MITSUBISHI MOTORS

SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : INFORMATION	ISSUE NO. : MSB-11E22-001	DATE : 2011-07-20
SUBJECT : TC-SST: MECHATRONIC AND CLUTCH ASSEMBLIES SERVICE PROCEDURES		<MODEL> (EUR) For vehicles with TC-SST (GS41, GS44S, GS41-EVO, GS45X) <M/Y> ALL
GROUP : MANUAL TRANSMISSION		

1. Description:

Service procedures for the TC-SST (Twin Clutch-Sport Shift Transmission) mechatronic assembly and clutch assembly have been established for the applicable Workshop Manuals. This Service Bulletin contains the additional descriptions.

2. Details:

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Code No.P1877: 2nd Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the 2nd gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 2nd gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1877 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) Drive with shifted in the 2nd gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1877 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1878: 3rd Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the 3rd gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 3rd gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1878 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) Drive with shifted in the 3rd gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1878 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1879: 4th Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the 4th gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 4th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1879 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) Drive with shifted in the 4th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1879 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P187A: 5th Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the 5th gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 5th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P187A set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) Drive with shifted in the 5th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P187A set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P187B: 6th Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the 6th gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 6th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P187B set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) Drive with shifted in the 6th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P187B set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P187C: Reverse Gear Block

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the gear engagement is normal.

DIAGNOSIS CODE SET CONDITIONS
The engagement of the reverse gear is determined to be impossible.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) With the engine idle status, operate the shift lever in the following sequence: P →R →D →R →P. (Hold each range for 5 seconds or more.)
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P187C set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Go to Step 4
"No" : Diagnosis code No. P181B: Carry out the troubleshooting for the diagnosis code No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22-41.)

STEP 4. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) With the engine idle status, operate the shift lever in the following sequence: P →R →D →R →P. (Hold each range for 5 seconds or more.)
(3) Check the diagnosis code.

Q: Is diagnosis code No.P187C set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1880: EOL Mode Active

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the TC-SST setting mode is normal.

DIAGNOSIS CODE SET CONDITIONS
The TC-SST setting mode is determined to be EOL (end of line) mode.

PROBABLE CAUSES
- The setting mode changeover mistake when TC-SST is shipped.
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P1880 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P1881: Twin clutch SST control mode switch system (Malfunction)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the twin clutch SST control mode switch is normal.

DIAGNOSIS CODE SET CONDITIONS
"+" and "–" signals of the twin clutch SST control mode switch is determined to be stuck on.

PROBABLE CAUSES
- Twin clutch SST control mode switch malfunction
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
After 5 or more seconds have passed with the engine idle status, check that the diagnosis code is reset.

Q: Is diagnosis code No.P1881 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Twin clutch SST control mode switch check

Q: Is the check result normal?
YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch.

STEP 4. Shift lever assembly replacement
(1) Replace the shift lever assembly.
(2) Check if the diagnosis code is set.

Q: Is diagnosis code No.P1881 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P1885: Shift fork 1 jump out

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the movement of the shift fork 1 is normal.

DIAGNOSIS CODE SET CONDITIONS
The movement of the shift fork 1 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 1st gear and reverse.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1885 set?

YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Replace the mechatronic assembly, and check if the diagnosis code is reset.
(1) Replace the mechatronic assembly. (Refer to P.22-111.)
(2) Drive with shifted in the 1st gear and reverse.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1885 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1886: Shift fork 2 jump out

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the movement of the shift fork 2 is normal.

DIAGNOSIS CODE SET CONDITIONS
The movement of the shift fork 2 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 3rd gear and 5th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1886 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Replace the mechatronic assembly, and check if the diagnosis code is reset.
(1) Replace the mechatronic assembly. (Refer to P.22-111.)
(2) Drive with shifted in the 3rd gear and 5th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1886 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1887: Shift fork 3 jump out

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the movement of the shift fork 3 is normal.

DIAGNOSIS CODE SET CONDITIONS
The movement of the shift fork 3 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 6th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1887 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Replace the mechatronic assembly, and check if the diagnosis code is reset.
(1) Replace the mechatronic assembly. (Refer to P.22-111.)
(2) Drive with shifted in the 6th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1887 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1888: Shift fork 4 jump out

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the movement of the shift fork 4 is normal.

DIAGNOSIS CODE SET CONDITIONS
The movement of the shift fork 4 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifted in the 2nd gear and 4th gear.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P1888 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Replace the mechatronic assembly, and check if the diagnosis code is reset.
(1) Replace the mechatronic assembly. (Refer to P.22-111.)
(2) Drive with shifted in the 2nd gear and 4th gear.
(3) Check the diagnosis code.

Q: Is diagnosis code No.P1888 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P1890 Teach-In not completed

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that Teach-In is completed normally.

DIAGNOSIS CODE SET CONDITIONS
It is judged that Teach-In is not completed normally.

PROBABLE CAUSES
- Teach-In not completed
- Malfunction of TC-SST-ECU
- Malfunction of clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No.P1890 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. M.U.T.-III Teach-In
(1) Perform Teach-In (the same item as the mechatronic assembly replacement).(Refer to P.22-3 .)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No.P1890 set?
YES : Go to Step 4.
NO : This diagnosis is complete.

STEP 4. Replace the mechatronic assembly, and check if the diagnosis code is reset.
(1) Replace the mechatronic assembly. (Refer to P.22-111.)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No.P1890 set?
YES : Go to Step 5.
NO : This diagnosis is complete.

STEP 5. Replace the clutch assembly, and check if the diagnosis code is reset.
(1) Replace the clutch assembly. (Refer to P.22-119.)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No.P1890 set?
YES : Replace the transmission assembly.
NO : This diagnosis is complete.

Code No.P2718: Clutch/Shift Pressure Solenoid 1 System (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 1 circuit is determined to be open.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2718 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2719: Clutch/Shift Pressure Solenoid 1 System (Overcurrent)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The supply current to the clutch/shift pressure solenoid 1 is determined to be overcurrent.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
After 5 or more seconds have passed with the engine idle status, check that the diagnosis code is reset.

Q: Is diagnosis code No.P2719 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2720: Clutch/Shift Pressure Solenoid 1 System (Short to earth)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 1 circuit is determined to be short to earth.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2720 set?

YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2721: Clutch/Shift Pressure Solenoid 1 System (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 1 circuit is determined to be short to power supply.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2721 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2727: Clutch/Shift Pressure Solenoid 2 System (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 2 circuit is determined to be open.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2727 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2728: Clutch/Shift Pressure Solenoid 2 System (Overcurrent)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The supply current to the clutch/shift pressure solenoid 2 is determined to be overcurrent.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2728 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2729: Clutch/Shift Pressure Solenoid 2 System (Short to earth)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 2 circuit is determined to be short to earth.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2729 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2730: Clutch/Shift Pressure Solenoid 2 System (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift pressure solenoid 2 circuit is determined to be short to power supply.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2730 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2733: Clutch/Shift Changeover Solenoid 1, spool stuck

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 1 is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 1 is determined to be seized.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Malfunction of clutch/shift changeover solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

⚠ WARNING
During inspection, the vehicle might move suddenly or the engine might stop. Be sure to depress the brake pedal securely. In addition, perform the vehicle inspection in a safe place isolated from people or objects.
(1) With the brake pedal pressed, start the engine.
(2) With the engine idle status, operate the shift lever in the following sequence: P →R →D. (Hold each range for 1 seconds or more.)
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P2733 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Check the fluid.

Q: Is the fluid level proper?
YES : Go to Step 4
NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Install the mechatronic assembly correctly. (Refer to P.22-111.)

Code No.P2736: Clutch/Shift Changeover Solenoid 1 System (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 1 circuit is determined to be open.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2736 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2738: Clutch/Shift Changeover Solenoid 1 System (Short to earth)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 1 circuit is determined to be short to earth.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2738 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2739: Clutch/Shift Changeover Solenoid 1 System (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 1 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 1 circuit is determined to be short to power supply.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 1

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2739 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2742: Fluid Temperature Sensor System (Output low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the output of the fluid temperature sensor is normal.

DIAGNOSIS CODE SET CONDITIONS
The output is determined to be too low.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
30 seconds after turning ON the ignition switch, check that the diagnosis code is reset.

Q: Is diagnosis code No.P2742 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2743: Fluid Temperature Sensor System (Output high range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the output of the fluid temperature sensor is normal.

DIAGNOSIS CODE SET CONDITIONS
The output is determined to be too high.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
30 seconds after turning ON the ignition switch, check that the diagnosis code is reset.

Q: Is diagnosis code No.P2743 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2766: Input Shaft 2 (Even number gear axle) Speed Sensor System (Poor performance)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the input shaft sensor 2 is normal.

DIAGNOSIS CODE SET CONDITIONS
The even number gear side input shaft speed (revolution) is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check
(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 115 or No. 240) is set.

Q: Which monitoring unit is set, No. 115 or No. 240?
No. 115 : Go to Step 4
No. 240 : Go to Step 3

STEP 3. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive the vehicle at 50 km/h or more.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P2766 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

STEP 4. Check whether the diagnosis code is reset.
(1) Erase the diagnosis code.
(2) Drive with shifting to each gear range.
(3) Check that the diagnosis code is reset.

Q: Is diagnosis code No.P2766 set?
YES : Go to Step 5.
NO : Intermittent malfunction.

STEP 5. M.U.T.-III Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22-105).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22-105).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the transmission assembly.
"No" : Replace the mechatronic assembly. (Refer to P.22-111.)

Code No.P2809: Clutch/Shift Changeover Solenoid 2, spool stuck

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 2 is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 2 is determined to be seized.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Malfunction of clutch/shift changeover solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
After driving in the 4th gear, check that the diagnosis code is reset.

Q: Is diagnosis code No. P2809 set?
YES : Go to Step 3.
NO : Intermittent malfunction.

STEP 3. Check the fluid.

Q: Is the fluid level proper?
YES : Go to Step 4
NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Install the mechatronic assembly correctly. (Refer to P.22-111.)

Code No.P2812: Clutch/Shift Changeover Solenoid 2 System (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 2 circuit is determined to be open.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
After driving in the 4th gear, check that the diagnosis code is reset.

Q: Is diagnosis code No. P2812 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2814: Clutch/Shift Changeover Solenoid 2 System (Short to earth)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 2 circuit is determined to be short to earth.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2814 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.P2815: Clutch/Shift Changeover Solenoid 2 System (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
TC-SST-ECU checks that the clutch/shift changeover solenoid 2 circuit is normal.

DIAGNOSIS CODE SET CONDITIONS
The clutch/shift changeover solenoid 2 circuit is determined to be short to power supply.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift changeover solenoid 2

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.P2815 set?

YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0001: Bus-off

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSIS CODE SET CONDITIONS
TC-SST-ECU ceases communication (bus-off).

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the diagnosis code is reset.
30 seconds after turning ON the ignition switch, check that the diagnosis code is reset.

Q: Is diagnosis code No.U0001 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0100: Engine Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSIS CODE SET CONDITIONS
The periodic communication data from the engine-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Engine-ECU malfunction
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III diagnosis code.
Check the engine diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.
After 15 seconds with the engine idle status, check that the diagnosis code is reset.

Q: Is diagnosis code No.U0100 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0103: Shift Lever Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSIS CODE SET CONDITIONS
The periodic communication data from the shift lever-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III diagnosis code.
Check the shift lever diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.
After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No.U0103 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0121: ASC Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSIS CODE SET CONDITIONS
The periodic communication data from the ASC-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of ASC-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III diagnosis code.
Check the ASC diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.
After 15 seconds with the engine idle status, check that the diagnosis code is reset.

Q: Is diagnosis code No.U0121 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0136: AWC <LANCER EVOLUTION> or ACD <Except LANCER EVOLUTION> Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the engine control module cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of AWC-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines.

STEP 2. M.U.T.-III diagnosis code
Check the AWC <LANCER EVOLUTION> or ACD <Except LANCER EVOLUTION> diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.
After 10 or more seconds have passed with the ignition switch ON position, check that the diagnosis code is reset.

