GROUP 23

AUTOMATIC TRANSMISSION

CONTENTS

AUTOMATIC TRANSMISSION

GENERAL INFORMATION

M2230000100300

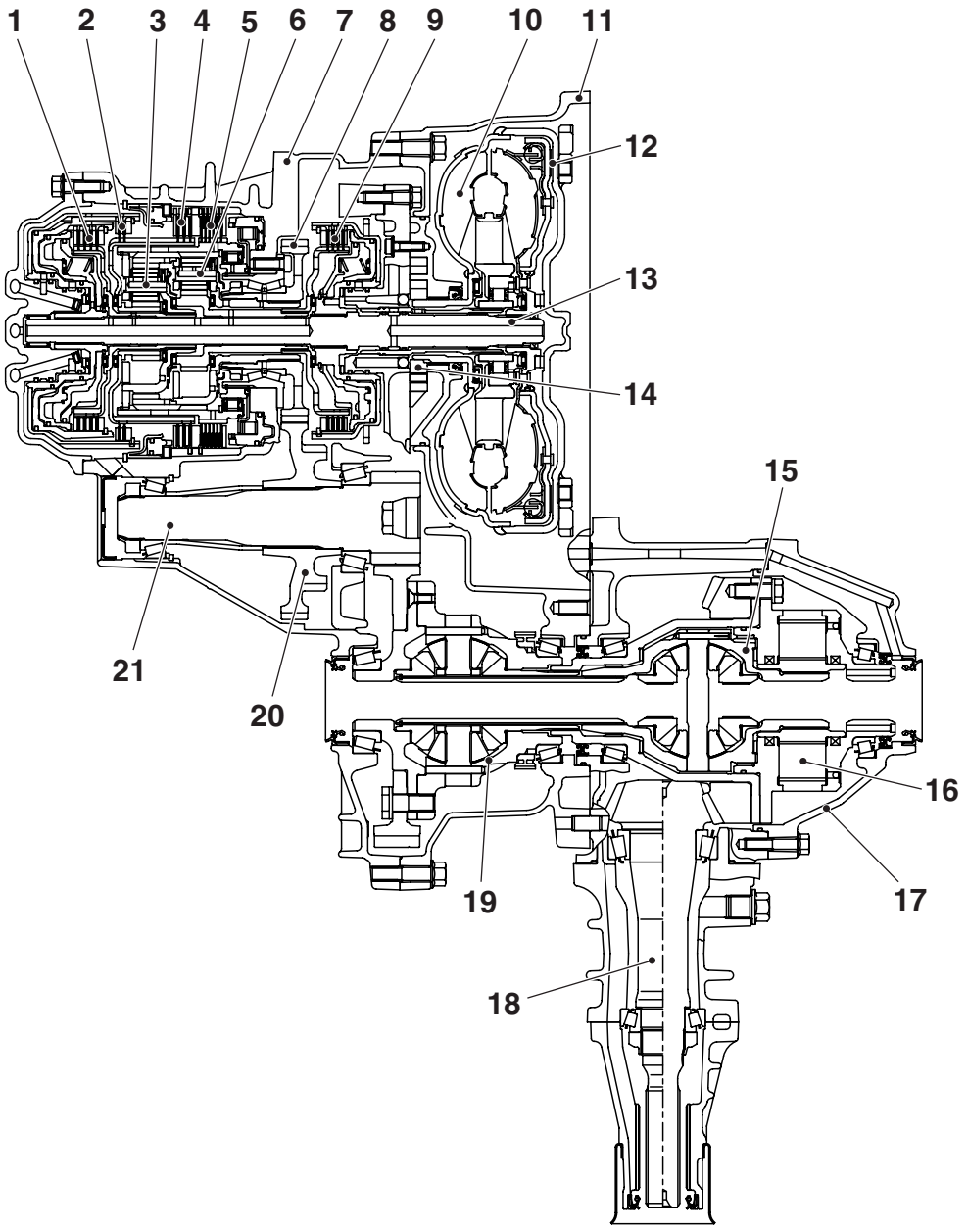
The W4A4B type automatic transmission has been used. The W4A4B transmission is based on the F4A42 transmission used for CARISMA. However, the transfer case is added in order to be installed to 4WD vehicles. The construction and operation of the W4A4B type are basically the same for the F4A42 type, but is tuned for the new 4G69 engine.

