

**** TECHNICAL INFORMATION NOTICE ****

DATE: August 17, 2017
TO: Mitsubishi Motors US & Puerto Rico Dealer Service and Parts Managers
RE: Required Procedures after CVT Assembly Replacement
TIN NO. TIN-17-23-001

AFFECTED VEHICLES: 2008-2017 Lancer, 2014-2017 Mirage & Mirage G4, 2008-2017 Outlander, 2011-2017 Outlander Sport

PURPOSE

This TIN details the procedures required after replacing a CVT (Continuously Variable Transmission) assembly. When replacing a CVT assembly, valve body, or TCM (Transaxle Control Module), specific procedures are required depending on the type of CVT in the vehicle.

Refer to the table below as a general guideline for which procedures are needed after replacing a CVT assembly. Then follow the procedures in this TIN, referring also to the applicable Service Manual for detailed procedures on the individual vehicle.

PROCEDURE GUIDE AFTER CVT REPLACEMENT

| CVT Type | CVT Type | | Initialization Procedure for CVT Learned Value | Fluid Deterioration Level Erasing/Reset | Writing New Calibration Value to TCM | CVT Learning Procedure | Test Drive | Starting Page in this TIN |
|----------|----------|-------|--|---|--------------------------------------|------------------------|------------|---------------------------|
| | 2WD | AWD | | | | | | |
| CVT 2 | F1CJA | W1CJA | Step 1 | Step 2 | - | Step 3 | Step 4 | 2 |
| CVT 7 | F1CJB | - | | | - | | | 4 |
| CVT 8 | F1CJC | W1CJC | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 | 6 |

INITIALIZATION PROCEDURE FOR CVT LEARNED VALUES (CVT 2, CVT 7, CVT 8)

After the CVT assembly and/or the valve body assembly is replaced, their serial number and learned value must be initialized. (This procedure resets and clears all values in the TCM.)

FLUID DETERIORATION LEVEL ERASING/RESET (CVT 2, CVT 7, CVT 8)

The TCM records the deterioration level of the transmission fluid over time and usage conditions. After replacing the transmission fluid, use the MUT- III SE to reset the deterioration level that has been recorded in the TCM.

WRITING OF THE CALIBRATION VALUE TO THE TCM (CVT 8 only - F1CJC and W1CJC)

Each CVT assembly or valve body has its own unique calibrated shift points. This information must be transferred to the original or replaced TCM for proper operation and proper shift functioning of the CVT. This calibration file can be downloaded from the MDL or copied from the CD that comes with the component.

CVT LEARNING PROCEDURE (CVT 2, CVT 7, CVT 8)

After the initialization is complete, the TCM does not have any learned values. This may degrade the shifting operation quality. When the TCM, the CVT assembly, or the valve body assembly is replaced, perform the CVT learning procedure by using the scan tool and following the recommended steps.

TEST DRIVE (CVT 2, CVT 7, CVT 8)

After the necessary procedures above are completed, a test drive must be performed to verify proper operation of the CVT.

CVT TRANSMISSION IDENTIFICATION

The CVT assembly type must be identified correctly in order to apply the correct procedures after replacement. Incomplete or improper procedures will lead to poor shift performance, complaints from customers, return repairs, and possible transmission damage. The correct transmission can be identified from the information plate on the passenger or driver's side B pillar, depending on model and model year (see illustration below). For example: the transmission identified on this plate is a **W 1 C J C** which, according to the chart on the first page, is a CVT 8 AWD.



WHEN REPLACING THE CVT ASSEMBLY: CVT 2 (F1CJA / W1CJA)

Remove the CVT assembly and replace with a new CVT assembly (Refer to Service Manual for procedures).

1. INITIALIZATION PROCEDURE FOR CVT LEARNED VALUES

- A. Move the selector lever to the "P" range and turn the ignition switch to the "LOCK" (OFF) position. Then, connect the MUT-III SE scan tool to the data link connector.
- B. Turn the ignition switch to the "ON" position (engine not running), and then move the selector lever to the "R" range.
- C. Depress the accelerator pedal while depressing the brake pedal (engine not running). In the CVT system of the MUT-III SE scan tool (*System Select: ELC-AT/CVT/TC-SST*), execute the clear DTC function for the CVT ECU (even if no codes are set).
- D. After initialization procedure is completed, proceed to the Fluid Deterioration Level Erasing/Reset procedure.