Q: Is diagnosis code No. U0136 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

Code No.U0141: ETACS Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSIS CODE SET CONDITIONS
The periodic communication data from the ETACS-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III diagnosis code.
Check the ETACS diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.
After 15 seconds with the engine idle status, check that the diagnosis code is reset.

Q: Is diagnosis code No.U0141 set?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

SYMPTOM CHART

M1225005200303

⚠ CAUTION
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned ON with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Symptom	Inspection procedure No.	Reference page
The M.U.T.-III cannot communicate with TC-SST-ECU.	1	P.22-95
The driving mode cannot be changed.	2	P.22-96
Speed change with the paddle shift is impossible.	3	P.22-96
TC-SST-ECU power supply circuit malfunction	4	P.22-97
The shift lever does not operate.	5	P.22-98
Gears cannot be changed with the manual mode.	6	P.22-99
The vehicle moves with the P-range.	7	P.22-100
Slipping occurs with the D-range/R-range/manual mode, and engine racing occurs during gear shifting/driving.	8	P.22-100
The vehicle does not creep with the D-range/R-range/manual mode.	9	P.22-101
The shock is large when the vehicle is stopped and the brake pedal is released with the D-range/R-range/manual mode.	10	P.22-102
Poor acceleration	11	P.22-102
The gear shifting does not occur. (The transmission does not upshift or downshift.)	12	P.22-103
The shift shock is large.	13	P.22-103
Delay occurs when the lever is shifted N →D or N →R.	14	P.22-103
The engine stops when the lever is shifted N →D or N →R.	15	P.22-104
The vehicle moves with the N-range on the level ground.	16	P.22-104
Judder/vibration/noise	17	P.22-105

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The M.U.T.-III cannot communicate with TC-SST-ECU.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus line, TC-SST-ECU power supply circuit, or TC-SST-ECU may have a problem.

PROBABLE CAUSES

- Wrong M.U.T.-III wiring harness
- The CAN bus line is defective.
- Malfunction of TC-SST-ECU power supply circuit
- Malfunction of TC-SST-ECU
- ECU malfunction of other system

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Check and repair the TC-SST-ECU power supply circuit. (Refer to P.22-97.)
NO : Repair the CAN bus lines.

INSPECTION PROCEDURE 2: The driving mode cannot be changed.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM
The twin clutch SST control mode switch, or TC-SST-ECU may have a problem.

PROBABLE CAUSES
- Malfunction of the twin clutch SST control mode switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III data list
Item No.32: Drive mode switch

Q: Is the check result normal?
YES : Intermittent malfunction.
NO : Go to Step 3.

STEP 3. Twin clutch SST control mode switch check

Q: Is the check result normal?
YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch.

STEP 4. Twin clutch SST control mode switch connector check:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Retest the system

Q: Does a malfunction take place again?
YES : Go to Step 6
NO : The inspection is complete.

STEP 6. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly.
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 3: Speed change with the paddle shift is impossible.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM
The paddle shift switch, or TC-SST-ECU may have a problem.

PROBABLE CAUSES
- Malfunction of the paddle shift switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Paddle shift switch check

Q: Is the check result normal?
YES : Go to Step 3.
NO : Replace the paddle shift assembly.

STEP 3. Measure the resistance at paddle shift switch connector.
Disconnect the connector, and measure the resistance between terminal No.2 and earth at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?
YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. Paddle shift switch connector check:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Check the wiring harness between paddle shift switch connector terminal No.2 and the body earth.
Check the earth line for open circuit.

Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the wiring harness.

STEP 6. Inspection of the shift lever assembly connector, intermediate connector, and paddle shift switch connector:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between paddle shift switch connector terminal No.1 and shift lever assembly connector terminal No.11, and between paddle shift switch connector terminal No.3 and shift lever assembly connector terminal No.10.
Check the output line for short or open circuit.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Retest the system

Q: Does a malfunction take place again?
YES : Go to Step 9.
NO : The inspection is complete.

STEP 9. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly.
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 4: TC-SST-ECU power supply circuit malfunction

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

TC-SST-ECU power supply circuit, earth circuit, or TC-SST-ECU may have a problem.

PROBABLE CAUSES

- Defective battery
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU
- Malfunction of the shift lever-ECU

DIAGNOSIS PROCEDURE

STEP 1. Check the battery.

Q: Is the battery in good condition?
YES : Go to Step 2.
NO : Charge or replace the battery.

STEP 2. Measure the resistance at TC-SST-ECU connector.
Disconnect the connector, and measure the resistance between terminal No.19 and earth at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. TC-SST-ECU connector check:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the defective connector.

STEP 4. Check the wiring harness between TC-SST-ECU connector terminal No.19 and body earth.
Check the earth line for open circuit.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Measure the voltage at TC-SST-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.6 and earth at the wiring harness side.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. Inspection of the intermediate connector and TC-SST-ECU connector:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between TC-SST-ECU connector terminal No.6 and fusible link No.36.
Check the power supply line for short or open circuit.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. M.U.T.-III diagnosis code.
Check the ETACS diagnosis code.

Q: Is the diagnosis code set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 9.

STEP 9. Measure the voltage at TC-SST-ECU connector.
(1) Disconnect the connector, and measure the voltage between terminal No.11 and earth at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 12.
NO : Go to Step 10.

STEP 10. Inspection of the intermediate connector, TC-SST-ECU connector, and ETACS-ECU connector:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 11.
NO : Repair the defective connector.

STEP 11. Check the wiring harness between TC-SST-ECU connector terminal No.11 and ETACS-ECU connector terminal No.5.
Check the power supply line for short or open circuit.

Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the wiring harness.

STEP 12. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 5: The shift lever does not operate.

COMMENTS ON TROUBLE SYMPTOM
The transmission control cable, shift lever assembly, or transmission assembly may have a problem.

PROBABLE CAUSES
- Malfunction of the transmission control cable
- Malfunction of the shift lever assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III data list.
Item No.5: Brake SW

Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 2.

STEP 2. Shift lever-ECU connector check:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the defective connector.

STEP 3. Measure the voltage at shift lever-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.4 and earth at the wiring harness side.

- **OK: 1 V or less (brake pedal released)**
- **OK: System voltage (brake pedal depressed)**

Q: Is the check result normal?
YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. Inspection of the stop lamp switch connector, intermediate connector:
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Check the wiring harness between stop lamp switch connector terminal No.1 and shift lever-ECU connector terminal No.4.
Check the output line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the wiring harness.

STEP 6. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the shift lever assembly.
NO : Intermittent malfunction.

STEP 7. Key interlock mechanism check

Q: Is the check result normal?
YES : Go to Step 8.
NO : Adjust the key interlock mechanism.

STEP 8. Shift lever operation check
(1) Disconnect the connection of the shift lever assembly and the transmission control cable.
(2) Turn the ignition switch to the ON position. Check that the shift lever can be moved to each range when the brake pedal is depressed.

Q: Is the check result normal?
YES : Go to Step 9.
NO : Replace the shift lever assembly.

STEP 9. Transmission control cable check
(1) Connect the connection of the shift lever assembly and the transmission control cable.
(2) Disconnect the connection of the transmission assembly and the transmission control cable.
(3) Turn the ignition switch to the ON position. Check that the shift lever can be moved to each range when the brake pedal is depressed.

Q: Is the check result normal?
YES : Replace the transmission assembly.
NO : Check the transmission control cable for installation condition, and repair or replace if necessary.

INSPECTION PROCEDURE 6: Gears cannot be changed with the manual mode.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus lines, shift lever assembly, or mechatronic assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the CAN bus lines
- Malfunction of the shift lever assembly
- Malfunction of the mechatronic assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.
Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. M.U.T.-III data list.
Shift lever item No.1: Lever position
(1) Confirm that "Manual" is displayed when the shift

lever position is in the manual mode.
(2) Confirm that "+" is displayed when the shift lever position is upshifted and held, and "-" is displayed when the shift lever position is downshifted and held.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Replace the shift lever assembly.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 7: The vehicle moves with the P-range.

COMMENTS ON TROUBLE SYMPTOM

The transmission control cable, shift lever assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the transmission control cable
- Malfunction of the shift lever assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Check for transmission control cable installation

Check the transmission control cable for installation condition.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Install the transmission control cable properly.

STEP 2. Transmission control cable operation check

1. Disconnect the connection of the transmission assembly and the transmission control cable.
2. Turn the ignition switch to the ON position and depress the brake pedal. Check that the transmission control cable works when shift lever is moved to P⇔R.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the transmission control cable. Then, go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the shift lever assembly.
NO : This diagnosis is complete.

STEP 5. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the transmission assembly.
NO : Intermittent malfunction.

INSPECTION PROCEDURE 8: Slipping occurs with the D-range/R-range/manual mode, and engine racing occurs during gear shifting/driving.

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Oil filter case assembly, mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Insufficient or contaminated fluid
- Malfunction of the oil filter case assembly
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Oil filter case assembly check

(1) Check if the oil filter is replaced according to the cycle specified in the Maintenance Note.
- Normal condition : 105,000 km <Vehicles for Europe>
- Normal condition : 100,000 km <Except vehicles for Europe>
- Severe condition : 45,000 km <Vehicles for Europe>
- Severe condition : 40,000 km <Except vehicles for Europe>

(2) Visually check that no fluid leaks form the oil filter case assembly and it is installed normally.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the oil filter case assembly.

STEP 2. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 5.
NO : Intermittent malfunction.

STEP 5. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the transmission assembly.
NO : Intermittent malfunction.

INSPECTION PROCEDURE 9: The vehicle does not creep with the D-range/R-range/manual mode.

COMMENTS ON TROUBLE SYMPTOM

The foot brake or parking brake may be dragging. Mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

NOTE: If the fluid temperature is extremely high, the creep is controlled slightly for slip control.

PROBABLE CAUSES

- Drag of foot brake or parking brake
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Inspect the foot brake or parking brake.

Check that the foot brake or parking brake is not dragging.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Adjust the foot brake or parking brake.

STEP 2. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 3.
NO : Intermittent malfunction.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the transmission assembly.
NO : Intermittent malfunction.

INSPECTION PROCEDURE 10: The shock is large when the vehicle is stopped and the brake pedal is released with the D-range/R-range/manual mode.

COMMENTS ON TROUBLE SYMPTOM

The mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 2.
NO : Intermittent malfunction.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 11: Poor acceleration

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Engine system, mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the engine system
- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Check the engine system

Q: Is the check result normal?

YES : Go to Step 2
NO : Repair the engine system.

STEP 2. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 5.
NO : Intermittent malfunction.

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transmission assembly.
NO : Intermittent malfunction.

INSPECTION PROCEDURE 12: The gear shifting does not occur. (The transmission does not upshift or downshift.)

⚠ CAUTION

Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus lines, mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the CAN bus lines
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics.

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. After repairing the CAN bus line, go to Step 2.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 3.

NO : Intermittent malfunction.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 4.

NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transmission assembly.

NO : Intermittent malfunction.

INSPECTION PROCEDURE 13: The shift shock is large.

COMMENTS ON TROUBLE SYMPTOM

The mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 2.

NO : Intermittent malfunction.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 3.

NO : Intermittent malfunction.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transmission assembly.

NO : Intermittent malfunction.

INSPECTION PROCEDURE 14: Delay occurs when the lever is shifted from "N" to "D" or "N" to "R".

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated.
TC-SST-ECU power supply circuit, mechatronic assembly, clutch assembly, or transmission assembly may have a problem.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU power supply circuit

- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Check the TC-SST-ECU power supply circuit
Refer to P.22-97.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22-97.)

STEP 2. Fluid check
Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 5.
NO : Intermittent malfunction.

STEP 5. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the transmission assembly.
NO : Intermittent malfunction.

INSPECTION PROCEDURE 15: The engine stops when the lever is shifted from "N" to "D" or "N" to "R".

COMMENTS ON TROUBLE SYMPTOM
Engine system, mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES
- Malfunction of the engine system
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. Check the engine system

Q: Is the check result normal?
YES : Go to Step 2
NO : Repair the engine system.

STEP 2. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 3.
NO : Intermittent malfunction.

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the clutch assembly. (Refer to P.22-119.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 16: The vehicle moves with the N-range on the level ground.

