISHI genuine grease Part No. 0101011 or equivalent

**NOTES** 

## 4. INPUT SHAFT

#### DISASSEMBLY AND REASSEMBLY <W5MG1>



#### **Disassembly steps**

- 1. Snap ring

  (A) K 2. 5th speed gear
  3. 4th speed gear
  4. Needle bearing

  H 5. Synchronizer ring

  (B) H 6. Synchronizer sleeve

  H 7. Synchronizer ball

  Synchronizer ball

  - ♦H♦ 8. Synchronizer spring

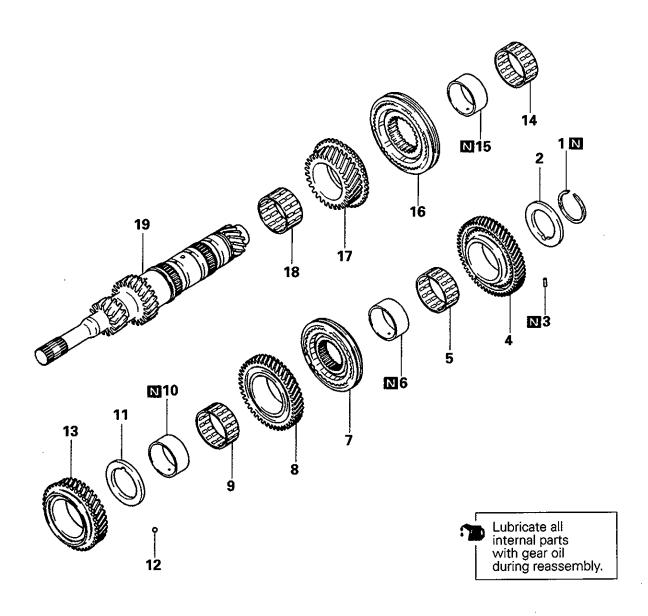
- ◆D♦ D♠ 9. Bearing sleeve
   ◆B♠10. 3rd 4th synchronizer hub
   11. Synchronizer ring
   12. 3rd speed gear
   13. Bearing spacer

  - 14. Needle bearing

    •A•15. Spacer ring

    16. Input shaft

# **DISASSEMBLY AND REASSEMBLY <W6MG1>**



### Disassembly steps

- 1. Snap ring

- 2. Spacer
  3. Spring pin
  4. 6th speed gear
  5. Needle bearing
- 6. Bearing sleeve
  7. 5th 6th synchronizer

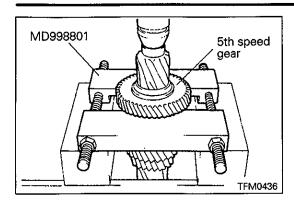
  - 8. 5th speed gear 9. Needle bearing
- ⟨E⟩ ♦G♦10. Bearing sleeve

- **▶F** 11. Spacer 12. Steel ball

  - 13. 4th speed gear 14. Needle bearing
- ⟨F⟩ ♦E 15. Bearing sleeve
   ♦C 16. 3rd 4th synchronizer
   17. 3rd speed gear
   18. Needle bearing

  - 19. Input shaft

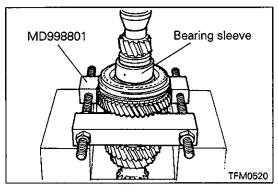
TFM0519



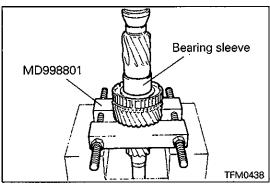
# DISASSEMBLY SERVICE POINTS AAD 5TH SPEED GEAR REMOVAL

## **()B()** SYNCHRONIZER SLEEVE REMOVAL

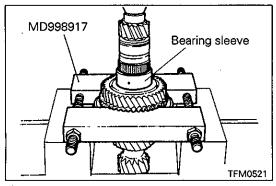
(1) Remove the sleeve while covering it with hands. Be careful not to lose the synchronizer balls and springs as they may jump off when the sleeve is removed.



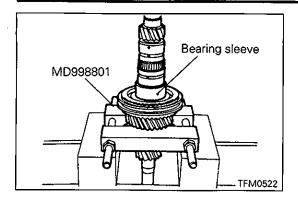
**♦C♦** BEARING SLEEVE REMOVAL



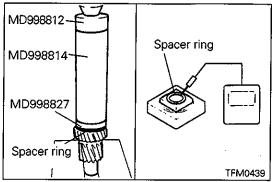
**♦D♦** BEARING SLEEVE REMOVAL



**₫E**♠ BEARING SLEEVE REMOVAL



# **⟨F⟩** BEARING SLEEVE REMOVAL



# REASSEMBLY SERVICE POINTS

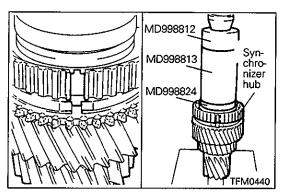
#### **♦A** SPACER RING INSTALLATION

(1) Using an electric heater and a thick iron plate, slowly heat the spacer ring via the plate.

Specified temperature: 110 – 120°C (230 – 248°F)

#### Caution

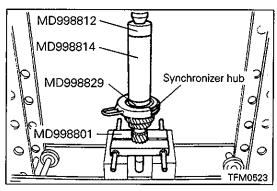
- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.



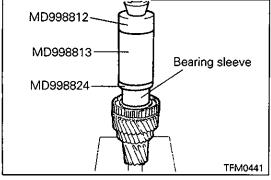
# **▶B** ◆ 3RD – 4TH SPEED SYNCHRONIZER HUB INSTALLATION

#### Caution

Align the synchronizer hub and ring as shown in the illustration.



