

8AT Transmission

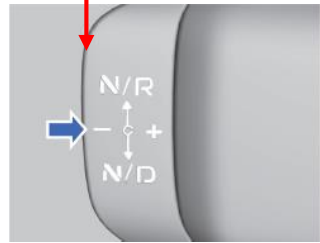
Contents

▶ **Mechanical system**

Electronic control system

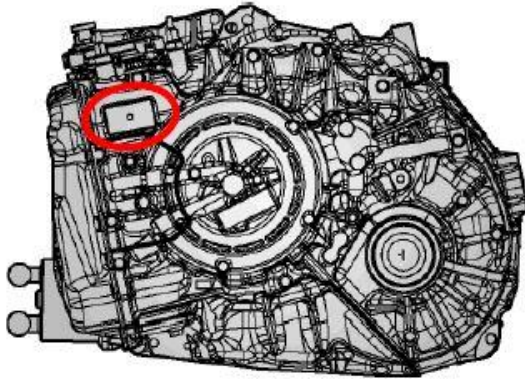
After-sale work

Mechanical system

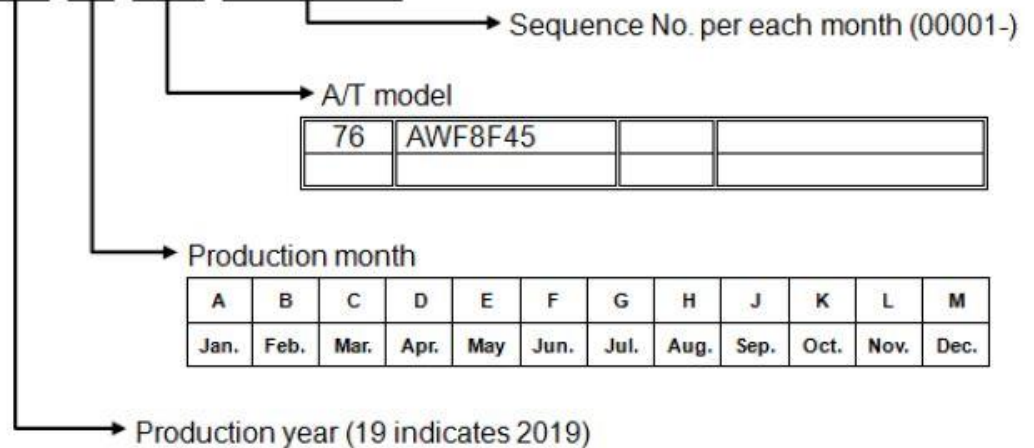


The AWF8F45 is a compact, lightweight, next-generation electronically controlled FF 8-speed automatic transaxle that employs a Ravigneaux-type planetary gear.

Mechanical system

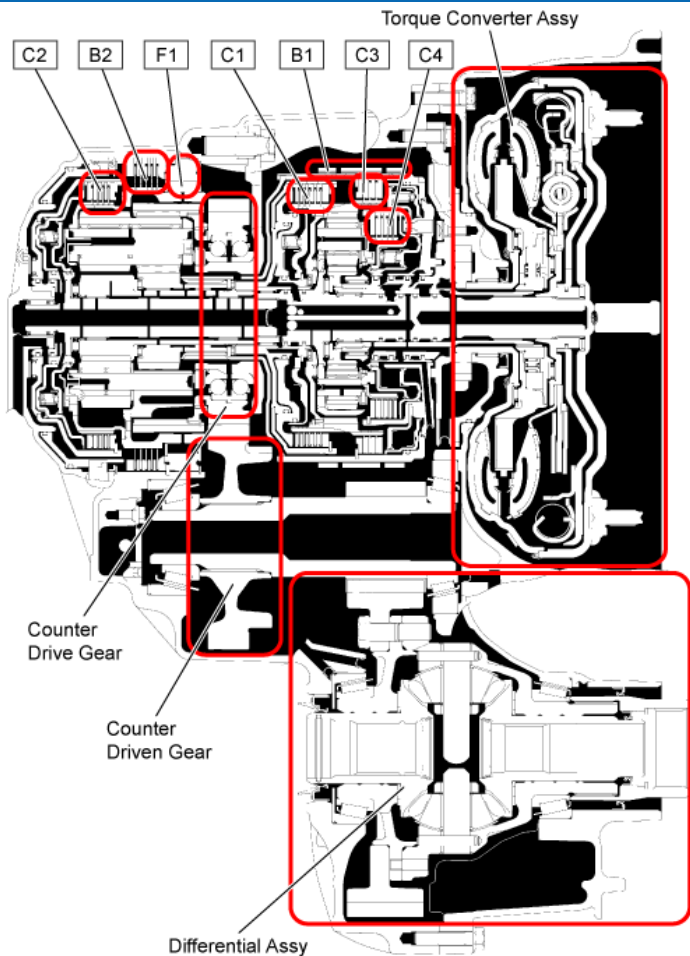


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Request for each dealers: Please inform "serial No." on the occurrence of claims, this information is essential.

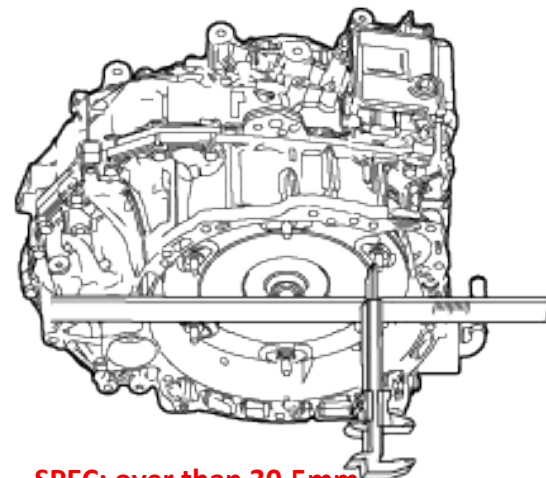
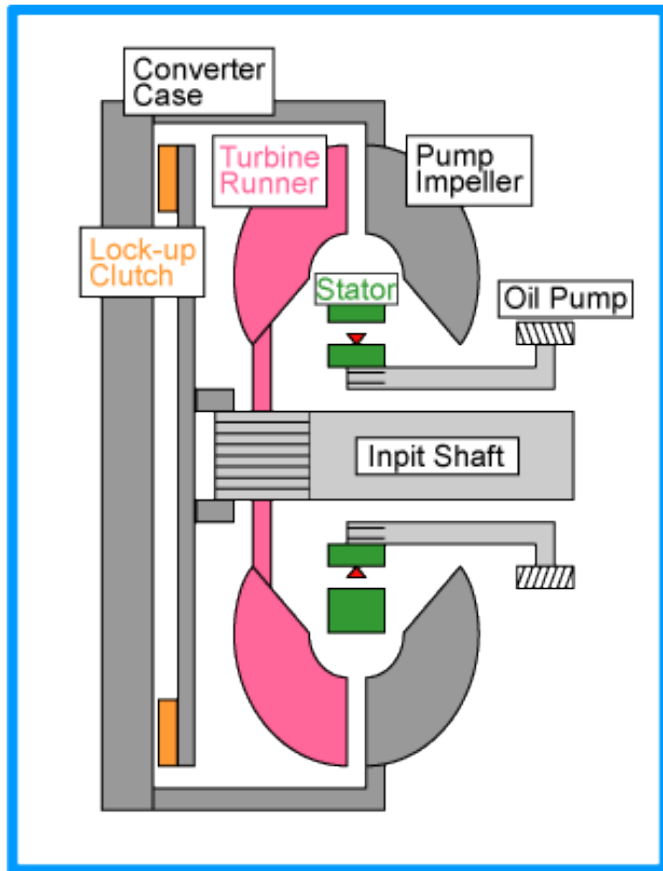
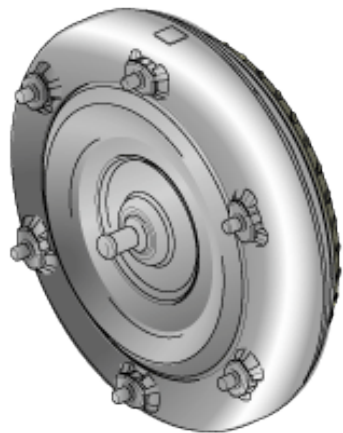
Mechanical system



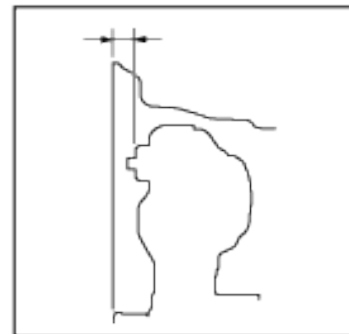
TYPE of A/T		AWF8F45	
Vehicle		CS11++	
A/T with TCU part No. (AW Part No.)		8889068955 (30570-TGB374)	
Engine model		B4204MP	
Stall revolution (r/min)		2689 ± 150 rpm	
Gear ratio	1st	5.250	
	2nd	3.029	
	3rd	1.950	
	4th	1.457	
	5th	1.221	
	6th	1.000	
	7th	0.809	
	8th	0.673	
	Reverse	4.015	
	Counter	0.942	
Differential	3.533		
Clutch, Brake, One-way clutch	Clutch	C1	1 flange, 5 discs, 5 plates
		C2	1 flange, 4 discs, 4 plates
		C3	1 flange, 3 discs, 3 plates
		C4	1 flange, 4 discs, 4 plates
	Brake	B1	1 Band
B2		2 flange, 6 discs, 5 plates	
One-way	F1	Roller type	
Solenoid	Shift solenoid	2 Solenoids [S1, S2]	
	Linear solenoid	7 Solenoids [SL1, SL2, SL3, SL4, SL5, SLT, SLU]	
	Electro magnetic oil pump	1 Solenoid [EMOP]	
ATF	AW		
Line pressure (kPa)	IDLE	"D"	350 - 520



Torque Converter



SPEC: over than 30.5mm



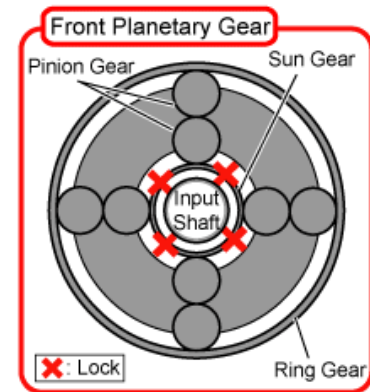
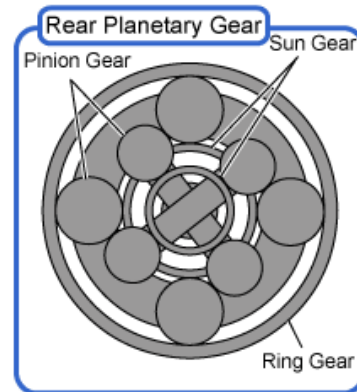
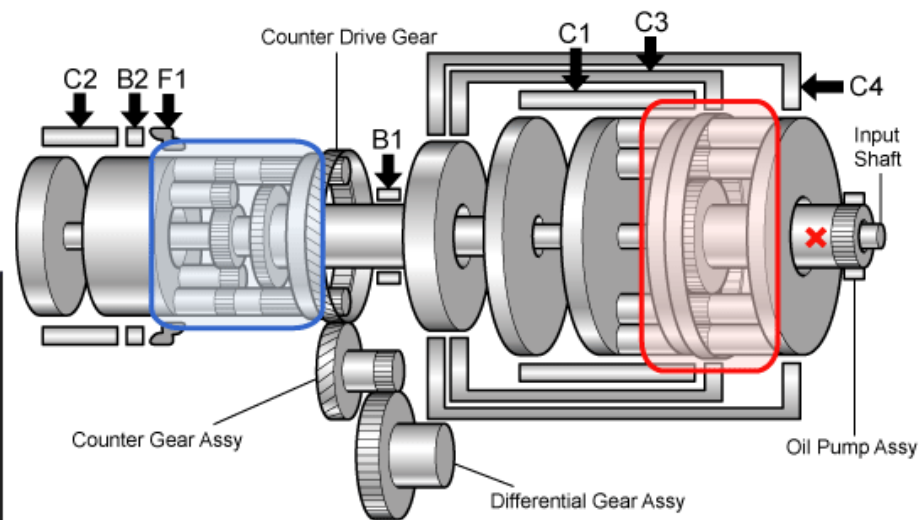
Mechanical system