NOTE: Performing initialization of the CVT learned value will also erase the diagnostic trouble code (DTC).

2. FLUID DETERIORATION LEVEL ERASING/RESET

Use the MUT-III SE scan tool to reset the oil degradation level counter in the TCM.

- A. Turn the ignition switch to the "ON" position.
- B. In the CVT System of the MUT-III SE scan tool, execute the special function "CVT oil degradation level reset (*item No.1: Clear CVT oil degradation level*)."
(*System Select: ELC-AT/CVT/TC-SST: Special Function*)
This will delete and reset the transmission fluid deterioration level.
- C. Turn the ignition switch to the "LOCK" (OFF) position.

3. CVT LEARNING PROCEDURE

Follow the steps in the table below to perform CVT learning in the TCM.

| Steps | Item | Contents |
|-------|--------------------------------------|--|
| 1 | Learning procedure for engine idling | Refer to <i>GROUP 00, General - Precautions before Service - Learning Procedures for Idling in MFI Engine</i> |
| 2 | Fluid cooling | Park the vehicle in a cooler place, stop the engine, and leave the vehicle until the fluid temperature is lowered to the ambient temperature. |
| 3 | Learning in cold engine condition | (1) Fluid temperature measurement Use scan tool (M.U.T.-III SE) to measure the fluid temperature. (Check that the fluid temperature is the same as the ambient temperature.) |
| | | (2) Line pressure and shift control learning Let the engine idle for 20 seconds in the "D" range. |
| | | (3) Direct control learning Run the vehicle at 25 to 31 mph (40 to 50 km/h) for 5 seconds in the "D" range with steady operation. |
| 4 | Learning in hot engine condition | (1) Fluid temperature adjustment ⚠ CAUTION When the CVT fluid temperature does not increase to 176° F (80° C) in cold region, raise the fluid temperature to a maximum extent. Raise the fluid temperature to 176° F (80° C). |
| | | (2) Direct control learning The same procedure as for "Learning in cold engine condition" |

4. TEST DRIVE VEHICLE

Test drive the vehicle to confirm repair.

WHEN REPLACING THE CVT ASSEMBLY: CVT 7 (F1CJB / W1CJB)

1. PERFORM THE INITIALIZATION PROCEDURE

Remove the CVT assembly and replace with a new CVT assembly (Refer to Service Manual for procedures).

- A. Move the selector lever to the "P" range and turn the ignition switch to the "LOCK" (OFF) position. Then, connect the MUT-III SE scan tool to the data link connector.
- B. Turn the ignition switch to the "ON" position, and then move the selector lever to the "R" range.
- C. Depress the accelerator pedal while depressing the brake pedal (engine not running). Use the MUT-III SE scan tool Special Function (*System Select: ELC-AT/CVT/TC-SST: Special Function*) to execute "Reset (item number 3: C/V initial & learned value)" while holding both accelerator and brake pedals down in the applied position.
- D. Set the selector lever to the "P" range.
- E. Turn the ignition switch to the "LOCK" (OFF) position, and then wait for 10 seconds.

CAUTION: Do not start the engine.

- F. Turn the ignition switch to the "ON" position, and then wait for 10 seconds.
- G. Check that "P" is displayed on the transmission range indicator on the multi-information display (MID) in the combination meter.

NOTE: "P" will disappear while the data is being read. "P" will appear in the MID when the data reading is complete.

- H. Turn the ignition switch to the "LOCK" (OFF) position and then to the "ON" position. Then use the MUT-III SE scan tool to erase the "CVT oil degradation level" (Refer to the Service Manual, section 23A).

2. FLUID DETERIORATION LEVEL ERASING/RESET

- A. Move the selector lever to the "P" range and turn the ignition switch to the "LOCK" (OFF) position. Then, connect the MUT-III SE scan tool to the data link connector.
- B. Turn the ignition switch to the "ON" position.
- C. Use the MUT-III SE scan tool Special Function to execute "CVT oil degradation level (item number 1: Clear CVT oil degradation level)".
(*System Select: ELC-AT/CVT/TC-SST: Special Function*)
- D. Turn the ignition switch to the "LOCK" (OFF) position, and then wait for 10 seconds.

3. CVT LEARNING PROCEDURE

When the transaxle control module (TCM) is replaced or when the learned value is initialized, the TCM does not have any learned value. This may degrade the shift quality. The TCM learns by repeating normal driving.