#### **♦C** 3RD – 4TH SYNCHRONIZER INSTALLATION



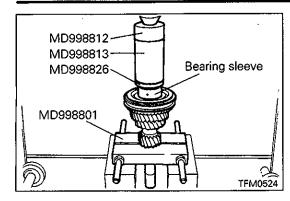
# **▶D BEARING SLEEVE INSTALLATION**

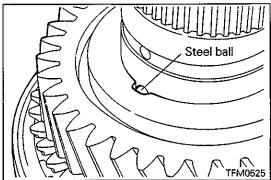
(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

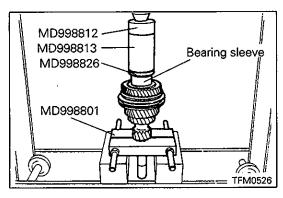
Specified temperature: 110 – 120°C (230 – 248°F) Caution

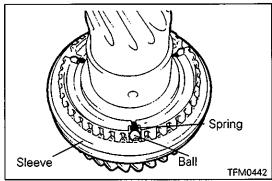
- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.

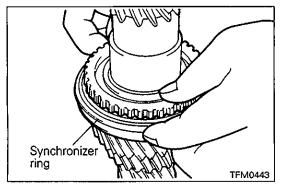
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## **▶E BEARING SLEEVE INSTALLATION**

(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

Specified temperature: 110 - 120°C (230 - 248°F)

#### Caution

- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.

# **▶F♠** SPACER INSTALLATION

(1) Install the spacer while aligning the groove of the spacer with the steel ball.

#### **▶G** BEARING SLEEVE INSTALLATION

(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

Specified temperature: 110 – 120°C (230 – 248°F)

#### Caution

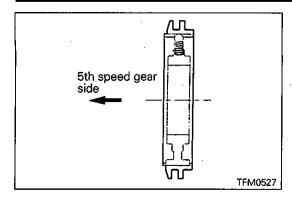
- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.

# ♦H♦ SYNCHRONIZER SPRING / BALL / SLEEVE / RING INSTALLATION

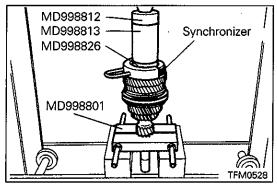
- (1) Install the sleeve on the synchronizer hub and shift it to the 3rd speed gear side.
- (2) Install the synchronizer springs and balls. (3 places)
- (3) Install the synchronizer ring.
- (4) While pressing the synchronizer ring with fingers, slide the sleeve to the 4th speed gear side.

#### NOTE

Sliding the sleeve to the 4th speed gear side positions the balls at the center of the sleeve.



# **♦14** 5TH - 6TH SYNCHRONIZER INSTALLATION



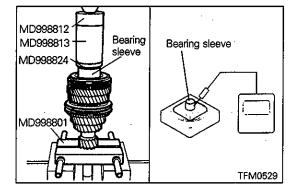
# **▶J** BEARING SLEEVE INSTALLATION

(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

Specified temperature: 110 - 120°C (230 - 248°F)

#### Caution

- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.



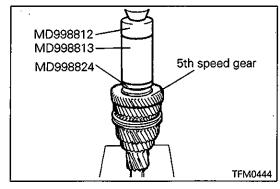
# **♦K** 5TH SPEED GEAR INSTALLATION

(1) Using an electric heater and a thick iron plate, slowly heat the gear via the plate.

Specified temperature: 160 - 180°C (320 - 356°F)

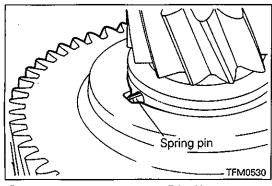
#### Caution

- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.



# **▶L** SPACER INSTALLATION

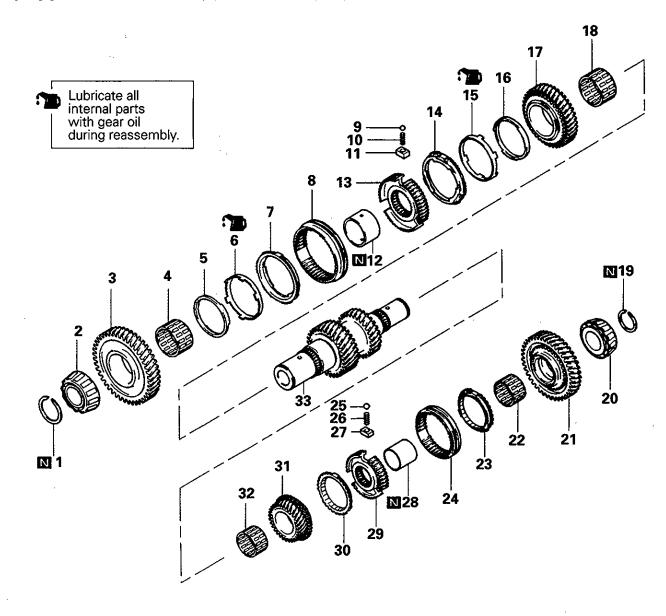
(1) Install the spacer while aligning the groove of the spacer with the spring pin.



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# 5. INTERMEDIATE GEAR

# DISASSEMBLY AND REASSEMBLY <W5MG1>



#### Disassembly steps

- 1. Snap ring
- ♦A♦ ♦K♦ 2. Bearing inner race

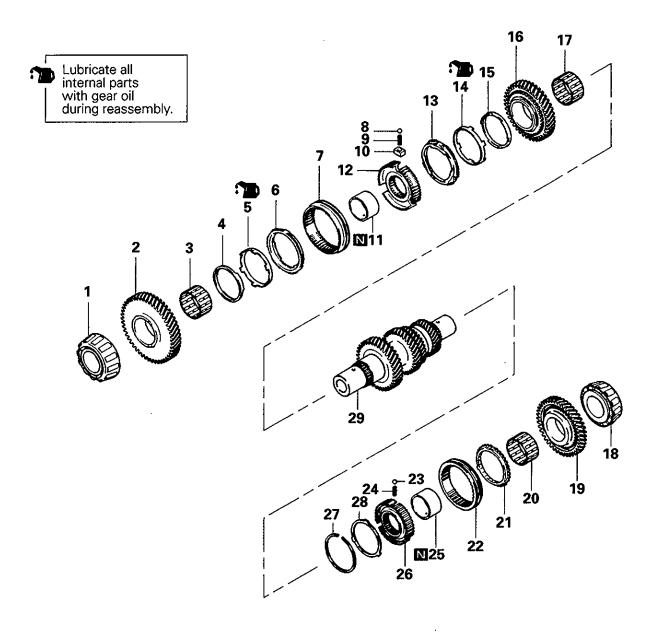
  - 3. 1st speed gear 4. Needle bearing
  - 5. Inner synchronizer ring
  - **♦G** 6. Synchronizer cone
- 7. Outer synchronizer ring
  480 J4 8. Synchronizer sleeve
  J4 9. Synchronizer ball
- - **J** 10. Synchronizer spring **J** 11. Synchronizer key
- ♦CD ♦I♠ 12. Bearing sleeve
  - ♦H♦13. 1st 2nd synchronizer hub
  - 14. Outer synchronizer ring \$6(15. Synchronizer cone
  - - 16. Inner synchronizer ring

