

## GROUP 22D

# TWIN CLUTCH SST OVERHAUL

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**GENERAL DESCRIPTION**

M1226000100092

**TRANSAXLE MODEL**

Transaxle model	Engine model	Vehicle model
W6DGA-3-12AA	4B11 DOHC MIVEC	CX4A

**GENERAL SPECIFICATION**

M1226000200066

**GEAR RATIO TABLE**

Item	Specification	
Transaxle model	W6DGA	
Transaxle type	6-speed forward, 1-speed reverse constant mesh	
Transaxle gear ratio	1st	3.655
	2nd	2.368
	3rd	1.754
	4th	1.322
	5th	0.983
	6th	0.731
	Reverse	4.011
Final gear ratio	4.062	
Transfer gear ratio	0.302	

**FASTENER TIGHTENING SPECIFICATION**

M1226000700157

**TRANSAXLE**

Item	Specification
Oil filter bracket	10 ± 1.5 N· m (89 ± 8 in-lb)
Oil filter case assembly	15 ± 2 N· m (11 ± 1 ft-lb)
Manual control shaft mounting screw	10 ± 1.5 N· m (89 ± 8 in-lb)
Plug	32 ± 2 N· m (24 ± 1 ft-lb)
Mechatronic assembly mounting bolt	5.0 ± 1.0 → 10 ± 1.5 N· m (44 ± 8 → 89 ± 8 in-lb)
Mechatronic assembly (The connector part) mounting screw	6.0 ± 1.0 N· m (53 ± 8 in-lb)
Oil pan mounting screw	10 ± 1 N· m (89 ± 8 in-lb)
Clutch assembly	7.5 ± 1.0 N· m (66 ± 8 in-lb)
Seal cover bracket mounting screw	10 ± 1 N· m (89 ± 8 in-lb)
Control cable bracket	11 ± 3 N· m (97 ± 26 in-lb)
Harness bracket	25 ± 4 N· m (18 ± 2 ft-lb)
Harness bracket	25 ± 4 N· m (18 ± 2 ft-lb)

**TRANSFER**

Item	Specification
Cover	9.0 ± 2.0 N· m (80 ± 18 in-lb)

**SEALANTS AND ADHESIVES**

M1226000500012

**TRANSFER**

Item	Specified sealant
Cover	Mitsubishi Part No. MD997740 or equivalent

**FORM-IN-PLACE GASKET (FIPG)**

This transaxle has several areas where the form-in-place gasket (FIPG) is used for sealing. To ensure that the FIPG fully serves its purpose, it is necessary to observe some precautions when applying it. Bead size, continuity and location are of paramount importance.

Too thin a bead could cause leaks. Too thick a bead, on the other hand, could be squeezed out of location, causing blocking or narrowing of fluid passages. To prevent leaks or blocking of passages, therefore, it is absolutely necessary to apply the FIPG evenly without a break, while observing the correct bead size. FIPG hardens as it reacts with the moisture in the atmospheric air, and it is usually used for sealing metallic flange areas.

**⚠ CAUTION**

**When re-applying liquid gasket (FIPG), be sure that:**

1. **Residues of FIPG are cleared from all the ins and outs of parts;**
2. **Use Mitsubishi genuine parts cleaner (MZ100387) or equivalent to well degrease the FIPG-applied surface.**
3. **FIPG is correctly applied in accordance with FIPG Application.**

**Disassembly**

Parts sealed with a FIPG can be easily removed without need for the use of a special method. In some cases, however, the FIPG in joints may have to be broken by tapping parts with a mallet or similar tool.

**Surface Preparation**

Thoroughly remove all substances deposited on the FIPG application surface, using a gasket scraper. Make sure that the FIPG application surfaces is flat and smooth. Also make sure that the surface is free from oils, greases and foreign substances. Do not fail to remove old FIPG that may remain in the fastener fitting holes.

**FIPG Application**

Applied FIPG bead should be of the specified size and free of any break. FIPG can be wiped away unless it has completely hardened. Install the mating parts in position while the FIPG is still wet. Do not allow FIPG to spread beyond the sealing areas during installation. Avoid operating the transaxle or letting oils or water come in contact with the sealed area before a time sufficient for FIPG to harden (approximately one hour) has passed. FIPG application method may vary from location to location. Follow the instruction for each particular case described later in this manual.

**LUBRICANT**

M1226000400071

**TRANSAXLE**

Item	Specified lubricant
Transaxle oil	Mitsubishi genuine part Diaqueen SSTF-1

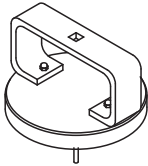
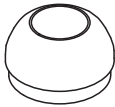

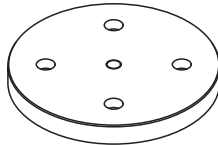
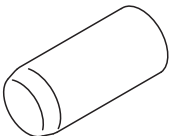
**TRANSFER**

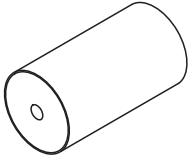
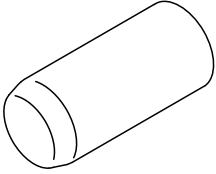
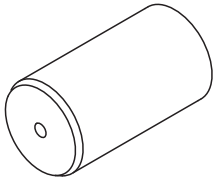
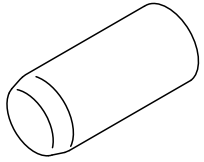
Item	Specified lubricant
Transfer oil	Hypoid gear oil API classification GL-5, SAE90
O-ring	Mitsubishi Genuine DiaQueen ATF SPlII
Oil seal	Retinax A

**SPECIAL TOOLS**

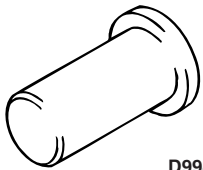
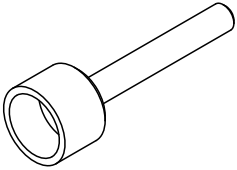
M1226000800109

**TRANSAXLE**

Tool	Tool number and name	Supersession	Application
	MB992332 Clutch remover & installer	–	Installation of Clutch assembly
	MB992324 Seal cover guide A	–	Installation of Seal cover
	MB992325 Seal cover guide B	–	Installation of Seal cover
	MB992323 Seal cover installer	–	Installation of Seal cover
	MB992311 Oil seal guide	–	Installation of transaxle case (LH) oil seal