SPECIFICATIONS

Item		Specifications
Transmission model		W4A4B
Torque converter	Type	3-element, 1-stage, 2-phase type
	Lock-up	Provided
	Stall torque ratio	2.01
Transmission type		4 forward speeds, 1 reverse speed, fully automatic
Transmission gear ratio	1st	2.842
	2nd	1.573
	3rd	1.000
	4th	0.688
	Reverse	2.214
Final drive ratio		4.625
Clutch		Multi-disc type (3 sets)
Brake		Multi-disc type (2 sets)
Manual control system		P-R-N-D (4 positions) + sport mode
Shift pattern control		Electronic control (INVECS-II)
Hydraulic control during shifting		Electronic control (Each clutch hydraulically independently controlled)
Lock-up clutch control		Electronic control
Transmission fluid	Specified lubricants	DIA QUEEN ATF SP III
	Quantity L	8.1
Transfer oil	Specified lubricants	Hypoid gear oil API classification GL-5 SAE 90
	Quantity L	0.55

SECTIONAL VIEW

M2230000700012



AC309395AB

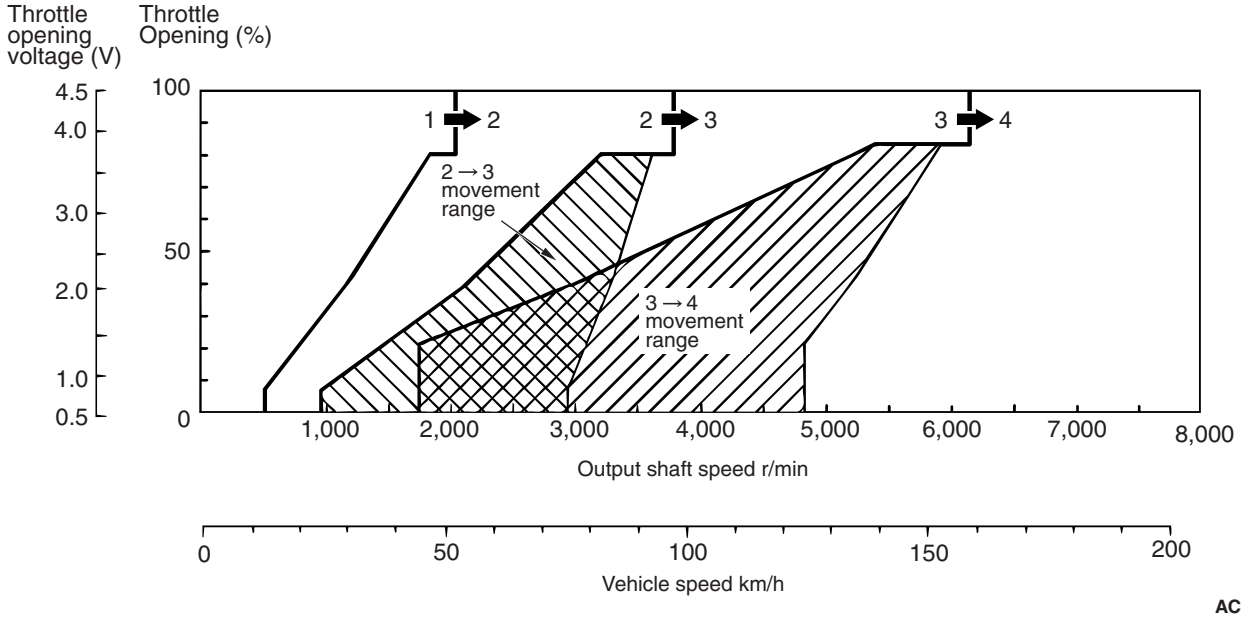
1. Overdrive clutch
2. Reverse clutch
3. Overdrive planetary gear set
4. Second brake
5. Low-reverse brake
6. Output planetary gear set
7. Transmission case
8. Transfer drive gear
9. Underdrive clutch
10. Torque converter
11. Converter housing
12. Damper clutch
13. Input shaft
14. Oil pump
15. Front differential
16. Viscous coupling unit (VCU)
17. Transfer case
18. Hypoid pinion
19. Centre differential
20. Transfer driven gear
21. Output shaft