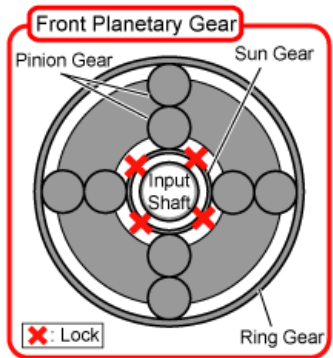
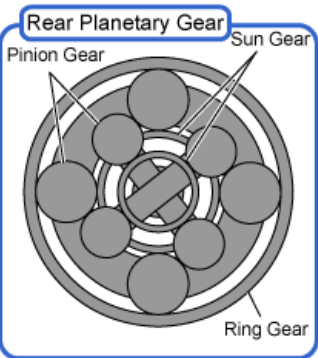
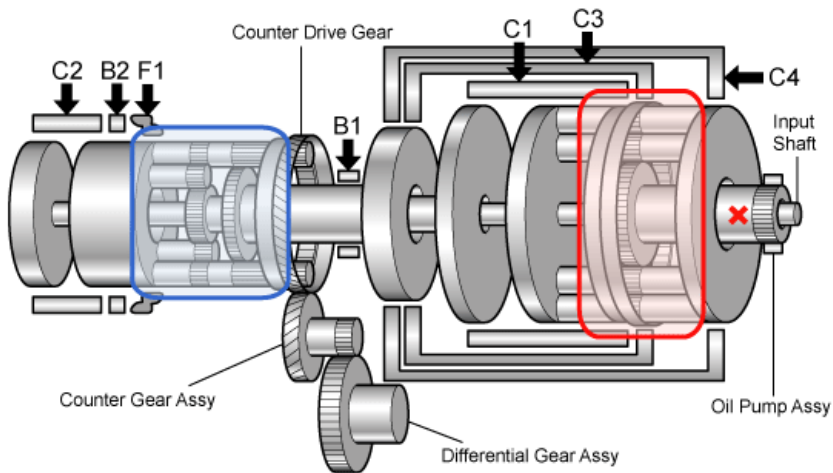
Ravigneaux-type planetary gear

List of operating components

Clutch / Brake	Operation	
C1	C1 Clutch	Connects front planetary ring gear to rear planetary rear sun gear
C2	C2 Clutch	Connects intermediate shaft to rear planetary carrier
C3	C3 Clutch	Connects front planetary ring gear to rear planetary middle sun gear
C4	C4 Clutch	Connects front planetary carrier to rear planetary middle sun gear
B1	B1 Brake	Locks rear planetary middle sun gear
B2	B2 Brake	Locks rear planetary carrier
F1	One-way Clutch	Locks counterclockwise rotation of rear planetary carrier



Mechanical system



(b) Operation of components

Full output, fully engaged	○
Zero output, fully disengaged	-
Output control engaged	△

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
"P"	-	-	△	-	-	○	-	-	-	-	-	-	△	-
REV	-	-	○	-	-	-	-	-	-	○	-	-	○	-
"R"	Inhibit	-	-	-	-	-	○	-	-	-	-	-	-	-
N⇌R	-	-	△	-	-	-	-	-	-	○	-	-	○	-
"N"	V≤5	-	△	-	-	○	-	-	-	-	-	-	△	-
V>5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N control	△	-	△	-	△	○	-	△	-	-	-	△	△	○
1st (V≤5)	○	-	△	-	-	○	-	○	-	-	-	-	△	○
1st	○	-	-	-	-	○	-	○	-	-	-	-	-	○
2nd	○	-	-	-	○	-	○	○	-	-	-	○	-	-
2nd (V≤5)	○	-	△	-	○	○	-	○	-	-	-	○	△	-
"D"	3rd	○	-	○	-	-	○	○	-	○	-	-	-	-
4th	○	-	-	○	-	-	-	○	-	-	○	-	-	-
5th	○	○	-	-	-	-	-	○	○	-	-	-	-	-
6th	-	○	-	○	-	-	-	-	○	-	○	-	-	-
7th	-	○	○	-	-	-	-	-	○	○	-	-	-	-
8th	-	○	-	-	○	-	-	-	○	-	-	○	-	-
"M"	1st E/G B	○	-	○	-	○	-	○	-	-	-	-	○	○

Lock-up operation exists: 1st to 8th gears

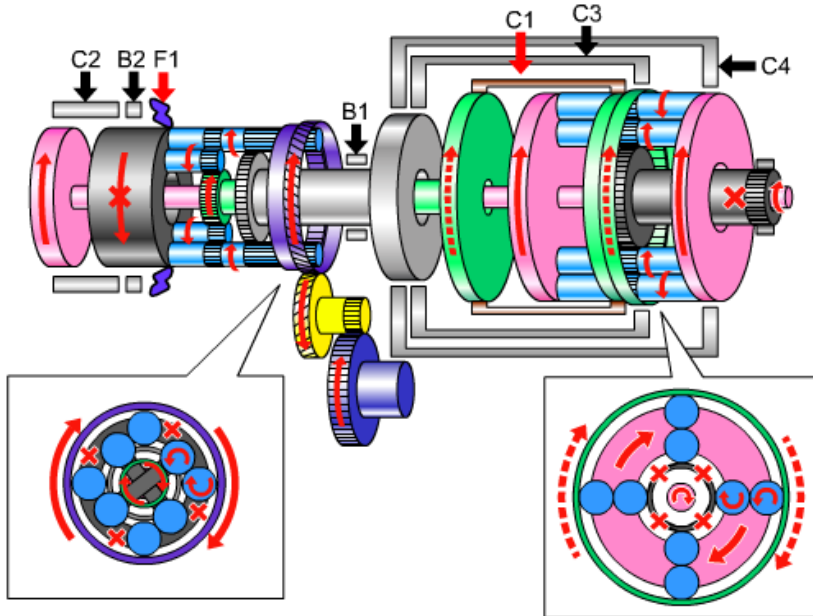


(c) Drive - 1st gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 1st	○	-	-	-	-	○	-	○	-	-	-	-	-	○

Power transmission pathway

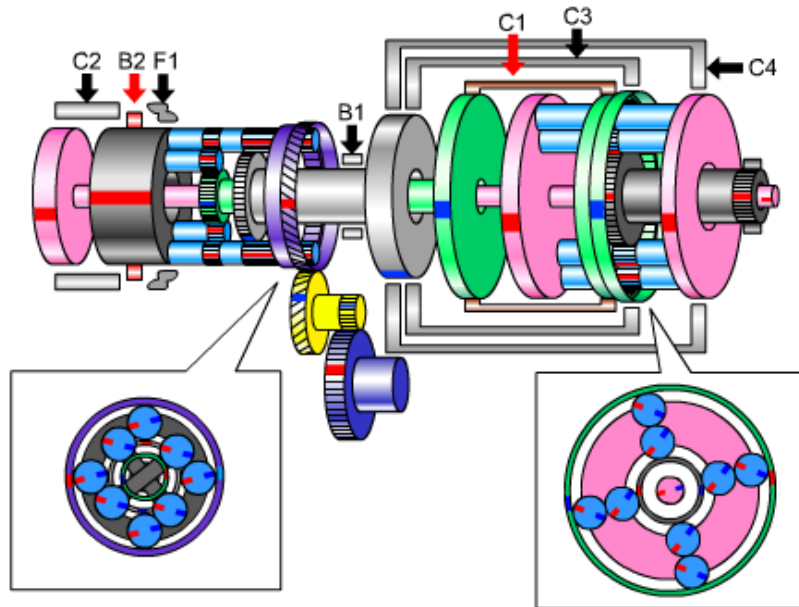
Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C1 clutch—rear planetary rear sun gear—rear planetary short pinion gear—rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.





(d) 1st gear - Engine brake

Shift position		Solenoid						Clutch				Brake		One-way clutch	
		SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
		N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"M"	1st E/G B	○	-	○	-	-	○	-	○	-	-	-	-	○	○



Power transmission pathway

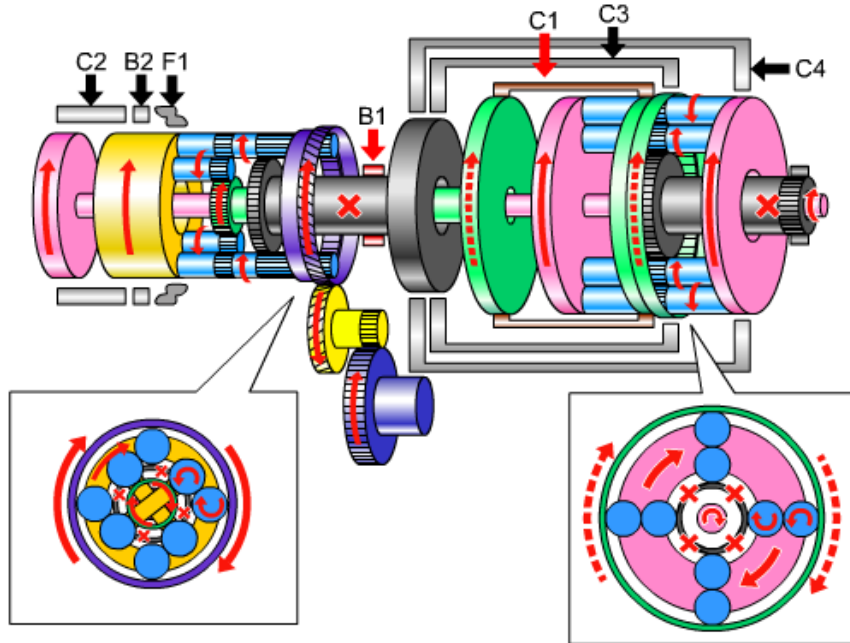
When the engine brake is activated, the drive force is transmitted from the tires and the rear planetary carrier- whose counterclockwise rotation is prevented by F1- attempts to turn clockwise.

Therefore, B2 turn ON, locking the rear planetary carrier, and transmits the drive force from the to the engine.



(e) Drive - 2nd gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 2nd	○	-	-	-	○	-	○	○	-	-	-	○	-	-



Power transmission pathway

Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C1 clutch—rear planetary rear sun gear—B1 brake—rear planetary short pinion gear—rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.

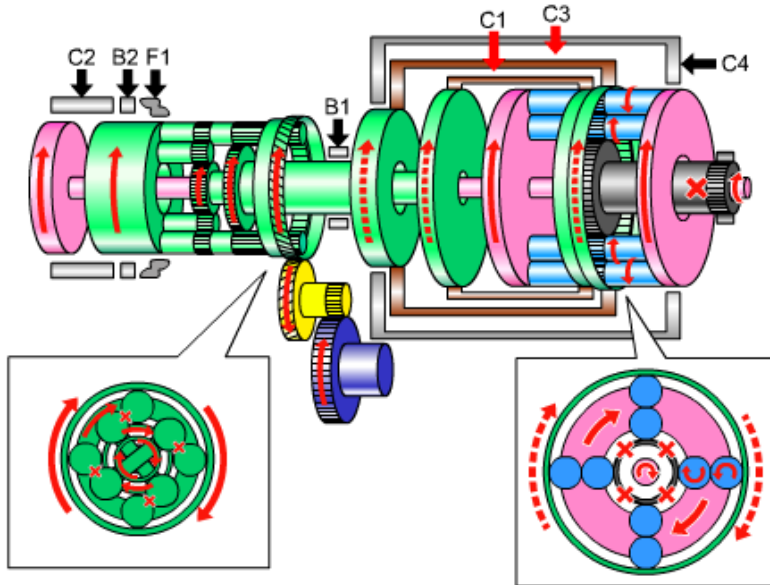


(f) Drive - 3rd gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D"	3rd	○	-	○	-	-	-	○	-	○	-	-	-	-

Power transmission pathway

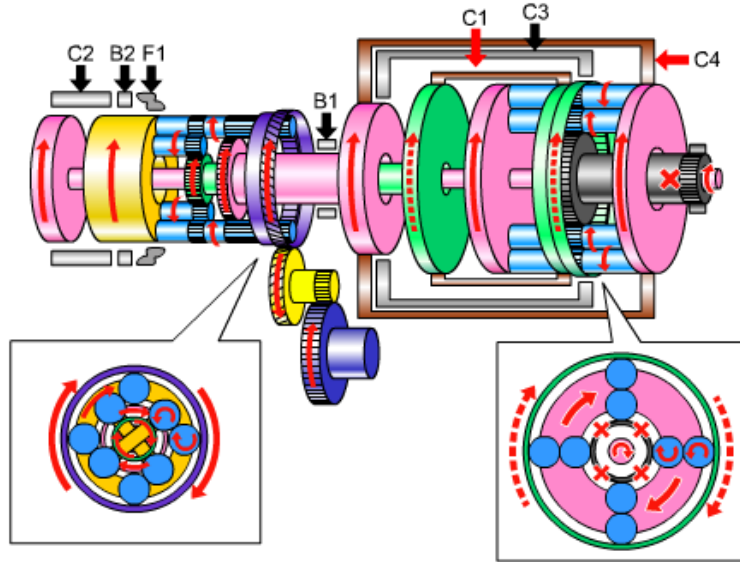
Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C1 clutch—C3 clutch—rear planetary gear assy -rear —rear planetary ring gear—counter drive gear—differential ring gear.