<b>Tool</b>	<b>Tool number and name</b>	<b>Supersession</b>	<b>Application</b>
	MB992310 Oil seal installer	–	Installation of transaxle case (LH) oil seal
	MB992313 Oil seal guide	–	Installation of transaxle case (RH) oil seal
	MB992312 Oil seal installer	–	Installation of transaxle case (RH) oil seal
	MB992314 V ring guide	–	Installation of V ring

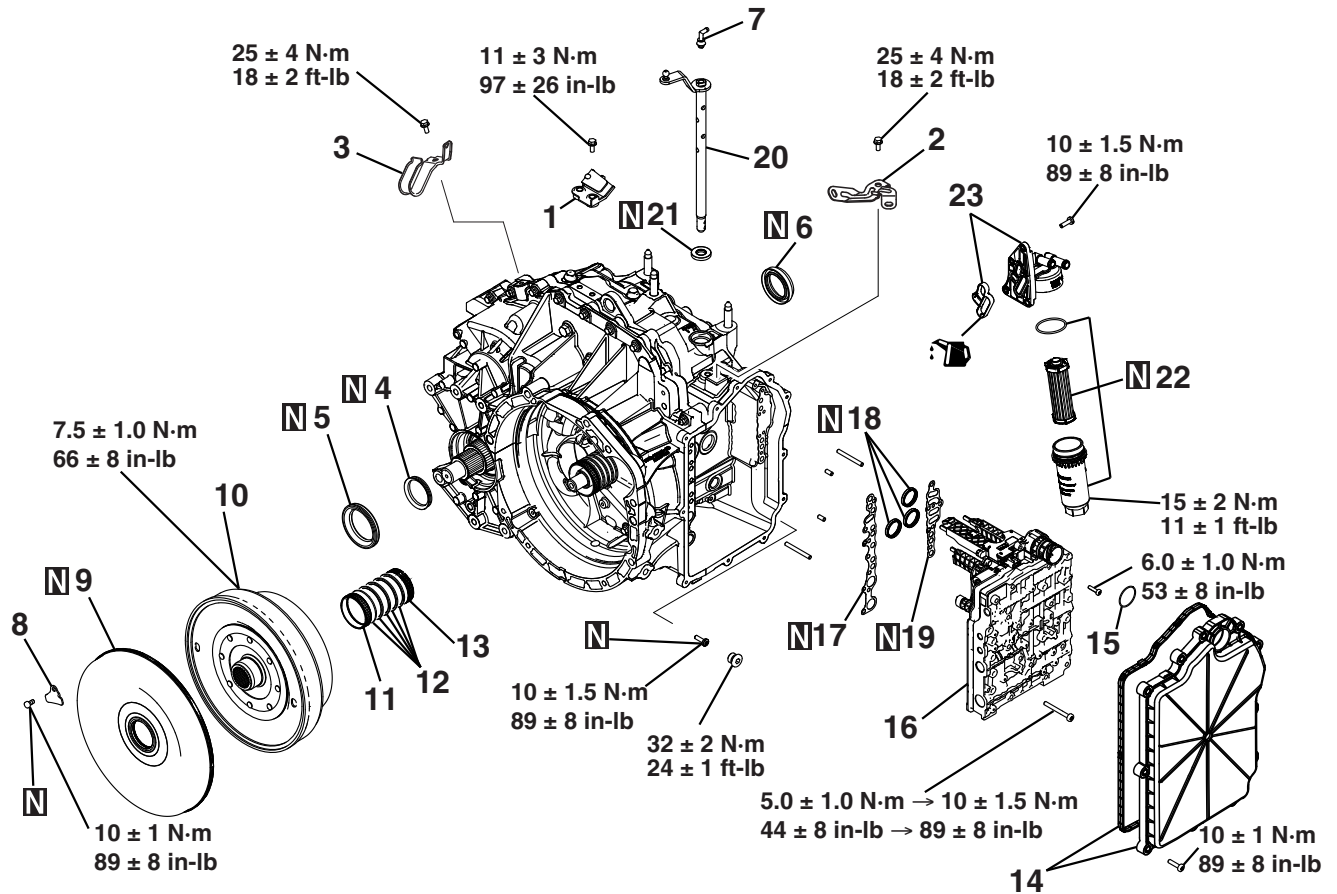
**TRANSFER**

<b>Tool</b>	<b>Tool number and name</b>	<b>Supersession</b>	<b>Application</b>
 D998382	MD998382 Crankshaft front oil seal installer	MD998382-01	Installation of oil seal
	MD998550 Input shaft holder	–	Installation of oil seal

# TRANSAXLE

## DISASSEMBLY AND ASSEMBLY

M1226001000195



AK900716AB

### Removal steps

- |       |       |                                 |       |
|-------|-------|---------------------------------|-------|
|       |       | 1. Control cable bracket        |       |
|       |       | 2. Harness bracket              | <<D>> |
|       |       | 3. Harness bracket              |       |
| >>J<< |       | 4. V ring                       | <<E>> |
| <<A>> | >>I<< | 5. Transaxle case oil seal (RH) |       |
| <<A>> | >>H<< | 6. Transaxle case oil seal (LH) |       |
|       |       | 7. Breather                     |       |
| <<B>> | >>G<< | 8. Seal cover bracket           | <<F>> |
| <<B>> | >>G<< | 9. Seal cover                   |       |
| <<C>> | >>F<< | 10. Clutch assembly             |       |
|       | >>E<< | 11. Needle roller bearing       |       |
|       |       | 12. Seal ring                   |       |

### Removal steps (Continued)

- |       |                                 |
|-------|---------------------------------|
| >>D<< | 13. Needle roller bearing       |
| >>C<< | 14. Oil pan assembly            |
|       | 15. O-ring                      |
| >>B<< | 16. Mechatronic assembly        |
| >>B<< | 17. Gasket A                    |
|       | 18. Gasket B                    |
| >>B<< | 19. Gasket C                    |
| >>A<< | 20. Manual control shaft        |
|       | 21. Oil seal                    |
|       | 22. Oil filter case assembly    |
|       | 23. Oil filter bracket assembly |

### Required Special Tools:

- MB992332: Clutch remover & installer
- MB992324: Seal cover guide A
- MB992325: Seal cover guide B
- MB992323: Seal cover installer
- MB992311: Oil seal guide
- MB992310: Oil seal installer
- MB992313: Oil seal guide
- MB992312: Oil seal installer
- MB992314: V ring guide