COMMENTS ON TROUBLE SYMPTOM
The mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSIS PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 2.
NO : Intermittent malfunction.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.)
NO : Intermittent malfunction.

INSPECTION PROCEDURE 17: Judder/noise/vibration

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Mechatronic assembly or clutch assembly may have a problem.

NOTE: The following items can become a cause of the probable causes other than transmission. Perform this troubleshooting after checking that the following probable causes are normal.

- *Engine system*
- *Vibration of exhaust system*
- *Driveshaft malfunction (flaw, wear, looseness, large deflection)*
- *Tyre*
- *Interference of the drive system and body*
- *Suspension malfunction (looseness)*

PROBABLE CAUSES

- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transmission assembly

DIAGNOSIS PROCEDURE

STEP 1. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Charge or replace the fluid.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22-111.) Then go to Step 3.
NO : Intermittent malfunction.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to P.22-119.) Then go to Step 4.
NO : Intermittent malfunction.

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transmission assembly.
NO : Intermittent malfunction.

SPECIAL FUNCTION

M1225028400074

TEACH-IN REFERENCE TABLE

⚠ CAUTION

Be careful with the following items when performing Item No.3: Line Pressure Test.

- **The engine speed could be high (4,000 r/min) when the Line Pressure Test is in progress. (Depending on the transmission state, the engine speed may not be high.)**
- **After Teach-In completion, check that it completed normally. (Teach-In execution results is displayed in the following Data list.)**

TEACH-IN

Item No.	M.U.T.-III Item Name
1	Plausibility check
2	Shift fork Teach-In
3	Line pressure Test
4	Stroke Teach-In

Item No.	M.U.T.-III Item Name
5	Boost Teach-In
6	Interlock Teach-In
7	Clutch Ventilation
8	Reset clutch gain

NOTE:

- *According to the transmission fluid state (fluid -filled state), Teach-In executed time is not equal.*
- *Item No.8 is not displayed when the Diag. Version of TC-SST-ECU is ~~pre-0002~~. (Diag. Version can be checked by the Teach-In screen of M.U.T.-III.)*

DATA LIST

No.	Data List Item Name	Teach-In state or result	M.U.T.-III display
100	Teach-In executing	Before execution	No
		Other than the execution conditions	Pending
		After execution	Yes →No
101	Normal End	At the normal end	Yes
		At the abnormal end	No
102	Abnormal End	At the normal end	No
		At the abnormal end	Yes
103	Timeout error	When a timeout error is not occurred	No
		When a timeout error is occurred	Yes
104	Abort conditions error	When an error other than the execution conditions is not occurred	No
		When an error other than the execution conditions is occurred	Yes
110	Execute last Teach-In item	–	The previously conducted M.U.T.-III item name is displayed
111	Internal Error Data	–	The monitoring unit No. is displayed in case of an error

ON-VEHICLE SERVICE

TRANSMISSION FLUID LEAKAGE CHECK

M1225029700067

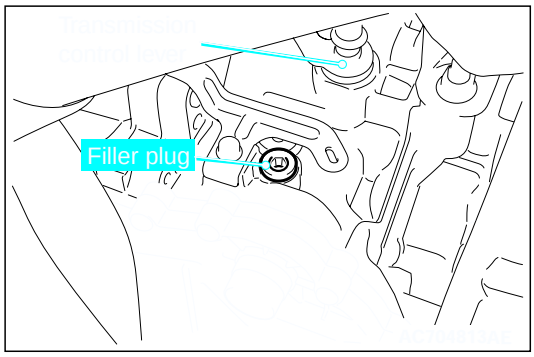
1. Clean the transmission exterior, and visually check the transmission for fluid leaks.
2. If the fluid is leaking from the oil pan or the oil seal, replace the part. If the fluid is leaking from the part other than the oil pan and the oil seal, replace the transmission assembly.

TRANSMISSION FLUID LEVEL CHECK

M1225008000234

1. Remove the engine room under cover front B assembly.
2. Start the engine, and let it run at idle to warm it up for 15 minutes.
3. Move the shift lever to every position (P, R, N, D, manual mode) (Hold for 20 seconds in each position), and then move it to the P range.
4. Stop the engine.

5. Remove the air cleaner element and air cleaner intake duct.

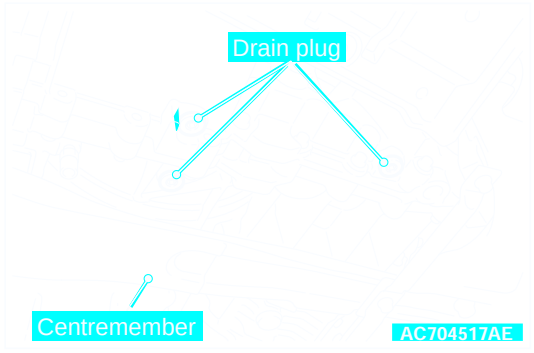


6. Remove the filler plug.

⚠ CAUTION

- **The drained fluid can be reused if it is between the replacement intervals.**

  <Replacement interval>
  - **Normal condition: 105,000 km <Vehicles for Europe>**
  - **Normal condition: 100,000 km <Except vehicles for Europe>**
  - **Severe condition: 45,000 km <Vehicles for Europe>**
  - **Severe condition: 40,000 km <Except vehicles for Europe>**
- **When reusing the drained fluid, make sure that no foreign object gets into the fluid.**



7. Remove the drain plugs, and leave it for 3 minutes to drain the fluid.

   NOTE: Because the fluid in the oil cooler, oil filter, and transmission assembly cannot be drained, the amount of drained fluid will be approximately 5.5 dm^3.
8. Tighten the drain plugs to the specified torque.

   Tightening torque: 35 ±5 N· m

⚠ CAUTION

Measure the drained fluid. If the drained fluid is less than approximately 5.5 dm^3, add new fluid to make it approximately 5.5 dm^3.

9. Fill the fluid into the filler plug.

   Brand name: Dia Queen SSTF-I

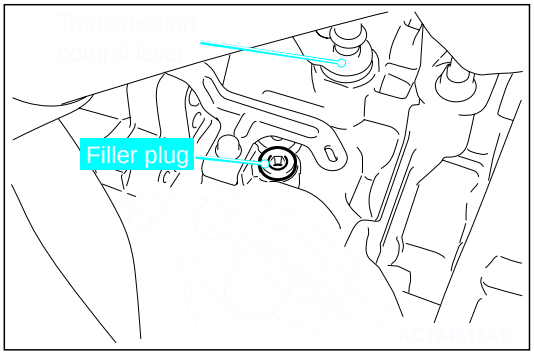
   Filling amount: Approximately 5.5 dm^3
10. Tighten the filler plug to the specified torque.

    Tightening torque: 35 ±5 N· m
11. Install the air cleaner element and air cleaner intake duct.
12. Install the engine room under cover front B assembly.

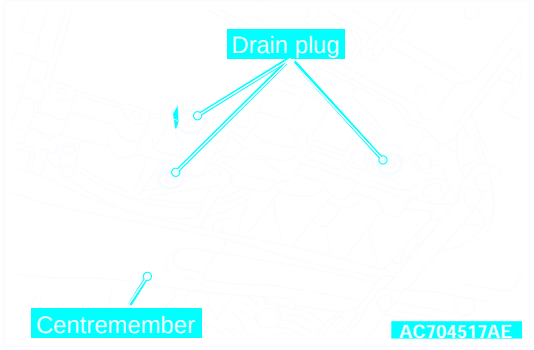
TRANSMISSION FLUID CHANGE

M1225008100242

1. Remove the engine room under cover front B assembly.
2. Start the engine, and let it run at idle to warm it up for 15 minutes.
3. Move the shift lever to every position (P, R, N, D, manual mode) (Hold for 20 seconds in each position), and then move it to the P range.
4. Stop the engine.
5. Remove the air cleaner element and air cleaner intake duct.



6. Remove the filler plug.



7. Remove the drain plug, and leave it for 3 minutes to drain the fluid.

NOTE: Because the fluid in the oil cooler, oil filter, and transmission assembly cannot be drained, the amount of drained fluid will be approximately 5.5 dm^3.

8. Tighten the drain plug to the specified torque.
   Tightening torque: 35 ±5 N· m
9. Fill the fluid into the filler plug.
   Brand name: Dia Queen SSTF-I
   Filling amount: Approximately 5.5 dm^3
10. Tighten the filler plug to the specified torque.
    Tightening torque: 35 ±5 N· m
11. Install the air cleaner element and air cleaner intake duct.
12. Install the engine room under cover front B assembly.

TRANSMISSION ASSEMBLY

REMOVAL AND INSTALLATION

M1225010200343

NOTE: For service procedures other than below, refer to the Workshop Manual of the relevant vehicle.

⚠ CAUTION

- **When the transmission assembly is replaced, save the vehicle identification number and perform the variant coding. Refer to the "M.U.T.-III Owner's Manual" and perform coding.**
- **When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to P.22-3).**
- **When the clutch assembly is replaced, the following Teach-In must be carried out (Refer to P.22-3).**
- **When the transmission control cable is disconnected, check after the installation that the cable is properly connected, and that the parking lock mechanism operates normally. At this time, do not check by simply using the display on the combination meter and shift indicator panel. Always check according to the procedure below.**
  - **When driving at 5 km/h or less, the vehicle stops when the shift lever is moved to the P range.**
  - **With the P range, the vehicle does not move on a slight slope or when pushed by hands.**
- **Drain the fluid remaining in the oil cooler before installing the transmission assembly.**
- **Do not refill the fluid when replacing the transmission assembly with a new one.**

NOTE:

- *The new transmission assembly is filled with 7.6 dm^3 of the fluid (including the oil cooler).*
- *The transmission assembly has a sealed structure, and the fluid does not drain out from parts other than the oil cooler hose.*

⚠ CAUTION

Refill 6.1 dm^3 of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose is 0.6 dm^3.

⚠ CAUTION

- **If the transmission assembly is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22-106.)**
- **When the transmission assembly is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL PAN