- 17. 2nd speed gear 18. Needle bearing

- 19. Snap ring **△D♦ ♦F** € 20. Bearing inner race
  - 21. Reverse gear
  - 22. Needle bearing
  - **D**423. Synchronizer ring
- ⟨B⟩ ♦D•24. Synchronizer sleeve •D•25. Synchronizer ball •D•26. Synchronizer spring
- ♦D 27. Synchronizer key ♦E ♦ C 28. Bearing sleeve
- - A429. 5th reverse synchronizer hub
    - 30. Synchronizer ring
    - 31. 5th speed gear
    - 32. Needle bearing
    - 33. Intermediate gear

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# **DISASSEMBLY AND REASSEMBLY <W6MG1>**



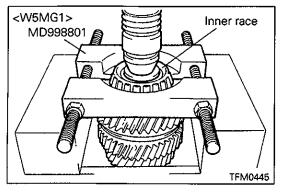
#### Disassembly steps

- ⟨A⟩ ♦K♦ 1. Bearing inner race
  - 2. 1st speed gear
  - 3. Needle bearing
  - 4. Inner synchronizer ring
  - **▶G** 5. Synchronizer cone
  - **▶J** 6. Outer synchronizer ring

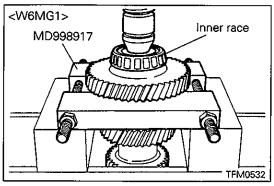
- ⟨B⟩ → J ← 7. Synchronizer sleeve
   → J ← 8. Synchronizer sleeve
   → J ← 9. Synchronizer spring
   → J ← 10. Synchronizer key
   ⟨C⟩ → J ← 11. Bearing sleeve
   → H ← 12. 1st 2nd synchronizer hub
  - 13. Outer synchronizer ring
  - ♦G 14. Synchronizer cone
    - 15. Inner synchronizer ring

- 16. 2nd speed gear 17. Needle bearing
- ♦D♦ ♦F♦ 18. Bearing inner race
  - 19. Reverse gear
  - 20. Needle bearing
  - **▶E** ◆21. Synchronizer ring
- ⟨B⟩ ►€ 22. Reverse synchronizer sleeve
- ◆E423. Synchronizer ball ◆E424. Synchronizer spring ◆E♦ ◆C425. Bearing sleeve
  - - ▶B426. Reverse synchronizer hub
      - 27. Snap ring
      - 28. Stopper plate
      - 29. Intermediate shaft

TFM0531

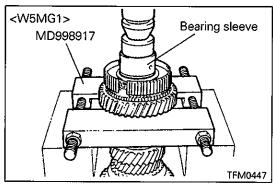


# DISASSEMBLY SERVICE POINTS \$\phi A \( \rightarrow \) BEARING INNER RACE REMOVAL



## **OBD** SYNCHRONIZER SLEEVE REMOVAL

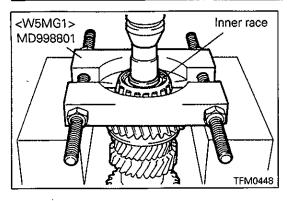
(1) Remove the sleeve while covering it with hands. Be careful not to lose the synchronizer balls and springs as they may jump off when the sleeve is removed.



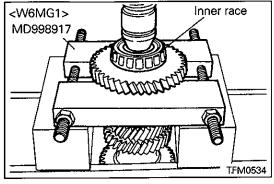
# <W6MG1> Bearing sleeve MD998917 TFM0533

#### © Mitsubishi Motors Corporation Feb. 1995

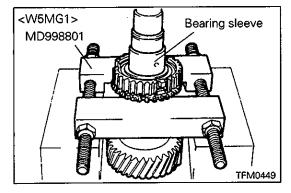
# **♦C** BEARING SLEEVE REMOVAL

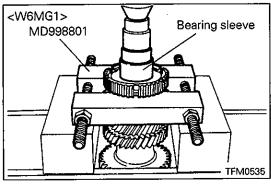


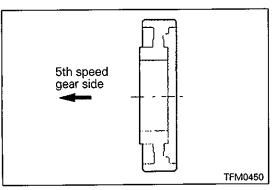
**♦DD** BEARING INNER RACE REMOVAL



**♦E♦** BEARING SLEEVE REMOVAL

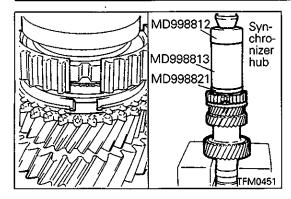






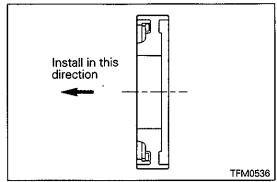
REASSEMBLY SERVICE POINTS

\$A 5TH - REVERSE SYNCHRONIZER HUB
INSTALLATION

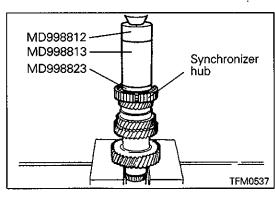


## Caution

Align the synchronizer hub and ring as shown in the illustration.

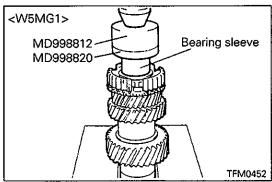


# **▶B** REVERSE SYNCHRONIZER HUB INSTALLATION



#### Caution

Align the synchronizer hub and ring as shown in the illustration.

