SECTION 7D

TRANSFER

WARNING:

For vehicles equipped with a Supplemental Restraint (Air Bag) System:

- **Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to "Air Bag System Components and Wiring Location View" under "General Description" in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and "Service Precautions" under "On-Vehicle Service" in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.**
- **Technical service work must be started at least 90 seconds after the ignition switch is turned to the "LOCK" position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).**

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General Description

Transfer Description

The aluminum transfer case directly connected to the back of the transmission contains input shaft, counter gear, output rear shaft, output front shaft, drive chain, shift fork shaft No.1, shift fork shaft No.2 and their accompanying gears, hubs, sleeves, synchronizer ring, fork, etc.

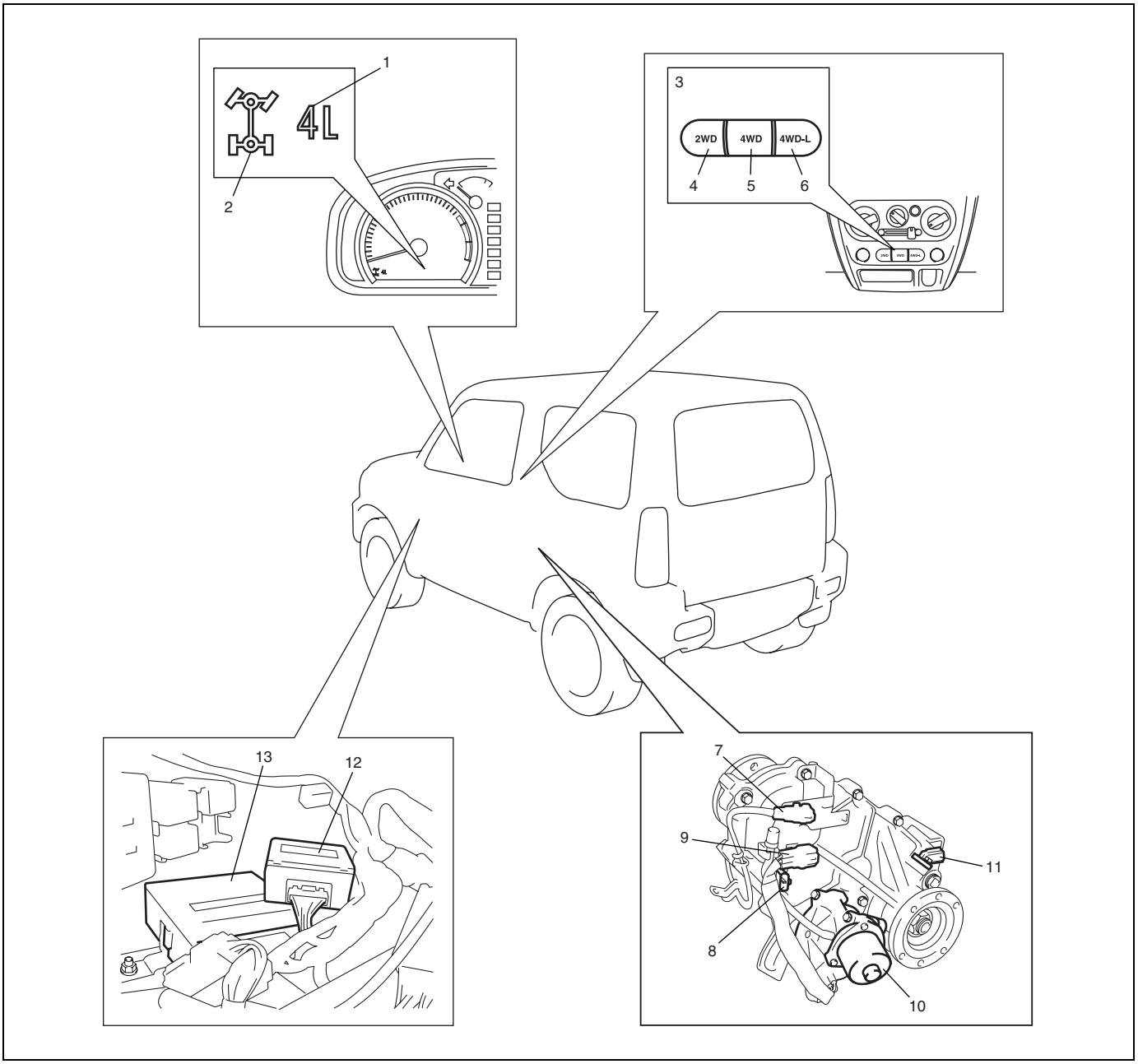
With a synchronizer installed to the front drive clutch hub sleeve, it is possible to change the shift position between the 2H position and the 4H position even while running.
The front drive gear shift fork has a shift fork spring to make a smooth shift between the 4H position and the 2H position.

The case has an oil receiver and an oil protect plate to provide proper lubrication even under the severe conditions of use.

Transfer Control System Description (Motor-Shift Type)

Instead of the transfer shift lever, the transfer position (2H, 4H and 4L) is shifted automatically by operating the “2WD” switch, “4WD” switch and “4WD-L” switch. The transfer control module operates the transfer shift actuator according to the “2WD” switch, “4WD” switch and “4WD-L” switch operation. Also, the transfer control system has 4WD indicator, 4WD low indicator and warning buzzer in order to inform the transfer control system condition.

Transfer Control System Components

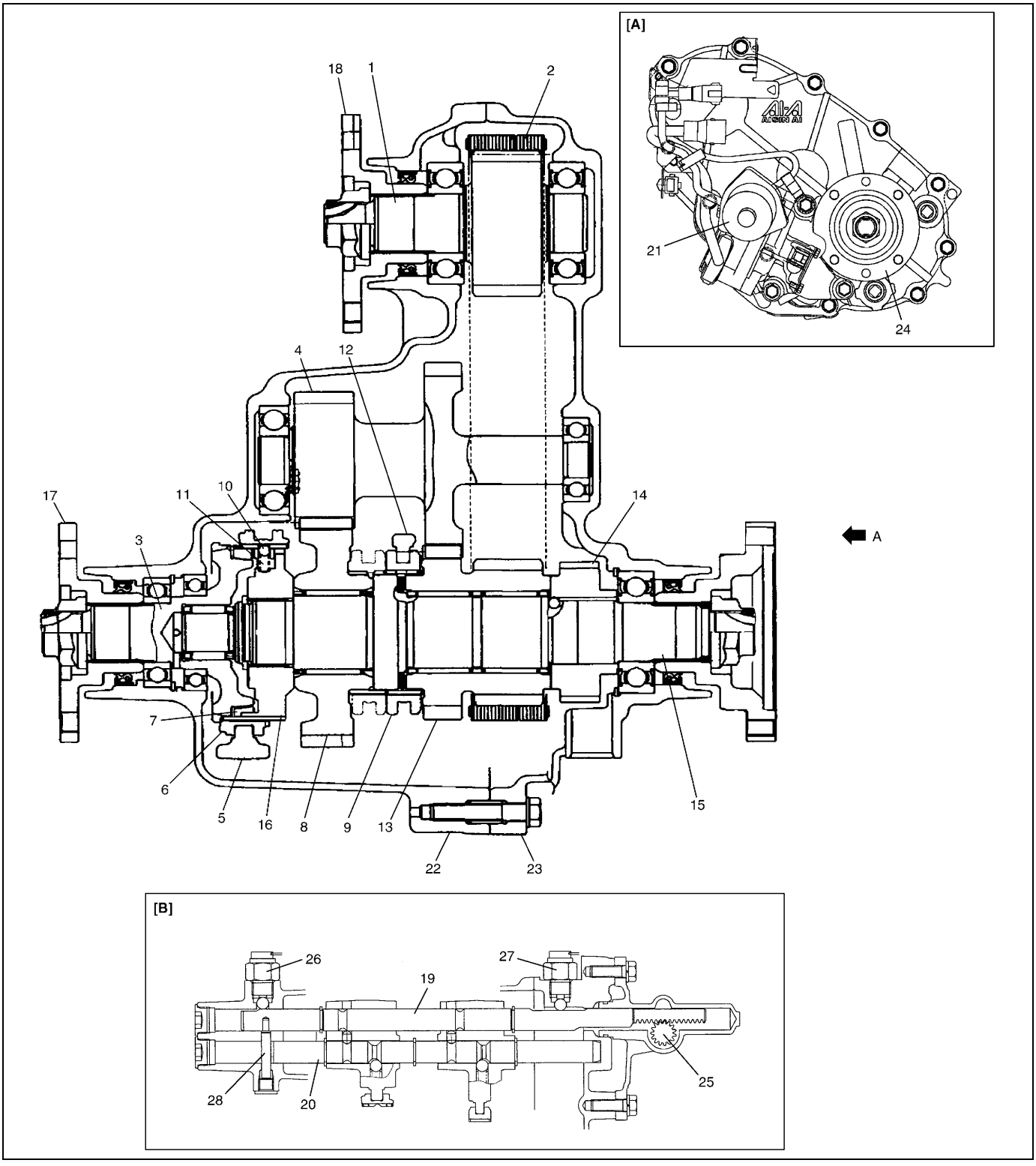


1. 4WD low indicator	6. “4WD-L” switch	11. VSS
2. 4WD indicator	7. 4WD switch connector	12. 4WD controller
3. 2WD/4WD switch	8. 4WD low switch connector	13. Transfer control module
4. “2WD” switch	9. Transfer shift actuator connector	
5. “4WD” switch	10. Transfer shift actuator motor	

Function of Transfer Control System Component

Part Name	Function
4WD switch	Detects whether transfer shift fork shaft No.1 is at 2H or 4H/4L.
4WD low switch	Detects whether transfer shift fork shaft No.1 is at 2H/4H or 4L.
2WD/4WD switch	• Shifts transfer shift position. • Consists of “2WD” switch, “4WD” switch and “4WD-L” switch.
“2WD” switch	Shifts transfer from 4H to 2H.
“4WD” switch	Shifts transfer from 2H to 4H or from 4L to 4H.
“4WD-L” switch	Shifts transfer from 4H to 4L.
4WD indicator	• Indicates whether transfer is at 4H/4L position or not. • Informs what state transfer control system is.
4WD low indicator	• Indicates whether transfer is at 4L position or not. • Informs what state transfer control system is.
A/T shift switch (N position) (for A/T model)	Detects whether A/T is at N range or not.
Clutch pedal switch	Detects whether clutch pedal is depressed or not.
Warning buzzer	Warns what state transfer control system is.
Transfer control module	• Controls transfer shifting. • Operates 4WD indicator, 4WD low indicator and warning buzzer. • Diagnoses 4WD switch, 4WD low switch and transfer shift actuator limit switch.
Transfer shift actuator	Consists of transfer shift actuator motor and transfer shift actuator limit switch.
Transfer shift actuator motor	Shifts transfer shift position by operating shift fork shaft No.1 through pinion gear.
Transfer shift actuator limit switch	Detects whether transfer shift actuator motor position.

Transfer Cross Section Diagram



[A]: View A	9. Reduction clutch sleeve	19. Shift fork shaft No.1
[B]: Shift fork shaft cross section	10. Steel ball	20. Shift fork shaft No.2
1. Input shaft	11. Key spring	21. Transfer shift actuator
2. Drive chain	12. High & low shift fork	22. Front case
3. Output front shaft	13. Sprocket output gear	23. Rear case
4. Counter gear	14. VSS rotor	24. Output rear flange
5. Front drive gear shift fork	15. Output rear shaft	25. Pinion gear
6. Front drive clutch hub sleeve	16. Front drive clutch hub	26. 4WD switch
7. Synchronizer ring	17. Output front flange	27. 4WD low switch
8. Output low gear	18. Input front flange	28. Straight pin

Transfer Control System Description

The transfer control module shifts the transfer to the selected shift position (2H, 4H, or 4L) according to the signal from the “2WD” switch, “4WD” switch or “4WD-L” switch.
The transfer controls the transfer shift actuator in order to operate the shift fork shaft No.1. The transfer control module detects the position of the transfer shift actuator motor by the signal from the transfer shift actuator limit switch.
Also, the transfer control module detects each position (2H, 4H, or 4L) of the shift fork shaft No.1 installed to the transfer assembly by the signals from the 4WD switch and the 4WD low switch as follows.

Relationship of transfer shift position and switch

Switch	Transfer shift position		
	2H	4H	4L
4WD switch	OFF	ON	ON
4WD low switch	OFF	OFF	ON

When the transfer shift actuator motor position detected by the limit switch matches the shift fork shaft No.1 position detected by the switches above-mentioned, the transfer control module judges that the transfer shifting is completed.
And, the transfer control module has the following operations to inform the state of the transfer and to assure the safe driveability even when the transfer control module detects failure of the transfer control system or the 4WD control system.

- Indicator and buzzer operation
- Limited shift operation

Indicator and warning buzzer operation

The transfer control module operates the 4WD indicator, the 4WD low indicator and the warning buzzer as follows in order to inform what state the transfer control system is.

NOTE:

- **The operations with asterisk (*) in the table below, indicate malfunction flashing. The transfer control module detects the malfunction in the transfer control system. Check and repair transfer control system referring to the applicable trouble shooting as follows.**
  - **– "Table-C: 4WD Indicator Flashes at Intervals of 0.5 Seconds Continuously" in this section**
  - **– "Table-D: 4WD Indicator and 4WD Low Indicator Flashes at Intervals of 0.2 Seconds" in this section**
- **For the conditions with asterisk (**) in the table below, the transfer control system is in the limited shift operation. For the details of limited shift operation, refer to "Limited Shift Operation" in this section.**

Operation			Condition
Indicator		Warning Buzzer	
4WD indicator	OFF	–	• Ignition switch is OFF. • Transfer is at 2H (air locking hub is unlocked).
	ON	–	• Within 2 seconds after ignition switch is turned ON. (checking indicator operation) • Transfer is at 4H/4L (air locking hub is locked).
	Flashes at intervals of 0.5 seconds for approx. 3 seconds	–	• Transfer is shifting from 2H to 4H. • Transfer is shifting from 4H to 2H. • Transfer could not complete shifting to 2H (or 4H) and shift position is returning to 4H (or 2H)**.
	Flashes at intervals of 0.5 seconds continuously*	–	4WD controller detects malfunction of 4WD control system.
	Flashes at intervals of 0.2 seconds*	–	Transfer control module detects malfunction of transfer shift actuator limit switch during shift operation**.
	Flashes at intervals of 0.5 seconds	Sounds 3 times	• "2WD" switch operates at 100 km/h (62 mile/h) or more when transfer is at 4H**. • "4WD" switch operates at 100 km/h (62 mile/h) or more when transfer is at 2H**.
4WD low indicator	OFF	–	• Ignition switch is OFF. • Transfer is at 2H/4H. (4WD low switch is OFF.)
	ON	–	• Within 2 seconds after ignition switch is turned ON. (checking indicator operation) • Transfer is at 4L. (4WD low switch is ON.)
	Flashes at intervals of 0.5 seconds	Sounds continuously	• Transfer is shifting from 4H to 4L. • Transfer is shifting from 4L to 4H. • Transfer is shifting to shift position detected by 4WD low switch**.
	Flashes at intervals of 0.2 seconds*	–	• Transfer control module detects mismatching between signals from transfer shift actuator limit switch and 4WD/4WD low switches when ignition switch is turned ON**. • Transfer control module detects malfunction of transfer shift actuator limit switch during shift operation**.

Operation		Warning Buzzer	Condition
Indicator			
4WD low indicator	Flashes at intervals of 0.5 seconds	Sounds 3 times	• "4WD" switch operates at 5 km/h (3 mile/h) or more when transfer is at 4L**. • "4WD-L" switch operates at 5 km/h (3 mile/h) or more when transfer is at 4H**. • Vehicle speed rises by 5 km/h (3 mile/h) or more during shifting from 4H to 4L or from 4L to 4H**. • A/T select lever shifts to other than "N" range or clutch pedal is released during shifting from 4H to 4L or from 4L to 4H. • "4WD" switch is pushed when transfer is at 4L and A/T is at other than "N" range or clutch pedal is released. • "4WD-L" switch is pushed when transfer is at 4H and A/T is at other than "N" range or clutch pedal is released.
–	–	Sound 3 times	• "2WD" switch is pushed when transfer is at 4L • "4WD-L" switch is pushed when transfer is at 2H.