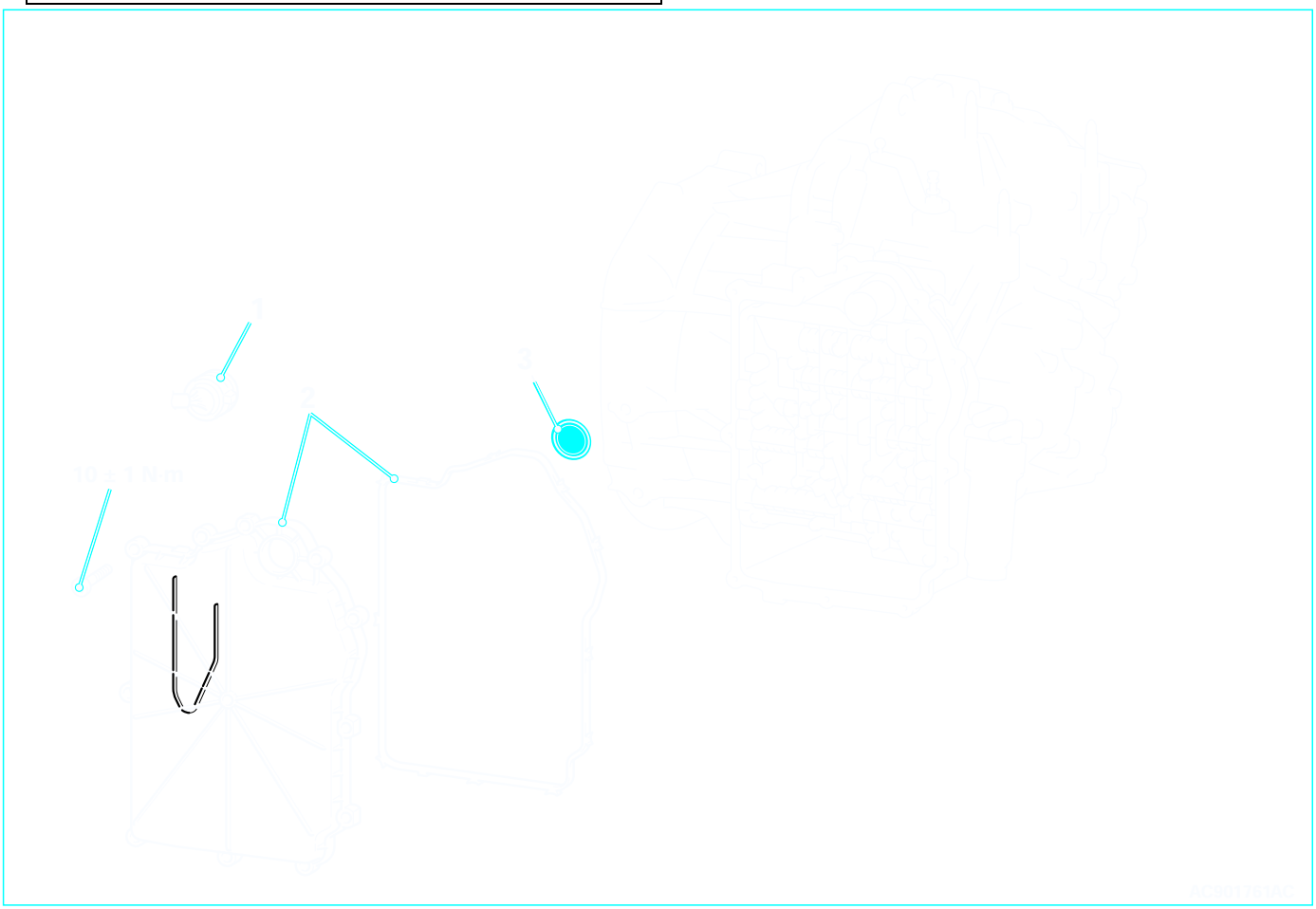
REMOVAL AND INSTALLATION

M1225028800276

⚠ CAUTION

If a fluid leakage is present in the area around the oil pan, clean around the oil pan. After cleaning, warm up the engine. Only if a fluid leakage is present in the area around the oil pan again, replace the oil pan assembly.

Pre-removal and Post-installation Operation
Charge Air Cooler Outlet Air Hose and Charge Air Cooler Outlet Air Hose E Removal and Installation.



Removal steps

>>B<< • Transmission Fluid Draining and Refilling (Refer to P.22-107.)

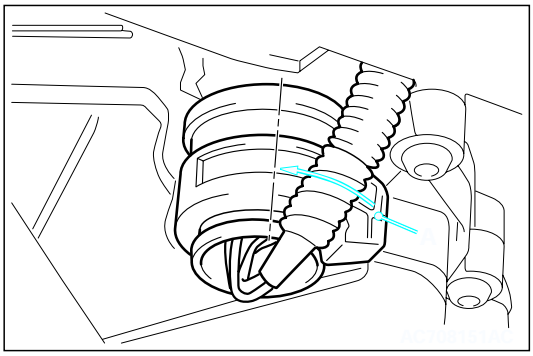
<<A>> 1. Transmission assembly connector connection

<<B>> >>A<< 2. Oil pan assembly

3. O-ring

REMOVAL SERVICE POINTS

<<A>> TRANSMISSION ASSEMBLY CONNECTOR DISCONNECTION



Rotate the section A of the connector 90° to the direction of the arrow to disconnect the connector.

<<B>> 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.

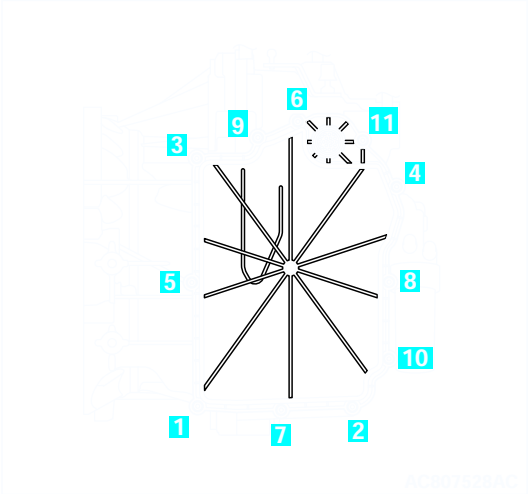
INSTALLATION SERVICE POINTS

>>A<< OIL PAN ASSEMBLY INSTALLATION

1. Completely degrease the oil pan assembly installation surface on the transmission 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

>>B<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

- **If the oil pan assembly and the internal components are repaired, fill new fluid and check the transmission fluid level. (Refer to P.22-106.)**
- **If the oil pan assembly and the internal components are not repaired, the drained fluid can be reused if it is between the replacement intervals.**

MECHATRONIC ASSEMBLY, MANUAL CONTROL LEVER

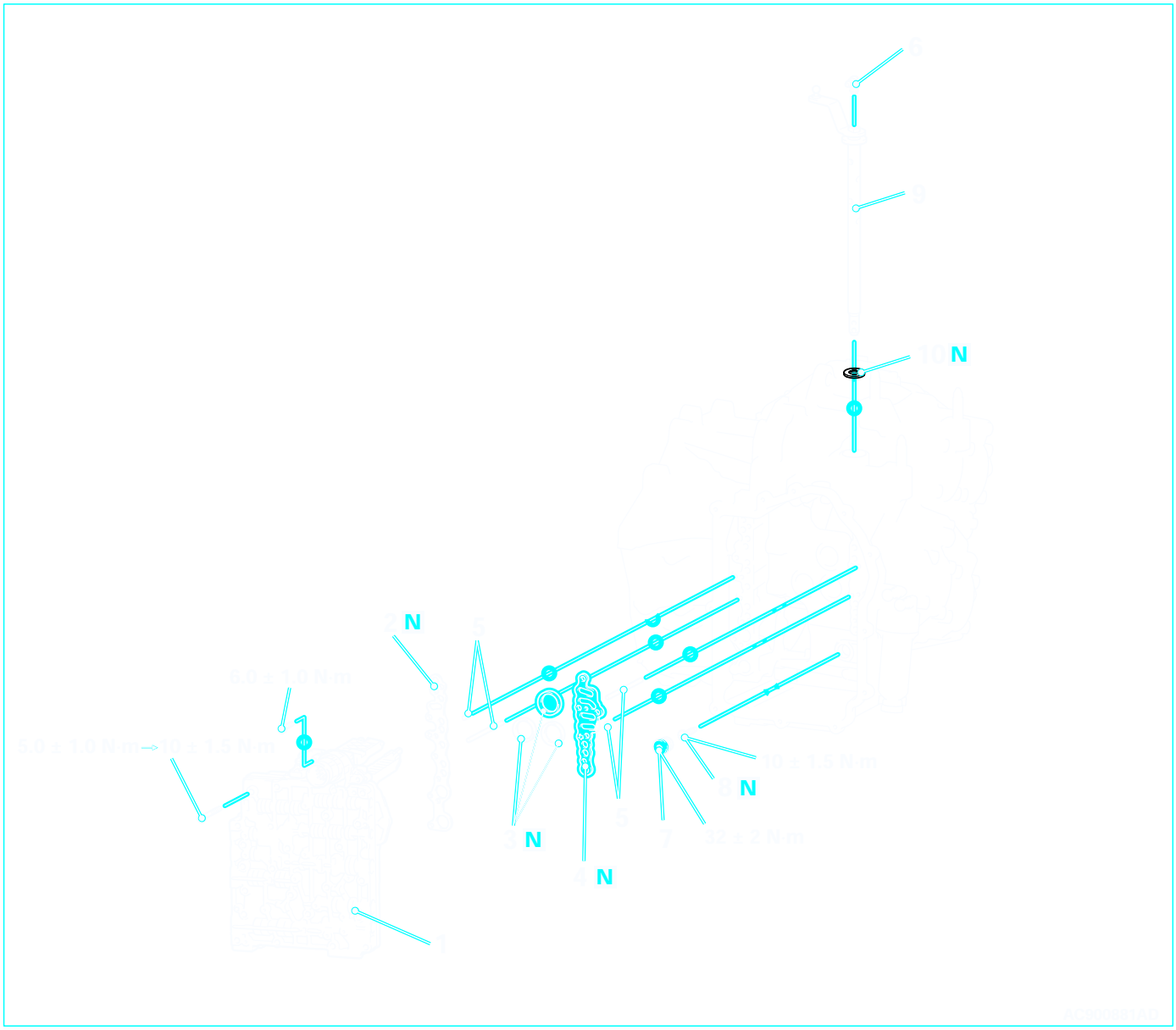
REMOVAL AND INSTALLATION

M1225029600060

⚠ CAUTION

When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to P.22-3).

Pre-removal and Post-installation Operation
- Radiator Lower Pipe Assembly Removal and Installation.
- Fan, Fan Motor and Fan Shroud Assembly Removal and Installation.
- Intercooler Outlet Air Pipe C Removal and Installation.
- Oil Pan Removal and Installation (Refer to P.22-109.)



Removal steps

<<A>> >>B<< 1. Mechatronic assembly
>>B<< 2. Gasket A
3. Gasket B
>>B<< 4. Gasket C
5. Pin

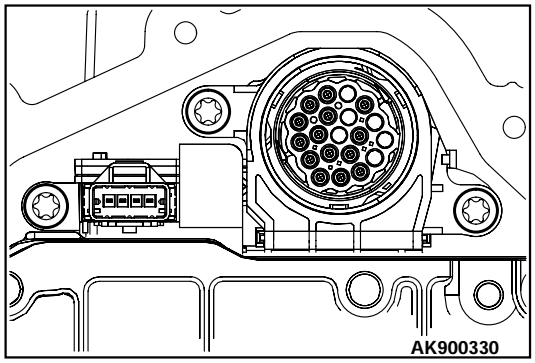
Removal steps (Continued)

6. Breather nipple
<<B>> >>A<< 7. Plug
<<B>> >>A<< 8. Bolt
<<B>> >>A<< 9. Manual control shaft
10. Oil seal

REMOVAL SERVICE POINTS

<<A>> MECHATRONIC ASSEMBLY REMOVAL

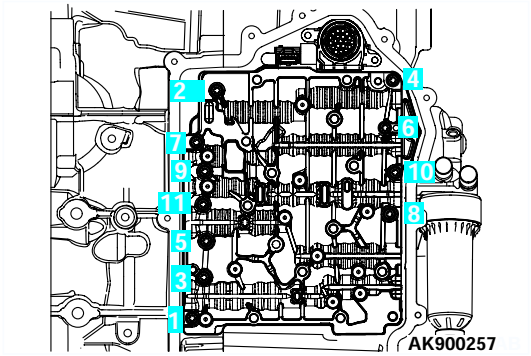
1. Remove the connector carefully.



⚠ CAUTION
When removing bolt, use magnetic tools to prevent them from falling out.

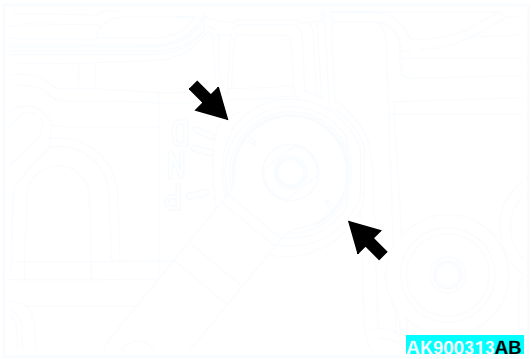
2. Remove the three bolts.

3. Pull carefully at the connector to loose by approx. 2 - 3 mm.



4. Remove the bolts in the order shown and remove the mechatronic assembly carefully.

<<B>> PLUG/BOLT/MANUAL CONTROL SHAFT REMOVAL



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

2. Remove the plug.

⚠ CAUTION
When removing bolt, use magnetic tools to prevent them from falling out.