ELECTRONIC CONTROL SYSTEM

SHIFT PATTERN CONTROL

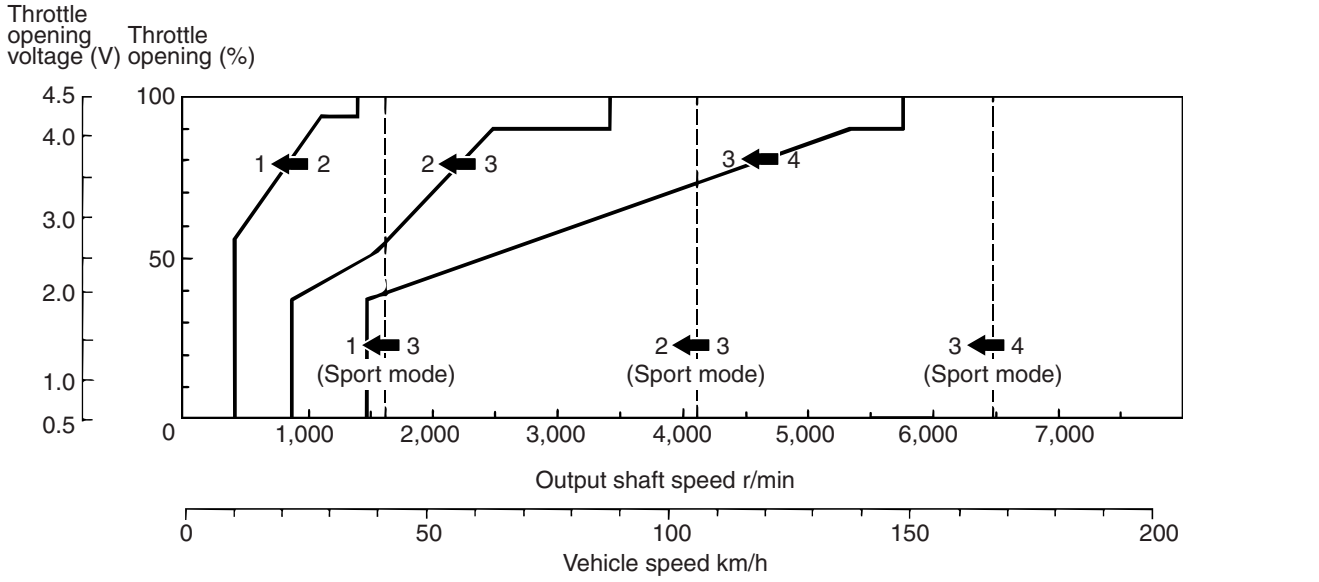
M2230003000227

UPSHIFT PATTERN



AC309445AB

DOWNSHIFT PATTERN



AC309446AB

DIAGNOSIS CLASSIFICATION TABLE

M2230010000144

Item		Diagnosis code No.	Data list		Actuator test
			Item No.	Display	
Throttle position sensor (TPS)		–	11	mV	–
A/T fluid temperature sensor	Open circuit	15	15	°C	–
	Short circuit	16			
Crank angle sensor	Open circuit	21	21	r/min	–
Input shaft speed sensor	Short circuit/open circuit	22	22	r/min	–
Output shaft speed sensor	Short circuit/open circuit	23	23	r/min	–
Stop lamp switch	Short circuit	26	26	ON/OFF	–
Inhibitor switch	Open circuit	27	61	P, R, N, D	–
	Short circuit	28			
Vehicle speed signal		–	29	km/h	–
LR solenoid valve	Short circuit/open circuit	31	31	%	01
UD solenoid valve	Short circuit/open circuit	32	32	%	02
2ND solenoid valve	Short circuit/open circuit	33	33	%	03
OD solenoid valve	Short circuit/open circuit	34	34	%	04
DCC solenoid valve	Short circuit/open circuit	36	36	%	06
Gear shift incomplete	1st	41	–	–	–
	2nd	42	–	–	–
	3rd	43	–	–	–
	4th	44	–	–	–
	Reverse	46	–	–	–
Damper clutch system	System defect	52	52	r/min	–
A/T control relay	Earth short circuit/open circuit	54	54	V	12
"N" range lamp	Open circuit	56	–	–	–
INVECS-II cancel command		–	40	ON/OFF	14
Engine volumetric efficiency		–	57	%	–
Shift position		–	63	4th, 3rd, 2nd, 1st, REV, NP	–
A/C-ECU		–	65	ON/OFF	–
Auto-cruise engeged signal		–	66	ON/OFF	–
Select switch		–	67	ON/OFF	–
Shift switch (Up)		–	68	ON/OFF	–
Shift switch (Down)		–	69	ON/OFF	–

Item		Diagnosis code No.	Data list		Actuator test
			Item No.	Display	
Shift indicator	1st	–	–	–	07
	2nd	–	–	–	08
	3rd	–	–	–	09
	4th	–	–	–	10