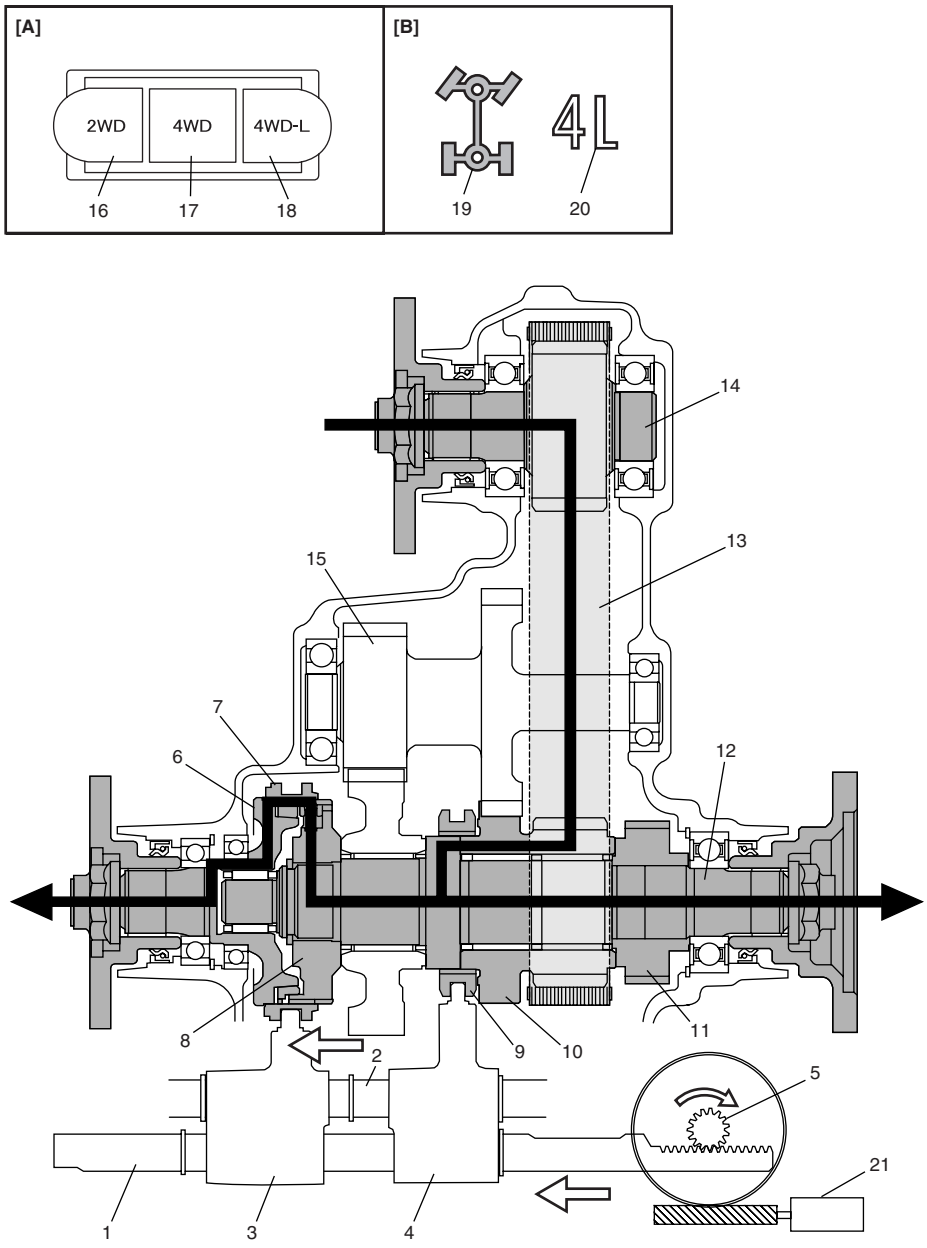
Transfer Control System Operation

Shift Operation from 2H to 4H

When "4WD" switch is pushed at 2H, the transfer control module shifts the transfer to 4H as follows.
The transfer control module flashes the 4WD indicator and runs the transfer shift control actuator motor. The transfer shift actuator motor shifts the shift fork shaft No.1 via the pinion gear until the 4WD switch is turned ON. And, the 4WD controller locks the air locking hub and turns ON the 4WD indicator via the transfer control module. If the transfer control module does not detect the ON signal from the 4WD switch for 3 seconds after starting the shift operation, the transfer control module returns the transfer shift actuator motor to the 2H position.
Also, the shift fork shaft No.1 shifts the front drive gear shift fork, and then the front drive clutch hub and the output front shaft are engaged via front drive clutch hub sleeve.
At this time, the driving force from the input shaft is transmitted to the transfer output front shaft and output rear shaft.

However, the shift operation will not be performed under the following condition.

- The transfer shift actuator limit switch detects other than the 2H position before starting the shift operation.
- The vehicle speed is more than 100 km/h (62 mile/h) before starting the shift operation.



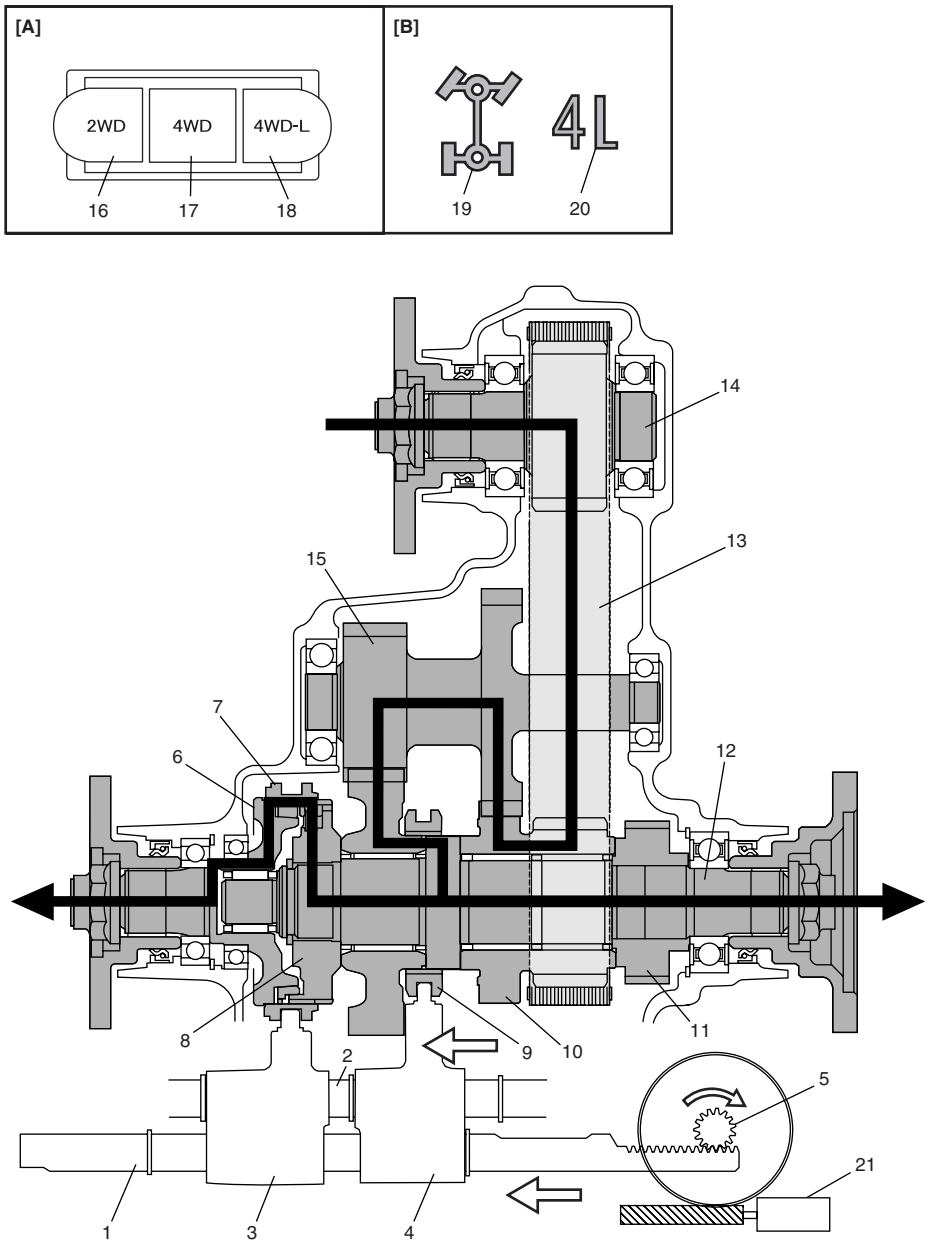
[A]: 2WD/4WD switch	7. Front drive clutch hub sleeve	15. Counter gear
[B]: Indicator	8. Front drive clutch hub	16. “2WD” switch
1. Shift fork shaft No.1	9. Reduction clutch sleeve	17. “4WD” switch
2. Shift fork shaft No.2	10. Sprocket output gear	18. “4WD-L” switch
3. Front drive gear shift fork	11. VSS rotor	19. 4WD indicator
4. High & low shift fork	12. Output rear shaft	20. 4WD low indicator
5. Pinion gear	13. Drive chain	21. Transfer shift actuator motor
6. Output front shaft	14. Input shaft	

Shift Operation from 4H to 4L

When “4WD-L” switch is pushed at 4H, the transfer control module shifts the transfer to 4L as follows.
The transfer control module flashes the 4WD low indicator and runs the transfer shift control actuator motor until the transfer shift actuator limit switch is at the 4L position.
The transfer shift actuator motor shifts the shift fork shaft No.1 via the pinion gear. And, if it is difficult to shift the shift fork shaft No.1 to the 4L position, the transfer actuator keeps the shift operation by the spring included in the transfer shift actuator.
When the transfer shift actuator shifts the shift fork shaft No.1 to the 4L position, the 4WD low switch is turned ON and the transfer control module turns ON the 4WD low indicator.
Also, the shift fork shaft No.1 shifts the high & low shift fork, and then the output low gear and the output rear shaft are engaged via the reduction clutch sleeve.
At this time, the driving force from the input shaft is transmitted to the transfer output front shaft and the output rear shaft through the counter gear at a reduced speed.

However, the shift operation will not be performed under the following conditions.

- The transfer shift actuator limit switch detects other than the 4H position before starting the shift operation.
- The vehicle speed is more than 5 km/h (3 mile/h) before stopping the transfer shift actuator motor.
- The A/T select lever is shifted from “N” range or the clutch pedal is released before stopping the transfer shift actuator motor.



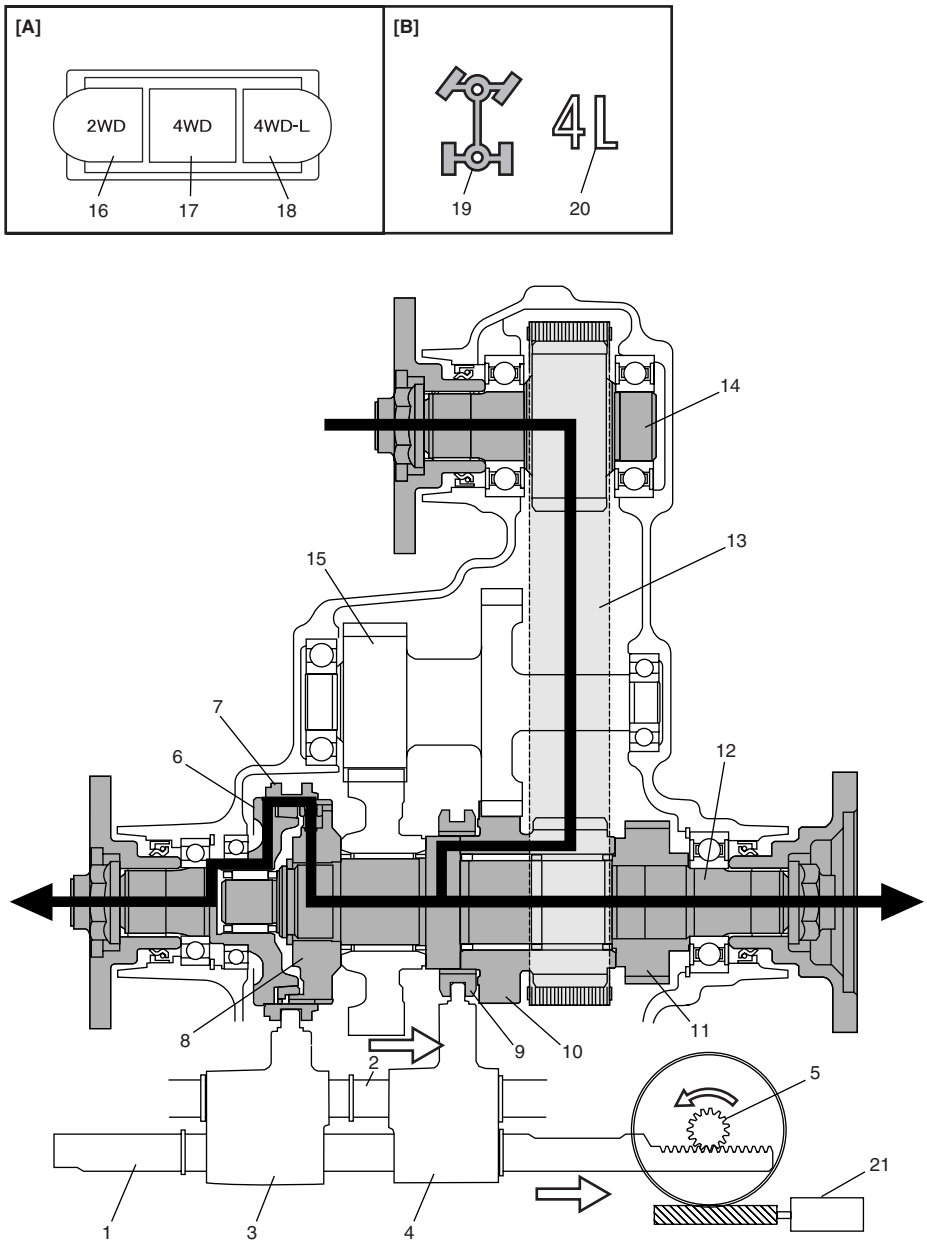
[A]: 2WD/4WD switch	7. Front drive clutch hub sleeve	15. Counter gear
[B]: Indicator	8. Front drive clutch hub	16. “2WD” switch
1. Shift fork shaft No.1	9. Reduction clutch sleeve	17. “4WD” switch
2. Shift fork shaft No.2	10. Sprocket output gear	18. “4WD-L” switch
3. Front drive gear shift fork	11. VSS rotor	19. 4WD indicator
4. High & low shift fork	12. Output rear shaft	20. 4WD low indicator
5. Pinion gear	13. Drive chain	21. Transfer shift actuator motor
6. Output front shaft	14. Input shaft	

Shift Operation from 4L to 4H

When “4WD” switch is pushed at 4L, the transfer control module shifts the transfer to 4H as follows.
The transfer control module flashes the 4WD low indicator and runs the transfer shift control actuator motor until the transfer shift actuator limit switch is at the 4H position.
The transfer shift actuator motor shifts the shift fork shaft No.1 via the pinion gear. And, if it is difficult to shift the shift fork shaft No.1 to the 4H position, the transfer actuator keeps the shift operation by the spring included in the transfer shift actuator.
When the transfer shift actuator shifts the fork shaft No.1 to the 4H position, the 4WD low switch is turned OFF and the transfer control module turns OFF the 4WD low indicator.
Also, the shift fork shaft No.1 shifts the high & low shift fork, and then the output low gear and the output rear shaft are disengaged via the reduction clutch sleeve.
At this time, the driving force from the input shaft is transmitted to the transfer output front shaft and the output rear shaft without speed reduction.

However, the shift operation will not be performed under the following conditions.

- The transfer shift actuator limit switch detects other than the 4L position before starting the shift operation.
- The vehicle speed is more than 5 km/h (3 mile/h) before stopping the transfer shift actuator motor.
- The A/T select lever is shifted from “N” range or the clutch pedal is released before stopping the transfer shift actuator motor.