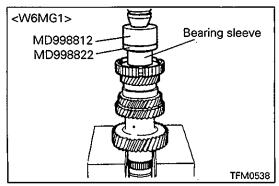


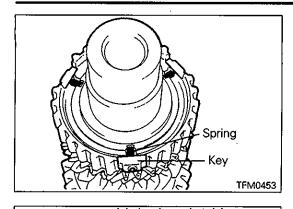
## **♦C** BEARING SLEEVE INSTALLATION

(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

Specified temperature: 110 – 120°C (230 – 248°F)

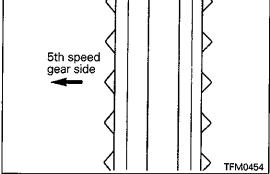
- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.



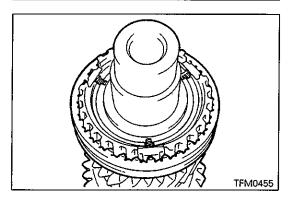


# **D** SYNCHRONIZER KEY / SPRING / BALL / SLEEVE / RING INSTALLATION

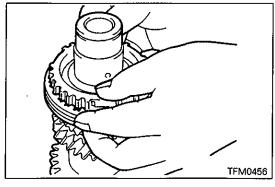
(1) Install the keys and springs to the synchronizer hub. (3 places)



(2) Make sure that the synchronizer sleeve is positioned in correct direction.



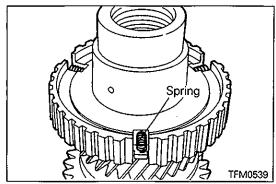
- (3) Install the sleeve with its projections aligned with the deep grooves in the synchronizer hub.
- (4) Shift the synchronizer sleeve to the 5th speed gear side.
- (5) Install the synchronizer balls. (3 places)



- (6) Install the synchronizer ring.
- (7) While pressing the synchronizer ring with fingers, slide the sleeve to the reverse gear side.

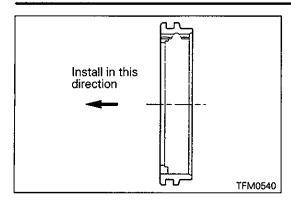
#### NOTE

Sliding the sleeve to the reverse gear side positions the balls at the center of the sleeve.

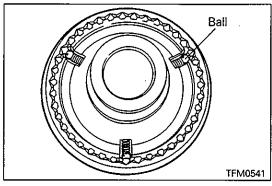


# **♦E** SYNCHRONIZER SPRING / BALL / SLEEVE / RING INSTALLATION

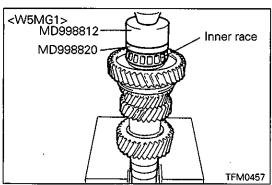
(1) Install the springs to the synchronizer hub. (3 places)



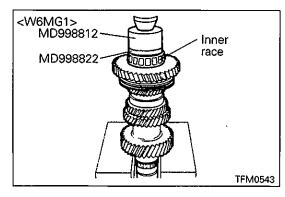
(2) Make sure that the synchronizer sleeve is positioned in correct direction.



(3) Install the synchronizer balls. (3 places)



# **▶F** ■ BEARING INNER RACE INSTALLATION

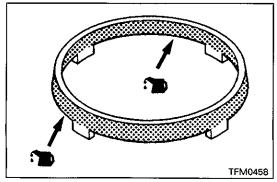


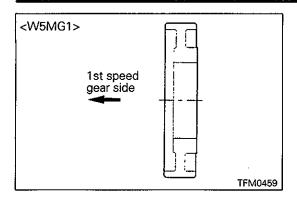
## **♦G** SYNCHRONIZER CONE INSTALLATION

(1) Apply transmission oil to the synchronizer cone facing (both sides).

# Specified oil:

Hypoid gear oil API GL-4 SAE 75W-85W or 80W

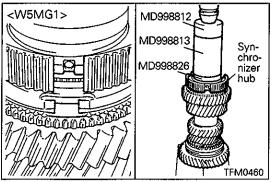




# **♦H** 1ST – 2ND SYNCHRONIZER HUB INSTALLATION

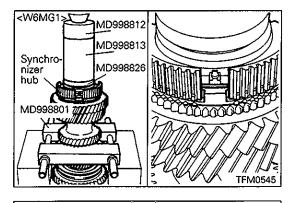
NOTE

On W6MG1, synchronizer hub can be installed in either direction.



#### Caution

Align the synchronizer hub and ring as shown in the illustration.



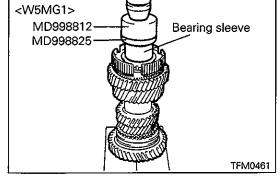
# **▶I** BEARING SLEEVE INSTALLATION

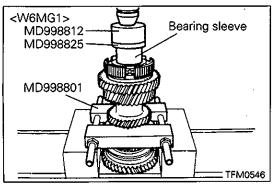
(1) Using an electric heater and a thick iron plate, slowly heat the sleeve via the plate.

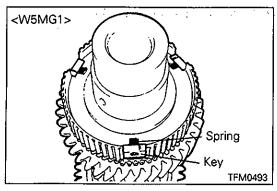
Specified temperature: 110 – 120°C (230 – 248°F)

#### Caution

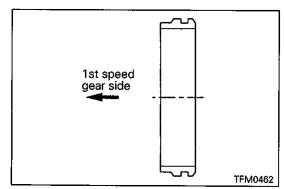
- Never overheat. If too high temperature is applied, the material strength becomes weaker.
- Be careful not to burn yourself.

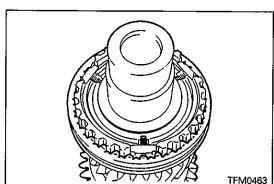


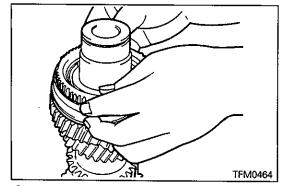




# <W6MG1> Spring Key TFM0547







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# **♦J SYNCHRONIZER KEY / SPRING / BALL / SLEEVE /**OUTER SYNCHRONIZER RING INSTALLATION

(1) Install the keys and springs to the synchronizer hub. (3 places)

#### Caution

 Be sure to install the synchronizer keys with their chamfered ends outward.