(g) Drive - 4th gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 4th	○	-	-	○	-	-	-	○	-	-	○	-	-	-



Power transmission pathway

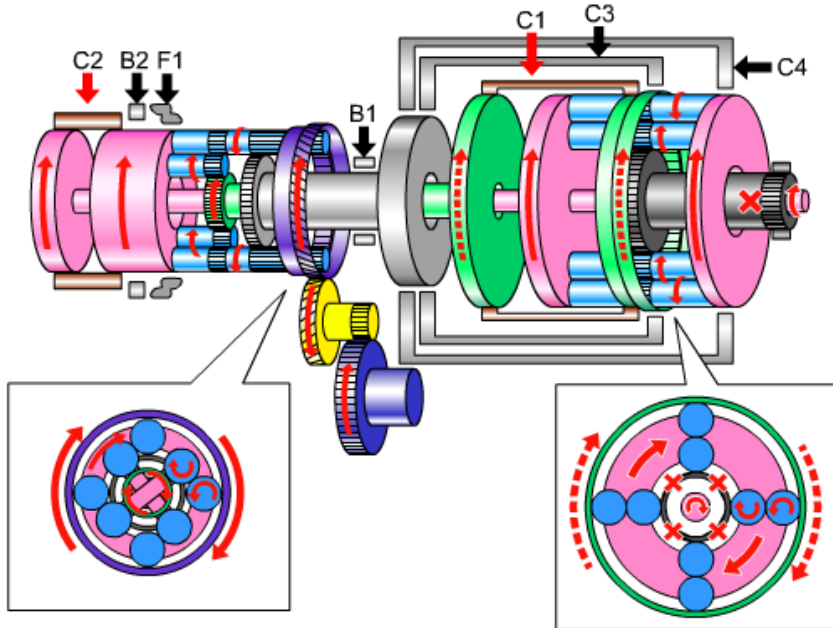
Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C4 clutch—rear planetary middle sun gear—C1 clutch—rear planetary rear sun gear—rear planetary short pinion gear—rear planetary long pinion—rear planetary ring gear—counter drive gear—differential ring gear.





(h) Drive - 5th gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 5th	○	○	-	-	-	-	-	○	○	-	-	-	-	-



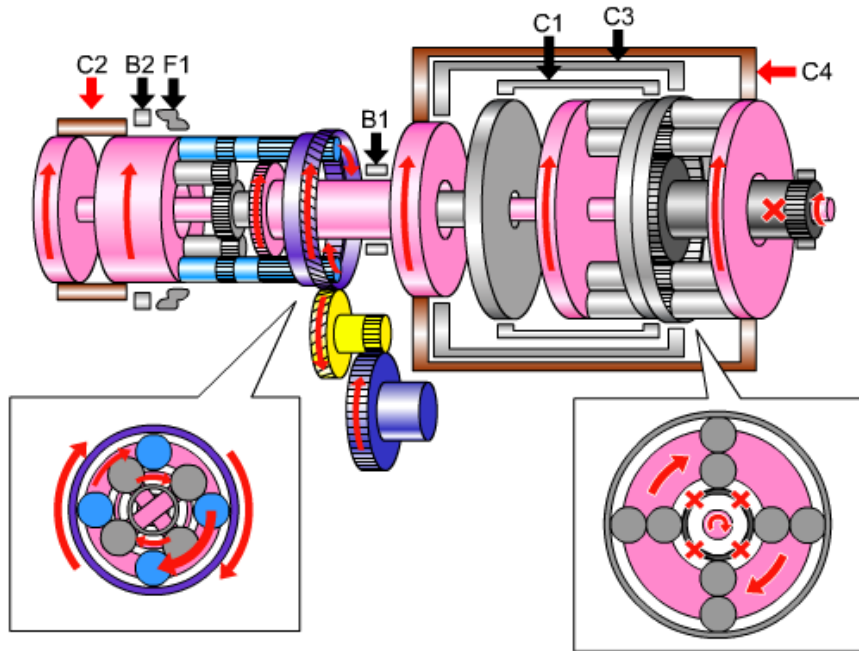
Power transmission pathway

Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C1 clutch—rear planetary rear sun gear—intermediate shaft—C2 clutch—rear planetary carrier—rear planetary short pinion gear—rear planetary long pinion—rear planetary ring gear—counter drive gear—differential ring gear.



(i) Drive - 6th gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 6th	-	○	-	○	-	-	-	-	○	-	○	-	-	-



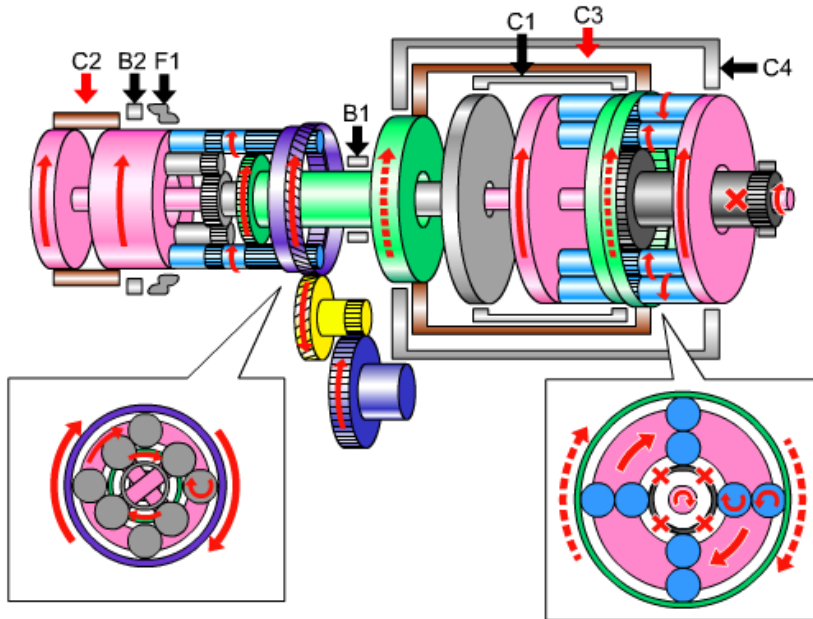
Power transmission pathway

Input shaft—front planetary carrier—C4 clutch—rear planetary—intermediate shaft—C2 clutch— rear planetary carrier—rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.



(j) Drive - 7th gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 7th	-	○	○	-	-	-	-	-	○	○	-	-	-	-



Power transmission pathway

Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—C3 clutch—rear planetary middle sun gear—intermediate shaft—C2 clutch— rear planetary carrier—rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.

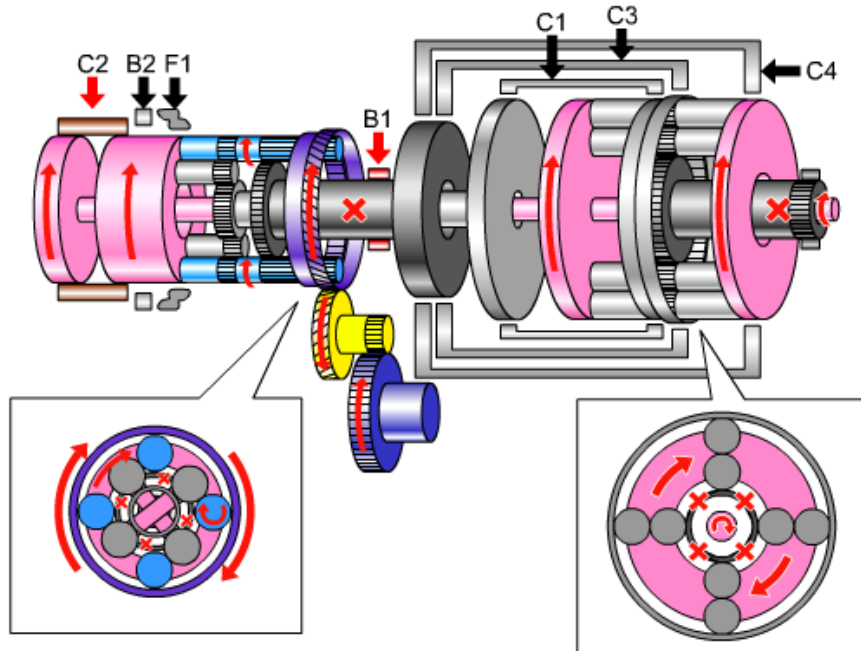


(k) Drive - 8th gear

Shift position	Solenoid							Clutch				Brake		One-way clutch
	SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
	N/C	N/C	N/C	N/C	N/C	N/C	N/C							
"D" 8th	-	○	-	-	○	-	-	-	○	-	-	○	-	-

Power transmission pathway

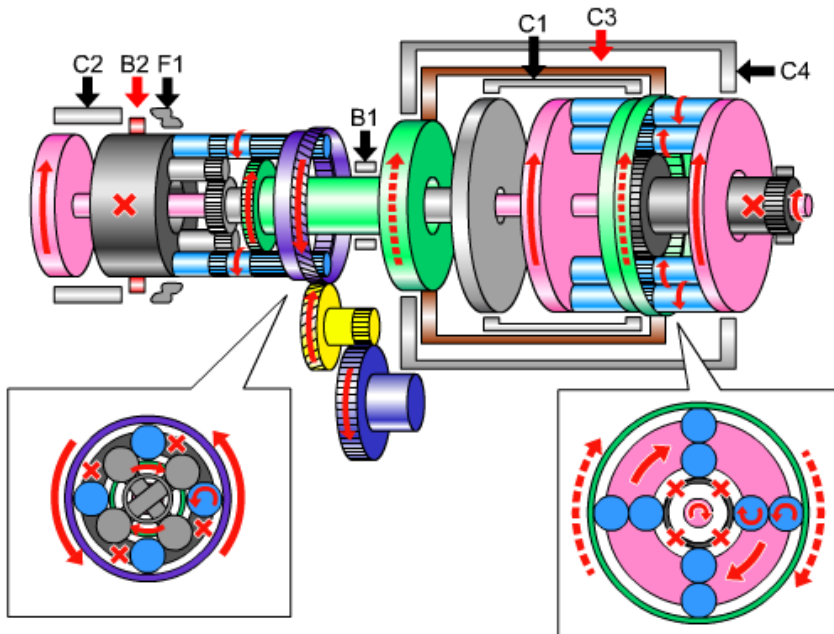
Input shaft—intermediate shaft-B1 brake-C2 - rear planetary carrier-rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.





(I) Reverse gear

Shift position		Solenoid						Clutch				Brake		One-way clutch	
		SL1	SL2	SL3	SL4	SL5	S1	S2	C1	C2	C3	C4	B1	B2	F1
		N/C	N/C	N/C	N/C	N/C	N/C	N/C	C1	C2	C3	C4	B1	B2	F1
"R"	REV	-	-	○	-	-	-	-	-	○	-	-	-	○	-
	Inhibit	-	-	-	-	-	-	○	-	-	-	-	-	-	-



Power transmission pathway

Input shaft—front planetary carrier—front planetary outer pinion gear—front planetary ring gear—front planetary pinion gear—front planetary carrier—C3 clutch—rear planetary middle sun gear—B2 brake—rear planetary long pinion gear—rear planetary ring gear—counter drive gear—differential ring gear.