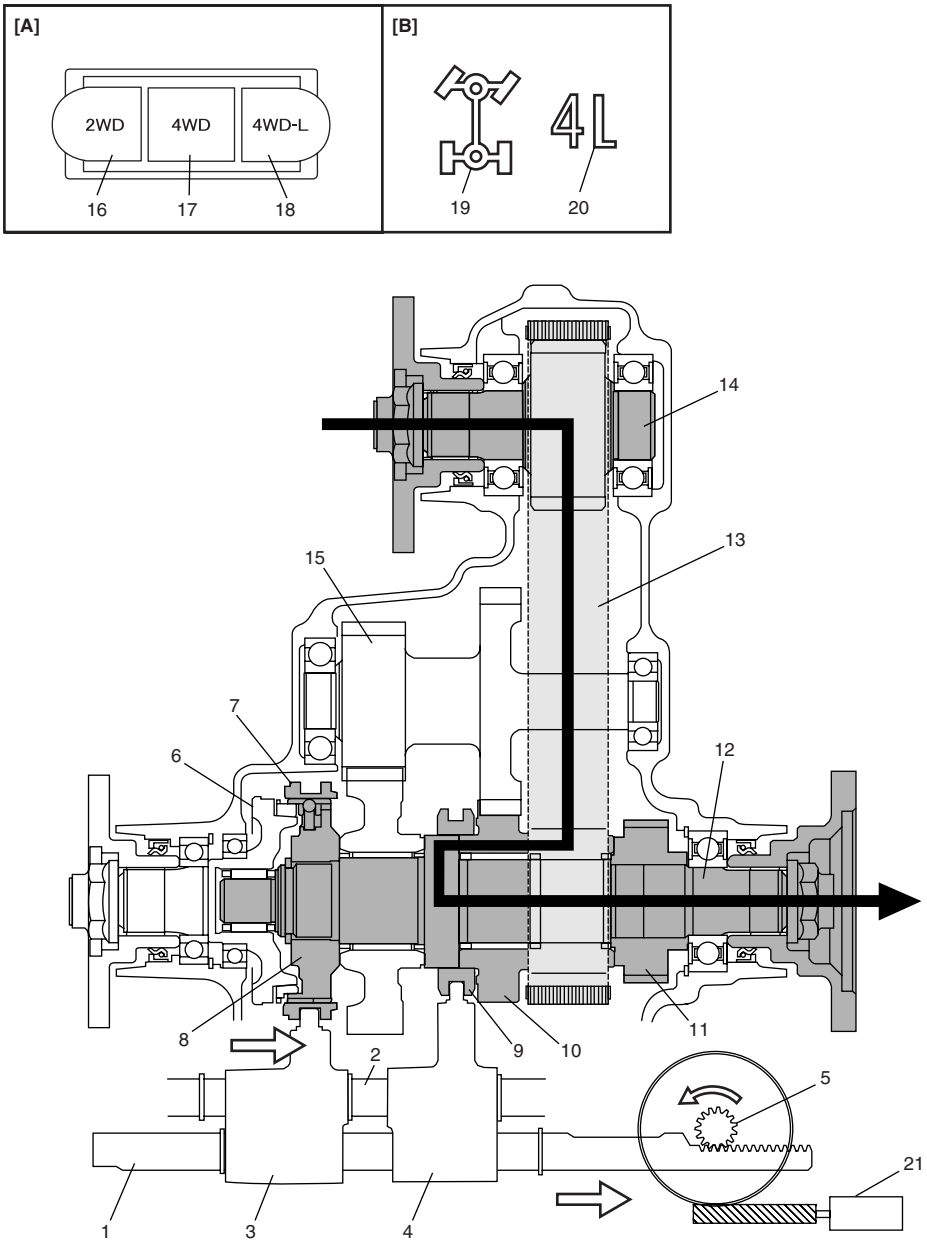
[A]: 2WD/4WD switch	7. Front drive clutch hub sleeve	15. Counter gear
[B]: Indicator	8. Front drive clutch hub	16. “2WD” switch
1. Shift fork shaft No.1	9. Reduction clutch sleeve	17. “4WD” switch
2. Shift fork shaft No.2	10. Sprocket output gear	18. “4WD-L” switch
3. Front drive gear shift fork	11. VSS rotor	19. 4WD indicator
4. High & low shift fork	12. Output rear shaft	20. 4WD low indicator
5. Pinion gear	13. Drive chain	21. Transfer shift actuator motor
6. Output front shaft	14. Input shaft	

Shift Operation from 4H to 2H

When “2WD” switch is pushed at 4H, the transfer control module shifts the transfer to 2H as follows.
The transfer control module flashes the 4WD indicator and runs the transfer shift control actuator motor until the transfer shift actuator limit switch is at the 2H position. If the transfer control module does not detect the 2H position signal from the transfer shift actuator limit switch for 3 seconds after starting the shift operation, the transfer control module returns the transfer shift actuator motor to the 4H position.
The transfer shift actuator motor shifts the shift fork shaft No.1 via the pinion gear. And, if it is difficult to shift to the 2H position, the transfer actuator keeps the shift operation by the spring included in the transfer shift actuator.
When the transfer shift actuator shifts the shift fork shaft No.1 to the 2H position, the 4WD switch is turned OFF. And, the 4WD controller unlocks the air locking hub and turns OFF the 4WD indicator via the transfer control module.
Also, the shift fork shaft No.1 shifts the front drive gear shift fork, and then the front drive clutch hub and the output front shaft are disengaged via front drive clutch hub sleeve.
At this time, the driving force from the input shaft is only transmitted to the transfer output front shaft.

However, the shift operation will not be performed under the following condition.

- The transfer shift actuator limit switch detects other than the 2H position before starting the shift operation.



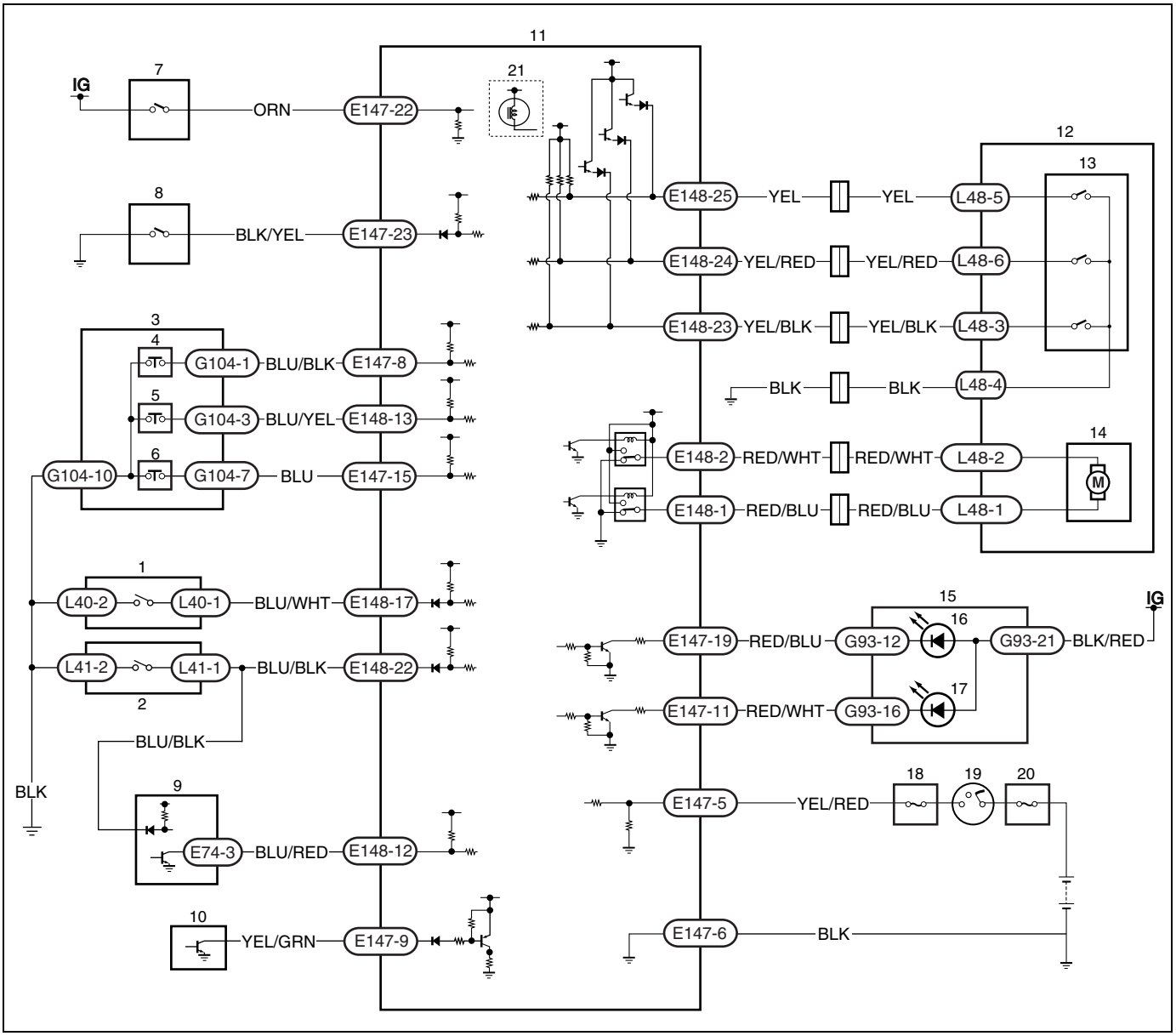
[A]: 2WD/4WD switch	7. Front drive clutch hub sleeve	15. Counter gear
[B]: Indicator	8. Front drive clutch hub	16. “2WD” switch
1. Shift fork shaft No.1	9. Reduction clutch sleeve	17. “4WD” switch
2. Shift fork shaft No.2	10. Sprocket output gear	18. “4WD-L” switch
3. Front drive gear shift fork	11. VSS rotor	19. 4WD indicator
4. High & low shift fork	12. Output rear shaft	20. 4WD low indicator
5. Pinion gear	13. Drive chain	21. Transfer shift actuator motor
6. Output front shaft	14. Input shaft	

Limited Shift Operation

When the transfer control module detects the following condition in the transfer control system, the transfer control module limits the transfer shift operation as follows, and the limitation can be canceled by turning ignition switch to “OFF” position.

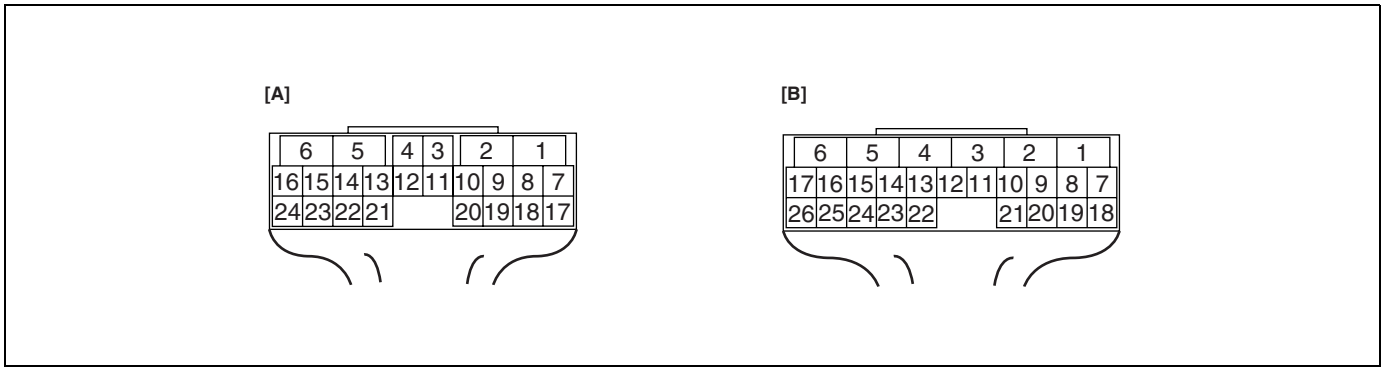
	Condition	Limited shift operation	Indicator and/or warning buzzer operation
Abnormal shift position limitation	Detects malfunction of transfer shift actuator limit switch when operating 2WD/4WD switch.	Cancels transfer shift actuator motor operation.	4WD indicator and 4WD low indicator flashes at intervals of 0.2 seconds.
Transmission range limitation	• Detects A/T shift range is at other than “N” range or clutch pedal is released when operating “4WD” switch with transfer is at 4L. • Detects A/T shift range is at other than “N” range or clutch pedal is released when operating “4WD-L” switch with transfer is at 4H.	Cancels transfer shift actuator motor operation.	• 4WD low indicator flashes at intervals of 0.5 seconds. • Warning buzzer sounds 3 times.
	Detects A/T shift range shifts at other than “N” range or clutch pedal is released during shifting from “4H” to “4L” or from “4L” to “4H”.	Operates transfer shift actuator motor to shift position detected by 4WD low switch.	4WD low indicator flashes at intervals of 0.5 seconds.
Vehicle speed limitation	• Detects signal from “4WD” switch at 5 km/h (3 mile/h) or more when transfer is at 4L. • Detects signal from “4WD-L” switch at 5 km/h (3 mile/h) or more when transfer is at 4H.	Cancels transfer shift actuator motor operation. (Returns shift position before it shifts.)	• 4WD low indicator flashes at intervals of 0.5 seconds. • Warning buzzer sounds 3 times.
	• Detects signal from “2WD” switch at 100 km/h (62 mile/h) or more when transfer is at 4H. • Detects signal from “4WD” switch at 100 km/h (62 mile/h) or more when transfer is at 2H.	Cancels transfer shift actuator motor operation.	• 4WD low indicator flashes at intervals of 0.5 seconds. • Warning buzzer sounds 3 times.
	Detects 5 km/h (3 mile/h) or more during shifting from “4H” to “4L” or from “4L” to “4H”.	Operates transfer shift actuator motor to shift position detected by 4WD low switch.	4WD low indicator flashes at intervals of 0.5 seconds.
Return control	Can not detect ON signal of 4WD switch within 3 seconds after transfer starts shifting from 2H to 4H.	Returns shift position before it shifts.	4WD indicator flashes at intervals of 0.5 seconds.

Transfer Control System Wiring Circuit Diagram



1. 4WD low switch	8. Clutch pedal switch (for M/T model)	15. Combination meter
2. 4WD switch	9. 4WD controller	16. 4WD indicator
3. 2WD/4WD switch	10. VSS	17. 4WD low indicator
4. “2WD” switch	11. Transfer control module	18. “4WD” fuse
5. “4WD” switch	12. Transfer shift actuator	19. Ignition switch
6. “4WD-L” switch	13. Transfer shift actuator limit switch	20. Main fuse
7. A/T shift switch (“N” range) (for A/T model)	14. Transfer shift actuator motor	21. Warning buzzer

Terminal Arrangement of Transfer Control Module



[A]: Connector “E147” viewed from harness side
[B]: Connector “E148” viewed from harness side

Terminal	Circuit	Terminal	Circuit
E147-5	Ignition power supply	E148-1	Transfer motor 2
E147-6	Ground	E148-2	Transfer motor 1
E147-8	“2WD” switch	E148-12	4WD controller (2WD/4WD position)
E147-9	Vehicle speed sensor (VSS)	E148-13	“4WD” switch
E147-11	4WD low indicator	E148-17	4WD low switch
E147-15	“4WD-L” switch	E148-22	4WD switch
E147-19	4WD indicator	E148-23	Limit switch 3
E147-22	A/T shift switch (“N” range) (for A/T model)	E148-24	Limit switch 2
E147-23	Clutch pedal switch (for M/T model)	E148-25	Limit switch 1

Input / Output Signal Table of Transfer Control Module

The transfer control module outputs the following signals to actuators, indicators, etc. according to operation of 2WD/4WD switch, etc.

		Output signal (to each component parts)			
		Transfer shift actuator	4WD indicator	4WD low indicator	Warning buzzer
Input signal	“2WD” switch	❍	❍		❍
	“4WD” switch	❍	❍	❍	❍
	“4WD-L” switch	❍		❍	❍
	VSS	❍			
	4WD switch	❍	❍	❍	❍
	4WD low switch	❍	❍	❍	❍
	A/T shift switch	❍		❍	❍
	Clutch pedal switch	❍		❍	❍
	4WD controller		❍		

Diagnosis

Transfer Diagnostic Flow Table

WARNING:

- **When shifting transfer from 2H to 4H with vehicle lifted, a hard impact occurs due to the speed difference between transfer output front shaft and transfer output rear shaft.**
  The impact may damage transfer system and vehicle may fall from lifting device, resulting in personal injury.
- **Be sure to depress brake pedal fully (tire stops completely) whenever shifting transfer from 2H to 4H with vehicle lifted.**

For the details of each step, refer to “Detail of Transfer Control System Check” in this section.

Step	Action	Yes	No
1	Malfunction analysis 1) Perform “Customer complaint analysis” in “Detail of Transfer Control System Check” in this section. 2) Perform “Problem symptom confirmation” in “Detail of Transfer Control System Check” in this section. Is there malfunction flashing in 4WD indicator and/or 4WD low indicator? (For detail of malfunction flashing, refer to “Indicator and Warning Buzzer Operation” in this section.)	Go to step 2.	Go to step 3.
2	Trouble shooting for malfunction flashing 1) Check and repair referring to applicable trouble shooting table for malfunction flashing. Are checks and repairs complete?	Go to Step 3.	Check and repair malfunction part(s).
3	Check for intermittent problem 1) Check intermittent troubles referring to “Intermittent and Poor Connection” in Section 0A. Is there any faulty condition?	Repair or replace malfunction part(s).	Go to Step 6.
4	Visual inspection and Transfer control system symptom diagnosis 1) Check and repair according to “Visual Inspection” and “Transfer System Symptom Diagnosis” in this section. Are there malfunction part(s)?	Check and repair malfunction part(s).	Go to Step 5.
5	Final confirmation test 1) Perform “Problem symptom confirmation” in “Detail of Transfer Control System Check” in this section. Is there any malfunction flashing and/or malfunction operation?	Go to Step 1.	End.

Detail of Transfer Diagnostic Flow Table

Step 3: Malfunction Analysis

Customer complaint analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer.
For this purpose, use of such a questionnaire form as shown in the following will facilitate collecting information to the point required for proper analysis and diagnosis.

Customer questionnaire (Example)

Customer's name:	Model:	VIN:	
Date of issue:	Date of Reg:	Date of problem:	Mileage:

Problem Symptoms	• 4WD indicator and/or 4WD low indicator abnormal: fails to turn on / fails to turn off / malfunction flashing • Abnormal noise while vehicle running: from transfer, from actuator, other _____ • No shifted to "2H" position • No shifted to "4H" position • No shifted to "4L" position
Frequency of Occurrence	• Continuous / Intermittent (times a day, a month) / other _____
Conditions for Occurrence of Ploblem	• When starting: at initial start only / at every start / other _____ • Vehicle speed: while accelerating / while decelerating / at stop / while turning / while running at constant speed / other _____ • Road surface condition: Paved road / rough road / snow-covered road / other _____
Environmental Condition	• Weather: fine / cloudy / rain / snow / other • Temperature: °F (°C)

NOTE:

The form is a standard sample. It should be modified according to conditions characteristic of each market.