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

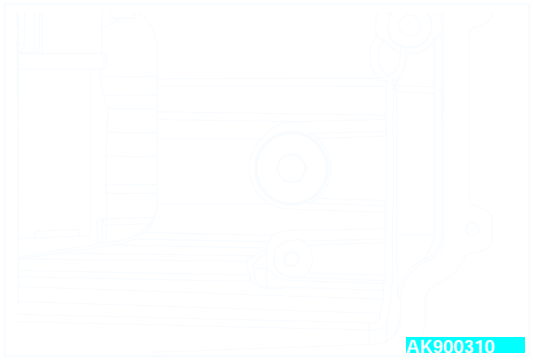
INSTALLATION SERVICE POINTS

>>A<< MANUAL CONTROL SHAFT/BOLT/PLUG INSTALLATION


AK900311

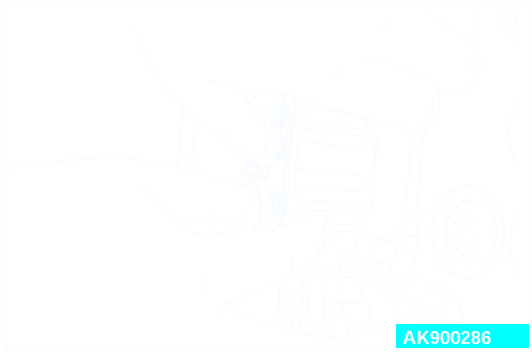
⚠ CAUTION
When installing bolt, use magnetic tools to prevent them from falling out.

1. Install the manual control shaft carefully and tighten the bolt to the specified torque.
   Tightening torque: 10 ±1.5 N· m

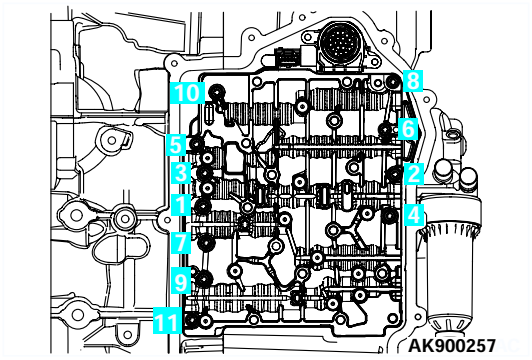

AK900310

2. Tighten the plug to the specified torque.
   Tightening torque: 32 ±2 N· m

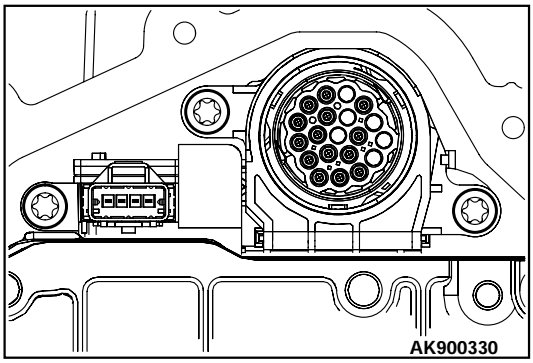
>>B<< GASKET A/GASKET C/MECHATRONIC ASSEMBLY INSTALLATION


AK900286

1. As shown in the illustration, fix the gasket to the transmission 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 ±1.0 N· m
3. Tighten again the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.
   Tightening torque: 10 ±1.5 N· m



⚠ CAUTION
When installing bolt, use magnetic tools to prevent them from falling out.

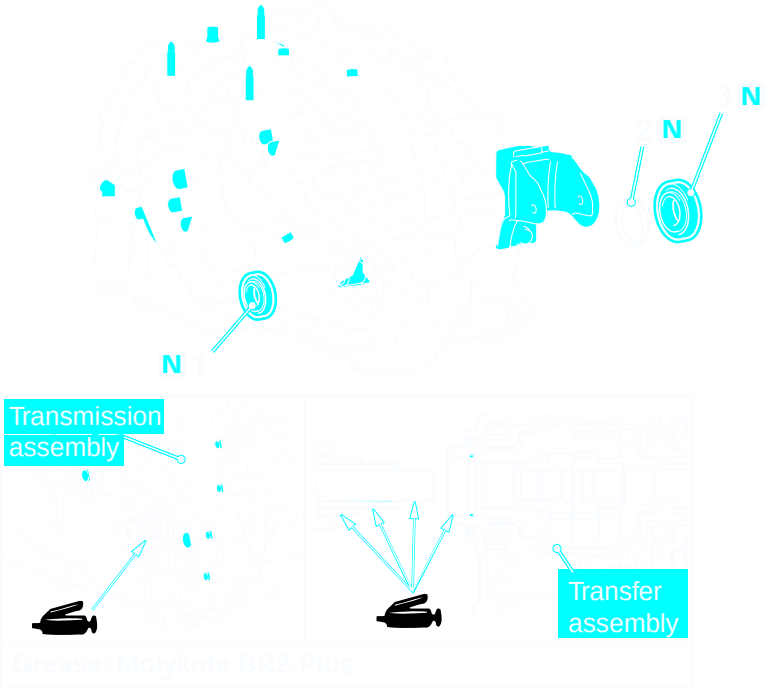
4. Tighten the bolts to the specified torque.
   Tightening torque: 6.0 ±1.0 N· m
5. Install the connector.

TRANSMISSION CASE OIL SEAL

REMOVAL AND INSTALLATION

M1225029000239

Pre-removal Operation	Post-installation Operation
• Transmission Fluid Draining (Refer to P.22-107.)	• Transmission Fluid Refilling (Refer to P.22-107.) • Transmission Fluid Level Check (Refer to P.22-106.)



Transmission case oil seal (LH) removal steps
- Front driveshaft assembly (LH)

<<A>> >>C<< 1. Transmission case oil seal (LH)

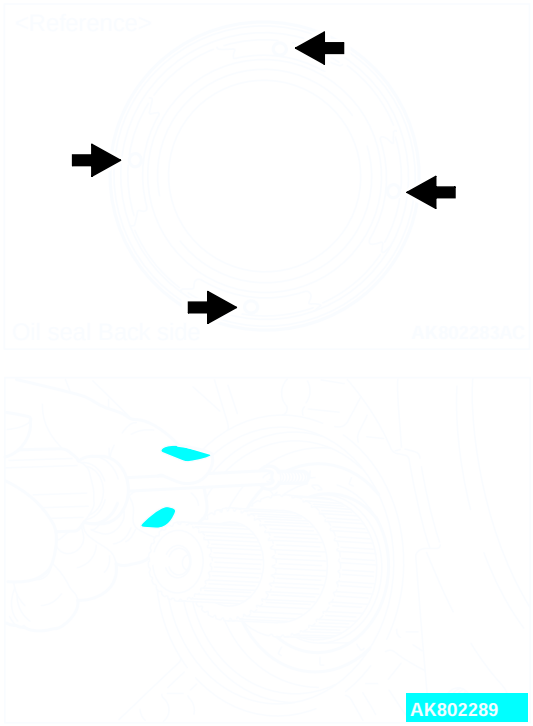
Transmission case oil seal (RH) removal steps
- Transfer assembly

>>B<< 2. V ring

<<A>> >>A<< 3. Transmission case oil seal (RH)

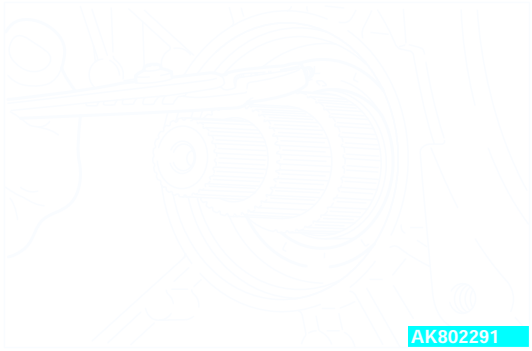
REMOVAL SERVICE POINTS

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



1. Insert the tapping screw (ϕ3 mm) 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.

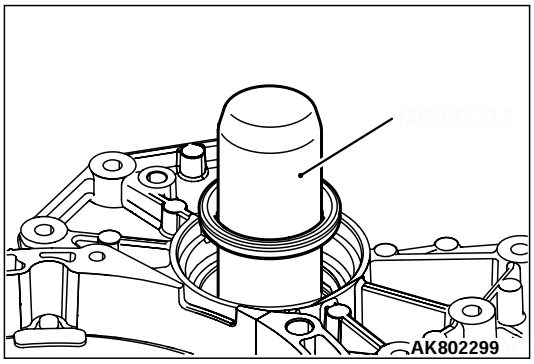


3. Hold the inserted tapping screw with pliers or similar tools, and remove the oil seal.

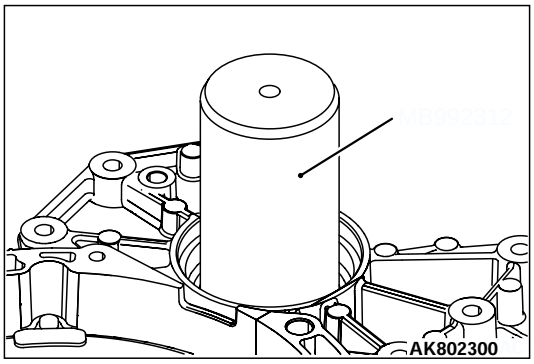
   NOTE: If the transmission case oil seal (RH) is replaced, the V-ring must also be replaced.

INSTALLATION SERVICE POINTS

>>A<< TRANSMISSION CASE OIL SEAL (RH) INSTALLATION

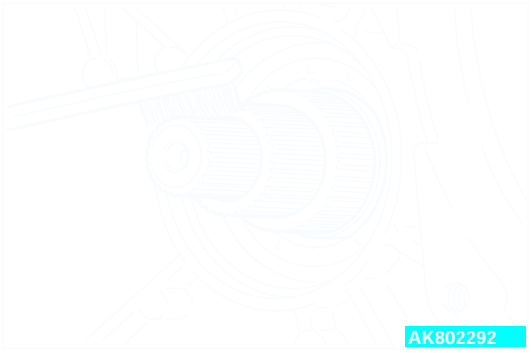


1. Apply the transmission oil to the oil seal guide (special tool: MB992313). Insert the oil seal to oil seal guide (special tool: MB992313).

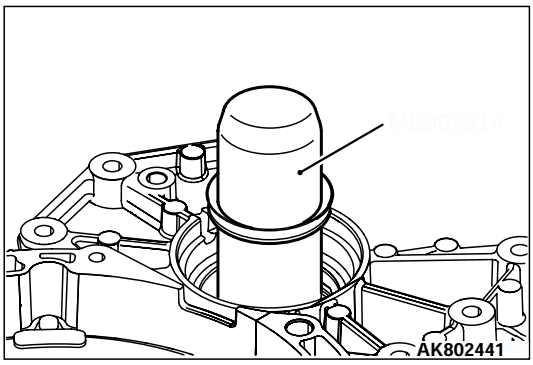


2. Use special tool oil seal installer (special tool: MB992312) to install the oil seal to the transmission case.

>>B<< V RING INSTALLATION

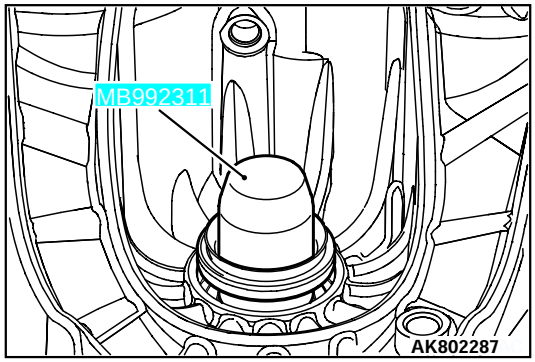


1. Clean the spline with a brush or the like.



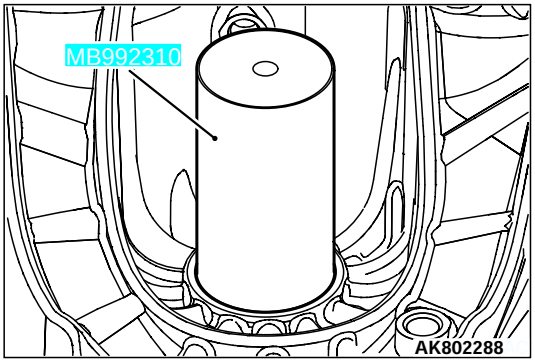
2. Apply the transmission oil to the V ring guide (special tool: MB992314). Insert the V ring to V ring guide (special tool: MB992314), and install the V ring to the transmission case.
3. Check that the V ring is installed securely.