Contents

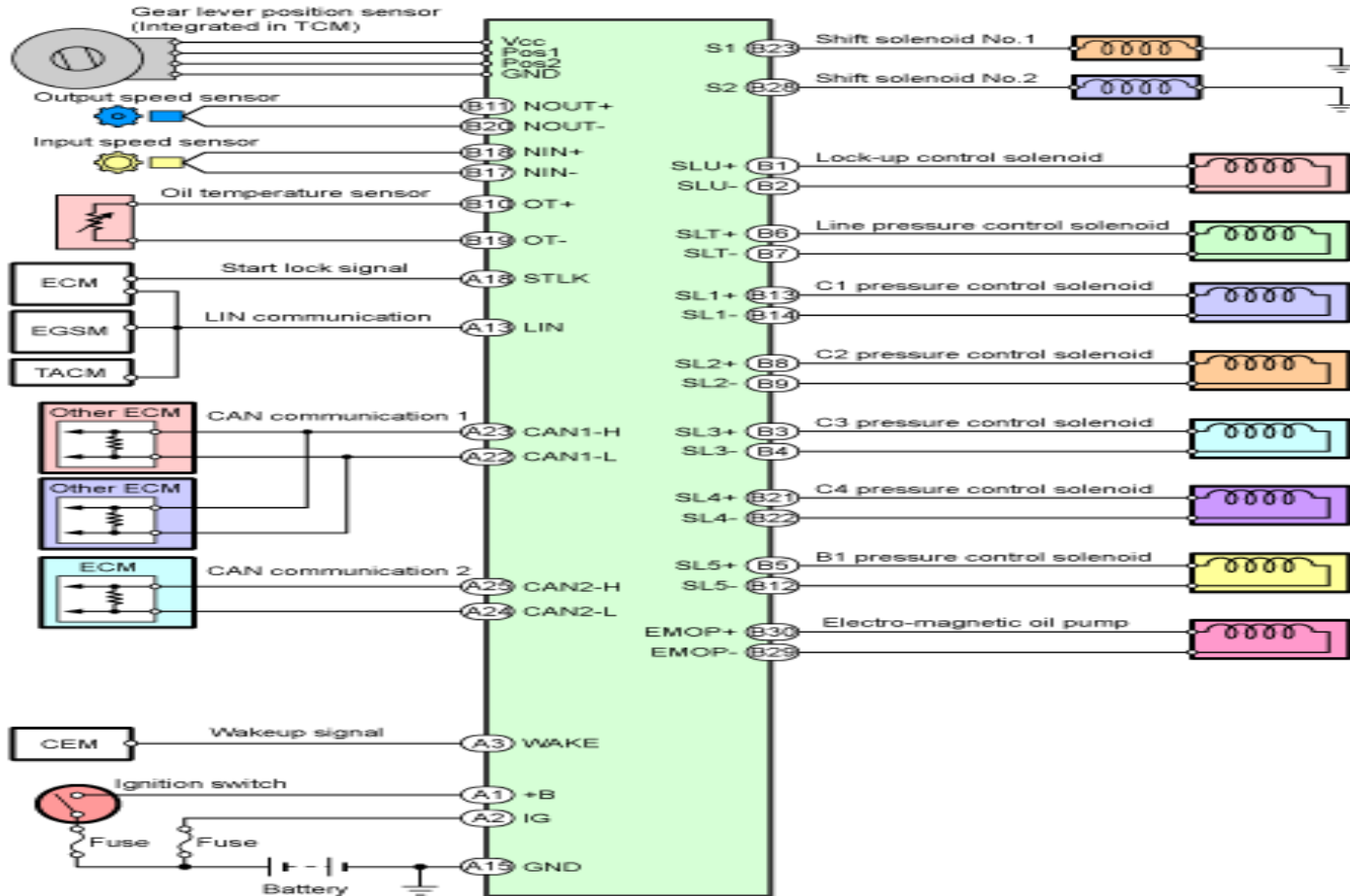
Mechanical system

▶ **Electronic control system**

After-sale work



Transmission control module (TCM)





4. TCM Control Function

(a) Automatic gear shift control

In automatic gear shift control, based on each gear shift pattern, S1 and S2 turn on or off and SL1, SL2, SL3, SL4 and SL5 are operated linearly according to information that includes vehicle speed, Throttle valve opening degree, and brake signals.

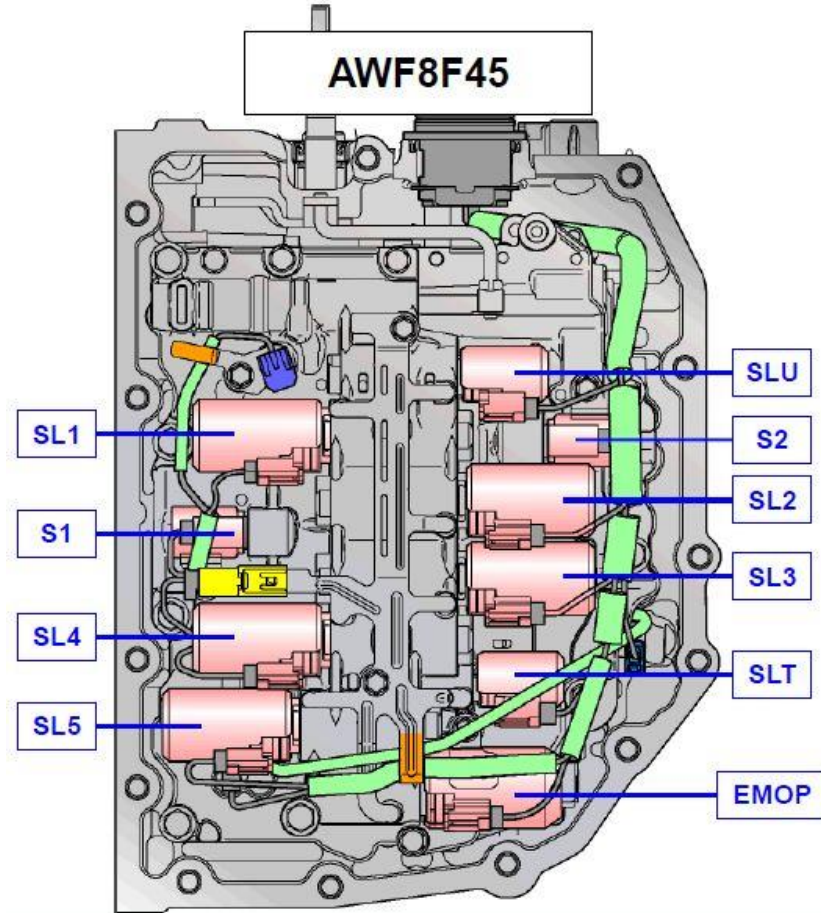
Gear and solenoid operation

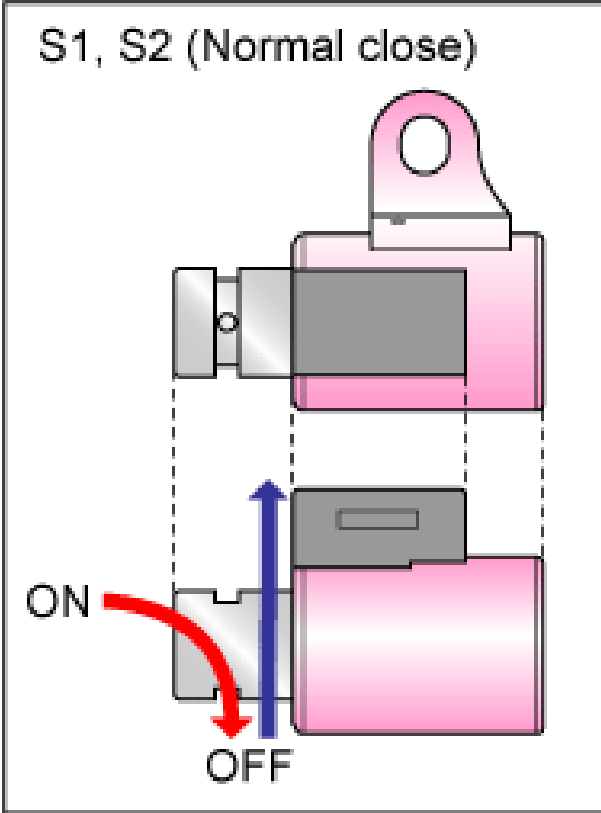
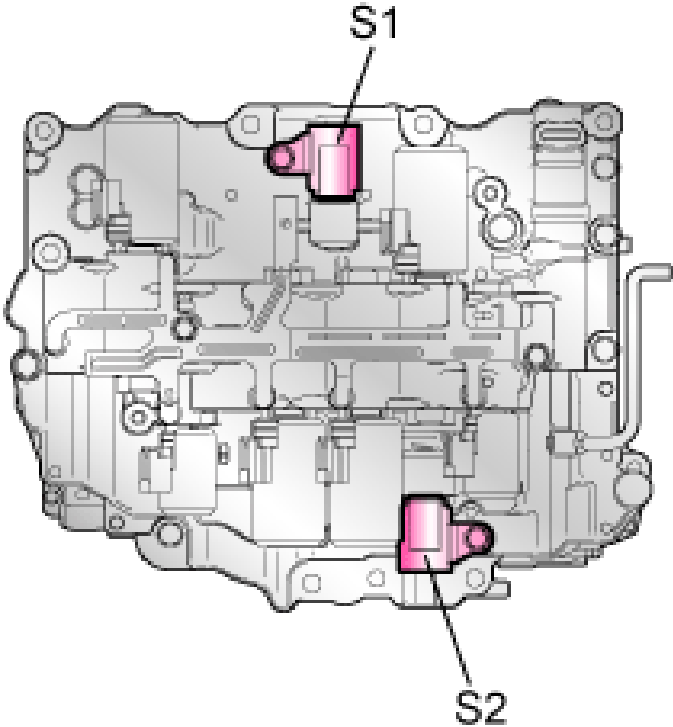
Gear	SL1 Normal close	SL2 Normal close	SL3 Normal close	SL4 Normal close	SL5 Normal close	S1 Normal close	S2 Normal close
P	-	-	△	-	-	○	-
R	REV	-	○	-	-	-	-
	Inhibit	-	-	-	-	-	○
	N⇌R	-	-	△	-	-	-
N	-	-	△	-	-	○	-
1st	○	-	-	-	-	○	-
2nd	○	-	-	-	○	-	○
3rd	○	-	○	-	-	-	○
4th	○	-	-	○	-	-	-
5th	○	○	-	-	-	-	-
6th	-	○	-	○	-	-	-
7th	-	○	○	-	-	-	-
8th	-	○	-	-	○	-	-
1st E/G brake	○	-	○	-	-	○	-

○ : On (current on)

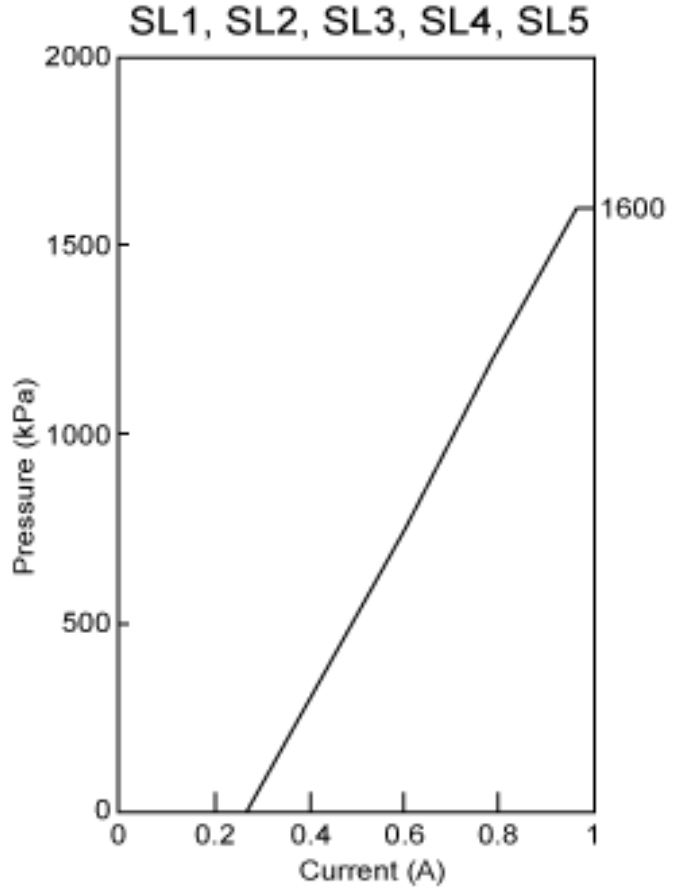
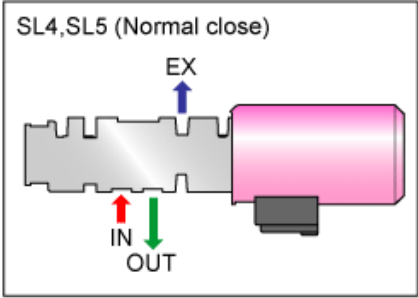
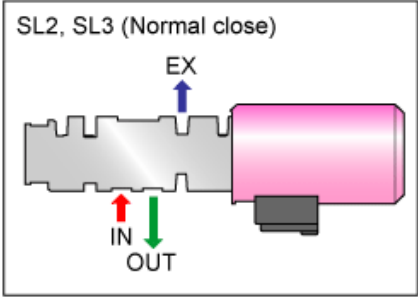
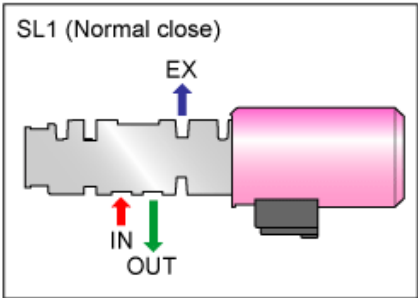
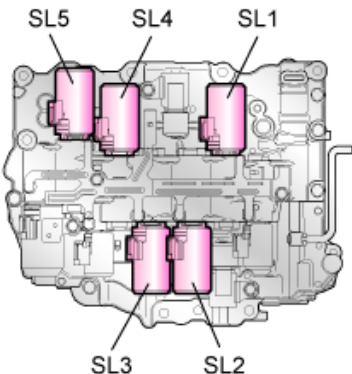
△ : Controlled