Problem symptom confirmation

Check if what the customer claimed in "Customer Questionnaire" is actually found in the vehicle and if that symptom is found, whether it is identified as a failure. (This step should be shared with the customer if possible). Check transfer control system referring to "Transfer Control System Operation Inspection" in this section.

Step 4: Troubleshooting for Malfunction Flashing

Based on the malfunction flashing indicated in Step 3 and referring to applicable trouble shooting table, locate the cause of the trouble, namely in a sensor, switch, wire harness, connector, actuator assembly or other part and repair or replace faulty parts.

Step 5: Check for Intermittent Problem

Check parts where an intermittent trouble is easy to occur (e.g., wire harness, connector, etc.) referring to “Intermittent and Poor Connection” in Section 0A and related circuit of malfunction flashing in Step 3.

Step 6: Visual Inspection and Transfer Control System Symptom Diagnosis

Be sure to perform visual check of the items that support proper function of the transfer control system referring to “Visual Inspection” in this section.
Check the part of system suspected as a possible cause referring to “Transfer System Symptom Diagnosis” in this section.

Step 7: Final Confirmation Test

Confirm that the problem symptom has gone and the transfer control system is free from any abnormal conditions. If what has been repaired is related to the malfunction flashing, perform “Transfer Control System Operation Inspection” in this section and confirm that no malfunction flashing is indicated.

Transfer Control System Operation Inspection

NOTE:

- **Can not operate to shift directly between from 2H to 4L or from 4L to 2H.**
- **If it is difficult to shift from “2H” to “4H” while vehicle is moving, stop vehicle and push and release “4WD” switch once with vehicle at stop.**
- **If it is difficult to shift transfer from “4H” to “2H” while vehicle is moving, try accelerating and decelerating several times after pushing “2WD” switch. Be sure to wait until traffic conditions allow you to accelerate and decelerate safely before using this procedure.**
- **If it is difficult to shift between from “4H” to “4L”, try moving vehicle slowly back or forth a few feet while 4WD low indicator is blinking. Be sure to wait until traffic conditions allow you to move vehicle safely before using this procedure.**
- **Also, when shifting to the “4L” position, gear grinding noise may be generated under low temperature condition. In that case, move the vehicle backward slowly.**
- **4WD indicator blinks when transfer is shifting from 2H to 4H or from 4H to 2H.**
- **4WD low indicator blinks and warning buzzer sounds during shift operation between 4H and 4L.**
- **For details of 4WD indicator, 4WD low indicator and warning buzzer operation, refer to “Indicator and Warning Buzzer Operation” in this section.**

1) Check the transfer oil level insufficient or incorrect referring to “Oil Check” in this section and transfer mountings for wear or looseness before performing test-driving.
2) Confirm that transfer is at 2H position and ignition switch is at OFF position.
3) Check 4WD indicator and 4WD low indicator as follows.
   a) Turn ignition switch to ON position.
   b) Check that 4WD indicator and 4WD low indicator turns on for about 2seconds and then turns off.
      If any faulty condition is found, proceed to “Table-A: 4WD Indicator and/or 4WD Low Indicator Does Not Come ON at Ignition Switch ON” or “Table-B: 4WD Indicator and/or 4WD Low Indicator Comes ON Steady” in this section.
4) Inspect shift operation from 2H to 4H as follows.
   a) Start engine.
   b) Make sure that vehicle speed is less than 100 km/h (60 mph).
   c) Confirm that transfer shift position is 2H.
   d) Position front wheels straight ahead.
   e) Push “4WD” switch.
   f) Check that 4WD indicator flashes, and then comes on steady.
5) Inspect shift operation from 4H to 4L as follows.
   a) Stop vehicle completely with engine running.
   b) Position front wheels straight ahead.
   c) Confirm that transfer shift position is 4H.
   d) Place A/T select lever in “N” position or depress clutch pedal fully.
   e) Push “4WD-L” switch.
   f) Check that 4WD low indicator flashes, and then comes on steady.
6) Inspect shift operation from 4L to 4H as follows.
   a) Stop vehicle completely with engine running.
   b) Position front wheels straight ahead.
   c) Confirm that transfer shift position is 4L.
   d) Place A/T select lever in “N” position or depress clutch pedal fully.
   e) Push “4WD” switch.
   f) Check that 4WD low indicator flashes, and then not comes on.
7) Inspect shift operation form 4H to 2H as follows.
   a) Make sure that vehicle speed is less than 100 km/h (60 mph).
   b) Confirm that engine is running and transfer shift position is 4H.
   c) Position front wheels straight ahead.
   d) Push “2WD” switch.
   e) Check that 4WD indicator flashes, and then not comes on.

Visual Inspection

Check the following parts and systems visually.

Inspection item	Inspection condition	Referring
Transfer mounting(s)	Wear and looseness	–
Transfer gear oil	Level and leakage	Refer to “Oil Change” in this section.
Front differential oil	Level and leakage	Refer to “Oil Change” in Section 7E.
Rear differential oil	Level and leakage	Refer to “Oil Change” in Section 7F.
A/T fluid	Level and leakage	Refer to “Fluid Change” in Section 7B.
Fuse(s)	Burning	Check related fuses.
Battery	Fluid level and corrosion of terminal	Refer to “Battery” in Section 6H.
Connectors of electric wire harness	Disconnection and friction	Refer to “Intermittent and Poor Connection” in Section 0A.

Transfer System Symptom Diagnosis

Diagnose transfer assembly after performing transfer control system check described in “Transfer Diagnostic Flow Table” in this section.

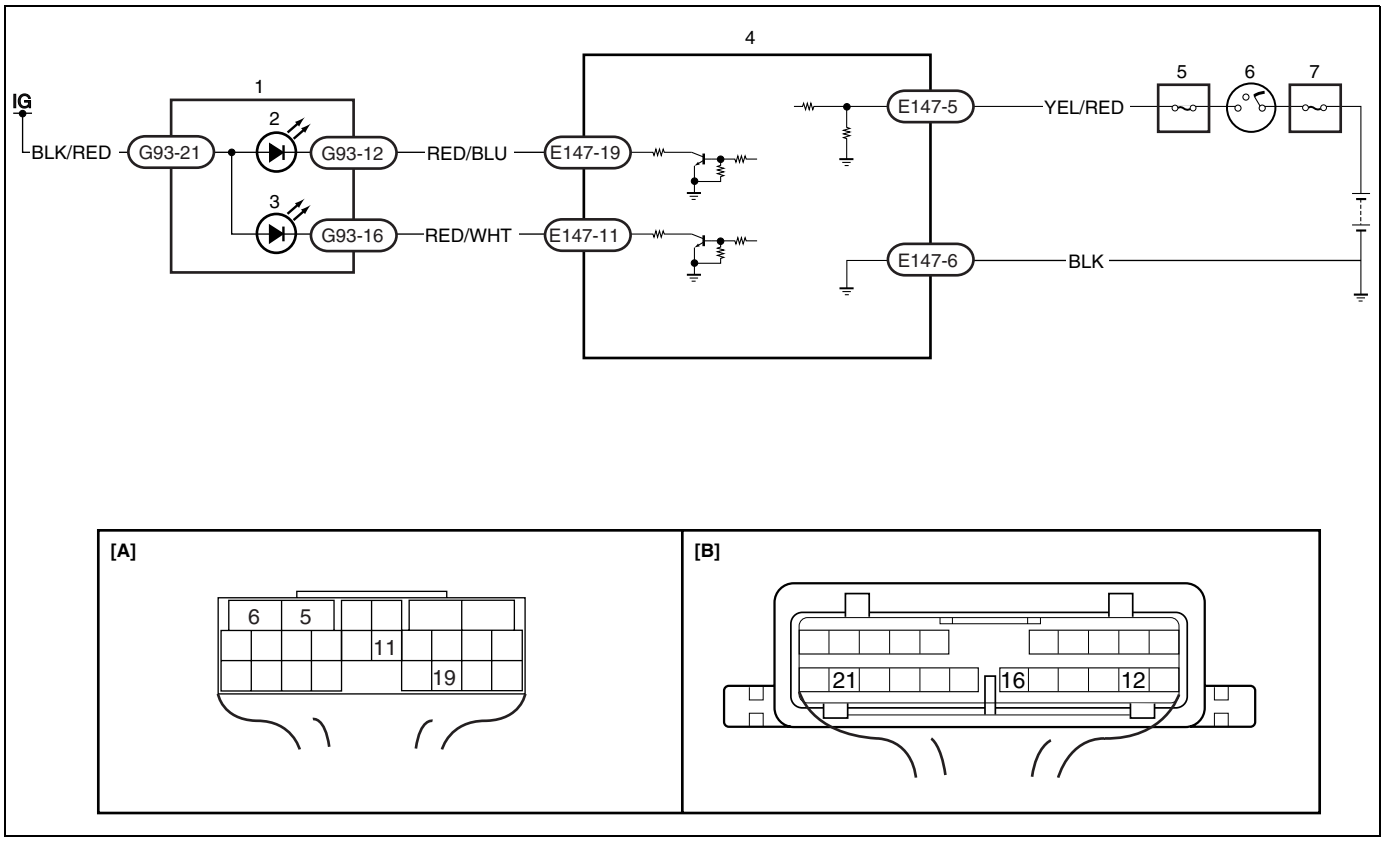
Condition	Possible Cause	Correction / Reference Item
Transfer control system does not operate (4WD indicator or 4WD low indicator does not flash and warning buzzer does not sound)	“2WD” switch, “4WD” switch and/or “4WD-L” switch faulty	Check switch(es) referring to “2WD/4WD Switch Inspection” in this section.
	Transfer shift actuator motor and/or transfer shift actuator limit switch faulty	Check transfer shift actuator referring to “Transfer Shift Actuator Inspection” in this section.
	4WD switch and/or 4WD low switch faulty	Check switch(es) referring to “4WD Switch and 4WD Low Switch Inspection” in this section.
	Wiring or grounding faulty	Repair as necessary.
	Transfer control module faulty	Check transfer control module referring to “Inspection of Transfer Control Module and Its Circuits” in this section.
Transfer control system does not operate (4WD indicator or 4WD low indicator flashes and warning buzzer sounds)	Tire worn unevenly	Rotate or replace.
	A/T shift switch (“N” range) faulty (for A/T model)	Adjust or check A/T shift switch referring to “Transmission Range Sensor (Shift Switch)” in Section 7B.
	Clutch pedal switch faulty (for M/T model)	• For petrol (gasoline) engine model, check clutch pedal switch referring to “Clutch Pedal Switch” in Section 7C. • For diesel engine model, check clutch pedal switch referring to “Clutch Pedal Switch Inspection” in Section 7C2.

Condition	Possible Cause	Correction / Reference Item
Transfer control system does not operate (4WD indicator or 4WD low indicator flashes and warning buzzer sounds)	VSS faulty	• For petrol (gasoline) engine model, check VSS referring to "DTC P0500 (DTC No. 16) Vehicle Speed Sensor (VSS) Malfunction" in Section 6. • For diesel engine model, check VSS referring to "DTC P0500 Vehicle Speed Circuit Malfunction" in Section 6-2.
	Wiring or grounding faulty	Repair as necessary.
	Transfer control module faulty	Check transfer control module referring to "Inspection of Transfer Control Module and Its Circuits" in this section.
Transfer refuses to shift selected position although transfer control system operates (4WD indicator or 4WD low indicator keeps flashing or transfer could not complete shifting to 2H (or 4H) and shift position is returning to 4H (or 2H).)	Transfer shift actuator faulty	Check transfer shift actuator referring to "Transfer Shift Actuator Inspection" in this section.
	4WD switch and/or 4WD low switch faulty	Check switch(es) referring to "4WD Switch and 4WD Low Switch Inspection" in this section.
	Distorted shift shaft or shift fork	Check shift fork referring to "Transfer Inspection" in this section.
	Worn synchronizer ring	Check synchronizer ring referring to "Transfer Inspection" in this section.
	Worn chamfered tooth on sleeve or gear	Check chamfered tooth and gear referring to "Transfer Inspection" in this section.
	Distorted shift shaft	Check shift shaft referring to "Transfer Inspection" in this section.
	Wiring or grounding faulty	Repair as necessary.
	Transfer control module faulty	Check transfer control module referring to "Inspection of Transfer Control Module and Its Circuits" in this section.
Warning buzzer does not sound although transfer operate normally	Wiring or grounding faulty	Repair as necessary.
	Transfer control module faulty	Check transfer control module referring to "Inspection of Transfer Control Module and Its Circuits" in this section.
Air lock hub does not lock/unlock	4WD switch faulty	Check 4WD switch referring to "4WD Switch and 4WD Low Switch Inspection" in this section.
	Wiring or grounding faulty	Repair as necessary.
	4WD control system faulty	Check 4WD control system referring to "Diagnosis table" in Section 3D.

Condition	Possible Cause	Correction / Reference Item
Gear slipping out of mesh	Worn shift fork shaft No.1 and/or No.2	Check shift fork shaft No.1 and/or No.2 referring to “Transfer Inspection”.
	Worn shift fork and/or sleeve	Check shift fork and/or sleeve referring to “Transfer Inspection”.
	Weak or damaged locating spring	Check locating spring referring to “Transfer Inspection”.
	Worn bearings on input shaft and/or output shaft	Check bearing referring to “Transfer Inspection”.
	Worn chamfered tooth on sleeve or gear	Check sleeve and gear referring to “Transfer Inspection”.
	Missing or disengagement of circlip(s)	Check circlip(s) referring to “Transfer Inspection”.
Noise	Inadequate or insufficient lubricant	Replenish transfer oil referring to “Oil Change” in this section.
	Damaged or worn bearing(s)	Check bearing(s) referring to “Transfer Inspection”.
	Damaged or worn gear(s)	Check gear(s) referring to “Transfer Inspection”.
	Damaged or worn synchronizer ring(s)	Check synchronizer ring(s) referring to “Transfer Inspection”.
	Damaged or worn chamfered tooth on sleeve(s) and/or gear(s)	Check sleeve(s) and/or gear(s) referring to “Transfer Inspection”.

Table A: 4WD Indicator and/or 4WD Low Indicator Does Not Come ON at Ignition Switch ON

Wiring Diagram



[A]: Transfer control module connector “E147” viewed from harness side	2. 4WD indicator	5. “4WD” fuse
[B]: Combination meter connector “G93” viewed from harness side	3. 4WD low indicator	6. Ignition switch
1. Combination meter	4. Transfer control module	7. Main fuse

Indicator Operation

Refer to “4WD Indicator and Warning Buzzer Operation” in this section.