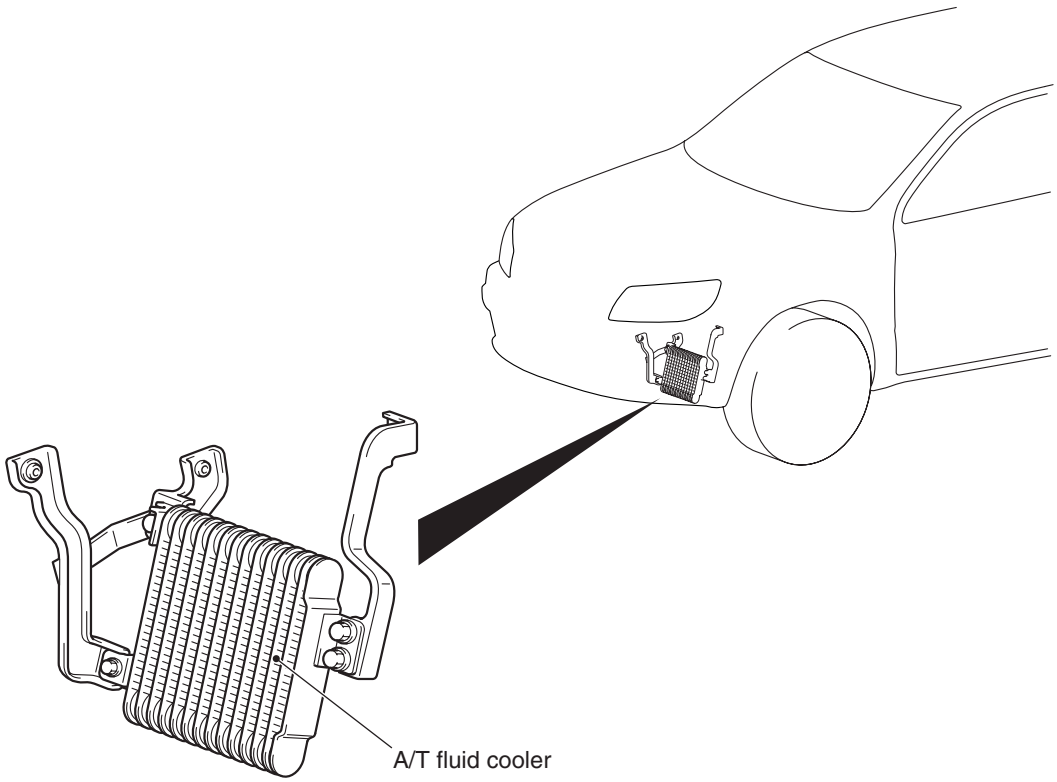
A/T FLUID COOLER

GENERAL INFORMATION

M2233001000101

The cooling performance for the automatic transmission fluid is improved by using the water-cooled A/T fluid cooler inside the radiator lower tank and the air-cooled A/T fluid cooler.