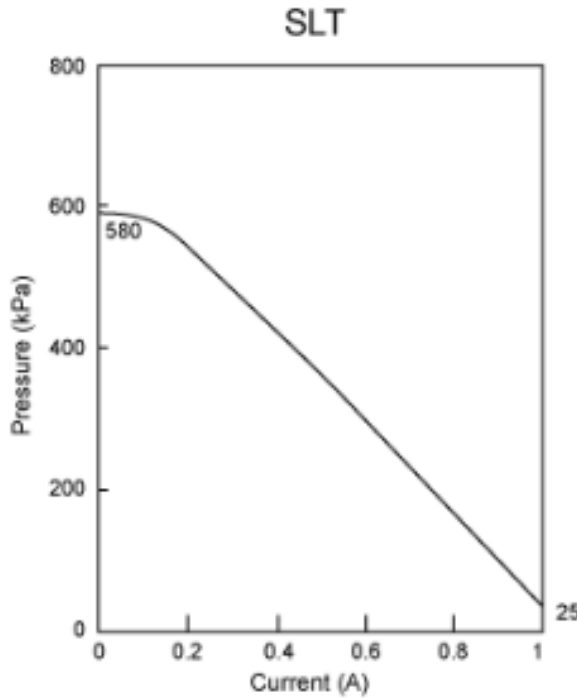
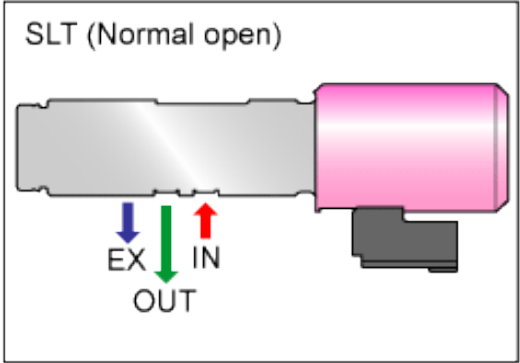
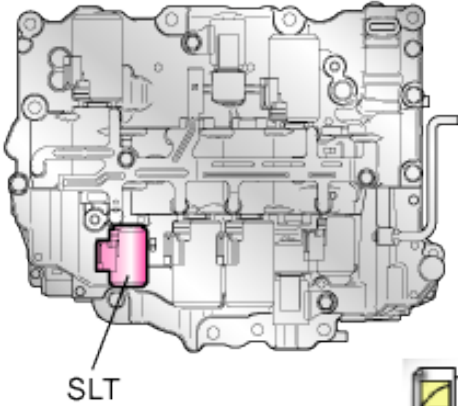
- : Off (current off)

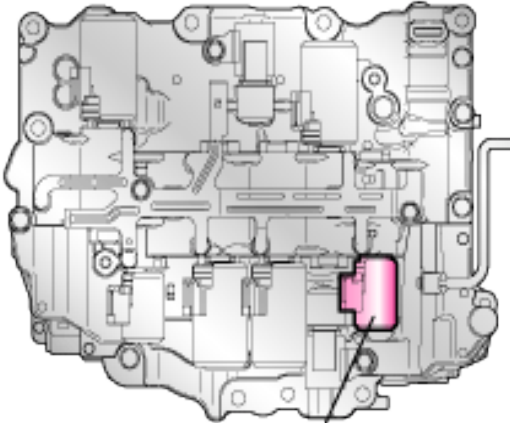




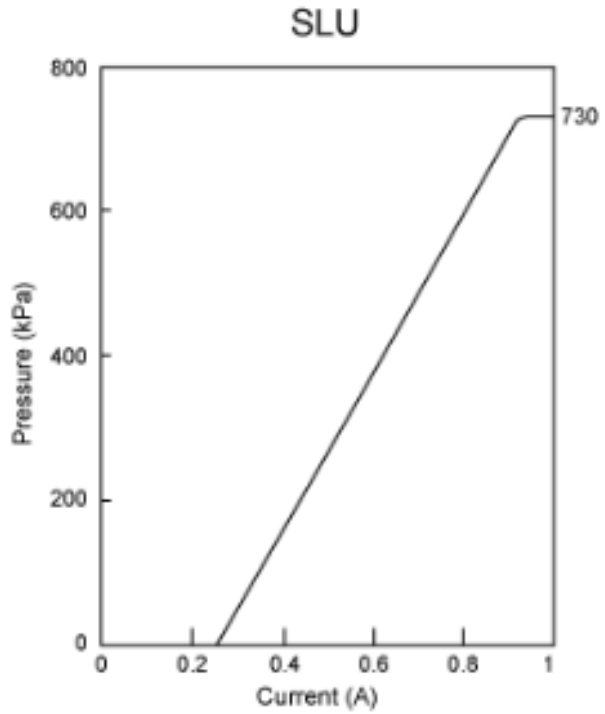
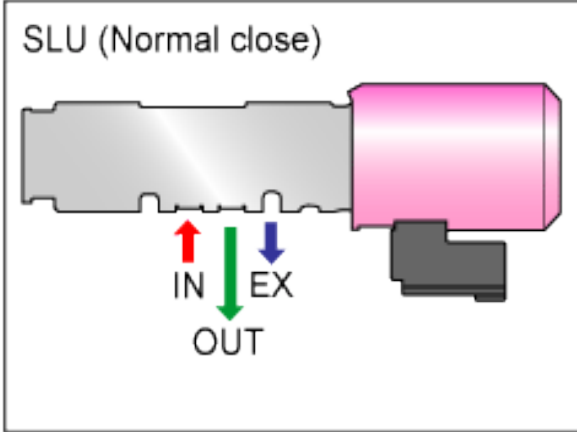
Electronic control system



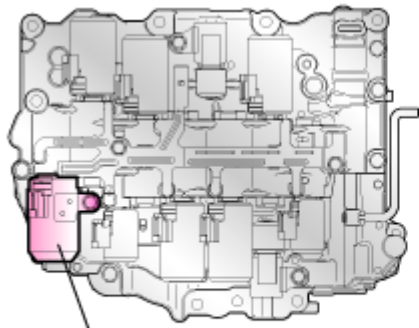




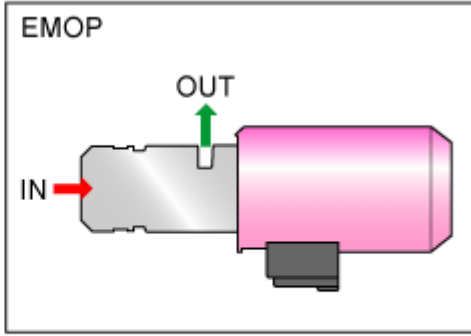
SLU



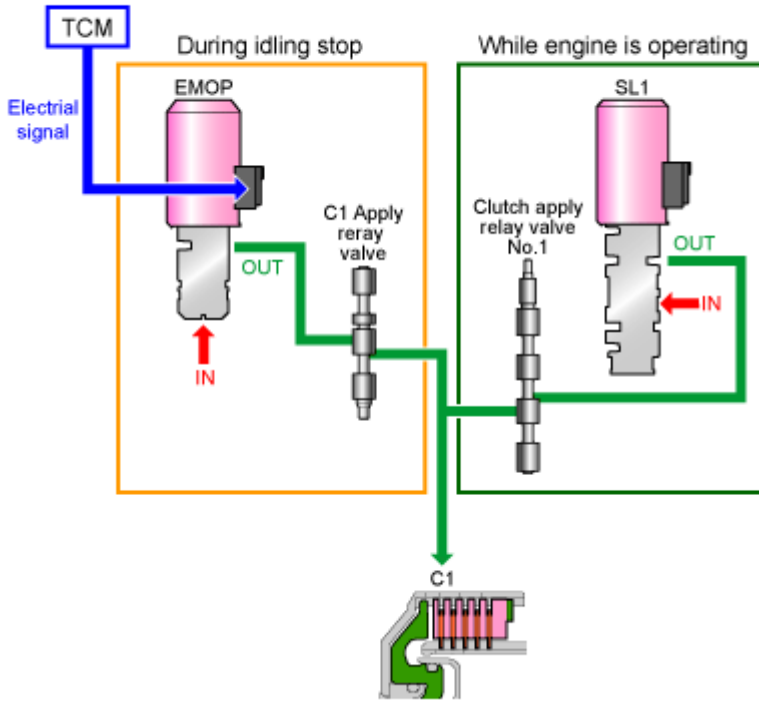
Electronic control system



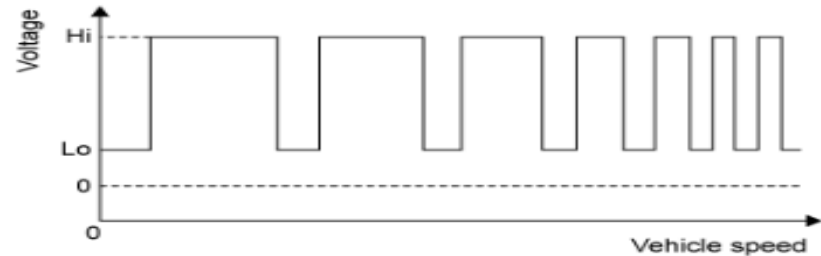
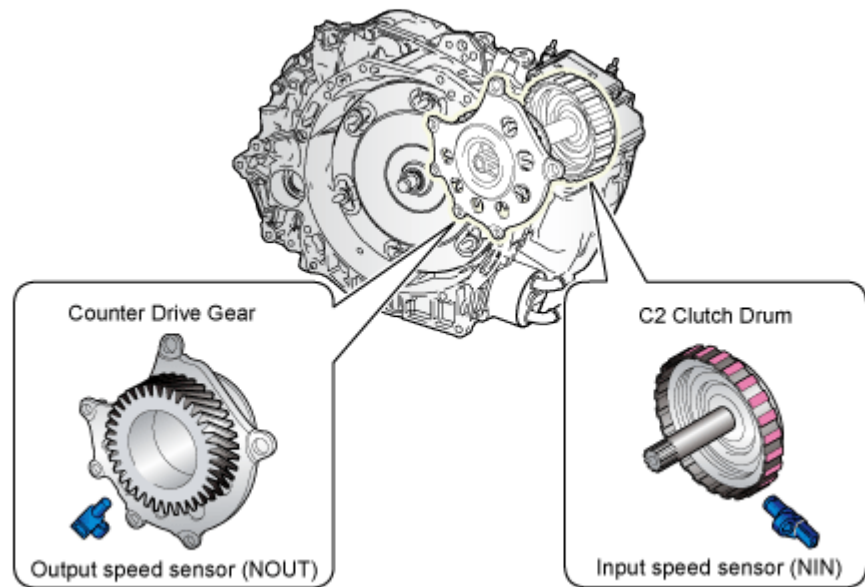
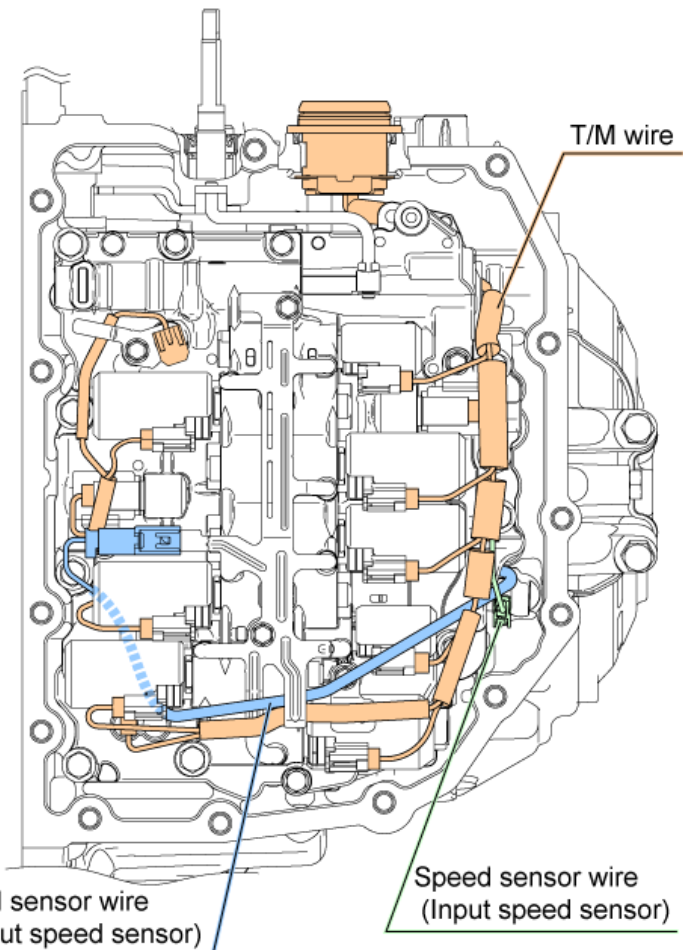
EMOP