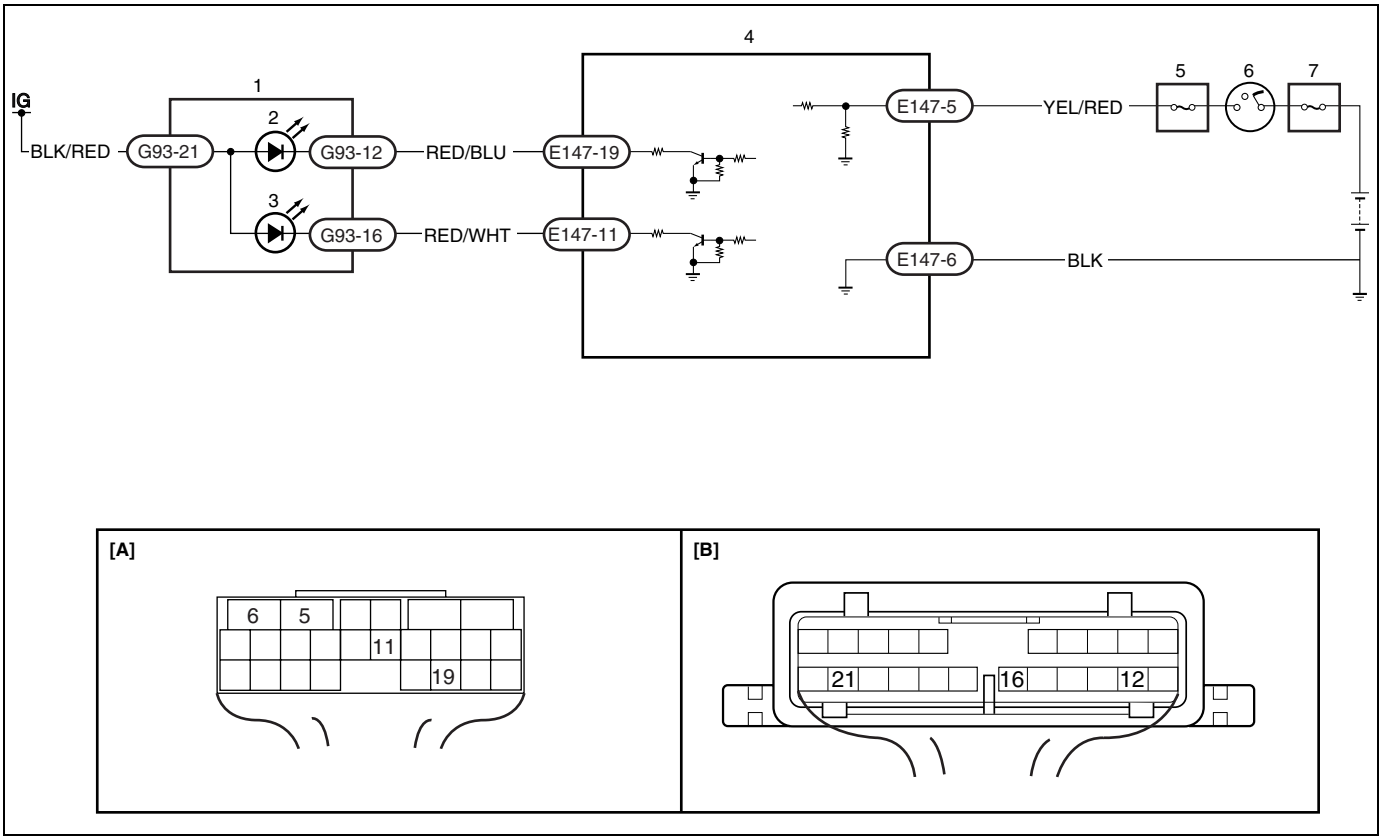
Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch to ON position. Do other warning lamps come ON?	Go to Step 2.	Go to Step 4.
2	4WD indicator and/or 4WD low indicator circuit check 1) Turn ignition switch to OFF position. 2) Disconnect transfer control module connector "E147". 3) Check for proper connection to "E147-11" terminal and/or "E147-19" terminal of transfer control module. 4) If OK, then ground "E147-11" terminal and/or "E147-19" terminal of transfer control module connector by using service wire with ignition switch turned ON. Does 4WD indicator and/or 4WD low indicator come ON?	Go to Step 6.	Go to Step 3.
3	4WD indicator and/or 4WD low indicator circuit check 1) Turn ignition switch to OFF position. 2) Remove combination meter referring to "Combination Meter" in Section 8. 3) Check for proper connection to "G93-12" terminal and/or "G93-16" terminal of combination meter connector. 4) If OK, then measure resistance the followings. • Between "G93-12" terminal of combination meter connector and "E147-19" terminal of transfer control module connector. • Between "G93-16" terminal of combination meter connector and "E147-11" terminal of transfer control module connector. Is each resistance 1 Ω or less?	Substitute a known-good combination meter and recheck.	"RED/BLU" and/or "RED/WHT" wire circuit open or high resistance.
4	Fuse check 1) Turn ignition switch to OFF position. Is "METER" fuse in good condition?	Go to Step 5.	Replace fuse and check for short.
5	Combination meter power circuit check 1) Remove combination meter referring to "Combination Meter" in Section 8. 2) Check for proper connection to "G93-21" terminal of combination meter connector. 3) If OK, then measure voltage between "G93-21" terminal of combination meter connector and vehicle body ground with ignition switch turned ON. Is voltage 10 – 14 V?	Substitute a known-good combination meter and recheck.	"BLK/RED" and/or circuit open.

Step	Action	Yes	No
6	Fuse check 1) Turn ignition switch to OFF position. Is “4WD” fuse in good condition?	Go to Step 7.	Replace fuse and check for short.
7	Transfer control module power circuit check 1) Check for proper connection to “E147-5” terminal of transfer control module connector. 2) If OK, then measure voltage between “E147-5” terminal of transfer control module connector and vehicle body ground with ignition switch turned ON. Is voltage 10 – 14 V?	Go to Step 8.	“YEL/RED” wire circuit open.
8	Transfer control module ground circuit check 1) Check for proper connection to “E147-6” terminal of transfer control module connector. 2) If OK, then measure resistance between “E147-6” terminal of transfer control module connector and vehicle body ground. Is it 1 Ω or less?	Substitute a known-good transfer control module and recheck.	“BLK” wire circuit open.

Table B: 4WD Indicator and/or 4WD Low Indicator Come ON Steady

Wiring Diagram



[A]: Transfer control module connector “E147” viewed from harness side	2. 4WD indicator	5. “4WD” fuse
[B]: Combination meter connector “G93” viewed from harness side	3. 4WD low indicator	6. Ignition switch
1. Combination meter	4. Transfer control module	7. Main fuse

Indicator Operation

Refer to “4WD Indicator and Warning Buzzer Operation” in this section.

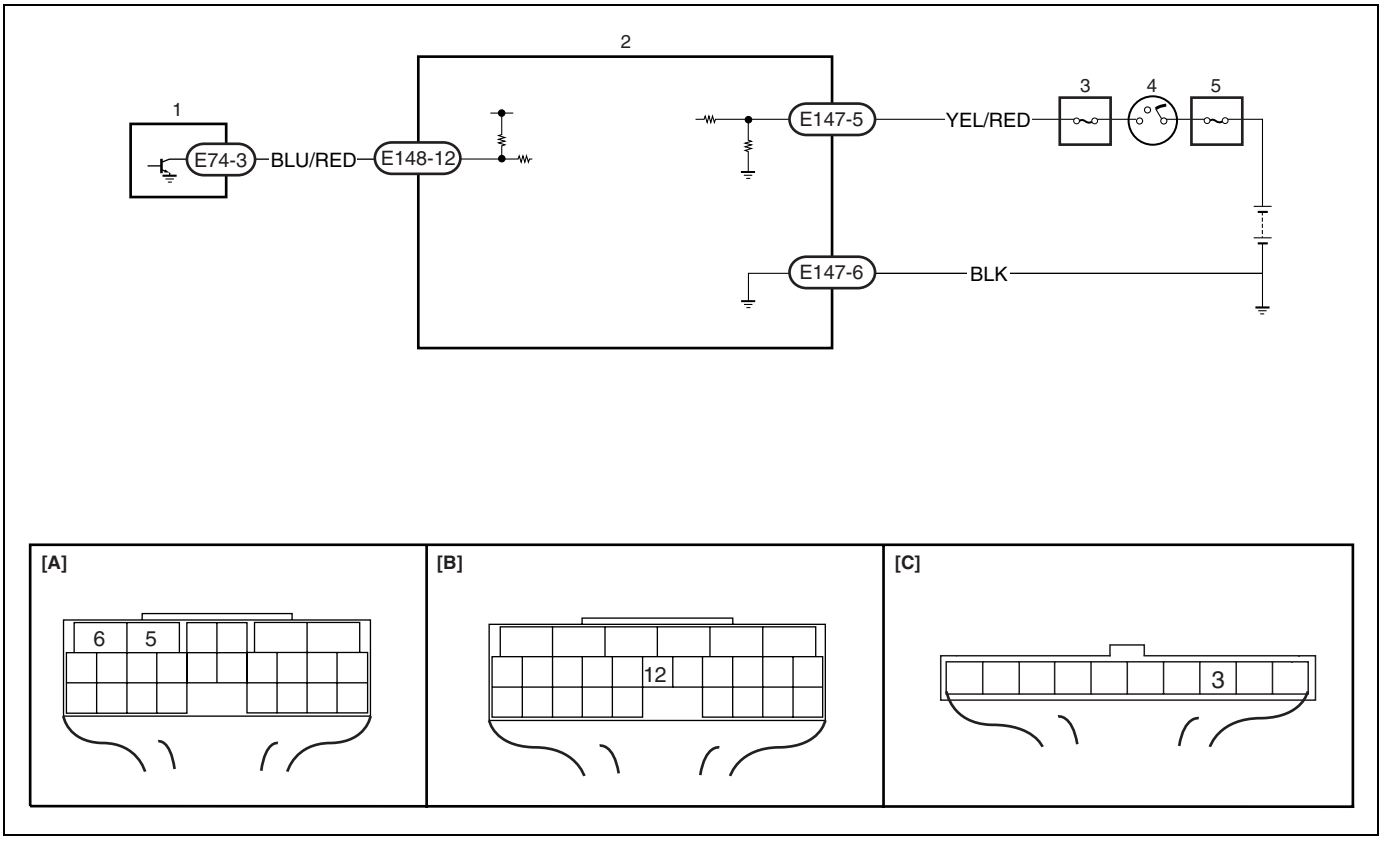
Troubleshooting

Step	Action	Yes	No
1	4WD indicator and 4WD low indicator circuit check 1) Turn ignition switch to OFF position. 2) Disconnect transfer control module connector “E147”. 3) Turn ignition switch to ON position. Does indicator come ON?	Go to Step 2.	Substitute a known-good transfer control module and recheck.

Step	Action	Yes	No
2	4WD indicator and 4WD low indicator circuit check 1) Turn ignition switch to OFF position. 2) Remove combination meter referring to "Combination Meter" in Section 8. 3) Measure resistance the followings. • Between "G93-12" of combination meter connector and vehicle body ground. • Between "G93-16" of combination meter connector and vehicle body ground. Is each resistance 1 MΩ or more?	Substitute a known-good combination meter and recheck.	"RED/BLU" wire and/or "RED/WHT" wire circuit shorted to ground.

Table C: 4WD Indicator Flushes at Intervals of 0.5 Seconds Continuously

Wiring Diagram



[A]: Transfer control module connector "E147" viewed from harness side	1. 4WD controller	4. Ignition switch
[B]: Transfer control module connector "E148" viewed from harness side	2. Transfer control module	5. Main fuse
[C]: 4WD controller connector "E74" viewed from harness side	3. "4WD" fuse	

Indicator Operation

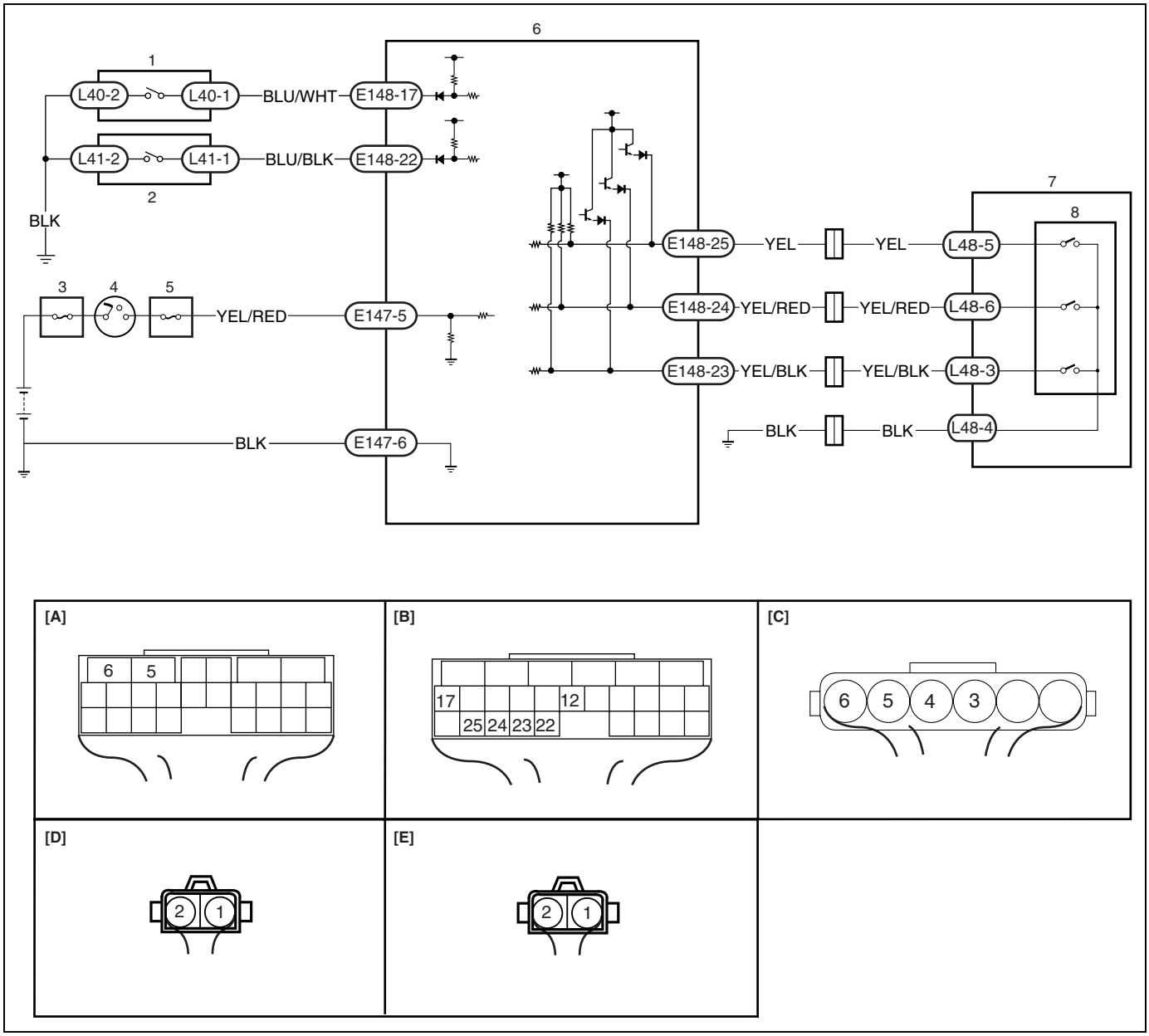
Refer to "4WD Indicator and Warning Buzzer Operation" in this section.

Troubleshooting

Step	Action	Yes	No
1	4WD control system check 1) Check 4WD controller referring to "4WD Control and its Circuit Check" in Section 3D. Is it in good condition?	Substitute a known-good Transfer control module and recheck.	Repair or replace malfunction part(s).

Table D: 4WD Indicator and 4WD Low Indicator Flashes at Intervals of 0.2 Seconds

Wiring Diagram



[A]: Transfer control module connector “E147” viewed from harness side	1. 4WD low switch	6. Transfer control module
[B]: Transfer control module connector “E148” viewed from harness side	2. 4WD switch	7. Transfer shift actuator
[C]: Transfer shift actuator connector “L48” viewed from harness side	3. Main fuse	8. Transfer shift actuator limit switch
[D]: 4WD low switch connector “L40” viewed from harness side	4. Ignition switch	
[E]: 4WD switch connector “L41” viewed from harness side	5. “4WD” fuse	

Indicator Operation

Refer to “4WD Indicator and Warning Buzzer Operation” in this section.

Troubleshooting

Step	Action	Yes	No
1	4WD low switch circuit check 1) Turn ignition switch to OFF position. 2) Disconnect 4WD low switch connector “L40”. 3) Check for proper connection to 4WD low switch at terminals “L40-1”. 4) If OK, then voltage between “L40-1” of 4WD low switch connector and vehicle body ground with ignition switch turned ON. Is voltage 10 – 14 V?	Go to Step 3.	Go to Step 2.
2	4WD low switch circuit check 1) Turn ignition switch to OFF position. 2) Disconnect transfer control module connector “E148”. 3) Check for proper connection to 4WD low switch at terminal “L40-1” and transfer control module at terminal “E148-17”. 4) If OK, then measure resistance between “L40-1” of 4WD low switch connector and “E148-17” of transfer control module connector. Is it 1 Ω or less?	Go to Step 4.	“BLU/WHT” wire is open or high resistance.
3	4WD low switch check 1) Check 4WD low switch referring to “4WD Low Switch Inspection” in this section. Is it in good condition?	“BLK” wire is open or high resistance.	Replace 4WD low switch.
4	4WD switch circuit check 1) Turn ignition switch to OFF position. 2) Disconnect 4WD switch connector “L41”. 3) Check for proper connection to 4WD switch at terminals “L41-1”. 4) If OK, then voltage between “L41-1” of 4WD switch connector and vehicle body ground with ignition switch turned ON. Is voltage 10 – 14 V?	Go to Step 6.	Go to Step 5.