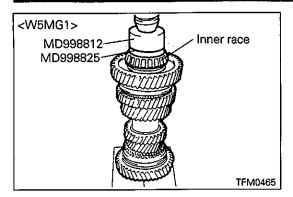
(2) Make sure that the synchronizer sleeve is positioned in correct direction.

- (3) Shift the synchronizer sleeve to the 2nd speed gear side.
- (4) Install the synchronizer balls. (3 places)

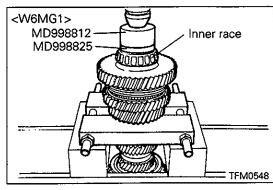
- (5) Install the outer synchronizer ring.
- (6) While pressing the outer synchronizer ring with fingers, slide the sleeve to the 1st speed gear side.

#### NOTE

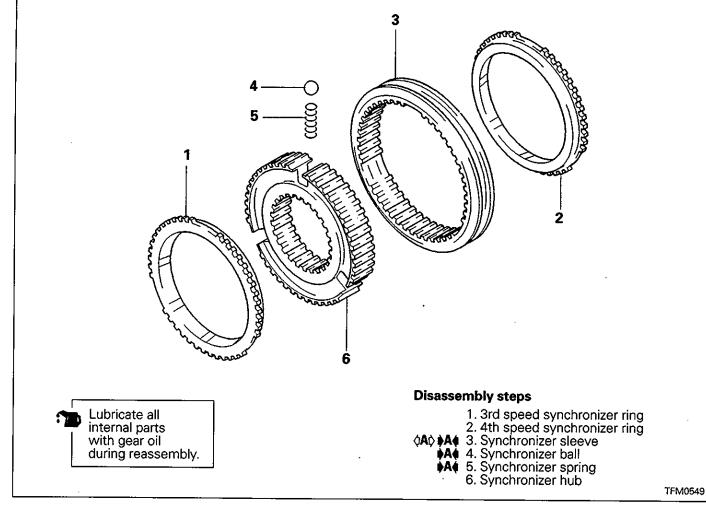
Sliding the sleeve to the 1st speed gear side positions the balls at the center of the sleeve.



# **▶K** BEARING INNER RACE INSTALLATION



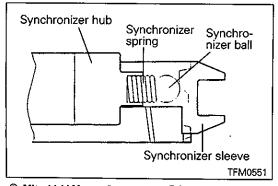
# 6. 3RD – 4TH SYNCHRONIZER <W6MG1> DISASSEMBLY AND REASSEMBLY



# **DISASSEMBLY SERVICE POINT**

# **♦A♦** SYNCHRONIZER SLEEVE REMOVAL

(1) Remove the sleeve while covering it with hands. Be careful not to lose the synchronizer balls and springs as they may jump off when the sleeve is removed.



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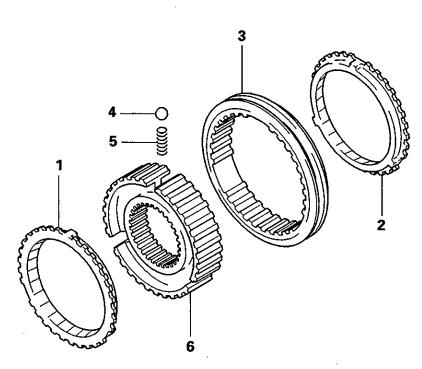
# REASSEMBLY SERVICE POINTS A SYNCHRONIZER SPRING / BALL / SLEEVE

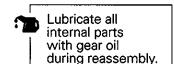
- INSTALLATION(1) Install the synchronizer sleeve and the 4th speed synchroniz-
- er ring to the synchronizer hub.
  (2) Install the synchronizer springs and balls. (3 places)

**NOTES** 

# 7. 5TH – 6TH SYNCHRONIZER <W6MG1>

# **DISASSEMBLY AND REASSEMBLY**





#### Disassembly steps

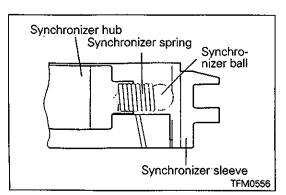
- 1. 5th speed synchronizer ring
- 2. 6th speed synchronizer ring
- ⟨A⟩ ≱A♦ 3. Synchronizer sleeve
  - ♦A 4. Synchronizer ball
  - A 5. Synchronizer spring
    - 6. Sýnchronizer hub

TFM0554

## **DISASSEMBLY SERVICE POINT**

# **♦A♦** SYNCHRONIZER SLEEVE REMOVAL

(1) Remove the sleeve while covering it with hands. Be careful not to lose the synchronizer balls and springs as they may jump off when the sleeve is removed.



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# REASSEMBLY SERVICE POINTS

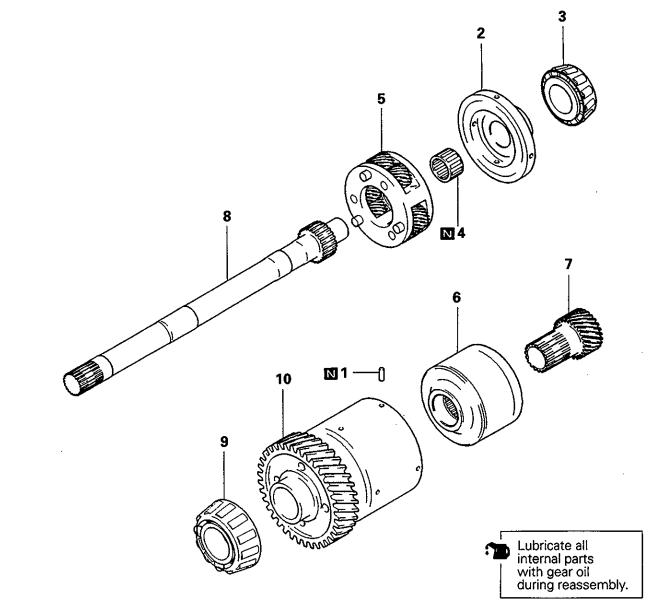
# ♦A♦ SYNCHRONIZER SPRING / BALL / SLEEVE INSTALLATION

- (1) Install the synchronizer sleeve and the 6th speed synchronizer ring to the synchronizer hub.
- (2) Install the synchronizer springs and balls. (3 places)

