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ADT330267, ADT330296

to fit:

Toyota Auris 1.4, Yaris 1.4 2005>2012

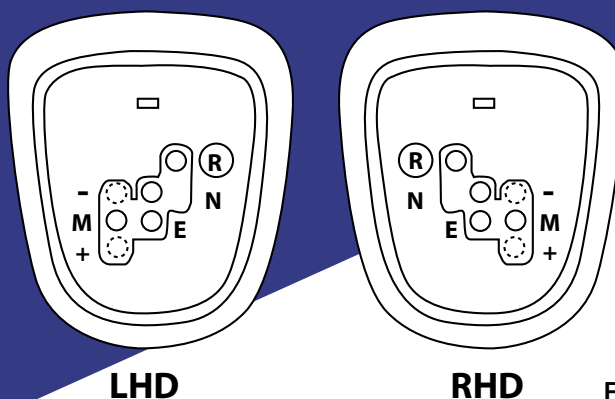


Fig. 1.

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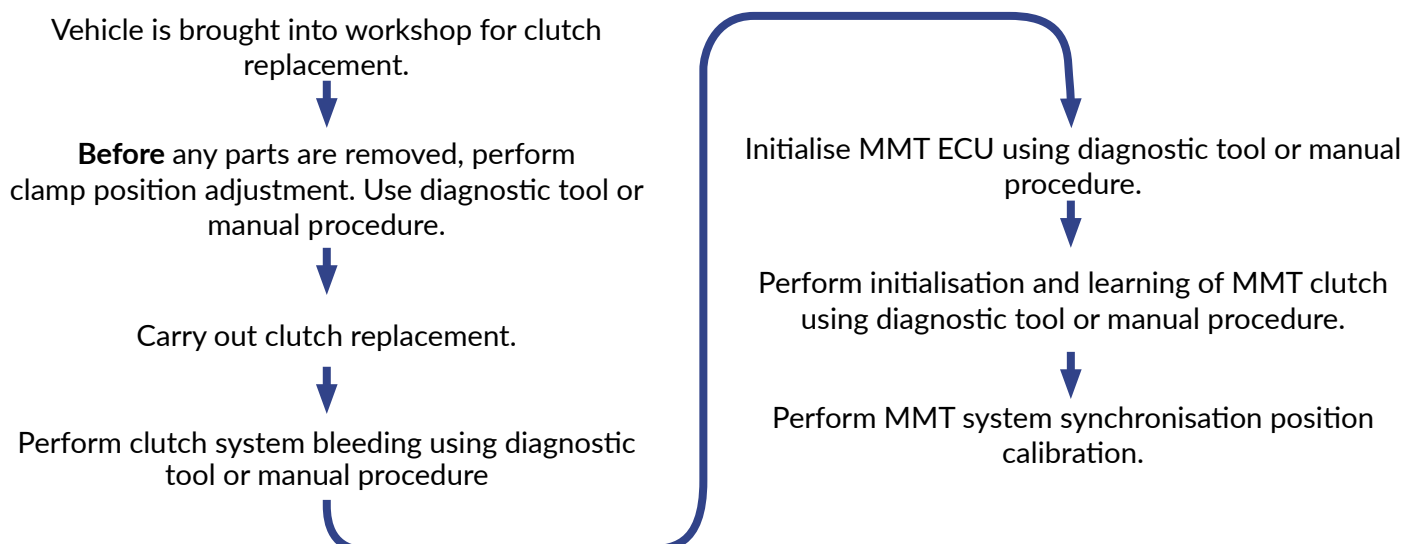
Toyota Auris, Yaris – MMT Clutch Replacement Guide (6 speed)

Multi-Mode Transmission, or MMT for short, is a type of sequential manual gearbox offered by Toyota. Instead of a conventional automatic transmission which uses hydraulics and a torque converter, the MMT has a conventional friction clutch and mechanical gear selector mechanism which is controlled electronically. The most obvious way to identify whether a car is fitted with MMT, is the gear selector will have no transmission locking Park (P) position, as in Fig. 1.

IMPORTANT: Before removing an MMT gearbox for a clutch replacement you must first set the clutch actuator to the 'clutch clamp' position. Failure to carry out this operation is likely to cause the clutch actuator to be in the incorrect position on reassembly of the gearbox. This could result in a multitude of problems such as clutch slippage, harsh and delayed engagement, or no clutch operation at all which would prevent the selecting of any gears and possible damage to the clutch actuator.

A suitable diagnostic tool can facilitate this step, although it is possible to complete the procedure manually without a diagnostic tool by following the process outlined in this bulletin.

MMT Parts Removal and Installation Procedure



Clutch clamp position adjustment manual procedure (without diagnostic tool)

1. Ensure the ignition is switched off, the gear selector is in the 'N' position and that the parking brake is applied.
2. Use a jumper wire to connect terminals 4 and 13 of the 16pin OBD diagnostic socket as shown in fig. 2.
3. With your foot OFF of the brake pedal, turn the ignition switch to the ON position.
4. Pump the brake pedal (on>off) 7 times or more within a 3 second period.