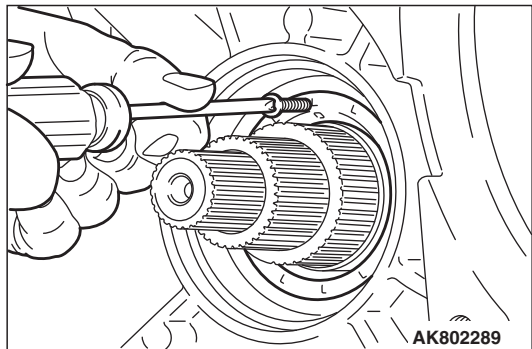
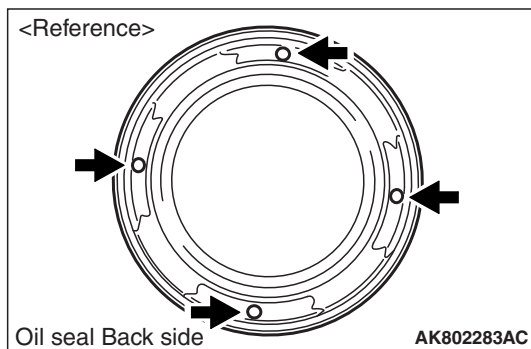
**CAUTION**

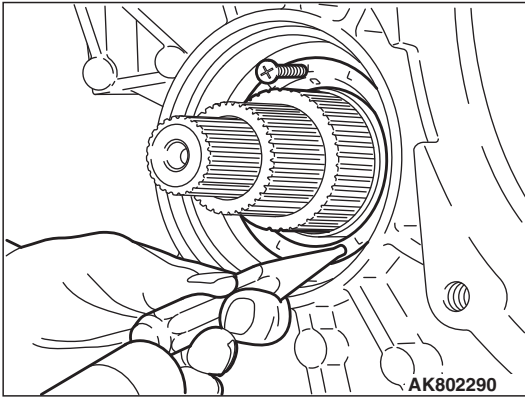
- When installing or removing screws, use magnetic tools to prevent them from falling out.
- If debris or parts enter into the transaxle case, pay attention to the following to replace the transaxle assembly:
- When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to GROUP 22C, Troubleshooting <TC-SST> –Learning Procedure for TC-SST P.22C-8).
- When the clutch assembly is replaced, the following Teach-In must be carried out (Refer to GROUP 22C, Troubleshooting <TC-SST> – Learning Procedure for TC-SST P.22C-8).

**DISASSEMBLY SERVICE POINTS**

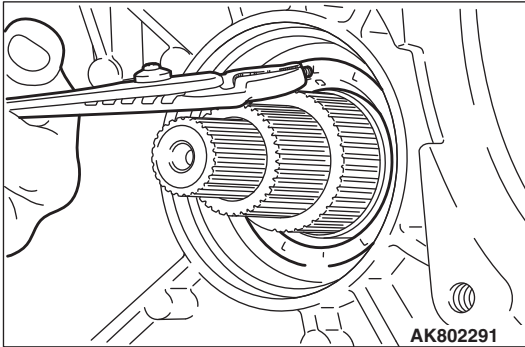
**<<A>> TRANSAXLE CASE OIL SEAL (RH) / TRANSAXLE CASE OIL SEAL (LH) REMOVAL**

1. Insert the tapping screw ( $\phi 3$  mm[0.1 inch]) to one of four hollows (round shape) on the oil seal by turning it 2 or 3 times.





2. Tap the opposite side of the inserted tapping screw using a knock pin punch to press in the oil seal approximately 1 mm (0.04 inch).



3. Hold the inserted tapping screw with pliers or similar tools, and remove the oil seal.

*NOTE: If the transaxle case oil seal (RH) is replaced, the V-ring must also be replaced.*

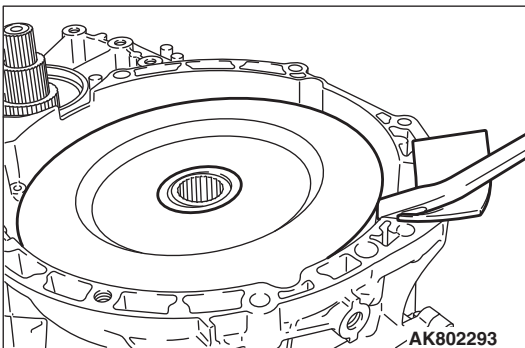
### <<B>> SEAL COVER BRACKET AND SEAL COVER REMOVAL

1. Remove the seal cover bracket.

#### **⚠ CAUTION**

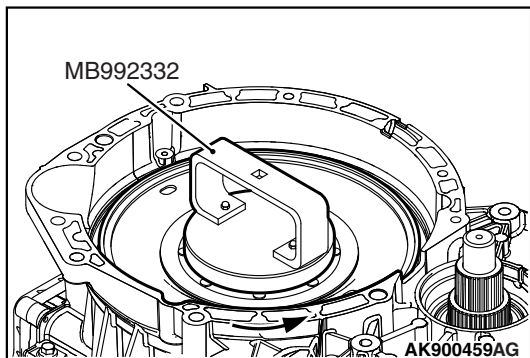
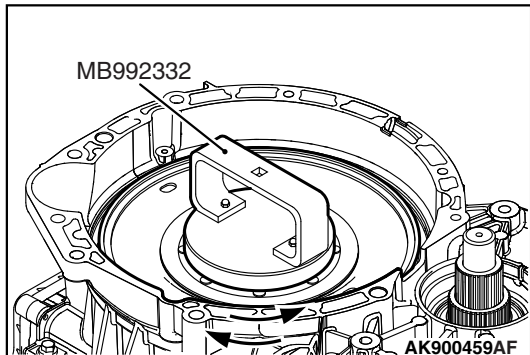
- Before removing the seal cover, securely remove iron powders including dusts by air spray.
- Before removing the seal cover, use the ladder sheet and so forth for the supporting point not to damage the clutching housing.

2. Remove the seal cover from the transaxle, using the tool such as crowbar.





### <<C>> CLUTCH ASSEMBLY REMOVAL



1. Align the four pins of the special tool, clutch remover & installer (MB992332), with the four holes of the clutch assembly to set the special tool, clutch remover & installer (MB992332), to the clutch assembly.

2. Rotate the clutch assembly in the axial direction to insert the pins into all four clutch disks in the clutch assembly.