**NOTES** 

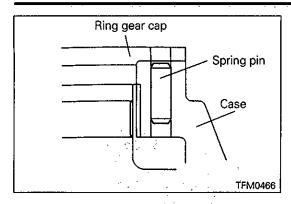
# 8. CENTER DIFFERENTIAL

# **DISASSEMBLY AND REASSEMBLY**



### **Disassembly steps**

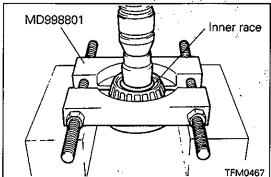
- - - 6. Viscous coupling
    - 7. Sun gear shaft 8. Center shaft
- ⟨D⟩ ♦A♠ 9. Bearing inner race 10. Center differential case



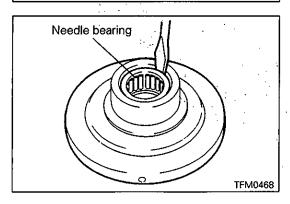
# **DISASSEMBLY SERVICE POINTS**

# **♦A♦ RING GEAR CAP REMOVAL**

(1) Drive in the spring pins to the position shown in the illustration.

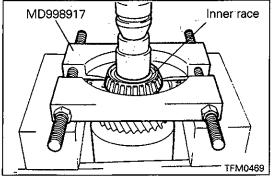


**()B()** BEARING INNER RACE REMOVAL

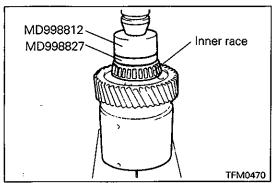


# **♦C** NEEDLE BEARING REMOVAL

(1) Using a screwdriver or the like, remove the needle bearing.

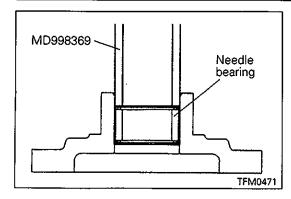


**△DD** BEARING INNER RACE REMOVAL



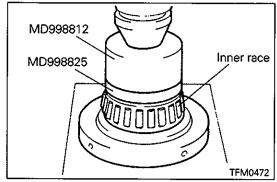
REASSEMBLY SERVICE POINTS

• A4 BEARING INNER RACE INSTALLATION

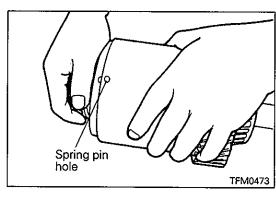


# **▶B** NEEDLE BEARING INSTALLATION

(1) Press in the bearing to the position shown in the illustration.

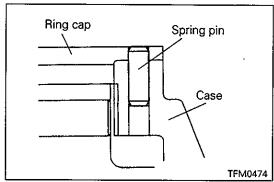


# **♦C** BEARING INNER RACE INSTALLATION



## **▶D** ■ RING GEAR CAP INSTALLATION

(1) While aligning the spring pin holes of the ring gear cap and center differential case, install the cap using a plastic hammer or the like.

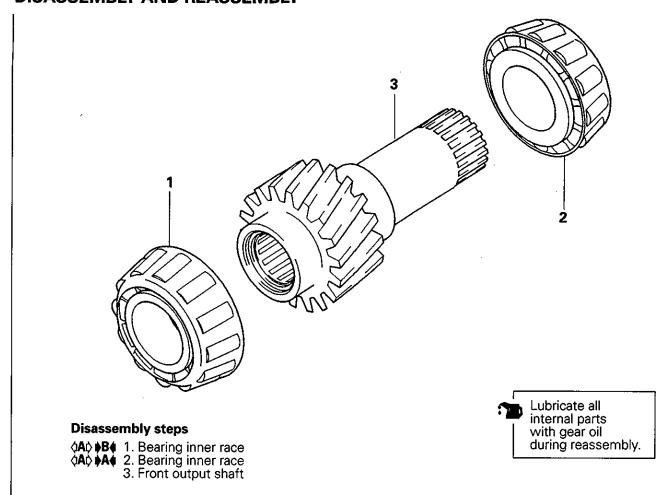


#### ►E4 SPRING PIN INSTALLATION

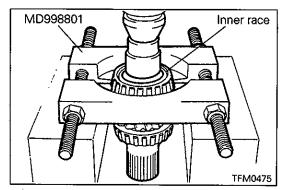
(1) Drive in the spring pins until they become flat with the center differential case surface.

**NOTES** 

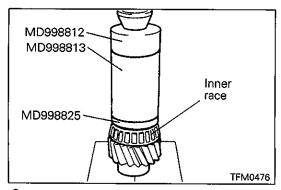
# 9. FRONT OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



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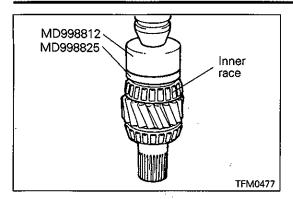


#### 



REASSEMBLY SERVICE POINTS

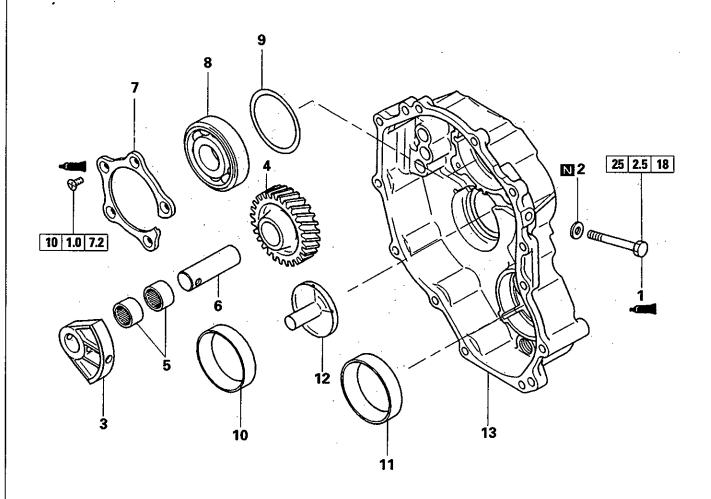
•A BEARING INNER RACE INSTALLATION

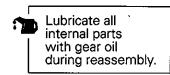


**▶B** ■ BEARING INNER RACE INSTALLATION

# **10. REAR COVER**

# **DISASSEMBLY AND REASSEMBLY <W5MG1>**





#### Disassembly steps

- **♦G** 1. Reverse idler gear shaft bolt

  - 2. Gasket3. Reverse idler gear shaft retainer4. Reverse gear5. Needle bearing
- F4 6. Reverse idler gear shaftE4 7. Input shaft rear bearing retainer