Hydraulic circuit



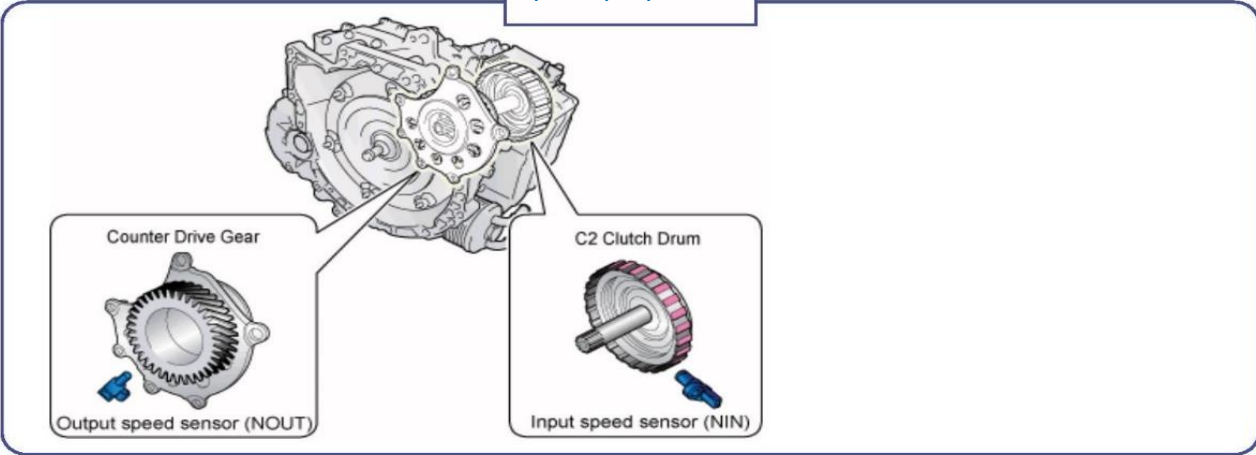
Electronic control system



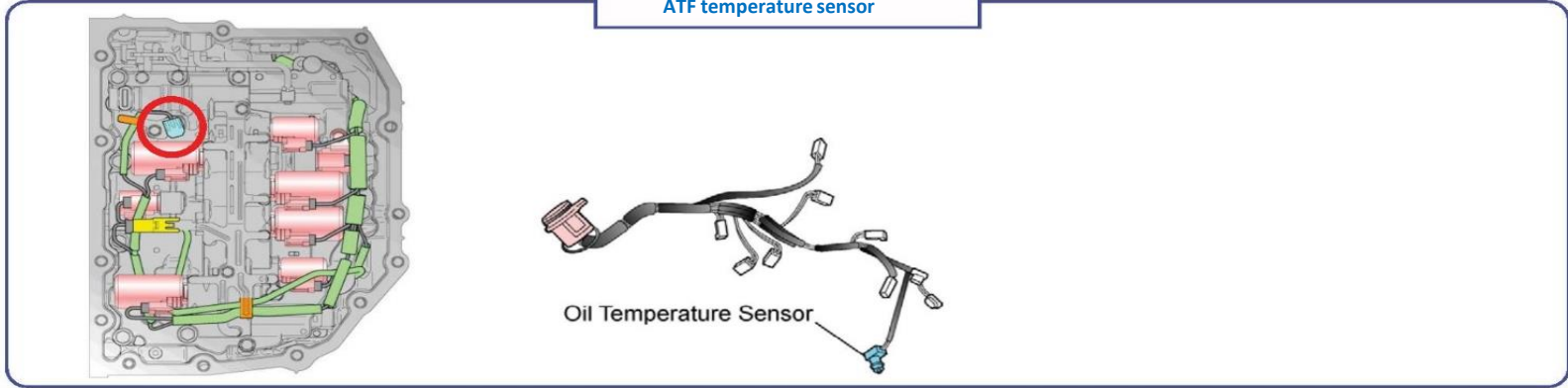
Electronic control system



Input/output speed sensor



ATF temperature sensor



Contents

Mechanical system

Electronic control system

▶ **After-sales work**



Note: When the TCM is replaced, perform software reload by GLDS, otherwise the vehicle will not be able to drive.

Geely Diagnostic System

Home KX11, 2021 X

吉利汽车 GEELY AUTO

Diagnostics Software

VIN: LB37852D2MS006189

Model/Year/Chassis: KX11, 2021, 006189

Connection:

Purchase Software Download Software

Advanced Test

Find/Add Software

Upgrades Hardware Changes Function Changes All

Part Number	Description	Comments	Size (...)	Download Time (min)
<input type="checkbox"/>	8892409715	SRS upgrade	820	--
<input type="checkbox"/>	8892409498	SWM reload	321	4
<input type="checkbox"/>	8892410092	TACM reload	427	--
<input type="checkbox"/>	8892410118	TACM upgrade	394	--
<input type="checkbox"/>	8892410251	TCAM RELOAD	66224	2
<input type="checkbox"/>	8892410267	TCAM UPGRADE	66168	2
<input checked="" type="checkbox"/>	8892868382	TCM RELOAD	1327	1
<input type="checkbox"/>	8893066349	TOTAL VEHICLE UPGRADE 5	3924500	75
<input type="checkbox"/>	8893160053	TOTAL VEHICLE UPGRADE 6	3926475	78
<input type="checkbox"/>	8892410377	VDDM reload	2548	1
<input type="checkbox"/>	8892410389	VDDM upgrade	2509	1

Add Software

Order Queue Order History Query Order

Order ID	Order Date	Expiration Date	Order Status		
Initialized					
Selected Software					
<input checked="" type="checkbox"/>	Part Number	Description	Comments	Size (kB)	Download Ti...
<input checked="" type="checkbox"/>	8892868382	TCM RELOAD		1327	1

Remove Purchase Order for Independent Workshop

Read data streams



Geely Diagnostic System



扬毅 陈



Home KX11, 2021 X

Diagnostics Software



VIN: LB37852D2MS006189
Model/Year/Chassis: KX11, 2021, 006189

Connection:



Network

Fault Tracing

Components

Service Functions

Source



ECUs Other



ID	Name
<input type="text"/>	<input type="text" value="TCM"/>
4/28	Transmission Control Module (TCM)

DTCs Documents Wiring Diagrams Parameters Activations Diagnostic Seq

Parameters Selected

Parameter

- _GearRatio - TCM
- Absolute Throttle Position - TCM
- Accelerator pedal position (via CAN) - TCM
- Actual gearratio - TCM
- Adaptation/Learning - TCM
- Brake pedal position (via CAN) - TCM
- brake pressure control solenoid(SLB1)_Current_Commanded Tester - TCM
- CAN controller status - TCM

_GearRatio - TCM

Parameter usage:

The Transmission Control Module (TCM) uses the parameter to calculate shift points and monitor the gear ratio.

Actuation test



Geely Diagnostic System



扬戩 陈



Home KX11, 2021 X

Diagnostics Software



VIN: LB37852D2MS006189

Model/Year/Chassis: KX11, 2021, 006189

Connection:

Source

Network

Fault Tracing

Components

Service Functions

ECUs Other

ID

Name

TCM

4/28

Transmission Control Module (TCM)

DTCs Documents Wiring Diagrams Parameters Activations Diagnostic Seq

Activation

Alternatives

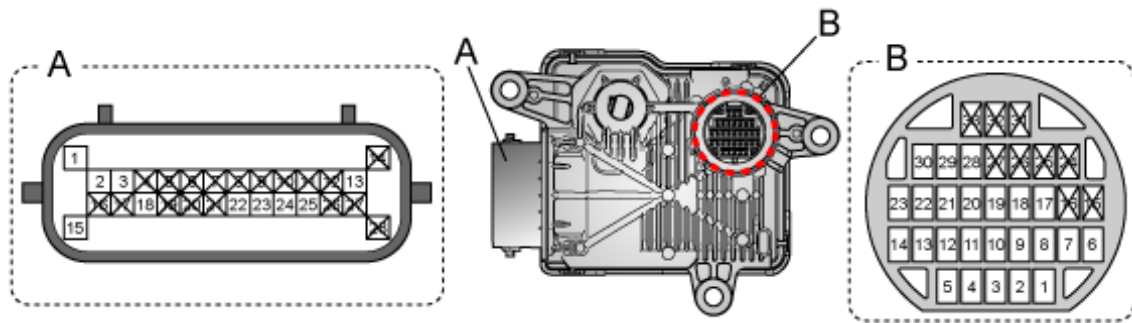
Electromagnetic oil pump (EMOP) Duty Commanded By The Tester - TCM	Off
Gear requested by Tester - TCM	Gear 1 requested
Shift Lock - TCM	Off
Solenoid S1 command - TCM	Off
Solenoid S2 command - TCM	Off
Start lock request status - TCM	LOCKED
Torque Converter Lockup State, Commanded By Tester - TCM	No control ongoing

Start

Torque Converter Lockup State, Commanded By Tester - TCM

Parameter	Value	Unit

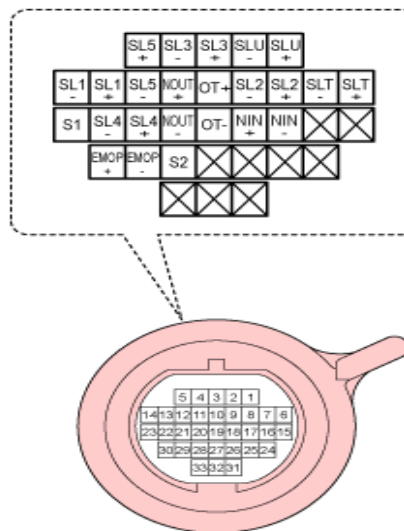
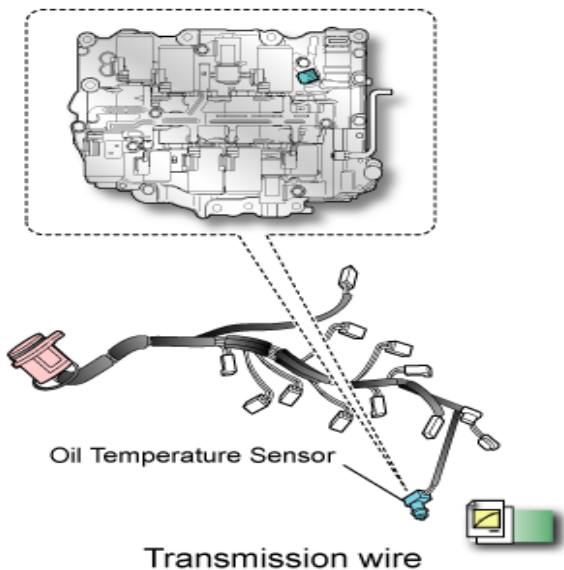
Wiring diagram



Terminal No.	Mark	Terminal name	Terminal No.	Mark	Terminal name
A1	+B	Battery voltage	B1	SLU+	Lock-up control solenoid [SLU+]
A2	IG	Ignition switch input signal	B2	SLU-	Lock-up control solenoid ground [SLU-]
A3	WAKE	Wakeup signal	B3	SL3+	C3 pressure control solenoid [SL3+]
A4	-	Blank	B4	SL3-	C3 pressure control solenoid ground [SL3-]
A5	-	Blank	B5	SL5+	B1 pressure control solenoid [SL5+]
A6	-	Blank	B6	SLT+	Line pressure control solenoid [SLT+]
A7	-	Blank	B7	SLT-	Line pressure control solenoid ground [SLT-]
A8	-	Blank	B8	SL2+	C2 pressure control solenoid [SL2+]
A9	-	Blank	B9	SL2-	C2 pressure control solenoid ground [SL2-]
A10	-	Blank	B10	OT+	Oil temperature sensor [OT+]
A11	-	Blank	B11	NOUT+	Output speed sensor [NOUT+]
A12	-	Blank	B12	SL5-	B1 pressure control solenoid ground [SL5-]
A13	LIN	LIN communication	B13	SL1+	C1 pressure control solenoid [SL1+]
A14	-	Blank	B14	SL1-	C1 pressure control solenoid ground [SL1-]
A15	GND	TCM ground	B15	-	Blank
A16	-	Blank	B16	-	Blank

A17	-	Blank	B17	NIN-	Input speed sensor ground [NIN-]
A18	STLK	Start lock signal output	B18	NIN+	Input speed sensor [NIN+]
A19	-	Blank	B19	OT-	Oil temperature sensor ground [OT-]
A20	-	Blank	B20	NOUT-	Output speed sensor ground [NOUT-]
A21	-	Blank	B21	SL4+	C4 pressure control solenoid [SL4+]
A22	CAN 1L	CAN communication 1 L line	B22	SL4-	C4 pressure control solenoid ground [SL4-]
A23	CAN 1H	CAN communication 1 H line	B23	S1	Shift solenoid No.1 [S1]
A24	CAN 2L	CAN communication 2 L line	B24	-	Blank
A25	CAN 2H	CAN communication 2 H line	B25	-	Blank
A26	-	Blank	B26	-	Blank
A27	-	Blank	B27	-	Blank
A28	-	Blank	B28	S2	Shift solenoid No.2 [S2]
			B29	EMOP-	Electro-magnetic oil pump ground [EMOP-]
			B30	EMOP+	Electro-magnetic oil pump [EMOP+]
			B31	-	Blank
			B32	-	Blank
			B33	-	Blank