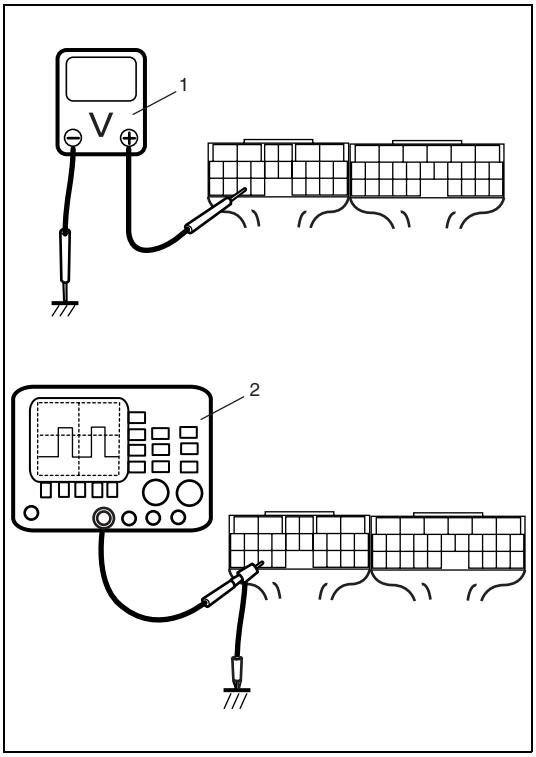
Step	Action	Yes	No
5	4WD switch circuit check 1) Turn ignition switch to OFF position. 2) Disconnect transfer control module connector “E148”. 3) Check for proper connection to 4WD switch at terminal “L41-1” and transfer control module at terminal “E148-22”. 4) If OK, then measure resistance between “L41-1” of 4WD switch connector and “E148-22” of transfer control module connector. Is it 1 Ω or less?	Go to Step 7.	“BLU/BLK” wire is open or high resistance.
6	4WD switch check 1) Check 4WD switch referring to “4WD Switch Inspection” in this section. Is it in good condition?	“BLK” wire is open or high resistance.	Replace 4WD switch.
7	Transfer shift actuator circuit check 1) Turn ignition switch to OFF position. 2) Disconnect transfer shift actuator connector “L48”. 3) Check for proper connection to transfer shift actuator at terminals “L48-5”, “L48-6”, “L48-3” and “L48-4”. 4) If OK, then measure resistance between “L48-5” of transfer shift actuator connector and “E148-25” of transfer control module connector. Is it 1 Ω or less?	Go to Step 8.	“YEL” wire is open or high resistance.
8	Transfer shift actuator circuit check 1) Measure resistance between “L48-6” of transfer shift actuator connector and “E148-24” of transfer control module connector. Is it 1 Ω or less?	Go to Step 9.	“YEL/RED” wire is open or high resistance.
9	Transfer shift actuator circuit check 1) Measure resistance between “L48-3” of transfer shift actuator connector and “E148-23” of transfer control module connector. Is it 1 Ω or less?	Go to Step 10.	“YEL/BLK” wire is open or high resistance.
10	Transfer shift actuator circuit check 1) Measure resistance between “L48-4” of transfer shift actuator connector and vehicle body ground. Is it 1 Ω or less?	Go to Step 11.	“BLK” wire is open or high resistance.
11	Transfer shift actuator limit switch check 1) Check transfer shift actuator limit switch referring to “Transfer Shift Actuator Inspection” in this section. Is it in good condition?	Substitute a known-good Transfer control module and recheck.	Replace transfer shift actuator.

Inspection of Transfer Control Module and Its Circuits

Transfer control module and its circuits can be checked at transfer control module wiring couplers by measuring voltage, pulse signal and resistance.

CAUTION:
Transfer control module cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to transfer control module with couplers disconnected from it.

Voltage and Signal Check

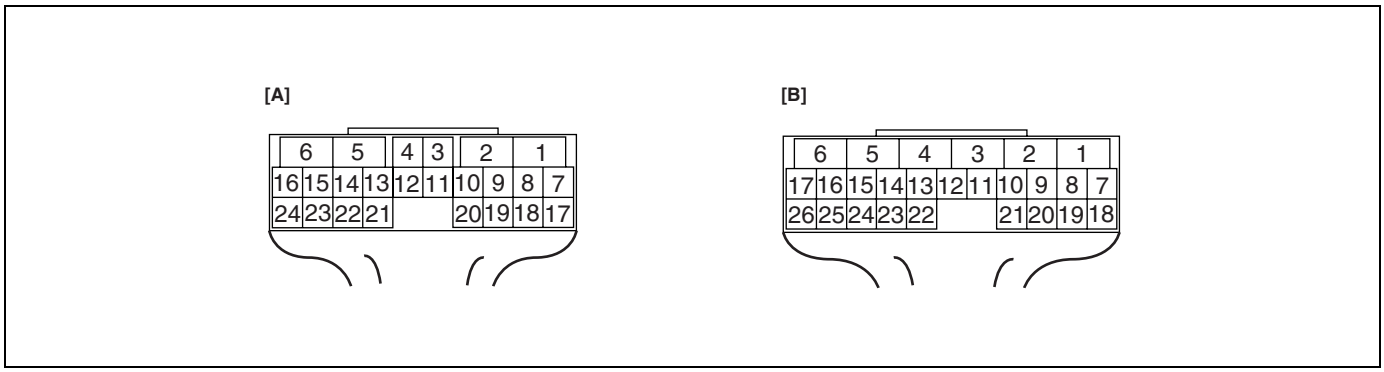


1) Check voltage using voltmeter (1) connected to each terminal of couplers.
2) Check signal using oscilloscope (2) connected to each terminal of couplers.

NOTE:

- **As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is turned ON.**
- **Pulse signal cannot be measured by voltmeter. It can be measured by oscilloscope.**
- **Item with asterisk (*) in normal voltage column can be read only by oscilloscope.**

Transfer control module connector (Viewed from harness side)



[A]: Connector “E147” viewed from harness side
[B]: Connector “E148” viewed from harness side

Terminal	Wire color	Circuit	Normal Voltage	Condition
E147-1	–	Blank	–	–
E147-2	–	Blank	–	–
E147-3	–	Blank	–	–
E147-4	–	Blank	–	–
E147-5	YEL/RED	Ignition power supply	10 – 14 V	Ignition switch turned to ON position
E147-6	BLK	Ground	0 – 1 V	–
E147-7	–	Blank	–	–
E147-8	BLU/BLK	“2WD” switch	10 – 14 V	Ignition switch turned to ON position and “2WD” switch released
			0 – 1.5 V	Ignition switch turned to ON position and “2WD” switch kept pushed
E147-9	YEL/GRN	Vehicle speed sensor (VSS)	*10 – 14 V ↑↓ 0 – 2 V (Repeated indicator)	Vehicle running
E147-10	–	Blank	–	–
E147-11	RED/WHT	4WD low indicator	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H or 4H
			0 – 3 V	Ignition switch turned to ON position and transfer shifted to 4L
E147-12	–	Blank	–	–
E147-13	–	Blank	–	–
E147-14	–	Blank	–	–
E147-15	BLU/BLK	“4WD-L” switch	10 – 14 V	Ignition switch turned to ON position and “4WD-L” switch released
			0 – 1.5 V	Ignition switch turned to ON position and “4WD-L” switch kept pushed
E147-16	–	Blank	–	–
E147-17	–	Blank	–	–
E147-18	–	Blank	–	–
E147-19	RED/BLU	4WD indicator	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H
			0 – 3 V	Ignition switch turned to ON position and transfer shifted to 4H or 4L
E147-20	–	Blank	–	–
E147-21	–	Blank	–	–

Terminal	Wire color	Circuit	Normal Voltage	Condition
E147-22	ORN	A/T shift switch (“N” range) (for A/T model)	10 – 14 V	Ignition switch turned to ON position and A/T shifted to “N” range
			0 – 1.5 V	Ignition switch turned to ON position and A/T shifted to other than “N” range
E147-23	BLK/YEL	Clutch pedal switch (for M/T model)	0 – 1.5 V	Ignition switch turned to ON position and clutch pedal depressed
			10 – 14 V	Ignition switch turned to ON position and clutch pedal released
E147-24	–	Blank	–	–
E148-1	RED/WHT	Transfer shift actuator motor 2	10 – 14 V	Ignition switch turned to ON position and transfer shift actuator being rotated when transfer shifted from 4L to 4H or from 4H to 2H
			0 – 1 V	Ignition switch turned to ON position and transfer shift actuator being rotated when transfer shifted from 2H to 4H or from 4H to 4L
E148-2	RED/BLU	Transfer shift actuator motor 1	0 – 1 V	Ignition switch turned to ON position and transfer shift actuator being rotated when transfer shifted from 4L to 4H or from 4H to 2H
			10 – 14 V	Ignition switch turned to ON position and transfer shift actuator being rotated when transfer shifted from 2H to 4H or from 4H to 4L
E148-3	–	Blank	–	–
E148-4	–	Blank	–	–
E148-5	–	Blank	–	–
E148-6	–	Blank	–	–
E148-7	–	Blank	–	–
E148-8	–	Blank	–	–
E148-9	–	Blank	–	–
E148-10	–	Blank	–	–
E148-11	–	Blank	–	–
E148-12	BLU/RED	4WD controller	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H
			0 – 1.5 V	Ignition switch turned to ON position and transfer shifted to 4Hor 4L
E148-13	BLU/YEL	“4WD” switch	10 – 14 V	Ignition switch turned to ON position and “4WD” switch released
			0 – 1.5 V	Ignition switch turned to ON position and “4WD” switch kept pushed
E148-14	–	Blank	–	–
E148-15	–	Blank	–	–
E148-16	–	Blank	–	–
E148-17	BLU/WHT	4WD low switch	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H or 4H
			0 – 1.5 V	Ignition switch turned to ON position and transfer shifted to 4L
E148-18	–	Blank	–	–
E148-19	–	Blank	–	–
E148-20	–	Blank	–	–
E148-21	–	Blank	–	–

Terminal	Wire color	Circuit	Normal Voltage	Condition
E148-22	BLU/BLK	4WD switch	0 – 1.5 V	Ignition switch turned to ON position and transfer shifted to 4H or 4L
			10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H
E148-23	YEL/BLK	Limit switch 3	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 4H
			0 – 0.88 V	Ignition switch turned to ON position and transfer shifted to 4L
E148-24	YEL/RED	Limit switch 2	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 2H
			0 – 0.88 V	Ignition switch turned to ON position and transfer shifted to 4H
E148-25	YEL	Limit switch 1	10 – 14 V	Ignition switch turned to ON position and transfer shifted to 4H
			0 – 0.88 V	Ignition switch turned to ON position and transfer shifted to 2H
E148-26	–	Blank	–	–

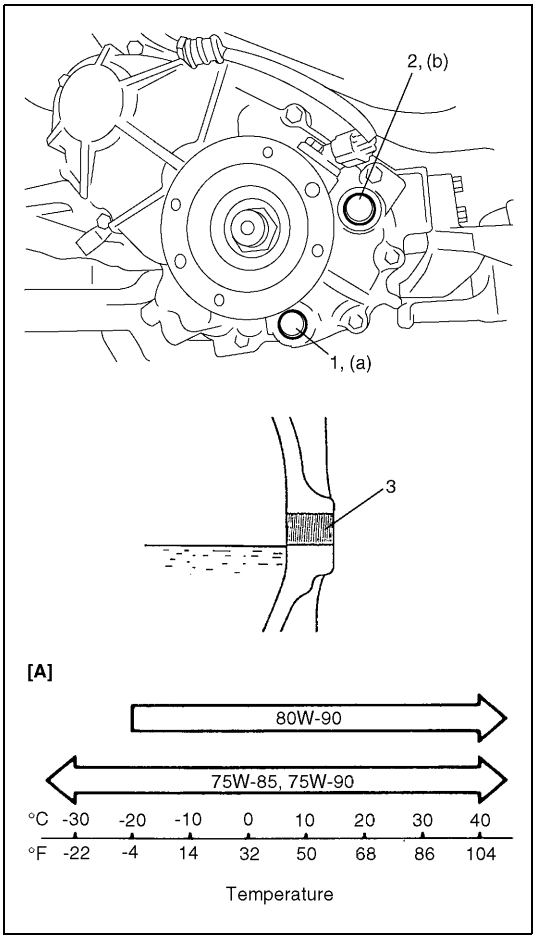
On-Vehicle Service

Transfer Gear Oil Change

NOTE:

Whenever vehicle is hoisted for any service work other than oil change, also be sure to check for oil leakage.

1) Before changing or inspecting oil, be sure to stop engine and lift up vehicle horizontally.
2) With vehicle lifted up, check oil leakage. If leakage exists, correct or repair it.



3) Remove oil filler plug (2).
4) Remove drain plug (1), and drain old oil.
5) Tighten new oil drain plug to specified torque.

Tightening torque
Oil drain plug (a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

6) Pour new specified oil until oil level reaches bottom of oil filler plug hole (3) as shown in figure.

NOTE:

- **For SAE classification, refer to viscosity chart [A].**
- **It is highly recommended to use API GL-4 75W-90 gear oil.**

Oil specification
: API GL-4

Reference:
Oil capacity
: 1.13 liters (2.4/2.0 US/Imp. pt)

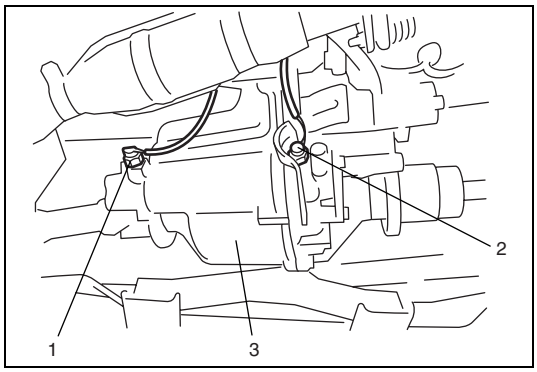
7) Tighten new oil level / filler plug to specified torque.

Tightening torque
Oil level / filler plug (b): 23 N·m (2.3 kg-m, 17.0 lb-ft)

4WD Switch and 4WD Low Switch Removal and Installation

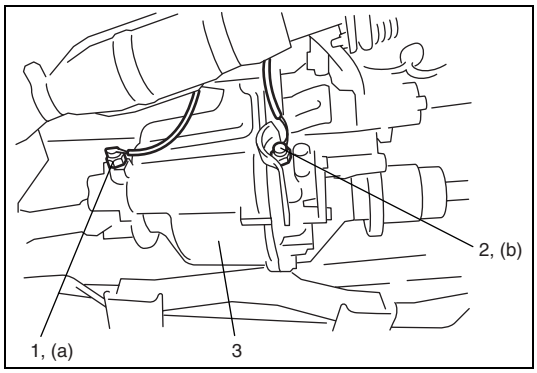
Removal

1) Disconnect negative (–) cable at battery.
2) Hoist vehicle.



3) Disconnect 4WD switch connector and 4WD low switch connector.
4) Remove 4WD switch (1), 4WD low switch (2) and steel balls from transfer assembly (3).

Installation



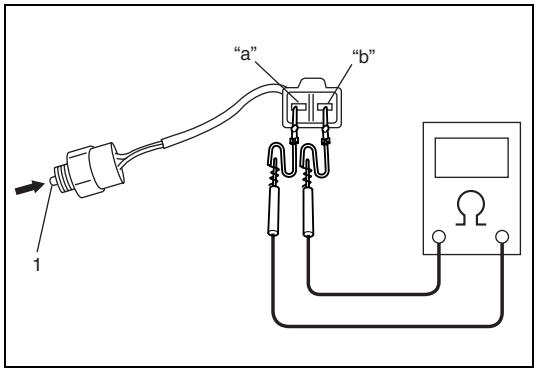
1) Install 4WD switch (1), 4WD low switch (2) and steel balls to transfer assembly (3).

Tightening torque
4WD switch (a): 19 N·m (1.9 kg-m, 14.0 lb-ft)
4WD low switch (b): 19 N·m (1.9 kg-m, 14.0 lb-ft)

2) Connect 4WD switch connector and 4WD low switch connector.
3) Connect negative (–) cable at battery.

4WD Switch and 4WD Low Switch Inspection

1) Remove 4WD switch or 4WD low switch referring to “4WD Switch and 4WD Low Switch Removal and Installation” in this section.



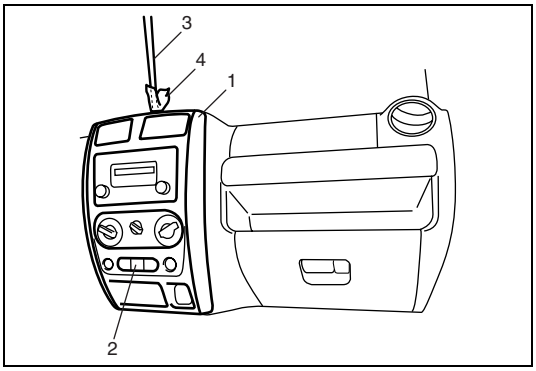
2) Check for continuity between “a” and “b” terminals of switch. If check result is not as specified below, replace switch.

4WD switch and 4WD low switch specification
Switch button (1) released: No continuity
Switch button (1) kept pushing: Continuity

3) Install 4WD switch or 4WD low switch referring to “4WD Switch and 4WD Low Switch Removal and Installation” in this section.

2WD/4WD Switch Removal and Installation

Removal



1) Remove center garnish (1).

NOTE:

Be careful not to damage center garnish.

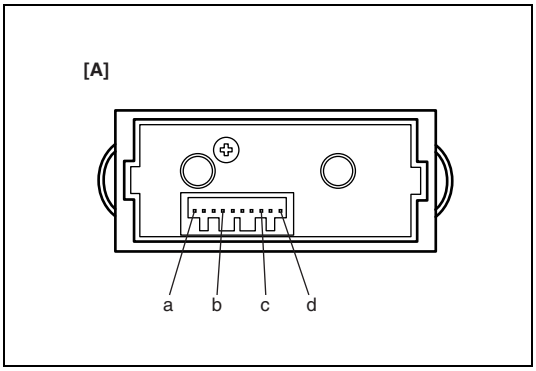
2) Remove 2WD/4WD switch (2), and then disconnect 2WD/4WD switch connector.