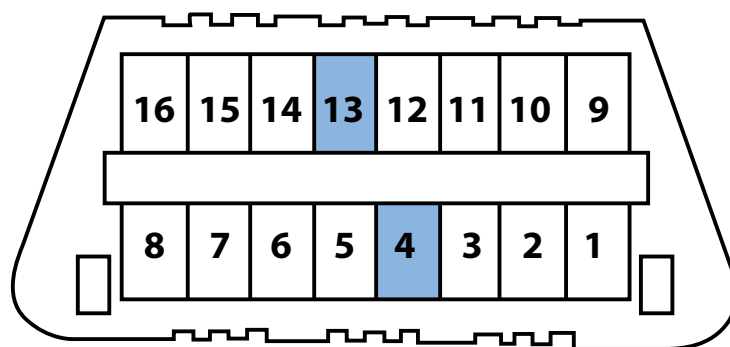


Fig. 2.

5. A buzzer should now sound twice with an interval of 0.25 seconds.
6. Depress the brake pedal and hold it down.
7. Keeping the brake pedal held down, now shift the gear lever in the following sequence:

1	2	3	4	5	6	7	8	9	10	11	12	13
N	E	M	+	M	+	M	+	M	+	M	E	N

8. Release the brake pedal.
9. Press and release the brake pedal one time. A buzzer should now sound once. **Note:** If the buzzer does not sound, turn the ignition OFF and wait at least 15 seconds before starting the process from the beginning again.
10. Pump the brake pedal (on>off) 3 times or more within a 2 second period. A buzzer should now sound twice with an interval of 0.25 seconds.
11. Depress the brake pedal and hold it down whilst shifting the gear lever into the '-' position.
12. Release the brake pedal.
13. Turn the ignition OFF and wait at least 10 seconds.
14. Disconnect the jumper wire from the 16 pin OBD diagnostic socket.

The clutch is now in its clamped position and you can proceed with removing the transmission and replacing the clutch assembly.

Note: If the clutch actuator cannot be set to the 'clamp position' due to a malfunction (sticking, etc.), then the clutch fluid pressure should be released from the bleeder plug to prevent the fluid from spraying.

IMPORTANT: After you have replaced the clutch you will need to bleed the clutch system, initialise the MMT ECU and Clutch and perform the MMT system calibration.

Clutch System Bleeding

After replacement of the clutch assembly including the concentric slave cylinder, it will be necessary to bleed trapped air from the clutch hydraulic system. Before you start, remove the clutch master cylinder reservoir filler cap and fill the reservoir with brake/clutch fluid as necessary.

1. Ensure the ignition is switched off and the gear selector is in the 'N' position.
2. Re-connect the jumper wire as shown previously in Figure 2.
3. Turn the ignition switch to ON.
4. Check that all electrical systems such as the air conditioning system, audio system and lighting system are off.
5. Pump the brake pedal (on>off) 7 or more times within a 3 second period.
6. Confirm that the buzzer beeps twice.
7. Depress the brake pedal and hold it down.
8. With the brake pedal held, move the shift lever to the 'M' position.
9. Release the brake pedal.
10. Move the shift lever through the following sequence and then depress the brake pedal.

1	2	3	4	5	6	7	8
+	M	+	M	+	M	-	N

11. Confirm that the buzzer beeps 6 times.
12. Pump the brake pedal (on>off) 3 or more times within 2 seconds.
13. Confirm that the buzzer beeps twice.
14. Remove the bleeder plug cap, connect a clear tube to the bleeder plug and loosen the bleeder plug.
15. Move the shift lever to '-' then back to 'M' and wait for 10 seconds or more.
16. Move the shift lever to '+' then back to 'M' and wait for 0.5 seconds or more.
17. If the fluid runs free of air bubbles, tighten the bleeder plug.
Note: If no fluid comes out, or if air bubbles are still present in the fluid, perform the following steps until the fluid coming out of the bleeder plug runs free of air bubbles.
18. Move the shift lever to '-' then back to 'M' and wait for 0.5 seconds or more. Then, move the shift lever to '+' back to 'M' and wait for 0.5 seconds. Then tighten the bleeder plug.
19. Move the shift lever to '-' then back to 'M' and wait for 0.5 seconds or more.
20. Move the shift lever to '+' then back to 'M' and wait for 0.5 seconds or more then loosen the bleeder plug. If the fluid coming out of the bleeder plug now runs free of air bubbles then tighten the bleeder plug.
Note: If air bubbles are still present in the fluid that comes out of the bleeder plug, repeat steps 18 through 20 again until the fluid runs free of air bubbles.
21. Install the bleeder plug cap.
22. Move the shift lever to '-' then back to 'M' and wait for 0.5 seconds or more.
23. Move the shift lever to 'M' then to '-' then back to 'M' and wait for 0.5 seconds or more. Then, move the shift lever to '+' then back to 'M' and wait for 0.5 seconds. Repeat this step at least 10 times.
24. Move the shift lever to 'N'. Then turn the ignition switch off.
25. Wait for 20 seconds or more.