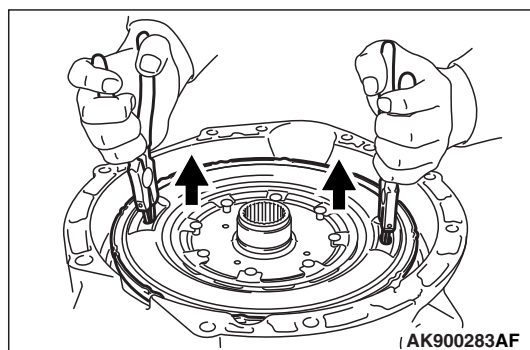
*NOTE: When the pins are inserted into all four clutch disks, the clutch assembly cannot easily be rotated in the axial direction.*

3. Rotate the clutch assembly counterclockwise six to seven times to loosen the clutch assembly.

#### **⚠ CAUTION**

- When lifting the clutch assembly, the tool must not hook the clutch disk.
- The clutch assembly might possibly have the needle bearing. Pay attention to it.
- Carefully handle the clutch assembly to place it on the clean place.

4. Lift the clutch assembly in the vertical direction to remove the clutch assembly from the transaxle assembly.



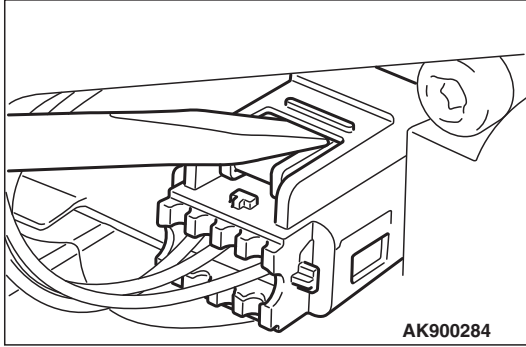
### <<D>> OIL PAN ASSEMBLY REMOVAL

#### **⚠ CAUTION**

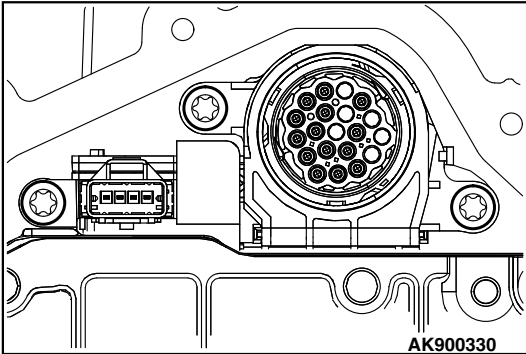
When removing the oil pan assembly, pay attention to avoid damage to the connector and the O-ring between the oil pan assembly and the connector.

## &lt;&lt;E&gt;&gt; MECHATRONIC ASSEMBLY REMOVAL

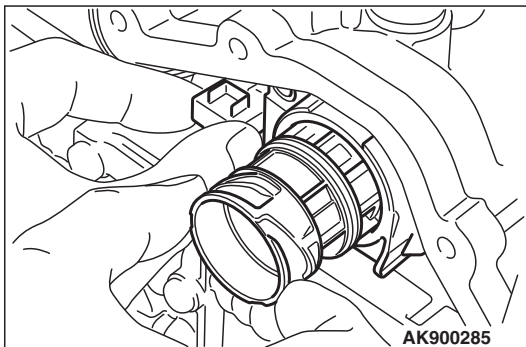
1. Remove the connector carefully.



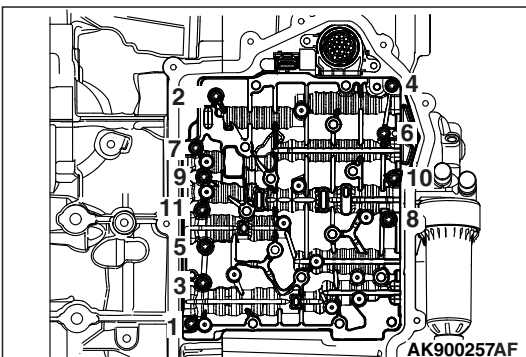
2. Remove the three bolts.



3. Pull carefully at the connector to loose by approx. 2 - 3 mm (0.08 - 0.12 inch).

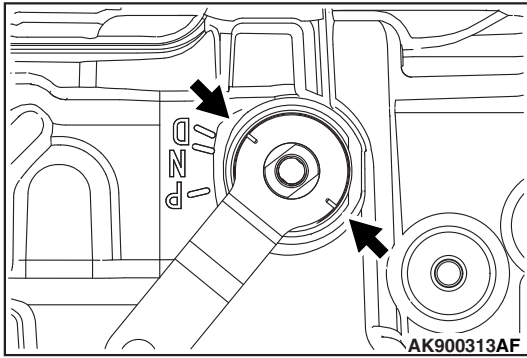


4. Remove the eleven bolts as shown and remove the mechatronic assembly carefully.

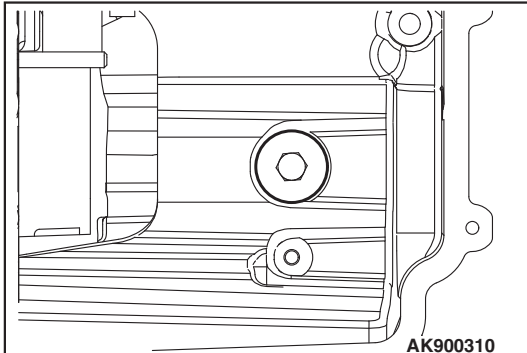


**<<F>> MANUAL CONTROL SHAFT REMOVAL**

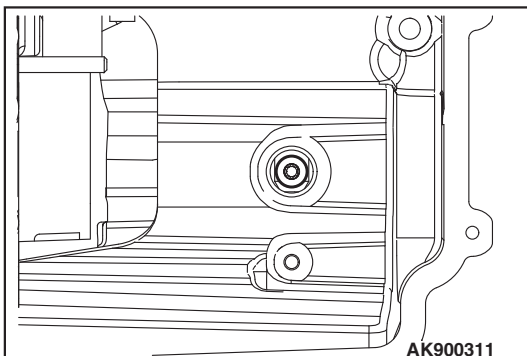
1. Move the park manual outer lever from D in clock direction to the service position as shown.



2. Remove the plug.



3. When removing the screw located behind the plug, pay attention to the screw not to fall in the transaxle case.
4. Remove the manual control shaft carefully.