>>C<< TRANSMISSION CASE OIL SEAL (LH) INSTALLATION



1. Apply the transmission oil to the oil seal guide (special tool: MB992311). Insert the oil seal to oil seal guide (special tool: MB992311).

   NOTE: Do not use oil seal guide (special tool: MB992311) without first removing the snap ring from the output shaft.



2. Use special tool oil seal installer (special tool: MB992310) to install the oil seal to the transmission case.

OIL COOLER

REMOVAL AND INSTALLATION

M1225010400358

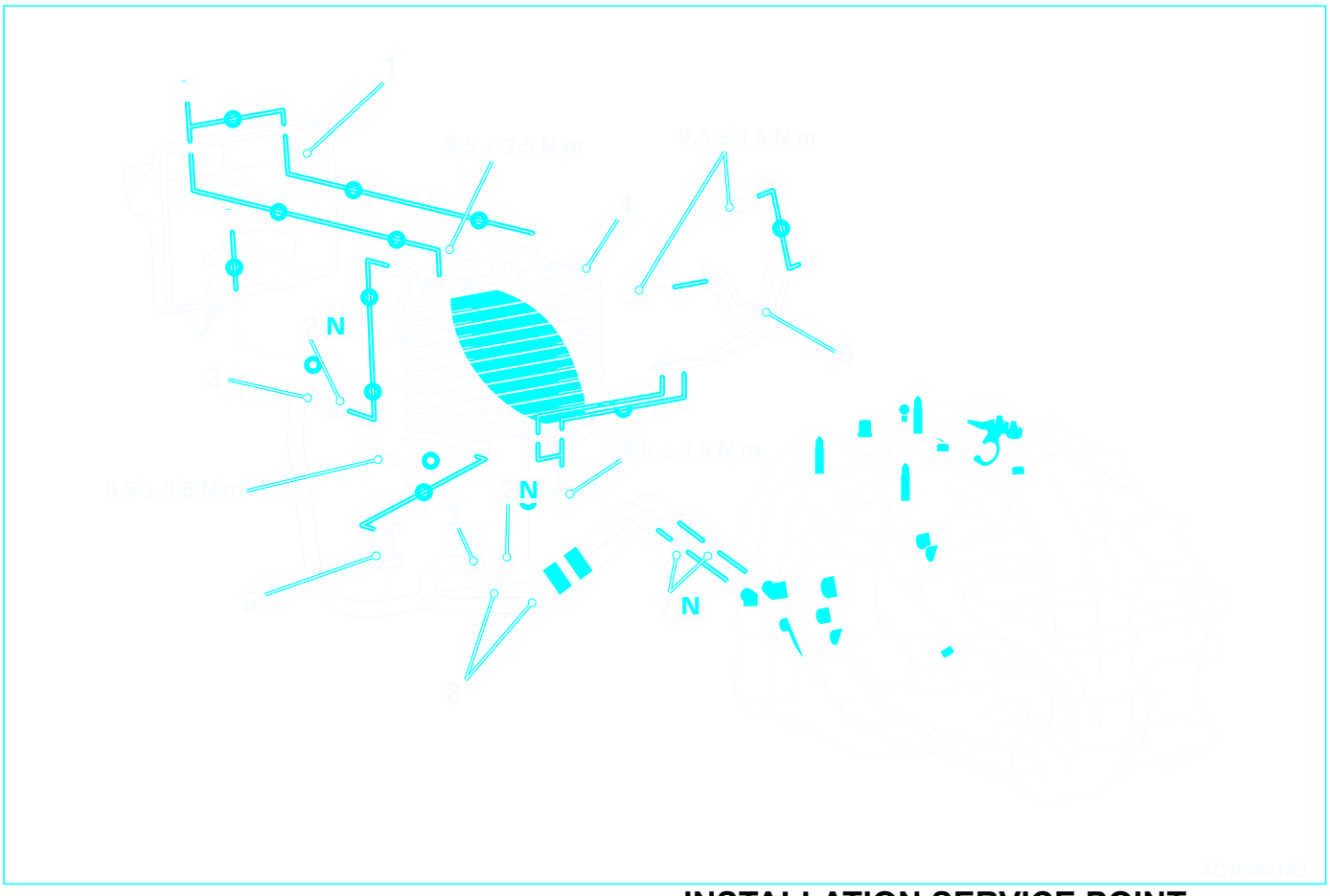
⚠ CAUTION

Do not refill the fluid when replacing the transmission assembly and the oil cooler with new ones at the same time.

NOTE:

- *The new transmission assembly is filled with 7.6 dm^3 of the fluid (including the oil cooler).*
- *The transmission assembly has a sealed structure, and the fluid does not drain out from parts other than the oil cooler hose.*

Pre-removal and Post-installation Operation
Front bumper and radiator grille assembly removal and installation.



Removal steps

>>A<< • Transmission fluid draining and refilling (Refer to P.22-107.)

1. Oil cooler duct
2. Hose clip
3. Oil cooler hose assembly connection
4. Oil cooler assembly
5. Hose clamp
6. Oil cooler bracket
7. Hose clip
8. Oil cooler hose assembly

INSTALLATION SERVICE POINT

>>A<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

Refill 6.1 dm^3 of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose assembly is 0.6 dm^3.

⚠ CAUTION

- **If the oil cooler is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22-106.)**
- **When the oil cooler is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL FILTER

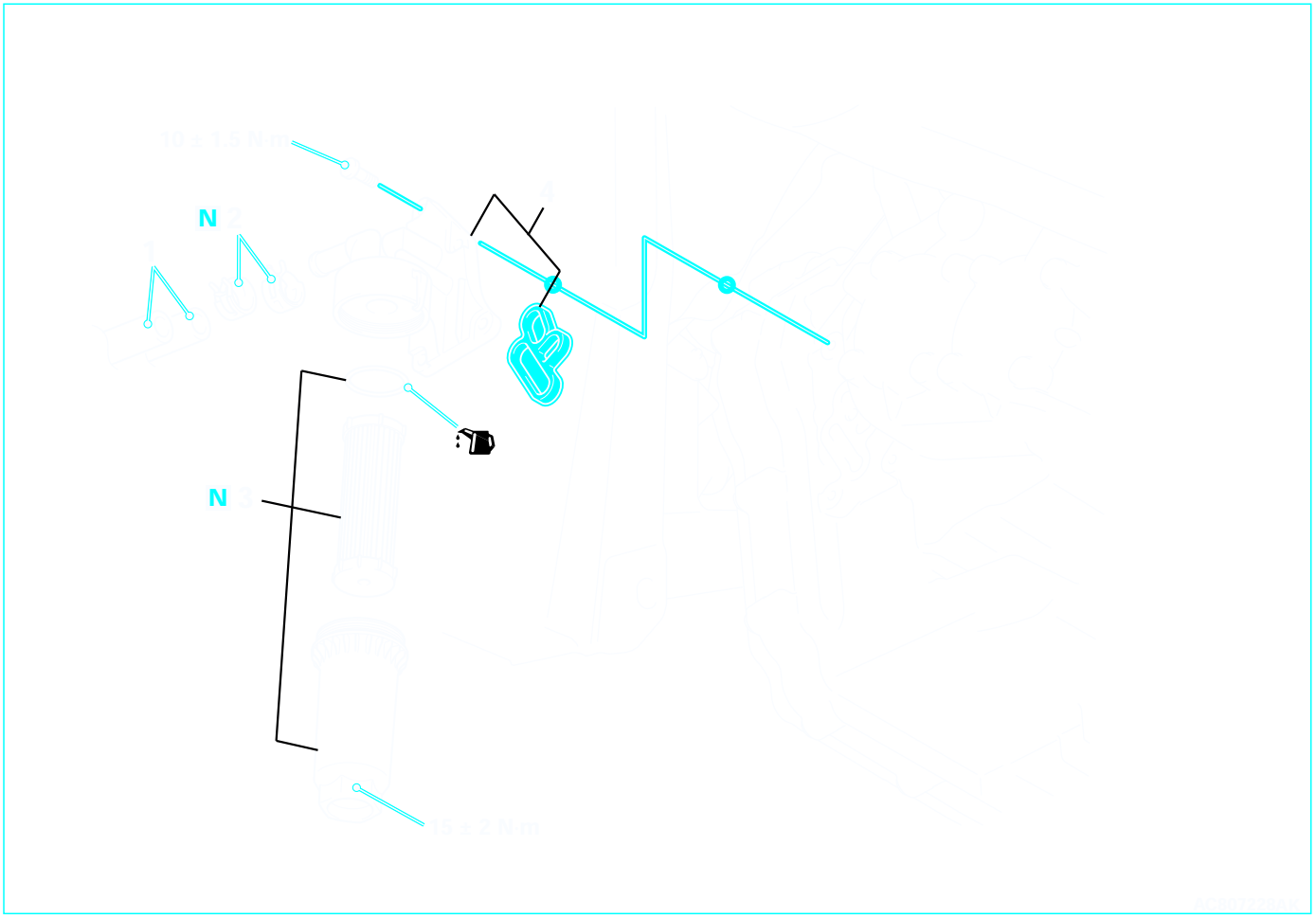
REMOVAL AND INSTALLATION

M1225028600186

⚠ CAUTION

If a fluid leakage is present in the area around the oil filter bracket, clean around the oil filter bracket. After cleaning, warm up the engine. Only if a fluid leakage is present in the area around the oil filter bracket again, replace the oil filter bracket assembly.

Pre-removal and Post-installation Operation
Engine Room Side Cover <LH>.



Removal steps

<<A>> >>B<<
- Transmission fluid draining and refilling (Refer to P.22-107.)

1. Oil cooler hose assembly connection

Removal steps (Continued)

2. Hose clip
3. Oil filter case assembly

>>A<<
4. Oil filter bracket assembly

REMOVAL SERVICE POINT

<<A>> TRANSMISSION FLUID DRAINING

Drain the fluid in the transmission assembly and the oil cooler.

INSTALLATION SERVICE POINTS

>>A<< OIL FILTER BRACKET ASSEMBLY INSTALLATION

1. Completely degrease the oil filter bracket assembly installation surface on the transmission side.
2. Remove the gasket from the oil filter bracket assembly, and completely degrease the groove of the oil filter bracket assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil filter bracket assembly.
3. Tighten the screws to the specified torque.

Tightening torque: 10 ±1.5 N· m

>>B<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

Refill 6.2 dm^3 of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose is 0.6 dm^3 , and the fluid capacity of the oil filter case assembly is 0.1 dm^3.