Wiring diagram

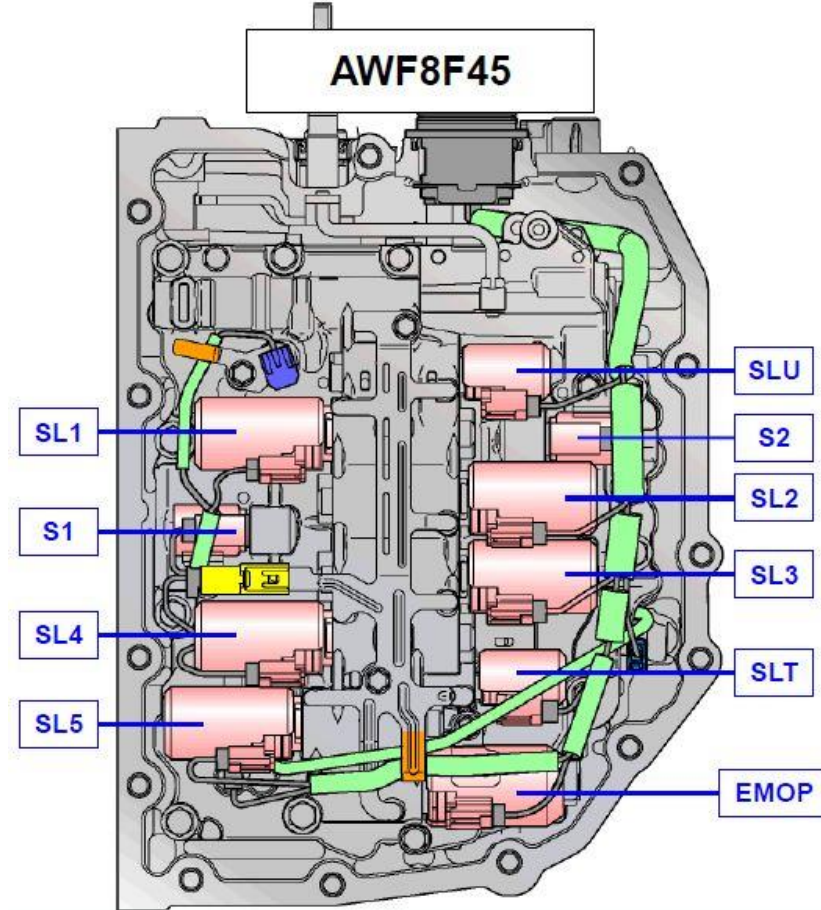


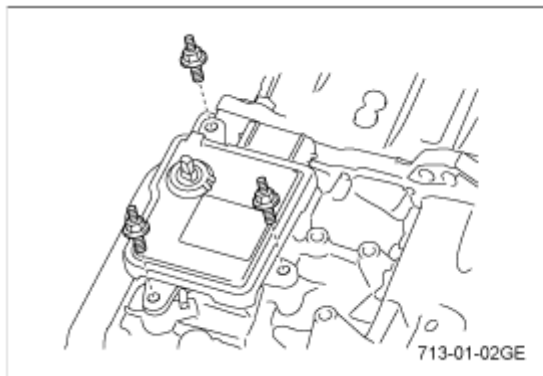
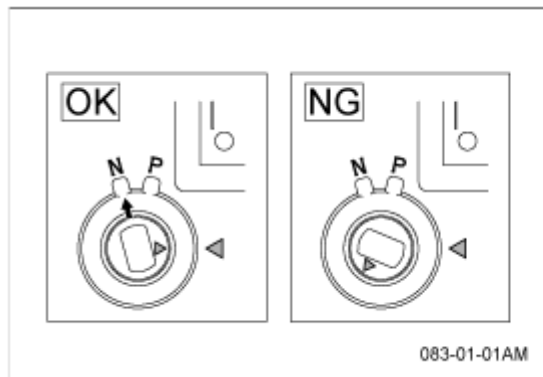
Terminal no.	Terminal name	Terminal no.	Terminal name
1	Lock-up control solenoid [SLU+]	18	Input speed sensor [NIN+]
2	Lock-up control solenoid [SLU-]	19	Oil temperature sensor [OT-]
3	Pressure control solenoid [SL3+]	20	Output speed sensor [NOUT-]
4	Pressure control solenoid [SL3-]	21	Pressure control solenoid [SL4+]
5	Pressure control solenoid [SL5+]	22	Pressure control solenoid [SL4-]
6	Line pressure control solenoid [SLT+]	23	Shift solenoid No.1 [S1]
7	Line pressure control solenoid [SLT-]	24	-
8	Pressure control solenoid [SL2+]	25	-
9	Pressure control solenoid [SL2-]	26	-
10	Oil temperature sensor [OT+]	27	-
11	Output speed sensor [NOUT+]	28	Shift solenoid No.2 [S2]
12	Pressure control solenoid [SL5-]	29	Electro-magnetic oil pump [EMOP-]
13	Pressure control solenoid [SL1+]	30	Electro-magnetic oil pump [EMOP+]
14	Pressure control solenoid [SL1-]	31	-
15	-	32	-
16	-	33	-
17	Input speed sensor [NIN-]		

System maintenance



TYPE of A/T	AWF6F25-SIII																			
Shift solenoid S1, S2	<p>11-15Ω/20 degrees C</p> <table border="1"> <caption>Shift Solenoid S1, S2 Resistance Data</caption> <thead> <tr> <th>Temperature (degrees C)</th> <th>Resistance (ohm)</th> <th>Reference Value (ohm)</th> </tr> </thead> <tbody> <tr> <td>-40</td> <td>8.4</td> <td>11.5</td> </tr> <tr> <td>0</td> <td>11</td> <td>15</td> </tr> <tr> <td>20</td> <td>11</td> <td>16.6</td> </tr> <tr> <td>120</td> <td>16.6</td> <td>22.7</td> </tr> <tr> <td>150</td> <td>22.7</td> <td>-</td> </tr> </tbody> </table> <p>□ : Reference value</p>		Temperature (degrees C)	Resistance (ohm)	Reference Value (ohm)	-40	8.4	11.5	0	11	15	20	11	16.6	120	16.6	22.7	150	22.7	-
	Temperature (degrees C)	Resistance (ohm)	Reference Value (ohm)																	
-40	8.4	11.5																		
0	11	15																		
20	11	16.6																		
120	16.6	22.7																		
150	22.7	-																		
Linear solenoid SL1, SL2, SL3, SL5 SLT, SLU	<p>5.0-5.6Ω/20 degrees C</p> <table border="1"> <caption>Linear Solenoid Resistance Data</caption> <thead> <tr> <th>Temperature (degrees C)</th> <th>Resistance (ohm)</th> <th>Reference Value (ohm)</th> </tr> </thead> <tbody> <tr> <td>-40</td> <td>3.8</td> <td>4.3</td> </tr> <tr> <td>0</td> <td>5.0</td> <td>5.6</td> </tr> <tr> <td>20</td> <td>5.6</td> <td>7.6</td> </tr> <tr> <td>120</td> <td>7.6</td> <td>8.5</td> </tr> <tr> <td>150</td> <td>8.5</td> <td>-</td> </tr> </tbody> </table> <p>□ : Reference value</p>		Temperature (degrees C)	Resistance (ohm)	Reference Value (ohm)	-40	3.8	4.3	0	5.0	5.6	20	5.6	7.6	120	7.6	8.5	150	8.5	-
	Temperature (degrees C)	Resistance (ohm)	Reference Value (ohm)																	
-40	3.8	4.3																		
0	5.0	5.6																		
20	5.6	7.6																		
120	7.6	8.5																		
150	8.5	-																		
Output and input speed sensor	HIGH	12-18 (mA)																		
	LOW	4-8 (mA)																		
Oil temperature sensor	40 degrees C	1.8 - 2.2 (kΩ)																		
	60 degrees C	0.9 - 1.1 (kΩ)																		
	80 degrees C	0.45 - 0.55 (kΩ)																		





1 REMOVE TCM

- (1) Be sure to match the position of the TCM marking.

CAUTION

- Do not turn the shaft more than 60 degrees from the marking, otherwise damage will occur.

- (2)

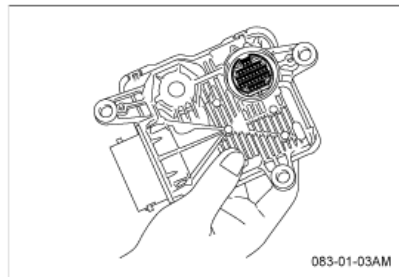
Remove the 3 stud bolts, and then remove the TCM.

HINT

- Bolt size: M8 x 1.25 x 20 mm (stud bolt)

CAUTION

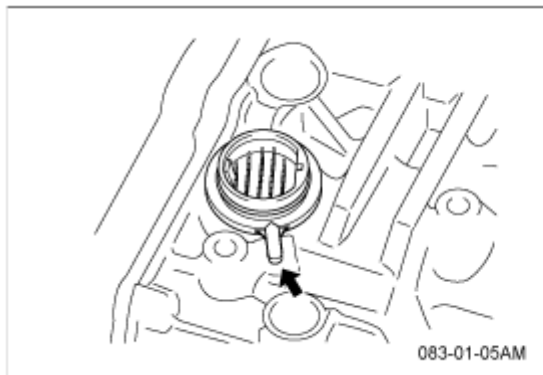
- Do not touch the terminals.





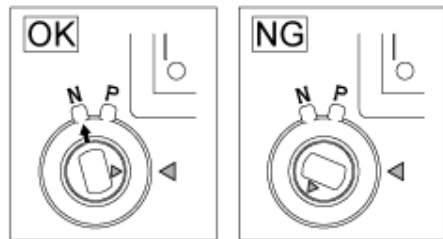
2 CHECK CONNECTOR

- (1) Check the condition of the connector pin of the A/T (foreign material, bent pins, broken pins, etc.) and "O" ring after the TCM is removed.



3 INSTALL TCM

- (1) Align the T/A case and wire connector.



083-01-01AM

3 INSTALL TCM

- (2) Be sure to match the position of the TCM marking.

CAUTION

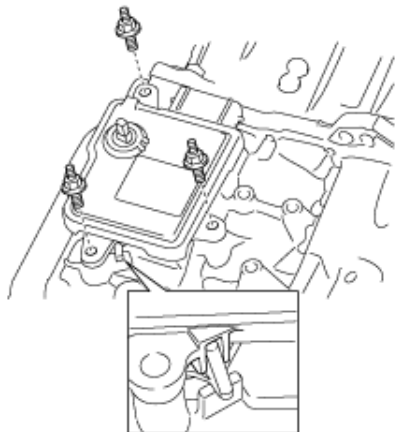
- Do not turn the shaft more than 60 degrees from the marking, otherwise damage will occur.

- (3) Tighten the 2 stud bolts and the bolt to install the TCM.

TT = 19.6 - 29.4 N·m

HINT

- Install the TCM to the T/M wire by engaging its claw.
- Bolt size: M8 x 1.25 x 20 mm (stud bolt)

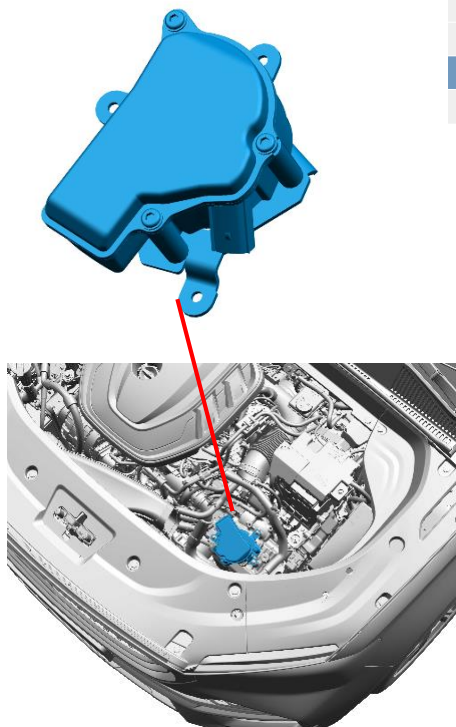


713-01-06GE



TACM - Transmission actuator control module

Once TACM disassembled from transmission, you need do the TACM calibration on GLDS.



The screenshot displays the GLDS software interface. On the left, a sidebar contains menu items: Network, Fault Tracing, Components, and Service Functions. The main window is titled 'ECUs' and shows a table with the following data:

ID	Name
4/209	Transmission Actuator Control Module (TACM)

Below the table, a 'Diagnostic Sequences' panel is visible, with a red arrow pointing to the 'Transmission Actuator Control Module (TACM)' entry. The main content area is titled 'Calibration of gear position sensor' and contains the following text:

Note! Calibration of the integral gear position sensor in the Transmission Control Module (TCM) must be carried out when the control module has been replaced or removed from the automatic transmission.