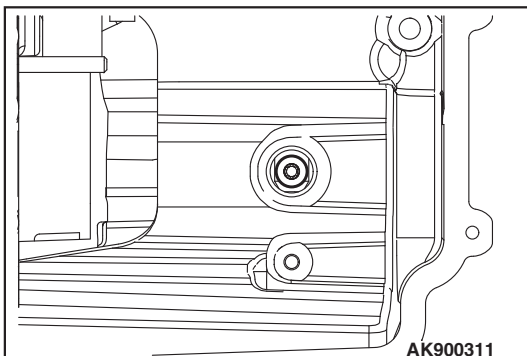


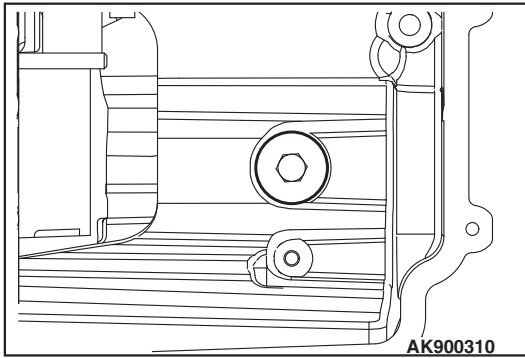
**ASSEMBLY SERVICE POINTS**

**>>A<< MANUAL CONTROL SHAFT INSTALLATION**

1. Install the manual control shaft carefully and tighten the screw to the specified torque.

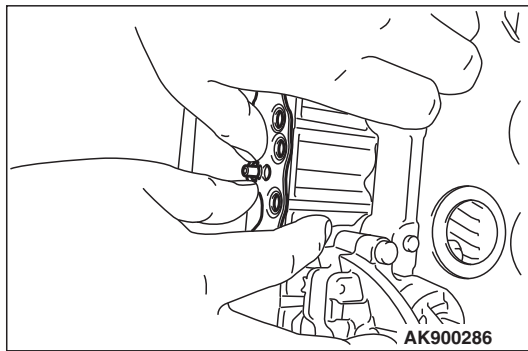
**Tightening torque: 10 ± 1.5 N·m (89 ± 8 in-lb)**



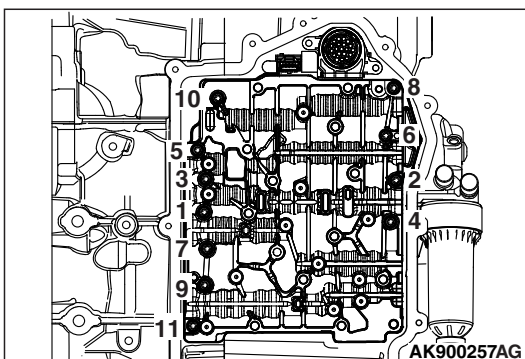
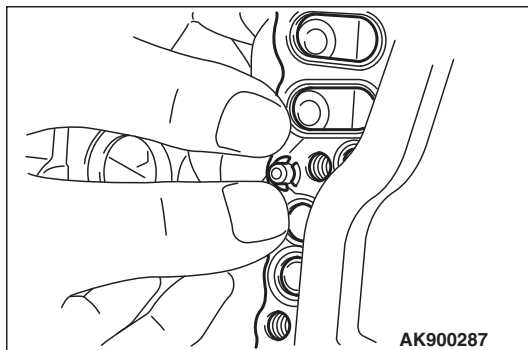


2. Tighten the plug to the specified torque.  
**Tightening torque:  $32 \pm 2$  N·m ( $24 \pm 1$  ft-lb)**

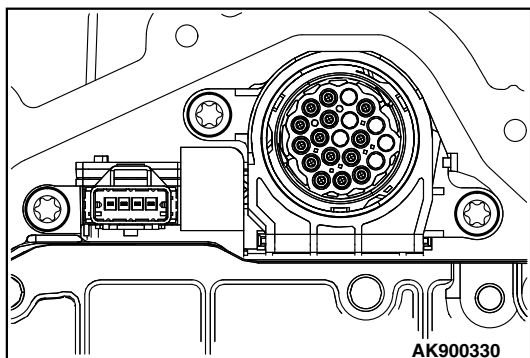
### >>B<< GASKET A / GASKET C / MECHATRONIC ASSEMBLY INSTALLATION



1. As shown in the illustration, fix the gasket to the transaxle case by pushing the gasket at the area to which the gasket dowel pin is inserted.



2. Install the mechatronic assembly carefully and tighten the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.  
**Tightening torque:  $5.0 \pm 1.0$  N·m ( $44 \pm 8$  in-lb)**
3. Tighten again the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.  
**Tightening torque:  $10 \pm 1.5$  N·m ( $89 \pm 8$  in-lb)**



4. Tighten the bolts to the specified torque.  
**Tightening torque: 6.0 ± 1.0 N·m (53 ± 8 in-lb)**

### >>C<< OIL PAN ASSEMBLY INSTALLATION

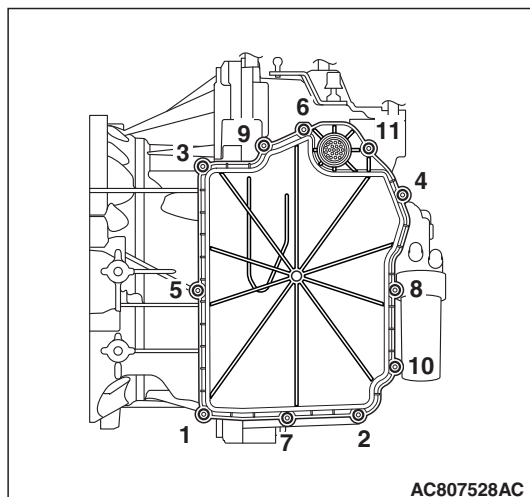
1. Completely degrease the oil pan assembly installation surface on the transaxle side.
2. Remove the gasket from the oil pan assembly, and completely degrease the groove of the oil pan assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil pan assembly.

#### **⚠ CAUTION**

**When installing the oil pan assembly, pay attention to avoid damage to the connector and the O-ring installed to the connector.**

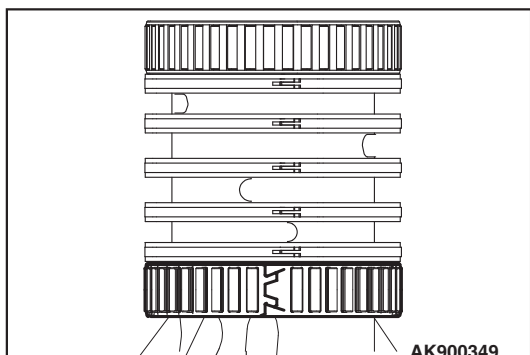
3. Tighten the screws to the specified torque in the order shown in the figure.