3. Flat end screwdriver
4. Rag

Installation

Reverse removal procedure for installation.

2WD/4WD Switch Inspection



Inspection 2WD/4WD switch as follows.
If any faulty condition is found, replace 2WD/4WD switch.

"2WD" switch

Check continuity between "a" and "d" terminals of 2WD/4WD switch.

"2WD" switch button released: No continuity
"2WD" switch button kept pushing: Continuity

"4WD" switch

Check continuity between "a" and "c" terminals of 2WD/4WD switch.

"4WD" switch button released: No continuity
"4WD" switch button kept pushing: Continuity

"4WD-L" switch

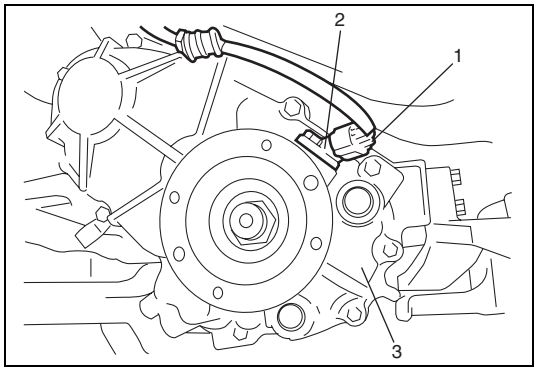
Check continuity between "a" and "b" terminals of 2WD/4WD switch.

"4WD-L" switch button released: No continuity
"4WD-L" switch button kept pushing: Continuity

[A]: 2WD/4WD switch

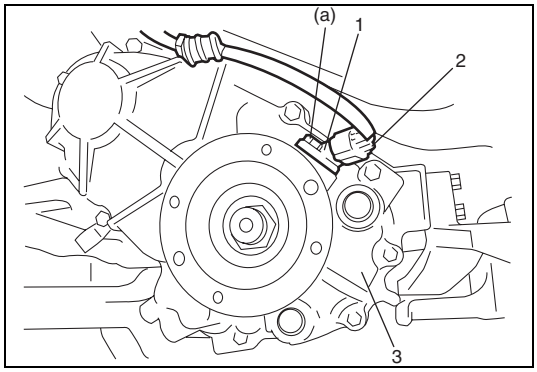
VSS Removal and Installation

Removal



1) Disconnect negative (–) cable at battery.
2) Hoist vehicle.
3) Disconnect VSS connector (1).
4) Remove VSS (2) from transfer assembly (3).

Installation

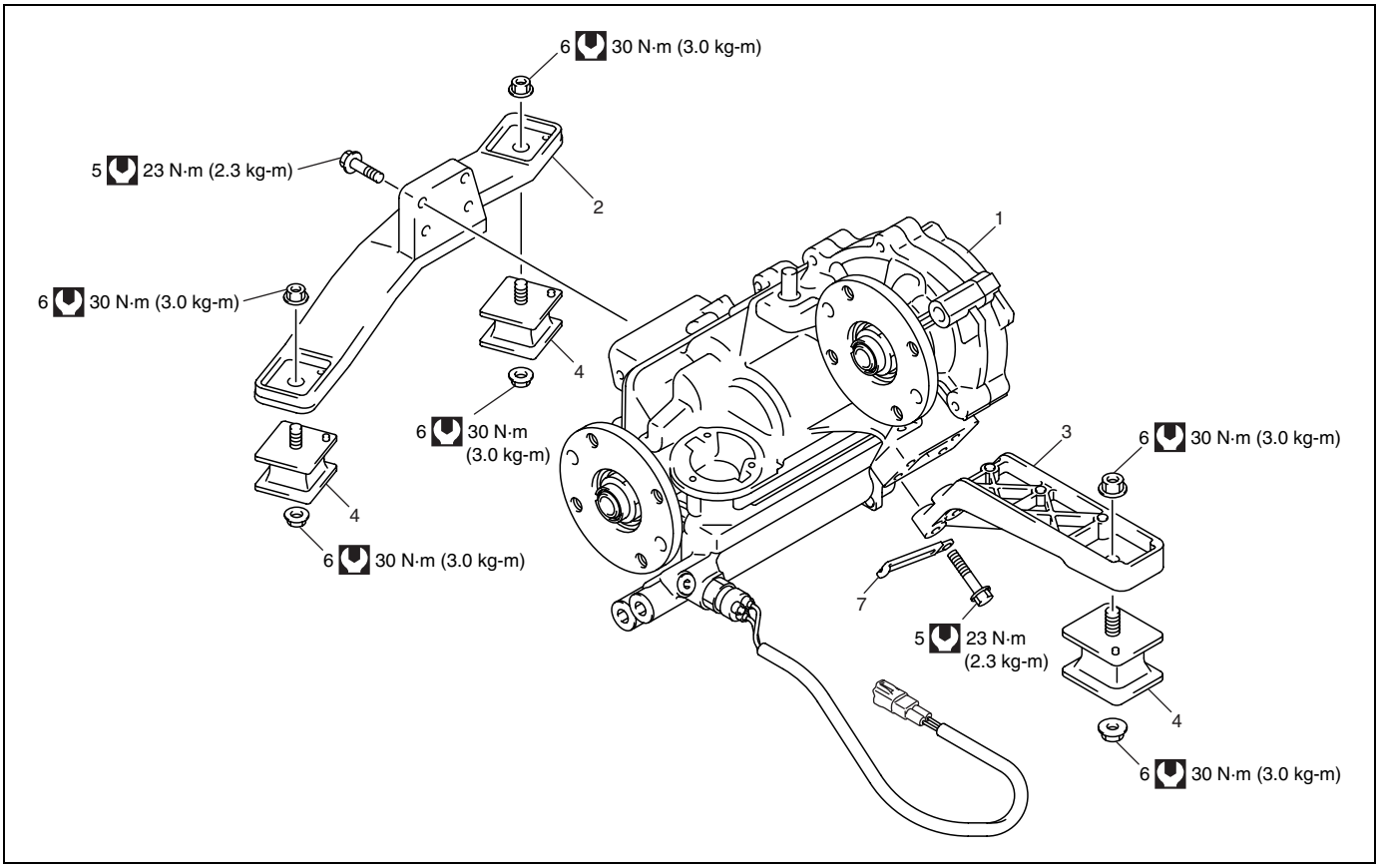


1) Install VSS (1) with new O-ring to transfer assembly (3).

Tightening torque
VSS bolt (a): 5 N·m (0.5 kg-m, 3.5 lb-ft)

2) Connect VSS connector (2).
3) Connect negative (–) cable at battery.

Transfer Assembly Mounting Components



1. Transfer assembly	4. Mounting	7. Clamp
2. Mounting left bracket	5. Transfer mounting bracket bolt	Tightening torque
3. Mounting right bracket	6. Transfer mounting nut	

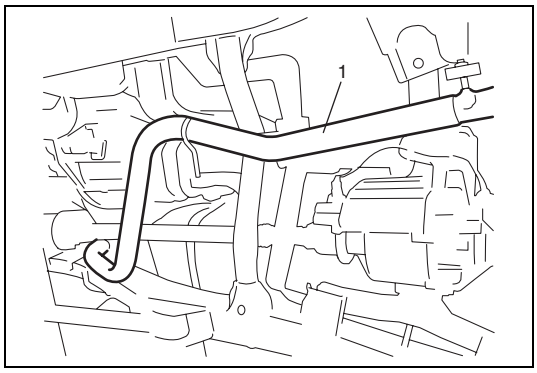
Transfer Assembly Dismounting and Remounting

Dismounting

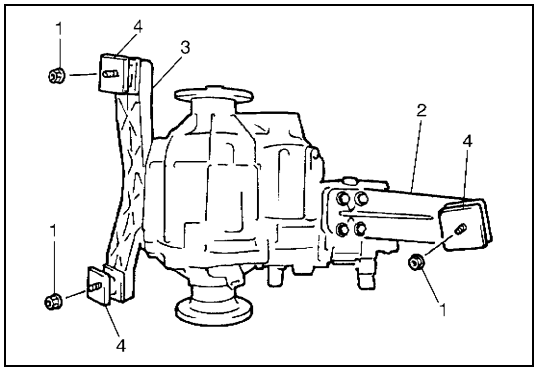
NOTE:

Set shift position to 4H position to facilitate transfer dismounting and remounting.

1) Disconnect negative (–) cable at battery.
2) Drain transfer oil referring to “Transfer Gear Oil Change” in this section.



3) Remove exhaust pipe (1).
4) Remove front and rear propeller shafts referring to “Propeller Shafts” in Section 4B.
5) Disconnect 4WD switch connector, 4WD low switch connector and transfer shift actuator motor connector and unclamp harness.
6) Disconnect VSS connector.

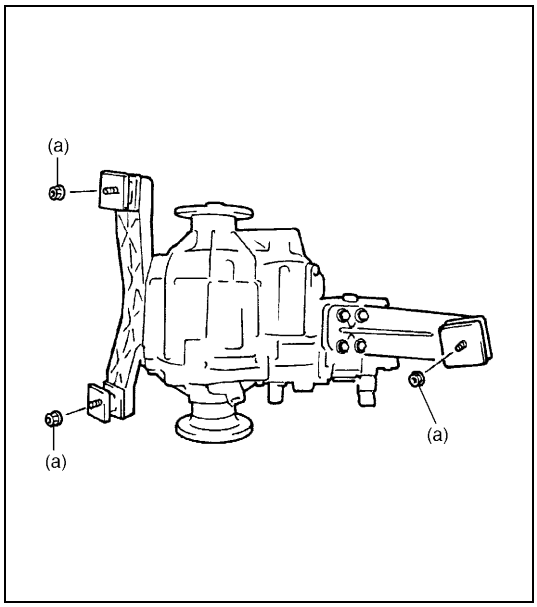


7) With transfer supported on jack, remove 3 mounting nuts (1), and then mounting right bracket (2) from transfer.
8) Remove transfer with mounting left bracket (3) from vehicle body.
9) Remove mounting left bracket from transfer.

4. Mounting

Remounting

Reverse dismounting procedure for remounting noting the following.



- Tighten bolts and nuts to specified torque.

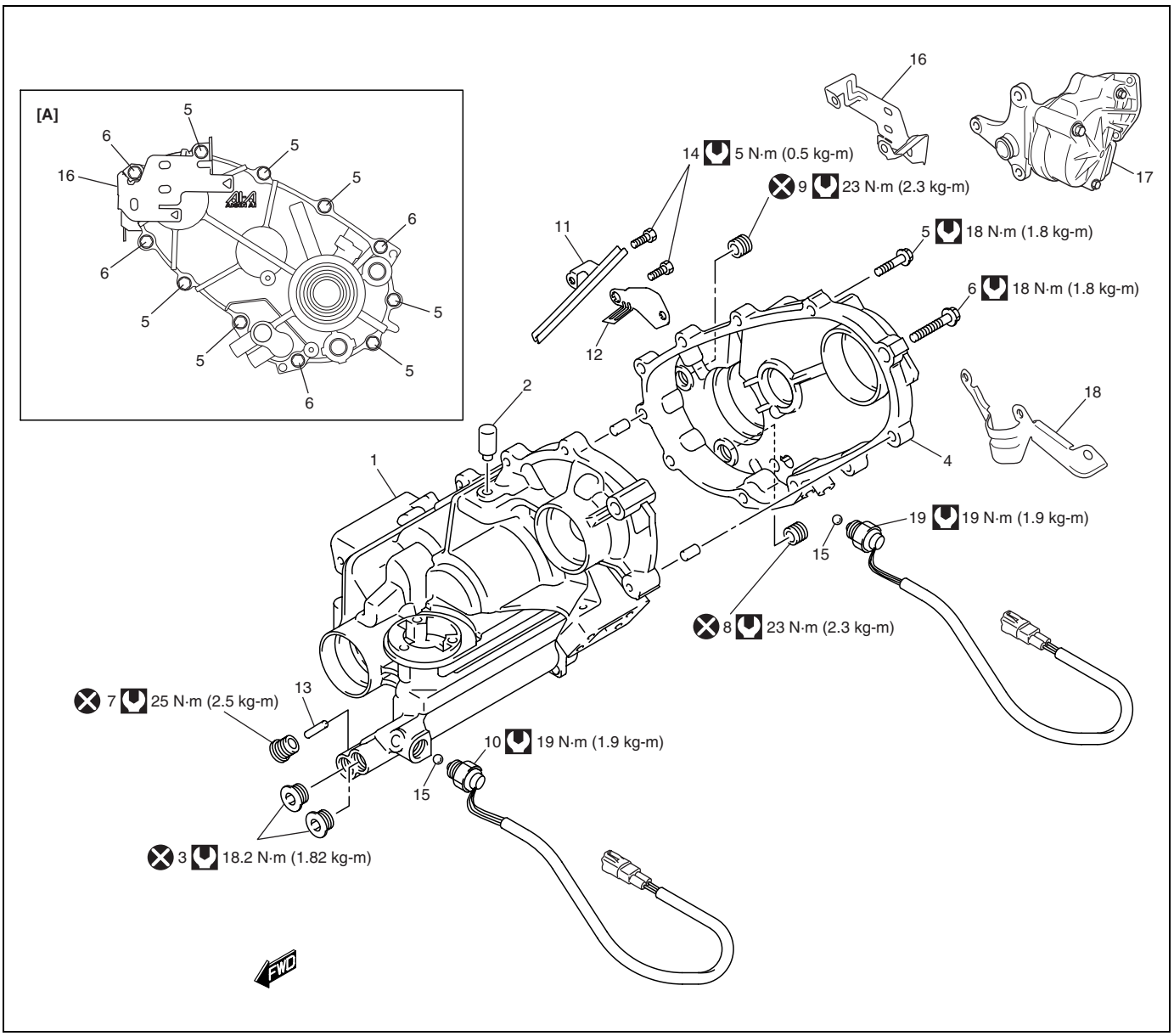
Tightening torque
Transfer mounting nut (a): 30 N·m (3.0 kg-m, 22.0 lb-ft)

- Set each clamp for wiring securely.
- Connect VSS connector.
- Connect 4WD switch connector (gray connector).
- Connect 4WD low switch connector (white connector).
- Connect transfer shift actuator motor connector.
- Refill transfer gear oil referring to “Transfer Gear Oil Change” in this section.
- Install front and rear propeller shaft referring to “Propeller Shafts” in Section 4B.
- Install exhaust pipe referring to “Exhaust Component” in Section 6K.
- Connect battery negative (–) terminal to battery.