Instructions

- Set the vehicle to usage mode Active.
- Place the gear selector lever in Neutral (N).
- Click Start to activate calibration of the gear position sensor.

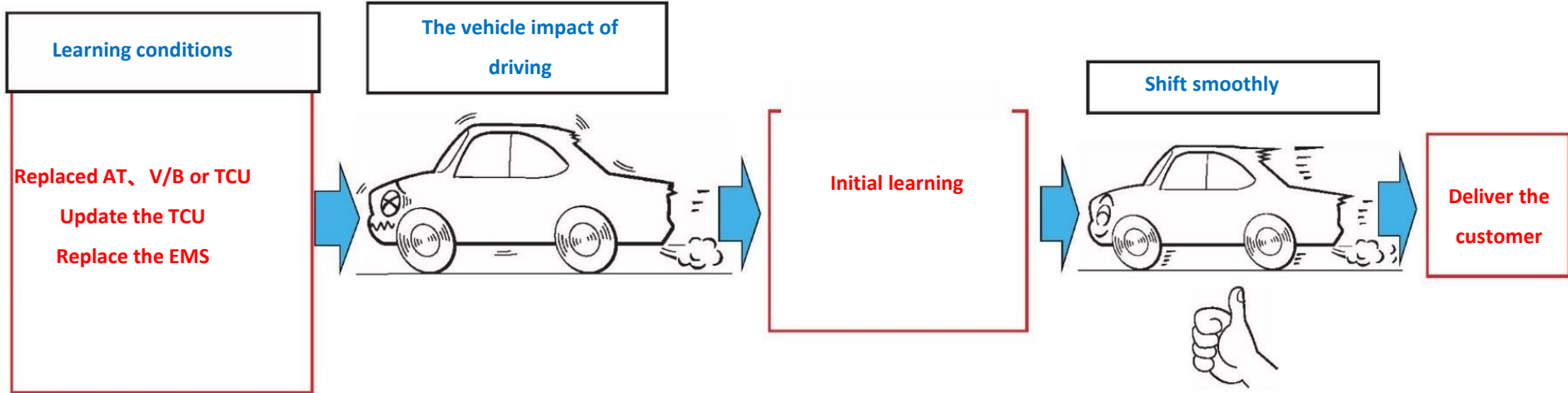
Note! During calibration, it is important that the Gear Selector Module (GSM), gear selector assembly and linkage are free of faults.

At the bottom of the window, there is a circular icon, a rectangular input field, and two buttons labeled 'Start' and 'Close'.



How to perform initial learning

If the automatic transmission or the TCM are replaced, or the TCM software is reloaded, be sure to initialize the learned values and perform initial learning.





Step 1: warm-up (ATF temperature is between 40°C and 110 °C. Caution: if the ATF temperature is not between 40°C and 110 °C, initial learning cannot be performed)

Step 2: garage shift learning

with the vehicle stationary, depress the brake and keep the shift lever in “N” position for 3 seconds. Then, shift from “N” into “D” position, and maintain this condition for 3 seconds. Repeat this procedure 5 times. Then repeat 5 times in the same way for “R” position.

Step 3: gear shift control learning

in “D” position, with the throttle opening angle between 25% and 35%, drive until 8th gear. and Then, release the accelerator pedal and coast, and bring the vehicle to a stop within 60 seconds, repeat this procedure 10 times.

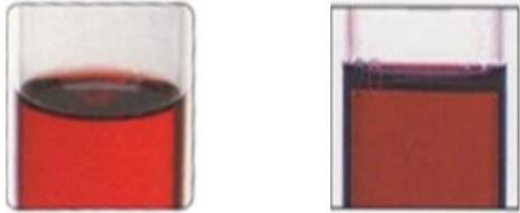
Step 4: check learning results

check that variable speed shock and shift shock have decreased compared to the conditions before learning.

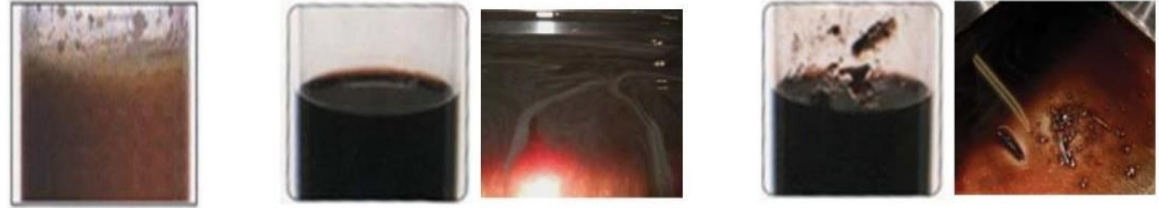
How to adjust ATF level



The color of the ATF varies with the mileage



The ATF is abnormal



Caution:the AT is maintenance-free, it need not replace the ATF except after replaced or repaired.

How to adjust ATF level



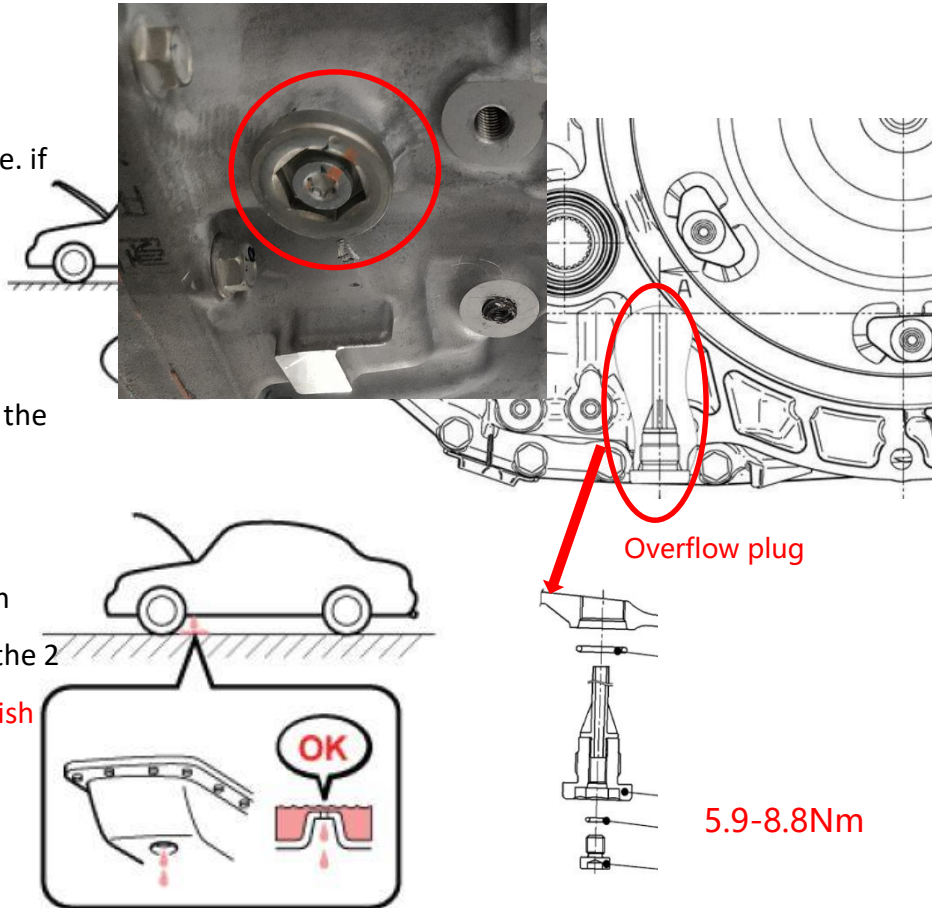
Step 1: park the vehicle on a level place, and confirm the shift position P

Step 2: remove the overflow plug to check if ATF drops from overflow hole. if ATF does not drop, additional ATF to be filled until ATF drops, tighten the overflow plug.

Step 3: remove filling plug and add 0.5L ATF from the filling hole. tighten the filling plug. And then, start the engine.

Step 4: To raise ATF in 50°C. Shift lever from P-R-N-D and D-N-R-P position more than 2 seconds per each position and return to P after performing the 2 times shifting. **When the ATF temperature reach the requirement and finish the shifting operation, shut down the engine**

Step 5: check ATF drops from the overflow hole.



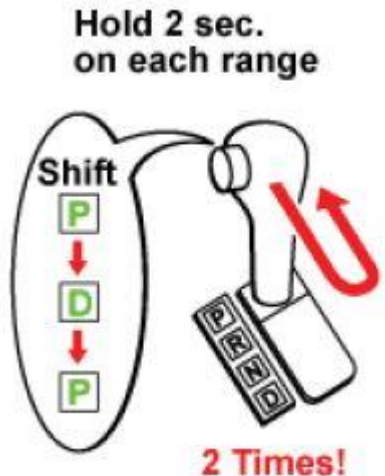
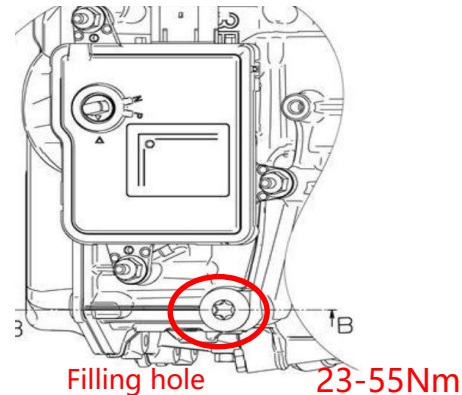
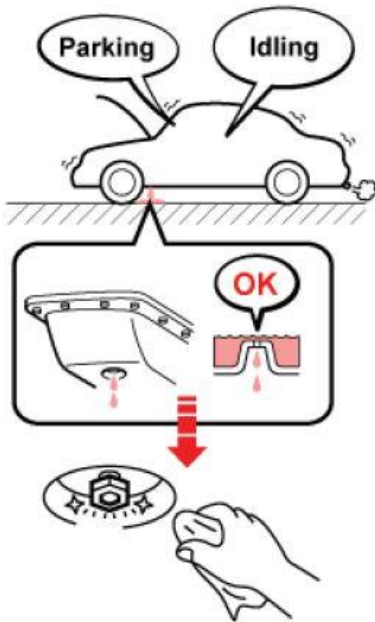
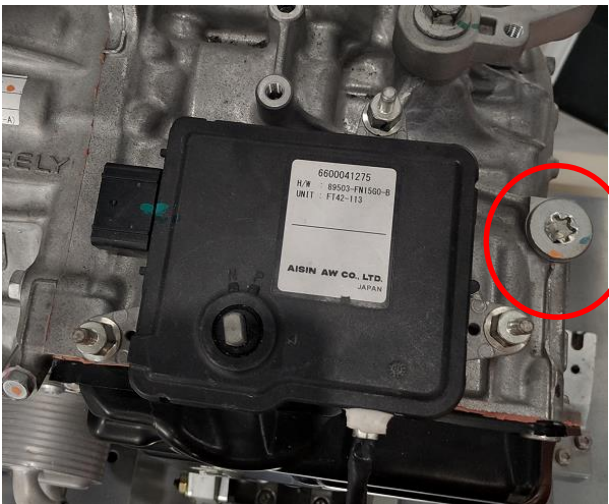


How to adjust ATF level

Step 6: confirm the ATF at temperature between 50-60°C with oil temperature sensor and wait until ATF does dribble out from overflow hole.

Caution: if ATF level is low, it would be thought oil leak on any part, therefore inspect related part sufficiently.

Step 7: using the new gasket and tighten the overflow plug.





(1) Perform the road test referring to the table below.

Item	Procedure
Shift function ("D" position)	In ordinary driving, check the shifting from 1st speed to 2nd speed, 3rd speed, 4th speed, 5th speed, 6th speed, 7th speed and 8th speed. (The vehicle may not shift into 5th or 6th speed depending on driving speed)
Shock level of shift in driving	In ordinary driving, check for smooth upshifting.
Kick-down function	<ul style="list-style-type: none"> • Check downshift by performing kick-down for each gear. • Check shock level during kick-down.
Operation of engine brake	Check the operation of the engine brake in the Manual shift 1st gear.
Shifting point at the time of full press on accelerator pedal	Check that the upshift speed matches the specified shift point from 1st speed to 2nd speed by fully depressing the accelerator pedal in the "D" position.
Manual shift control function	Check that it is possible to shift into any gear when the shift lever is put into Manual mode.
Lock-up control function	Check that engine speed does not change dramatically when slightly depressing the acceleration pedal when driving on a flat road in the lock-up speed area.
"P" position operation	Check that the vehicle does not move when stopped on a slope (of more than about 5% or 3°) with the shift lever in the "P" position and the parking brake released.
Oil leak	Check that there are no oil leaks by inspecting each part after the road test.



DTC list



Checksheet



Matrix chart



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