Clutch system bleeding is Complete.

Disconnect the jumper wire from 16 pin OBD diagnostic socket.

After completing the clutch system bleeding, inspect for leaks, top up the clutch master cylinder reservoir and refit the filler cap.

Initialisation of the MMT ECU

(All learned and calibrated values and DTC's are cleared)

1. Ensure the ignition is switched off and the gear selector is in the 'N' position.
2. Re-connect the jumper wire as shown previously in figure 2.
3. Wait at least 10 seconds and then turn the ignition to the ON position.
4. Pump the brake pedal (on>off) at least 7 times within a 3 second period.
5. A buzzer should now sound twice with an interval of 0.25 seconds.

Now you are ready to initialise the ECU...

6. Depress the brake pedal and hold it down.
7. Keeping the brake pedal held down, now shift the gear lever in the following sequence:

1	2	3	4	5	6	7	8	9	10	11	12
N	E	M	-	M	-	M	-	M	-	E	N

8. Release the brake pedal.
9. Press and release the brake pedal one time. A buzzer should sound twice with an interval of 0.5 seconds.
Note: If the buzzer does not sound, turn the ignition OFF and wait at least 15 seconds before restarting the process from the beginning again.
10. Pump the brake pedal (on>off) 3 times or more within a 2 second period. A buzzer should now sound twice with an interval of 0.25 seconds when initialising the ECU.
11. Turn the ignition switch off and wait at least 10 seconds.
12. Disconnect the jumper wire from 16 pin OBD diagnostic socket.

Initialisation of the MMT ECU is complete.

Initialisation of the clutch

1. Ensure the ignition is switched off and the gear selector is in the 'N' position.
2. Re-connect the jumper wire as shown previously in figure 2.
3. Wait at least 10 seconds and then turn the ignition to the ON position.
4. Pump the brake pedal (on>off) at least 7 times within a 3 second period. A buzzer should sound twice with an interval of 0.25 seconds.

Now you are ready to initialise the clutch...

5. Depress the brake pedal and hold it down.
6. Keeping the brake pedal held down, now shift the gear lever in the following sequence:

1	2	3	4	5	6	7	8	9	10	11	12
N	E	M	+	M	-	M	+	M	-	E	N

7. Release the brake pedal.
8. Press and release the brake pedal one time. A buzzer should now sound 3 times to confirm initialisation of the transmission. **Note:** If the buzzer does not sound, turn the ignition OFF and wait at least 15 seconds before restarting the process.
9. Pump the brake pedal (on>off) 3 times or more within a 2 second period. A buzzer should now sound twice with an interval of 0.25 seconds.
10. Turn the ignition switch to OFF and wait at least 10 seconds.
11. Disconnect the jumper wire from 16 pin OBD diagnostic socket.

Initialisation of the MMT clutch is complete.





MMT system learning

Performing this procedure will ensure that the initialised clutch position and/or gear position is stored.

1. Ensure the ignition is switched off and the gear selector is in the 'N' position.
2. Turn the ignition to the ON position and wait at least 50 seconds. You will hear the gear shift and selector actuator selecting gears.
3. Turn the ignition to the OFF position and wait at least 15 seconds.
4. Ensuring that the Shift lever is in the 'N' position, depress and hold down the brake pedal, turn the ignition on and start the engine. The shift indicator on the instrument panel should blink when the engine is started.
5. Wait at least 10 seconds, checking that the shift 'N' position indicator has stopped blinking and is on continuously.

The MMT system learning is complete.

MMT system synchronisation and position calibration

The vehicle must now be road tested to allow the transmission to learn gear position and synchronisation.

Drive the vehicle in the manual mode (gear position M) and move through all the gears leaving at least 2 seconds between changes.

Gear Change	Gear Position	Vehicle Speed
Up-shift	1st →> 2nd	Between 16.8-21.7 mph (27-35 km/h)
	2nd →> 3rd	Between 31.1-41.0 mph (50-66 km/h)
	3rd →> 4th	Between 45.4-59.7 mph (73-96 km/h)
	4th >→ 5th	Between 60.9-80.8 mph (98-130 km/h)
	5th >→ 6th	Between 60.9-110.0 mph (98-177 km/h)
Down-shift	2nd →> 1st	Between 16.8-21.7 mph (27-35 km/h)

If after the synchronisation process the gear changes jolt or are not smooth, then perform the position calibration again.

Please always abide by local speed limits.

For more technical information please visit: partsfinder.bilsteingroup.com