- 8. Input shaft rear bearing

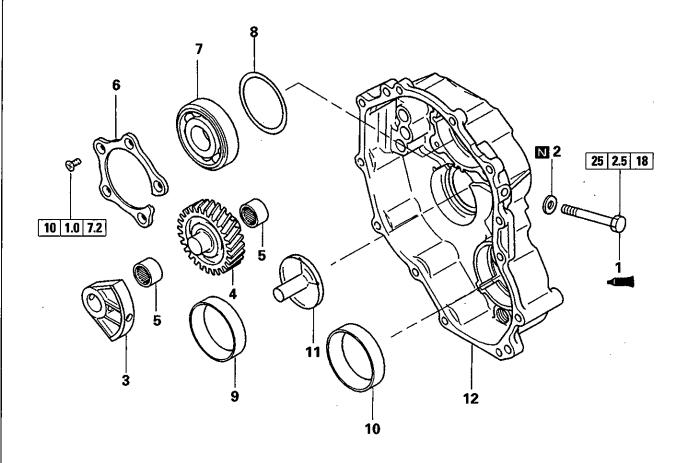
  •D4 9. Spacer

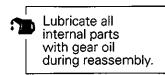
  •A0 •C410. Bearing outer race

  •B411. Bearing outer race

  •A412. Oil guide
- - - 13. Rear cover

# **DISASSEMBLY AND REASSEMBLY <W6MG1>**





#### Disassembly steps

**♦G** 1. Reverse idler gear shaft bolt

2. Gasket3. Reverse idler gear retainer4. Reverse idler gear

5. Needle bearing

**▶E** 6. Input shaft rear bearing retainer

7. Input shaft rear bearing

\*D 8. Spacer

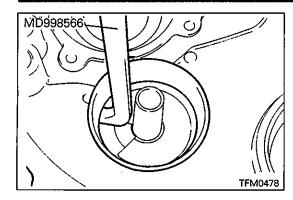
(A) C 9. Bearing outer race

(B) B(10. Bearing outer race

A(11. Oil guide

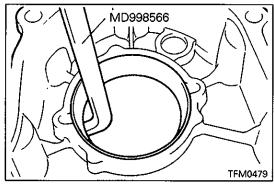
12. Rear cover

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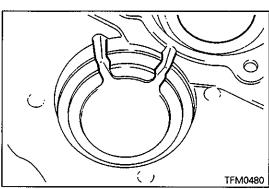


# **DISASSEMBLY SERVICE POINTS**

**♦A♦** BEARING OUTER RACE REMOVAL



**♦B**♦ BEARING OUTER RACE REMOVAL



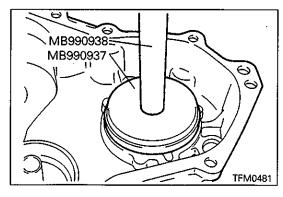
# REASSEMBLY SERVICE POINTS

# **♦A** OIL GUIDE INSTALLATION

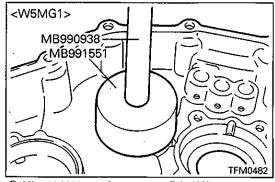
(1) Align the notch of the oil guide with the position shown in the illustration.

#### Caution

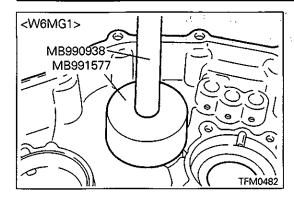
• If the oil guide is damaged, replace it with a new one.

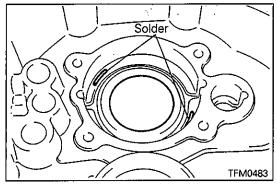


**▶B** ■ BEARING OUTER RACE INSTALLATION



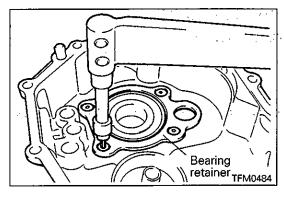
**♦C** BEARING OUTER RACE INSTALLATION



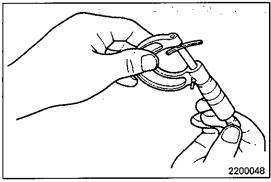


# **▶D** SPACER INSTALLATION

(1) Place solders [approx. 10 mm (0.39 in.) in length and 1.6 mm (0.063 in.) in diameter] in the rear cover as shown in the illustration and install the input shaft rear bearing.



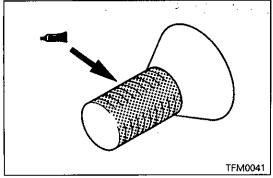
(2) Install the input shaft rear bearing retainer and tighten the bolts to the specified torque.



(3) Measure the thickness of the crushed solders using a micrometer. Based on the measurement, select the appropriate spacer to adjust the end play within the standard value.

Standard value: 0.02 - 0.05 mm (0.0008 - 0.0020 in.)

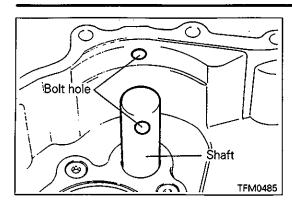
(4) If the solders were not pressed, use solders with larger diameter and repeat the above procedure (1) through (2).



# **♦E** INPUT SHAFT REAR BEARING RETAINER INSTALLATION

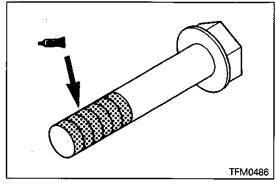
(1) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent



# **▶F**♠ REVERSE IDLER GEAR SHAFT INSTALLATION

(1) Install the shaft with its bolt hole located as shown in the illustration.