CONSTRUCTION DIAGRAM

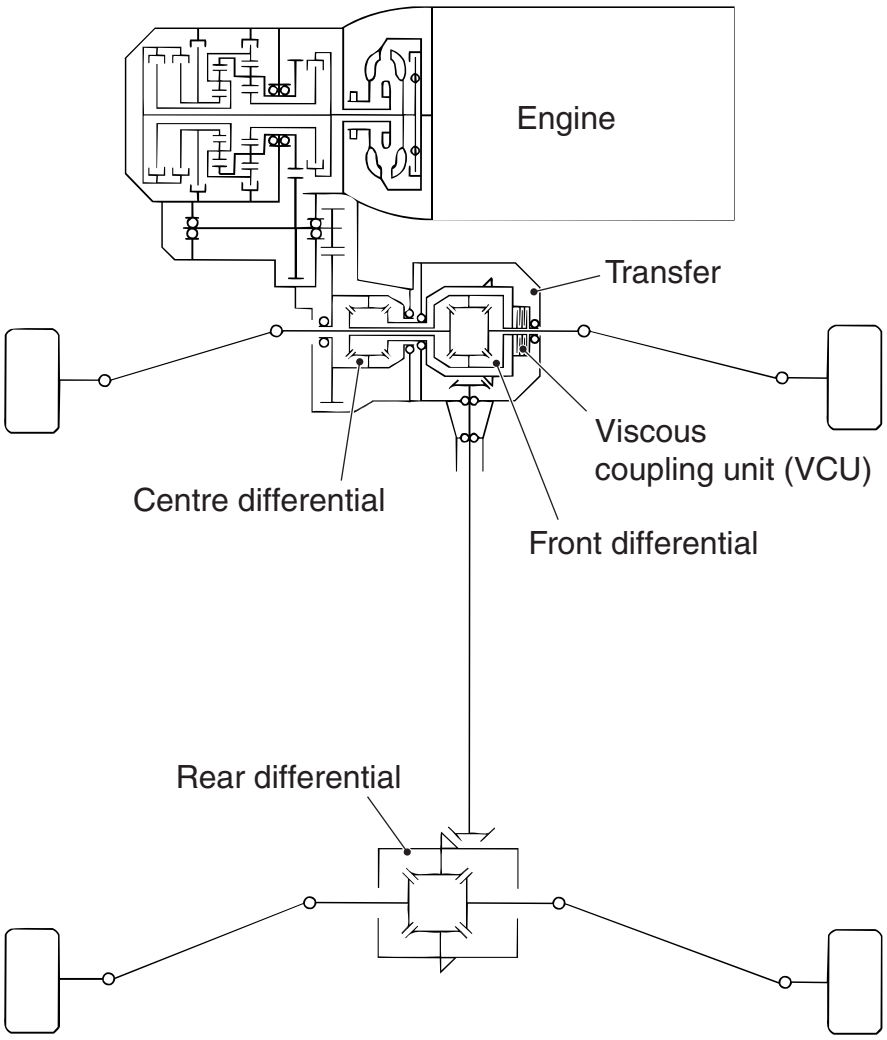


AC309367AB

4WD SYSTEM

GENERAL INFORMATION

M2230000100292



AC107112AB

- The 4WD system uses the centre differential with limited slip device.
- The front differential is housed in the transfer (4WD). The centre differential is housed in the transmission in the place of the front differential for 2WD.
- A viscous coupling unit (VCU) is used for the centre differential limited slip device, and is located in the rear of the front differential.

TRANSFER

M2230000400033

An oil cooler has been installed in the transfer, the same as for manual transmission models.

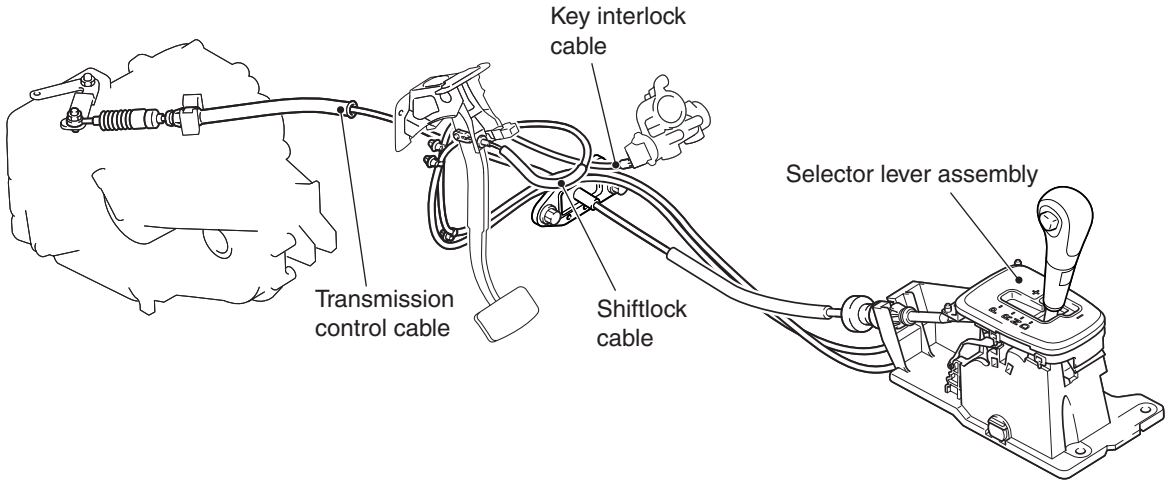
TRANSMISSION CONTROL

GENERAL INFORMATION

M2232000100492

- The selector lever assembly has two gates; main gate and manual gate. Main gate has four shift positions (P, R, N, D), which allows the same control as the conventional A/T. The manual gate allows the driver to select gears just like a manual transmission.
- In order to prevent a sudden start caused by misguided lever operation, the system uses A/T prevention misguided operation mechanisms (consisting of shift lock mechanism and key interlock mechanism).

COMPONENT VIEW



AC309384AB