In order to make the TCM learn faster, follow the procedures in the table below.

| Steps | Item | Contents |
|-------|--|--|
| 1 | Engine idling learning | Refer to <i>GROUP 00 - General, Precautions Before Service - Engine Idling Learning Procedure</i> . |
| 2 | Transmission fluid temperature measurement | Use the scan tool (M.U.T.-III SE) to measure the transmission fluid temperature (data list item number 21). |
| 3 | Transmission fluid temperature adjustment | Start the engine and warm it up until the transmission fluid temperature reaches approximately 176°F (80°C). If the transmission fluid temperature does not rise to 176°F (80°C) in cold climates, raise the fluid temperature as much as possible. |
| 4 | Secondary pressure sensor | <ol style="list-style-type: none"> 1.Start the engine when the selector lever is in the "P" range and the vehicle is stopped. 2.Turn the ignition switch to the "LOCK" (OFF) position to stop the engine. 3.Wait for 30 seconds in the state described in Step 2. 4.Repeat above steps 1 to 3 three times to complete learning. |
| 5 | Select control learning | <p>⚠ CAUTION</p> <p>When moving the selector lever from the "N" range to the "D" range, and from the "N" range to the "R" range, hold for five seconds or more in each range.</p> <ol style="list-style-type: none"> 1.Start the engine, and move the selector lever from the "N" range to the "D" range and from the "N" range to the "R" range (two or three times each). If there is no shift shock, the learning is complete. 2.If the shift shock is large, move the selector lever from the "N" range to the "D" range and from the "N" range to the "R" range (up to 10 times each) and the learning is complete. |
| 6 | Shift control learning 1 | <ol style="list-style-type: none"> 1.Check that the "idle neutral active status (data list item number 40)" can be monitored by using the scan tool (M.U.T.-III SE). 2.Start the engine and wait for at least one minute. 3.Turn off the air conditioning. 4.While the selector lever is at the "D" range, drive the vehicle at 6.2 mph (10 km/h) or more. Then, stop the vehicle with the selector lever at the "D" range. 5.Depress the brake pedal to activate the idle neutral control, and wait for 30 seconds or more. 6.Carry out Step 4 and Step 5 again to complete learning. |
| 7 | Shift control learning 2 | <ol style="list-style-type: none"> 1.Start the engine. 2.Turn off the air conditioning. 3.While the selector lever is at the "D" range, depress the accelerator pedal by approximately 1/8^{*1} to accelerate to approximately 37 mph (60 km/h). Depress the brake pedal to decelerate and stop the vehicle. Turn the ignition switch to the "LOCK" (OFF) position to stop the engine and wait for five seconds. 4.If there is no shift shock, the learning at Step 3 is complete. If the shift shock is large, repeat Step 3 (up to five times). 5.While the selector lever is at the "D" range, depress the accelerator pedal by approximately 3/8^{*2} to accelerate to approximately 37 mph (60 km/h). Drive at a constant speed for five seconds, and depress the brake pedal to decelerate and stop the vehicle. Turn the ignition switch to the "LOCK" (OFF) position to stop the engine and wait for five seconds. 6.If there is no shift shock, the learning at Step 5 is complete. If the shift shock is large, repeat Step 5 (up to 10 times) and the learning is complete. |

NOTE: ^{*1}Reference: Data list item number 15 "Accelerator position" on scan tool (M.U.T.-III SE) measures 10 to 15 percent.

NOTE: ^{*2}Reference: Data list item number 15 "Accelerator position" on scan tool (M.U.T.-III SE) measures 25 to 50 percent.

4. TEST DRIVE VEHICLE

Test drive the vehicle to confirm repair.

WHEN REPLACING THE CVT ASSEMBLY: CVT 8 (F1CJC / W1CJC)

NOTE: Basic steps for CVT 8 are listed below. For complete detailed procedures on CVT 8 component replacement (CVT assembly, valve body, and/or TCM), refer to TSB-15-23-001.

BEFORE replacing the CVT assembly:

- Record the new CVT part number and serial number which is stamped on the new CVT assembly. This information will be used to confirm the correct calibration ID data is written to the TCM.
- Remove the old CVT assembly and replace with a new CVT assembly (Refer to Service Manual for procedures).