# ♦G♦ REVERSE IDLER GEAR SHAFT BOLT <W5MG1> / REVERSE IDLER GEAR RETAINER BOLT <W6MG1> INSTALLATION

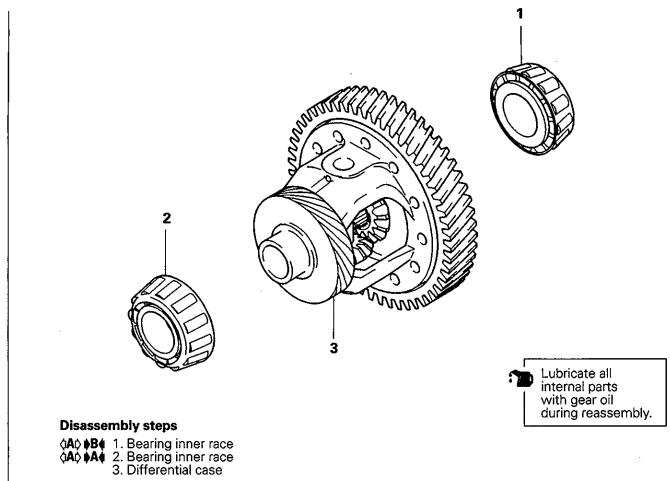
(1) Apply sealant to the bolt threads and tighten the bolts to the specified torque.

Specified sealant: LOCTITE No. 242 or equivalent

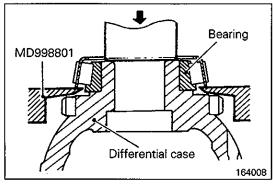
**NOTES** 

# 11. FRONT DIFFERENTIAL

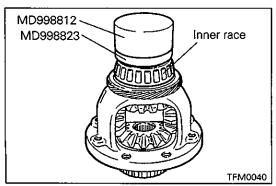
# **DISASSEMBLY AND REASSEMBLY**



TFM0393

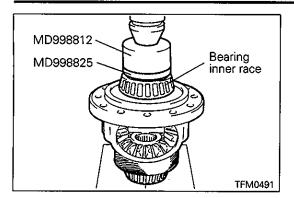


# 



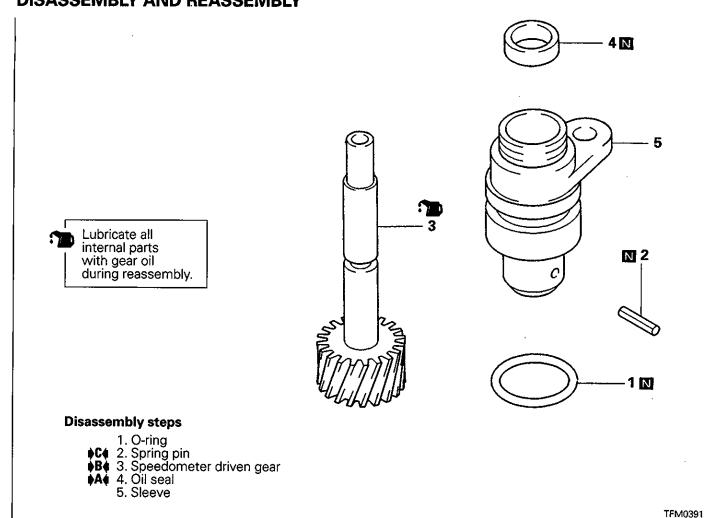
REASSEMBLY SERVICE POINTS

•A BEARING INNER RACE INSTALLATION



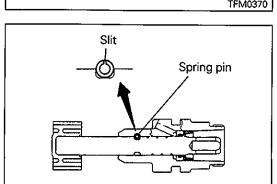
**♦B** BEARING INNER RACE INSTALLATION

# 12. SPEEDOMETER GEAR DISASSEMBLY AND REASSEMBLY



Oil seal

TFM0370



# **REASSEMBLY SERVICE POINTS**

# **♦A** OIL SEAL INSTALLATION

(1) Press in the oil seal to the position shown in the illustration.

# **▶B** SPEEDOMETER DRIVEN GEAR INSTALLATION

(1) Apply gear oil to the speedometer driven gear shaft and install the shaft.

## **♦C** SPRING PIN INSTALLATION

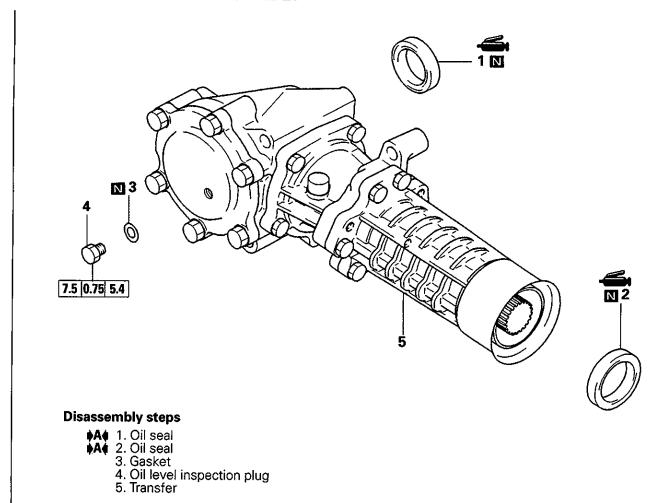
(1) Insert the spring pin while facing its slit away from the driven gear.

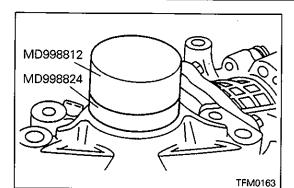
TFM0369

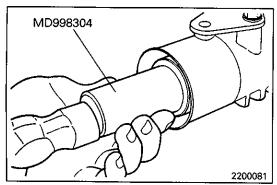
**NOTES** 

# 13. TRANSFER

# **DISASSEMBLY AND REASSEMBLY**







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# REASSEMBLY SERVICE POINT

**♦A** OIL SEAL INSTALLATION

(1) After installing the oil seal, apply grease to the oil seal lips.

Specified grease:

MITSUBISHI genuine grease Part No. 0101011 or equivalent

TFM0489

**NOTES**