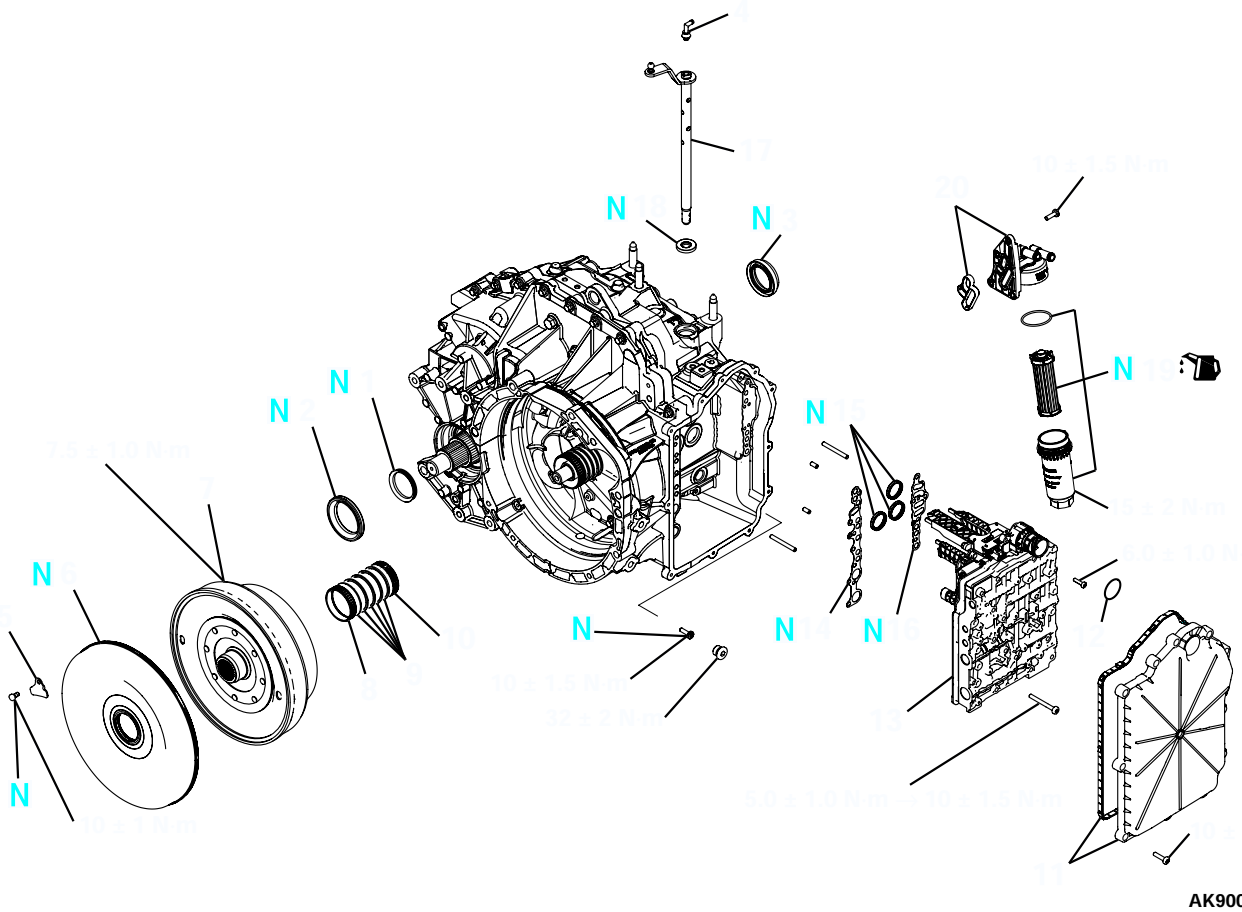
⚠ CAUTION

- **If the fluid leakage from the oil filter is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22-106.)**
- **When the oil filter is replaced, the drained fluid can be reused if it is between the replacement intervals.**

TRANSMISSION <OVERHAUL>

DISASSEMBLY AND REASSEMBLY

M1226001000236



AK900831

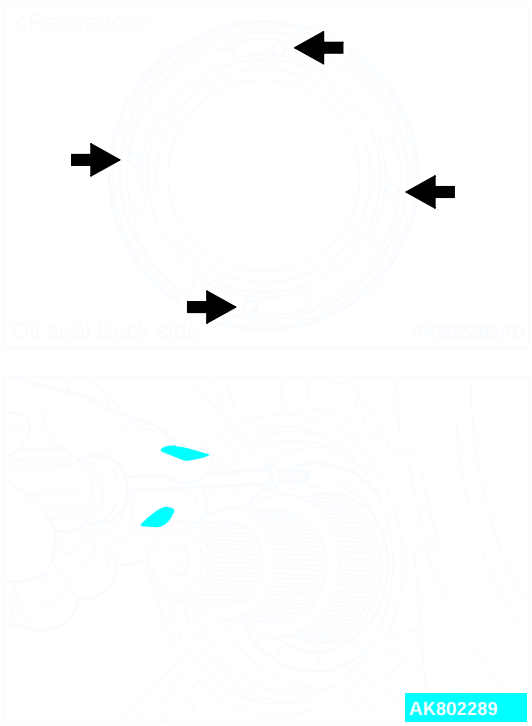
		Disassembly steps
	>>K<<	1. V ring
<<A>>	>>J<<	2. Transmission case oil seal (RH)
<<A>>	>>I<<	3. Transmission case oil seal (LH)
		4. Breather
<<B>>	>>H<<	5. Seal cover bracket
<<B>>	>>H<<	6. Seal cover
<<C>>	>>G<<	7. Clutch assembly
		8. Needle roller bearing
	>>F<<	9. Seal ring
	>>E<<	10. Needle roller bearing
<<D>>	>>D<<	11. Oil pan assembly
		12. O-ring
<<E>>	>>C<<	13. Mechatronic assembly
	>>C<<	14. Gasket A
		15. Gasket B
	>>C<<	16. Gasket C
<<F>>	>>B<<	17. Manual control shaft
		18. Oil seal
		19. Oil filter case assembly
	>>A<<	20. Oil filter bracket assembly

⚠ CAUTION

- **When installing or removing screws, use magnetic tools to prevent them from falling out.**
- **If debris or parts enter into the transmission case, pay attention to the following to replace the transmission assembly:**
- **When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to** P.22-3 **).**
- **When the clutch assembly is replaced, the following Teach-In must be carried out (Refer to** P.22-3 **).**

REMOVAL SERVICE POINTS

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



1. Insert the tapping screw (ϕ3 mm.) 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.

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

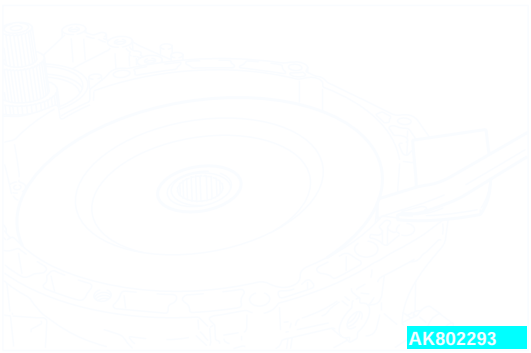
NOTE: If the transmission case oil seal (RH) is replaced, the V ring must also be replaced.

<<B>> SEAL COVER BRACKET / SEAL COVER REMOVAL

1. Remove the seal cover bracket.

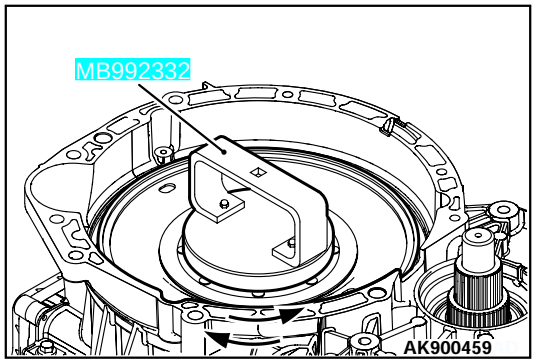
⚠ CAUTION

- **Before removing the seal cover, securely remove metal debris 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.**



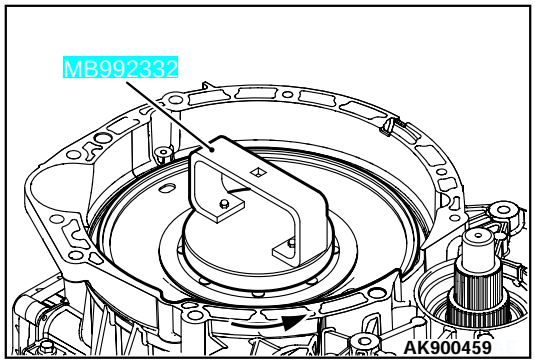
2. Remove the seal cover from the transmission, using the tool such as crowbar.

<<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.

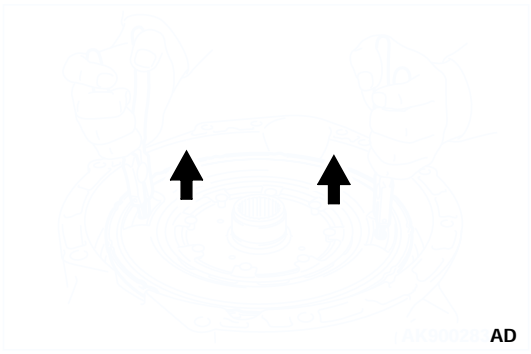
   NOTE: When the pins are inserted into all four clutch disks, the clutch assembly cannot easily be rotated in the axial direction.



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.**


AD

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

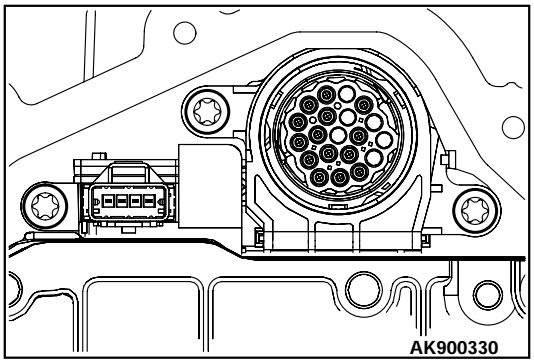
<<D>> OIL PAN ASSEMBLY REMOVAL

⚠ 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.

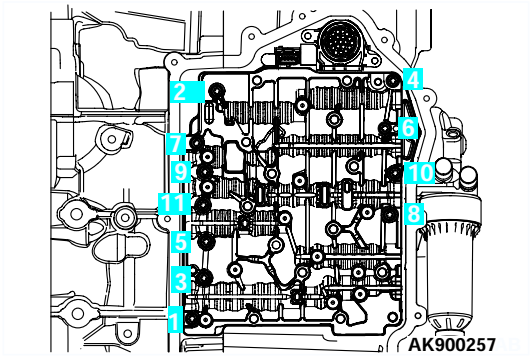
<<E>> MECHATRONIC ASSEMBLY REMOVAL

1. Remove the connector carefully.


AK900330

2. Remove the three bolts.

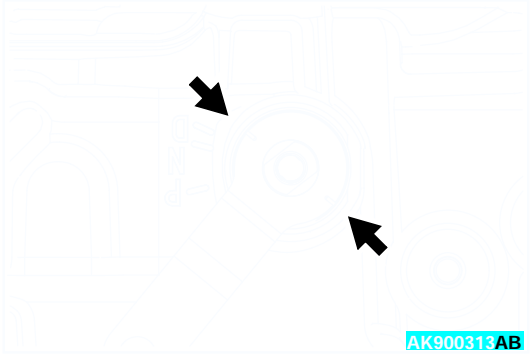
3. Pull carefully at the connector to loose by approx. 2 - 3 mm.



AK900257

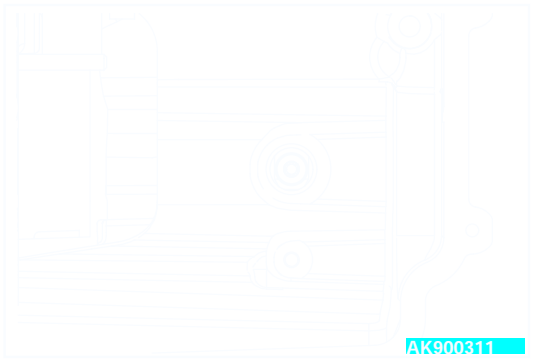
4. Remove the eleven bolts as shown and remove the mechatronic assembly carefully.

<<F>> MANUAL CONTROL SHAFT REMOVAL


AK900313AB

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 transmission case.
4. Remove the manual control shaft carefully.

INSTALLATION SERVICE POINTS

>>A<< OIL FILTER BRACKET ASSEMBLY INSTALLATION

1. Completely degrease the oil filter bracket assembly installation surface on the transmission side.
2. Remove the gasket from the oil filter bracket assembly, and completely degrease the groove of the oil filter bracket assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil filter bracket assembly.
3. Tighten the screws to the specified torque.

   Tightening torque: 10 ±1.5 N· m

>>B<< MANUAL CONTROL SHAFT INSTALLATION

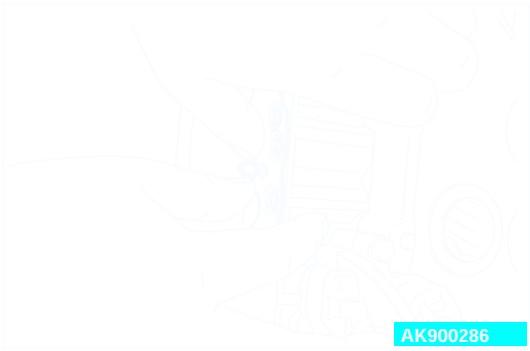
1. Install the manual control shaft carefully and tighten the screw to the specified torque.