**Tightening torque: 10 ± 1 N·m (89 ± 8 in-lb)**



### >>D<< NEEDLE ROLLER BEARING INSTALLATION

1. Insert the needle roller bearing and ensure that the lock is closed completely.

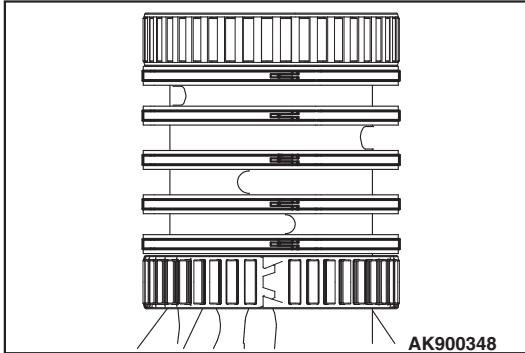


## &gt;&gt;E&lt;&lt; SEAL RING INSTALLATION

**⚠ CAUTION**

Do not expand the seal ring more than necessary.

1. Insert the seal ring.
2. Ensure that the lock is closed completely and it is seated flat into its position.

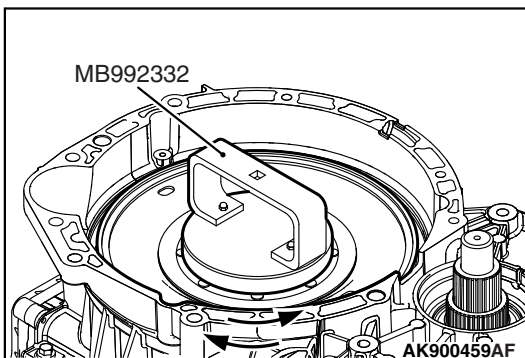
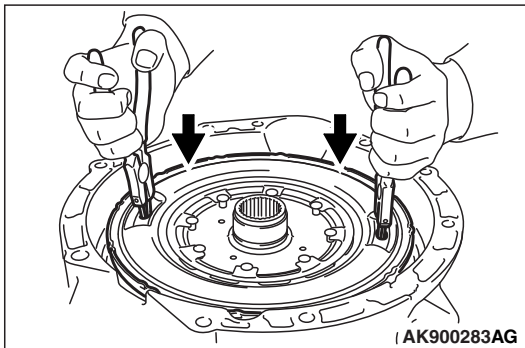


## &gt;&gt;F&lt;&lt; CLUTCH ASSEMBLY INSTALLATION

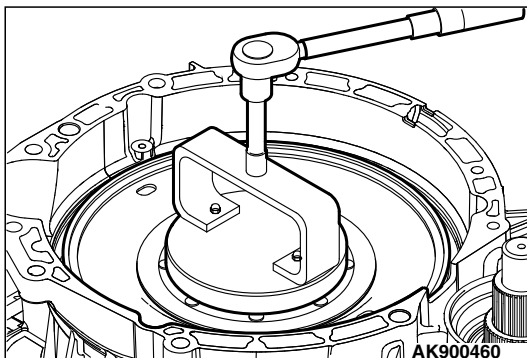
**⚠ CAUTION**

Pay attention to the clutch assembly not to touch the seal ring and needle bearing.

1. Put down the clutch assembly in the vertical direction to carefully install it.



2. Align the four pins of the special tool, clutch remover & installer (MB992332), with the four holes of the clutch assembly to set the special tool, clutch remover & installer (MB992332), to the clutch assembly.
3. Rotate the clutch assembly in the axial direction to insert the pins into all four clutch disks in the clutch assembly.

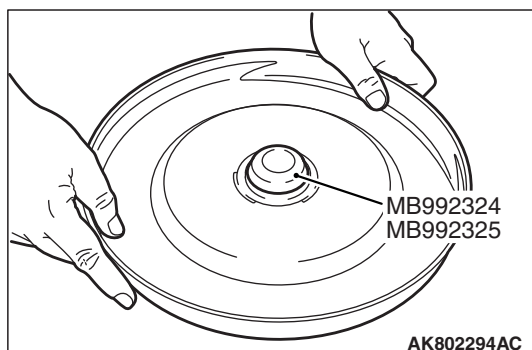


4. Rotate the clutch assembly clockwise to install it. Tighten it to the specified torque.

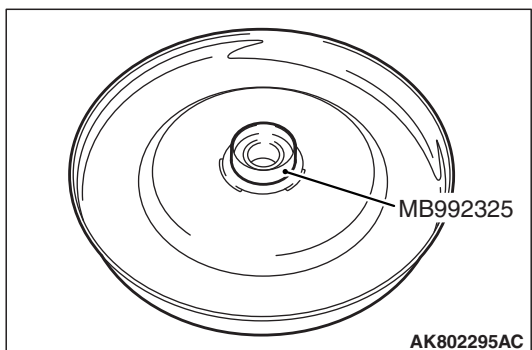
**Tightening torque: 7.5 ± 1.0 N·m (66 ± 8 in-lb)**

**>>G<< SEAL COVER BRACKET AND SEAL  
COVER INSTALLATION**

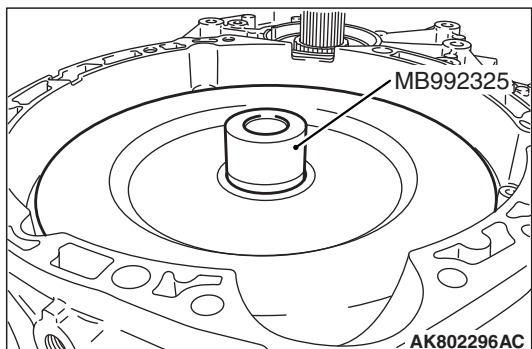
1. Install the seal cover to the special tool MB992324 and MB992325.



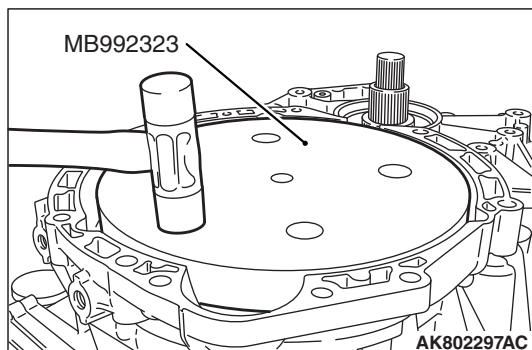
2. Remove the special tool MB992324 from MB992325.