1. **PERFORM THE INITIALIZATION PROCEDURE**

- A. Move the transmission selector lever to the "P" range and turn the ignition switch to the "LOCK" (OFF) position. Then, connect the MUT-III SE scan tool to the data link connector.
- B. Turn the ignition switch to the "ON" position (engine not running). Depress the brake pedal and move the transmission range selector lever to the "R" range.
- C. Depress the accelerator pedal while depressing the brake pedal (engine not running). In the CVT system of the MUT-III SE scan tool, Special Function (*System Select: ELC-AT/CVT/TC-SST: Special Function*) execute "Calibration value reset (*item No.1: Calibration value reset*)" while holding both accelerator and brake pedals down in the applied position.
- D. Set the selector lever to the "P" range. Release both pedals.
- E. Turn the ignition switch to the "LOCK" (OFF) position, and then wait for ten seconds.
- F. Turn the ignition switch to the "ON" position.
- G. Make sure that the selector lever is in the "P" or "N" range and that "P" or "N" is **not** displayed in the multi-information display (MID) of the combination meter.

2. **FLUID DETERIORATION LEVEL ERASING/RESET**

Use the MUT-III SE scan tool to reset the oil degradation level counter in the TCM.

- A. Turn the ignition switch to the "ON" position.
- B. In the CVT system of the MUT-III SE scan tool (*System Select: ELC-AT/CVT/TC-SST: Special Function*), execute the special function "CVT oil degradation level reset (*item No.1: Clear CVT oil degradation level*)"
This will delete and reset the transmission fluid deterioration level. Operation complete.
- C. Turn the ignition switch to the "LOCK" (OFF) position.

3. **WRITING OF THE CALIBRATION VALUE TO THE TCM**

NOTE: This procedure is necessary for the CVT 8 ONLY.

- A. The first step is to transfer the calibration value data file (aka coding file) for the new CVT assembly to a USB memory stick and then to the MUT-III SE scan tool.
- B. Using the new CVT part number and serial number obtained at the beginning of this section ("**BEFORE** replacing the CVT assembly"), download the calibration data file either from the MDL (Mitsubishi Dealer Link), OR copy the calibration data file from the CD that was supplied with the new CVT assembly. Then save the file to a USB memory stick.

NOTE: Each calibration file is unique and cannot be interchanged with another CVT file.

- C. Insert the USB memory stick with the calibration data file into the MUT-III SE scan tool.

- D. Connect the scan tool to the data link connector of the vehicle.
- E. Turn the ignition switch to the "ON" position.
- F. In the CVT system of the MUT-III SE scan tool, Special Function (*System Select: ELC-AT/CVT/TC-SST: Special Function*), go to the "Write calibration value (Saved calibration value writing)" screen and select the same file name of the file that was transferred to the USB memory stick. This should be the same serial number from the new CVT assembly or the CD cover. Write the new CVT calibration file into the TCM of the vehicle.
- G. Make sure that the serial number on the "Saved calibration value writing" completion screen corresponds with the serial number of the new CVT assembly. Refer to the file name that was written down at the beginning of this procedure.

NOTE: If the file name does not correspond, repeat the operations from step A above.

- H. The shift range symbol ("P" or "N") should now illuminate in the combination meter.

NOTE: If the shift range symbol ("P" or "N") in the multi-information display (MID) in the combination meter does not illuminate, repeat the operations from step A above.

- I. Turn the ignition switch to the "LOCK" (OFF) position.

4. CVT LEARNING PROCEDURE

- A. Start the engine.
- B. Wait until the engine is warmed up. Then road test the vehicle for approximately one minute at 25 mph (40 km/h) or more.
- C. Immediately after the road test, verify the following conditions in the CVT:
 - No CVT-related diagnostic trouble code is set.
 - A (non-CVT-related) DTC is set, but no trouble symptoms are identified.
 - No abnormal operating concerns (e.g. abnormal noise).
 - No fluid leaks.
- D. Turn the ignition switch to the "LOCK" (OFF) position.
- E. Turn the ignition switch to the "ON" position.
- F. Teach the system a meeting point.
All of the following conditions must be satisfied for approximately 90 seconds:
 - Vehicle is stationary.
 - Engine speed: 500 - 850 rpm (idling)
 - Brake pedal: Keep depressed entire time
 - Accelerator pedal: Released
 - Selector lever in "D" range
 - Transmission fluid temperature: 104 - 212 °F (40 - 100 °C)
- G. Return transmission selector lever to the "P" range.
- H. Turn the ignition switch to the "LOCK" (OFF) position.

5. TEST DRIVE VEHICLE

Test drive the vehicle to confirm repair.