   Tightening torque: 10 ±1.5 N· m

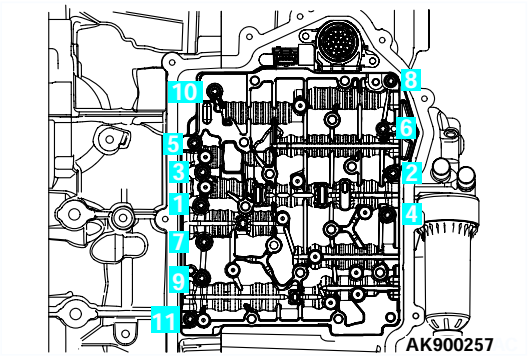
2. Tighten the plug to the specified torque.

   Tightening torque: 32 ±2 N· m

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



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

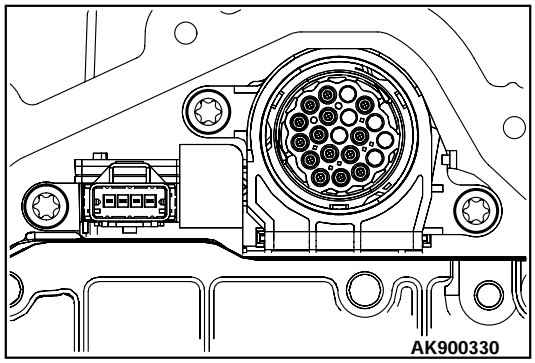


2. Install the mechatronic assembly carefully and tighten the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.

   Tightening torque: 5.0 ±1.0 N· m

3. Tighten again the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.

   Tightening torque: 10 ±1.5 N· m



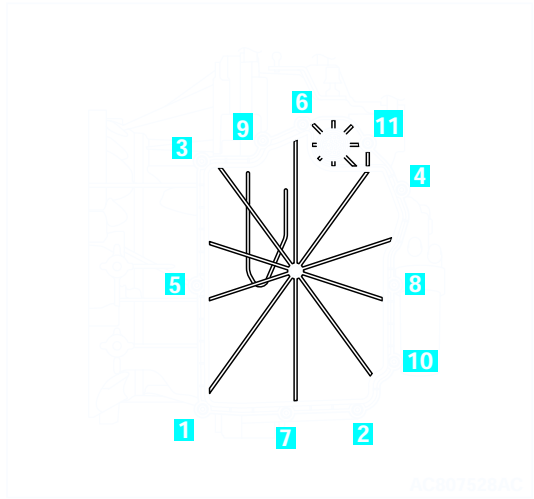
4. Tighten the bolts to the specified torque.

   Tightening torque: 6.0 ±1.0 N· m

>>D<< OIL PAN ASSEMBLY INSTALLATION

1. Completely degrease the oil pan assembly installation surface on the transmission 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

>>E<< NEEDLE ROLLER BEARING INSTALLATION

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

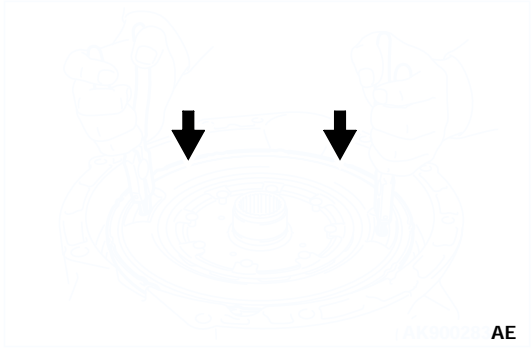
>>F<< SEAL RING INSTALLATION

⚠ CAUTION
Do not expand the seal ring more than necessary.

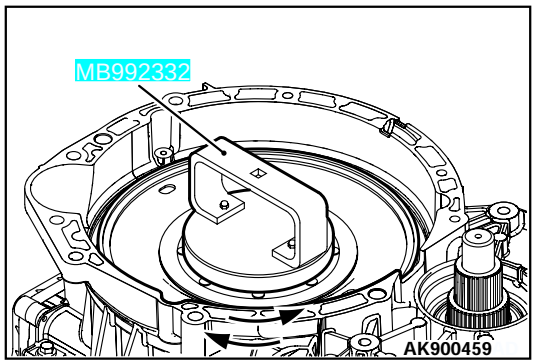
1. Insert the seal ring.
2. Ensure that the lock is closed completely and it is seated flat into its position.

>>G<< CLUTCH ASSEMBLY INSTALLATION

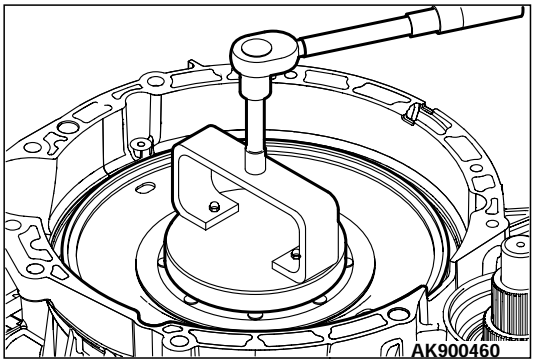
⚠ CAUTION
Pay attention to the clutch assembly not to touch the seal ring and needle bearing.



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

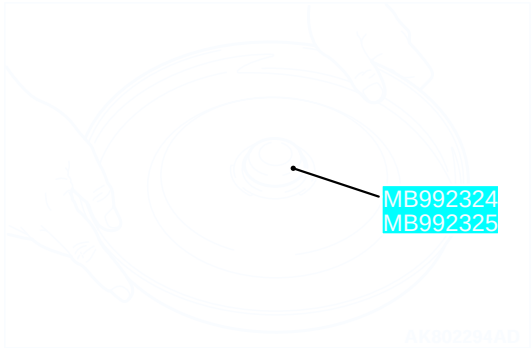


2. Align the four pins of the special tool, clutch remover & installer (MB992332), with the four holes of the clutch assembly to set the special tool, clutch remover & installer (MB992332), to the clutch assembly.
3. Rotate the clutch assembly in the axial direction to insert the pins into all four clutch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

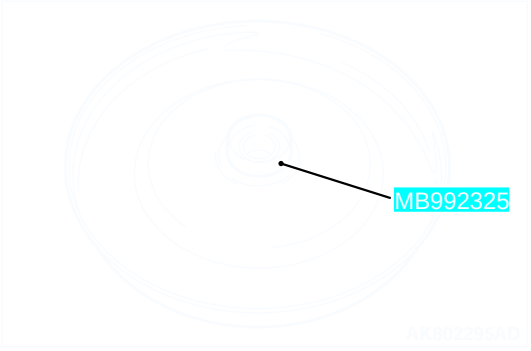


4. Rotate the clutch assembly clockwise to install it.
   Tighten it to the specified torque.
   Tightening torque: 7.5 ±1.0 N· m

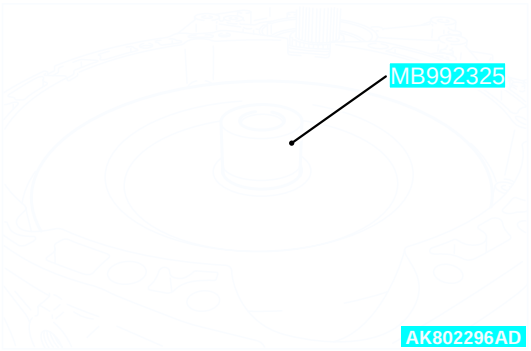
>>H<< SEAL COVER BRACKET / SEAL COVER INSTALLATION



1. Install the seal cover to the following special tool.
   - Seal cover guide A (MB992324)
   - Seal cover guide B (MB992325)



2. Remove the special tool, Seal Cover Guide A (MB992324), from Seal Cover Guide B (MB992325).



3. Install the seal cover to the transmission. Remove the special tool, Seal Cover Guide B (MB992325).

4. Use special tool Seal cover installer (MB992323) to install the seal cover to the transmission.

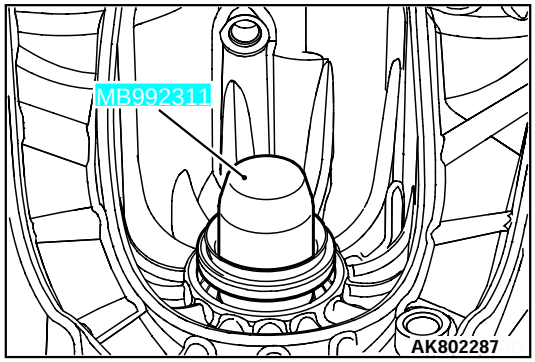
5. Install the seal cover bracket.

   Confirm that it is not shaky.

6. Tighten the seal cover bracket mounting bolt to the specified torque.

   Tightening torque: 10 ±1 N· m

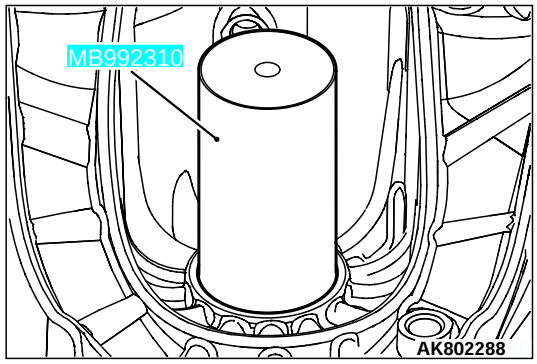
>>I<< TRANSMISSION CASE OIL SEAL (LH) INSTALLATION



1. Apply the transmission oil to the special tool oil seal guide (MB992311).

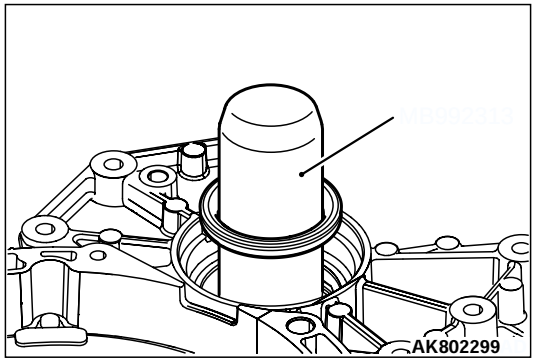
   Insert the special tool oil seal guide (MB992311).

   NOTE: Do not use special tool oil seal guide (MB992311) without first removing the snap ring from the output shaft.



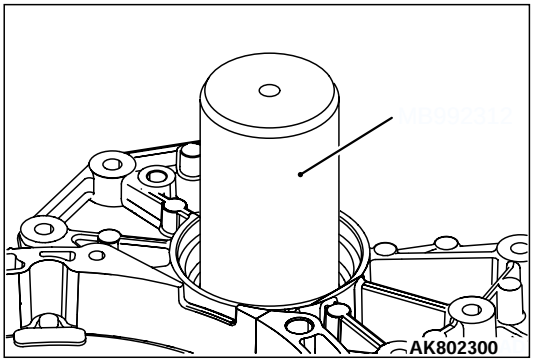
2. Use special tool oil seal installer (MB992310) to install the oil seal to the transmission.

>>J<< TRANSMISSION CASE OIL SEAL (RH) INSTALLATION



1. Apply the transmission oil to the special tool oil seal guide (MB992313).

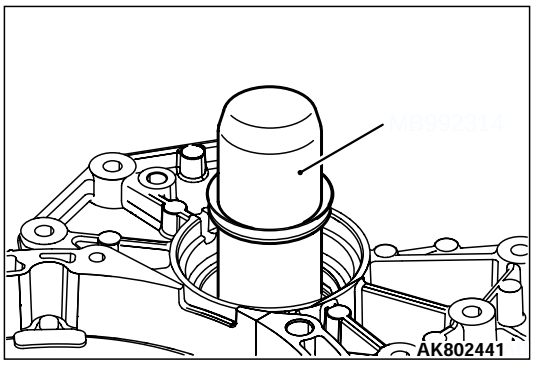
   Insert the oil seal to the special tool oil seal guide (MB992313).



2. Use special tool oil seal installer (MB992312) to install the oil seal to the transmission.

>>K<< V RING INSTALLATION

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



2. Apply the transmission oil to the special tool V ring guide (MB992314).

   Insert the V ring to the special tool V ring guide (MB992314).

3. Check that the V ring is installed securely.