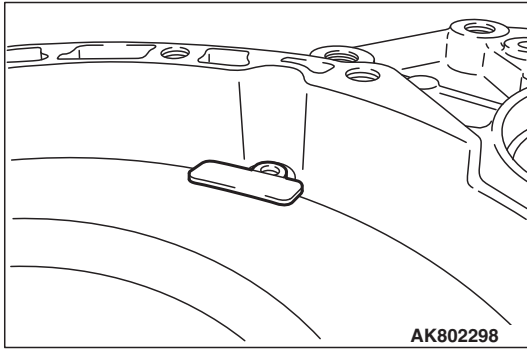


3. Install the seal cover to the transaxle case. Remove the special tool MB992325.



4. Use special tool MB992323 to install the seal cover to the transaxle.

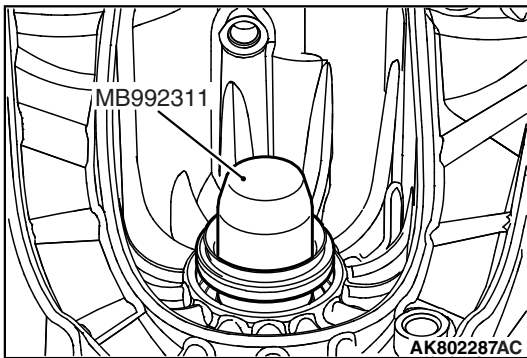




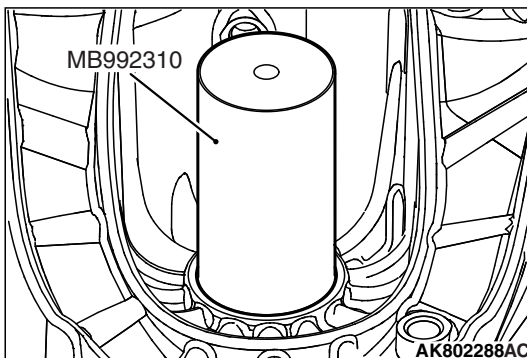
5. Install the seal cover bracket.  
Confirm that it is not shaky.
6. Tighten the seal cover bracket mounting bolt to the specified torque.

**Tightening torque:  $10 \pm 1$  N·m ( $89 \pm 8$  in-lb)**

### >>H<< TRANSAXLE CASE OIL SEAL (LH) INSTALLATION

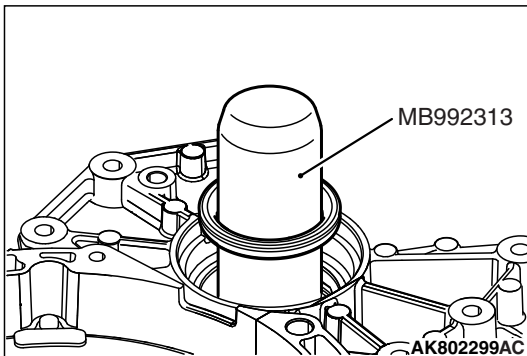


1. Apply the transaxle oil to the special tool MB992311.  
Insert the oil seal to the special tool MB992311.



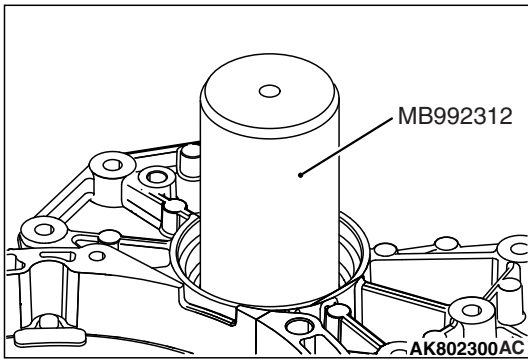
2. Use special tool MB992310 to install the oil seal to the transaxle.

### >>I<< TRANSAXLE CASE OIL SEAL (RH) ASSEMBLY INSTALLATION



1. Apply the transaxle oil to the special tool MB992313.  
Insert the oil seal to special tool MB992313.

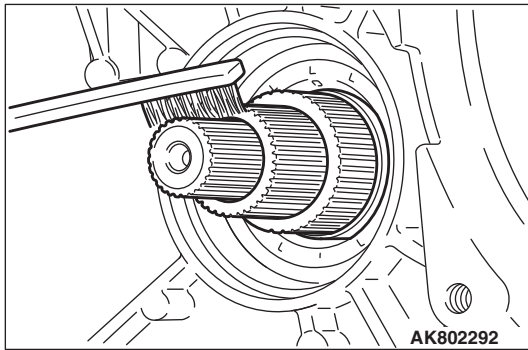




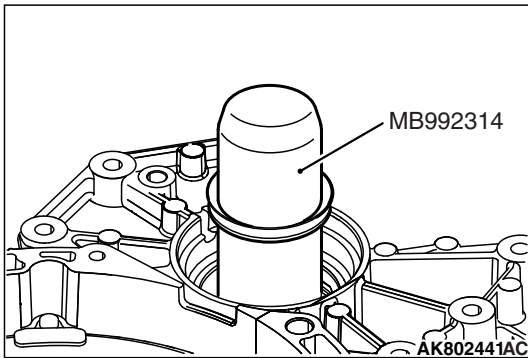
2. Use special tool MB992312 to install the oil seal to the transaxle.

### >>J<< V RING INSTALLATION

1. Clean the spline with a brush or the like.



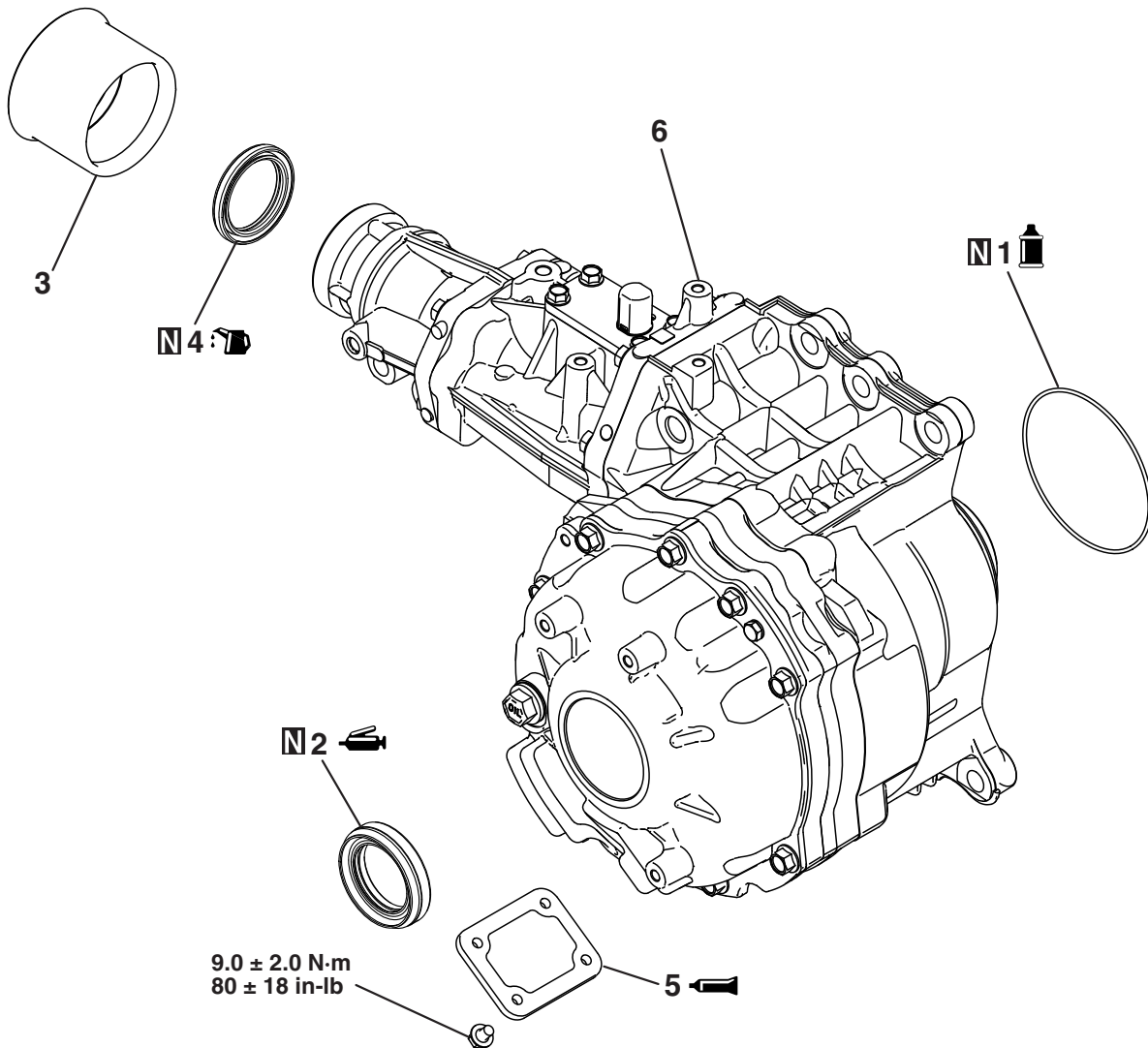
2. Apply the transaxle oil to the special tool MB992314. Insert the V ring to the special tool MB992314, and install the V ring.
3. Check that the V ring is installed securely.



**TRANSFER**

**DISASSEMBLY AND ASSEMBLY**

M1222004000619



AK800089AF

**Removal steps**

>>C<<

1. O-ring
2. Oil seal
3. Dust seal guard

**Removal steps (Continued)**

>>B<<

>>A<<

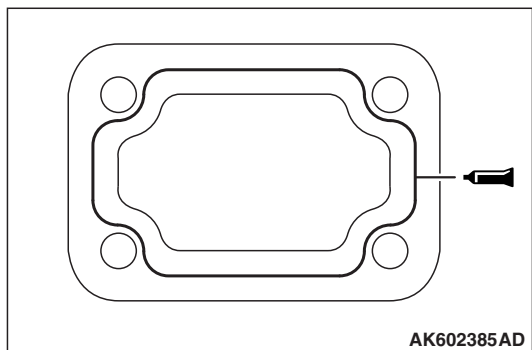
4. Oil seal
5. Cover
6. Transfer

**Required special tools:**

- MD998382: Crankshaft front oil seal installer
- MD998550: Extension housing seal installer

## ASSEMBLY SERVICE POINT

### >>A<< COVER INSTALLATION



1. Completely degrease the FIPG-applied surface so that water and oil including the old sealant cannot adhere to the surface coated with the sealant.

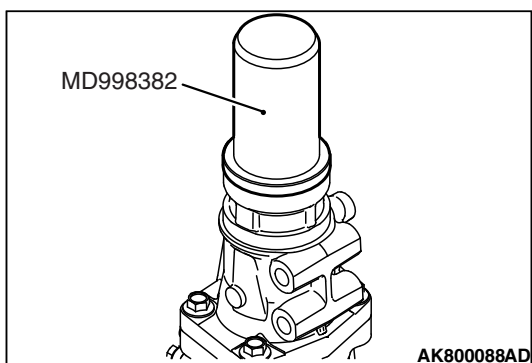
Never touch the degreased surface by hand.

2. Apply a 1.5 mm (0.06 in) diameter bead of sealant as illustrated onto the cover.

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

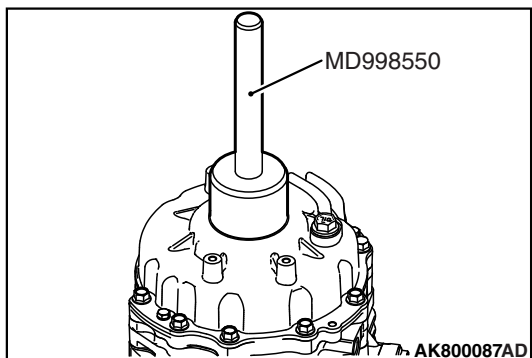
3. Attach the cover to the transfer and tighten it to the specified torque.

### >>B<< OIL SEAL INSTALLATION



1. Using the special tool MD998382, to install the oil seal.
2. Apply transfer oil to the lip of oil seal.

### >>C<< OIL SEAL INSTALLATION



1. Using the special tool MD998550, to install the oil seal.
2. Apply specified grease to the oil seal lip area.

**Specified grease: Retinax A**

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## NOTES