Unit Repair Overhaul

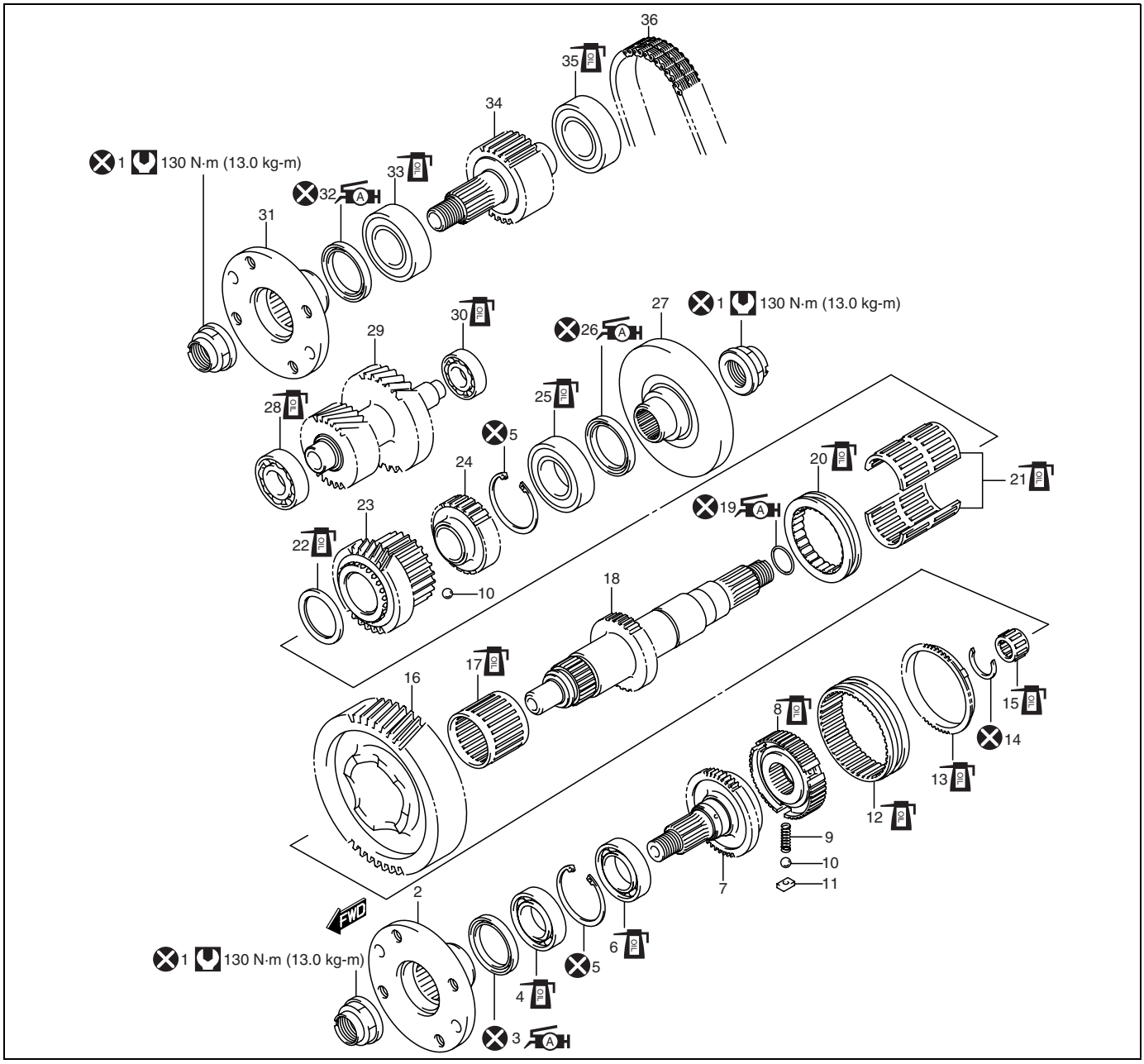
Transfer Unit Components

Transfer case component



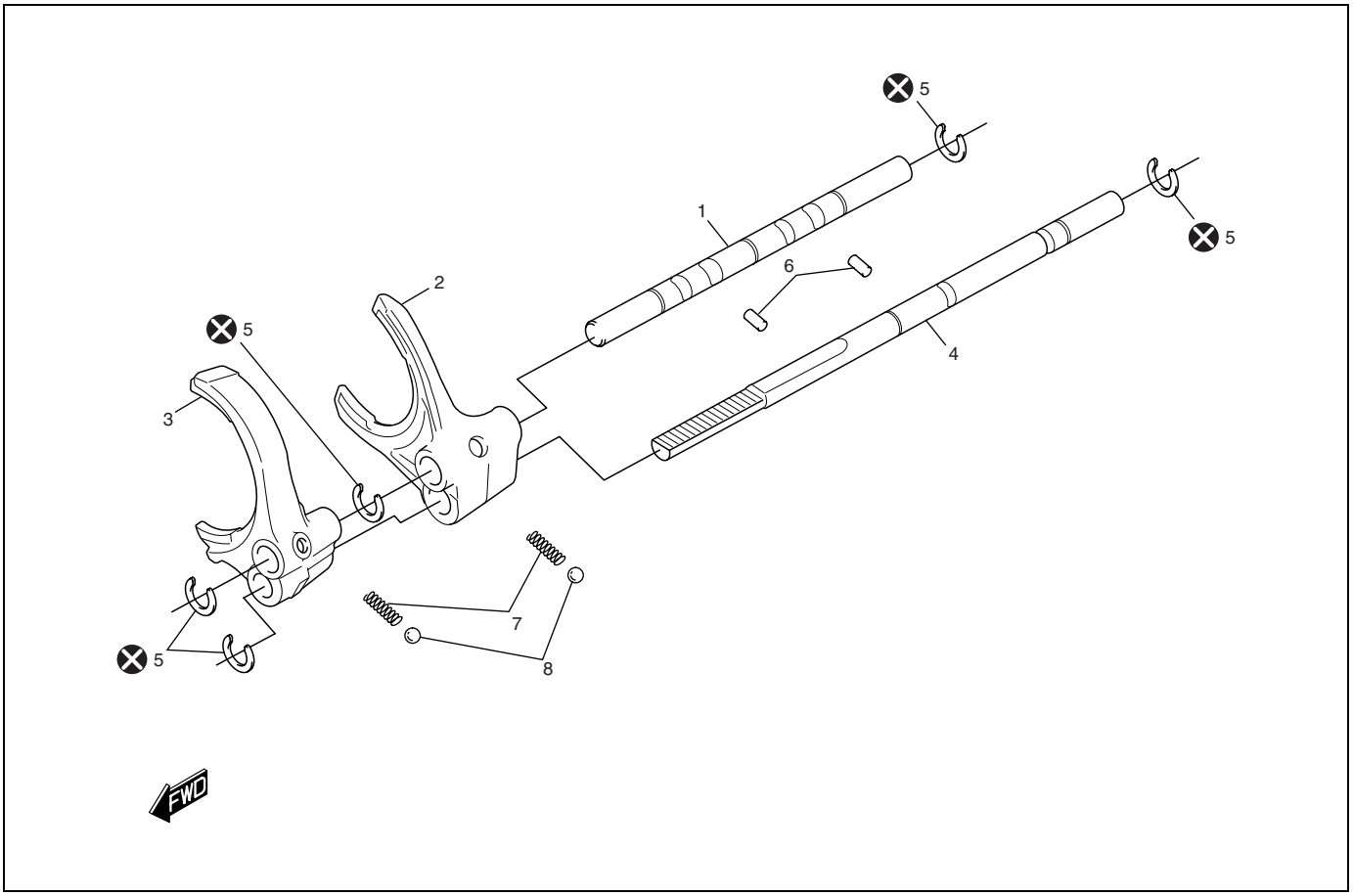
[A]: Transfer case bolt location	8. Oil drain plug	16. Harness connector bracket
1. Front case	9. Oil level / filler plug	17. Transfer shift actuator
2. Plug	10. 4WD switch (gray connector)	18. Switch cover
3. Locating plug	11. Oil receiver	19. 4WD low switch (white connector)
4. Rear case	12. Oil protect plate	Tightening torque
5. Transfer case bolt (short)	13. Straight pin	Do not reuse.
6. Transfer case bolt (long)	14. Transfer oil protect plate bolt	
7. Straight pin plug	15. Steel ball	

Transfer gear component



1. Flange nut	14. Output shaft snap ring	27. Rear flange
2. Output front flange	15. Output front shaft bearing	28. Counter gear No.1 bearing
3. Front case No.1 oil seal : Apply grease 99000-25010 to oil seal lip.	16. Output low gear	29. Counter gear
4. Front case No.1 bearing	17. Output rear shaft No.1 bearing	30. Counter gear No.2 bearing
5. Circlip	18. Output rear shaft	31. Input front flange
6. Output front shaft bearing	19. O-ring : Apply grease 99000-25010 to all around surface.	32. Front case No.2 oil seal : Apply grease 99000-25010 to oil seal lip.
7. Output front shaft	20. Reduction clutch sleeve	33. Front case No.2 bearing
8. Front drive clutch hub	21. Output rear shaft No.2 bearing	34. Input shaft
9. Key spring	22. Thrust bearing	35. Input shaft bearing
10. Steel ball	23. Sprocket output gear	36. Drive chain
11. Key	24. VSS rotor	Do not reuse.
12. Front drive clutch hub sleeve	25. Rear case bearing	Tightening torque
13. Synchronizer ring	26. Rear case oil seal : Apply grease 99000-25010 to oil seal lip.	Apply transfer gear oil

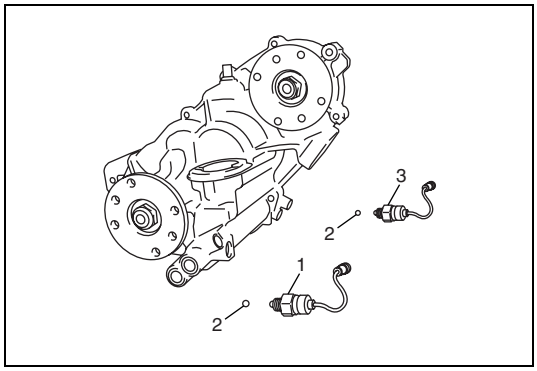
Transfer shift shaft component



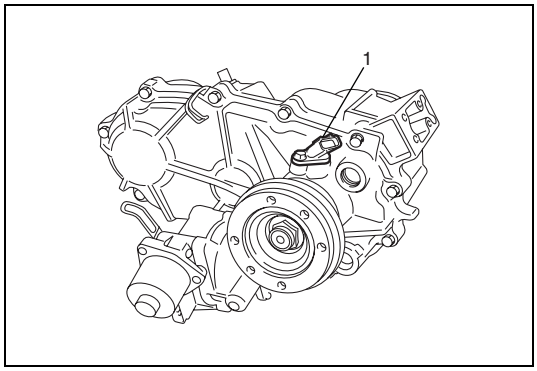
1. Shift fork shaft No.2	4. Shift fork shaft No.1	7. Spring
2. High & low shift fork	5. Snap ring	8. Ball
3. Front drive gear shift fork	6. Straight pin	⊗ Do not reuse.

Transfer Unit Disassembly and Reassembly

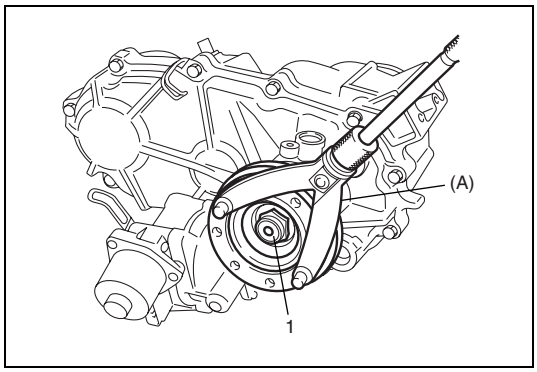
Disassembly



1) Remove 4WD switch (1) and 4WD low switch (3), and then take out steel balls (2).

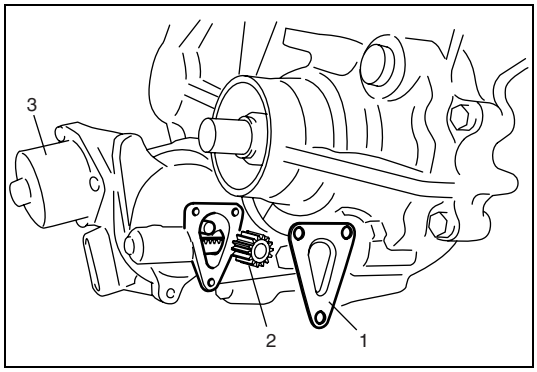


2) Remove VSS (1) from transfer.

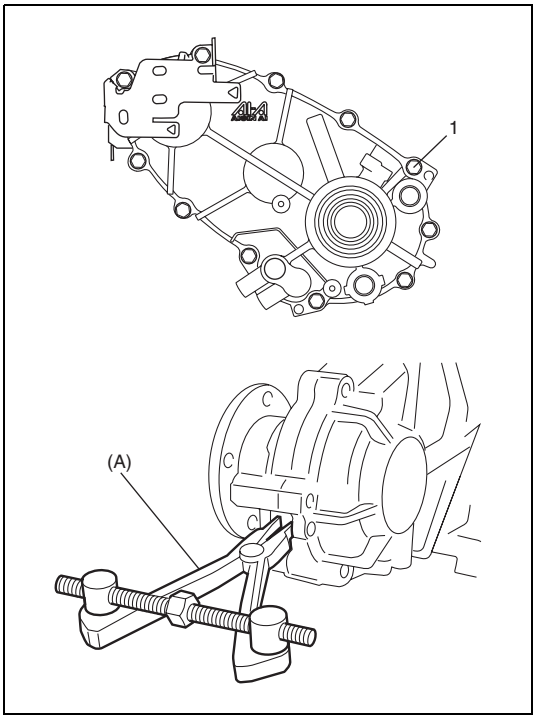


3) Remove rear flange. To lock flange, use special tool. With flange locked, remove flange nut (1).

Special tool
(A): 09930-40113



4) Remove case cover (1) and pinion gear (2), and then remove transfer shift actuator (3).

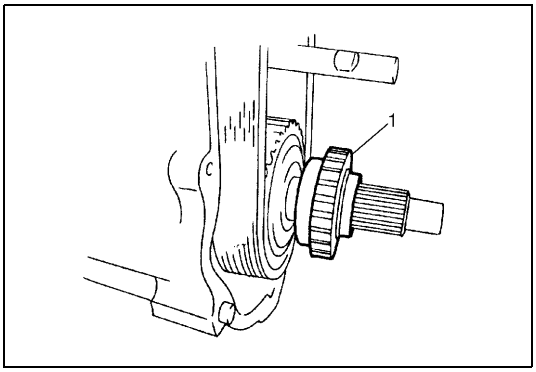


5) Remove 11 rear case bolts (1), and then separate front and rear cases using special tool.

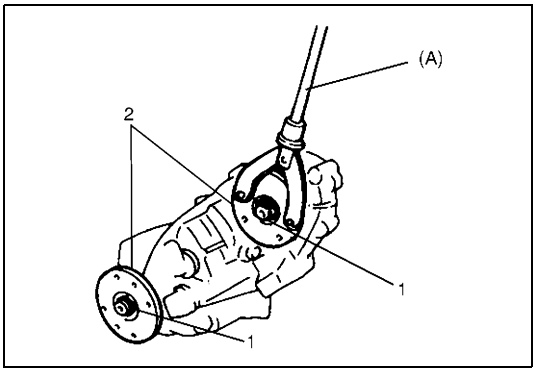
NOTE:

To separate cases, use special tool at 2 points in turn and make opening wider evenly.

Special tool
(A): 09912-34510

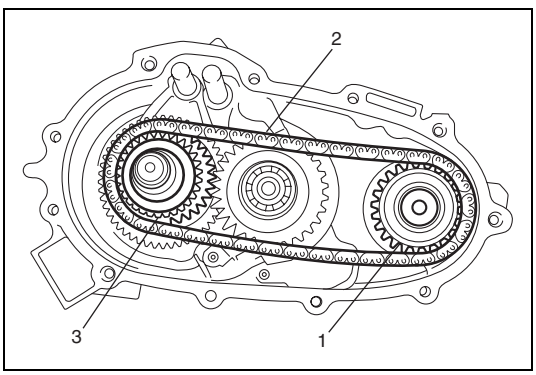


6) Pull out VSS rotor (1) and steel ball.

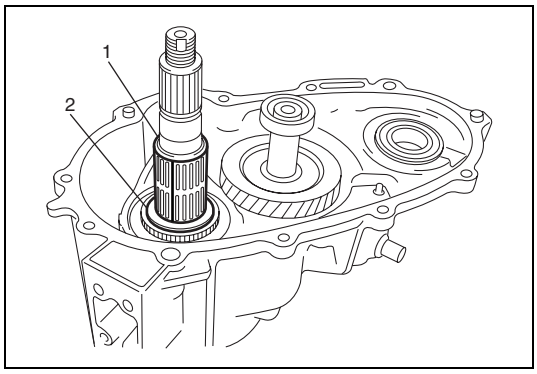


7) Remove front flanges (2). To lock flange, use special tool. With flange locked, remove flange nut (1).

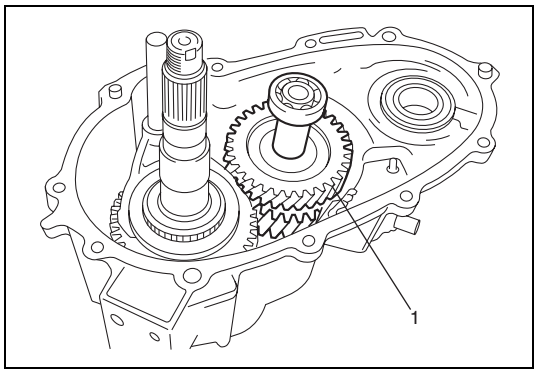
Special tool
(A): 09930-40113



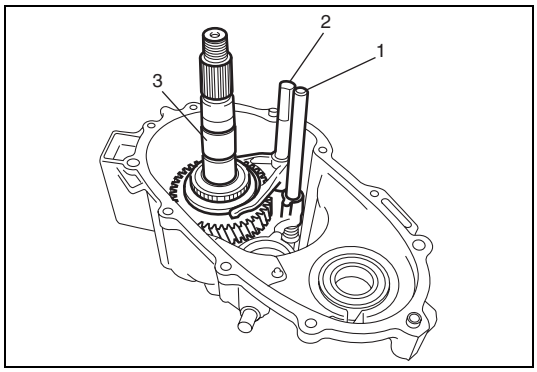
8) Remove drive chain (2), input shaft (1), and sprocket output gear (3) as an assembly.



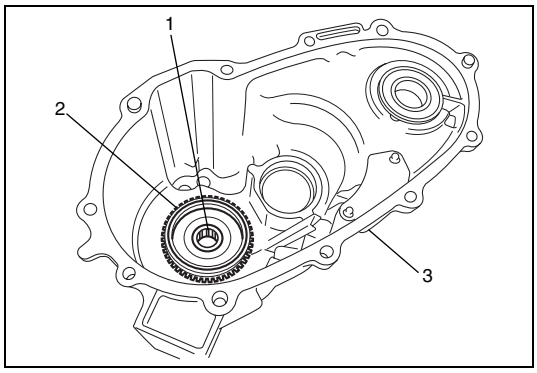
9) Remove needle roller bearings (1) and thrust bearing (2).



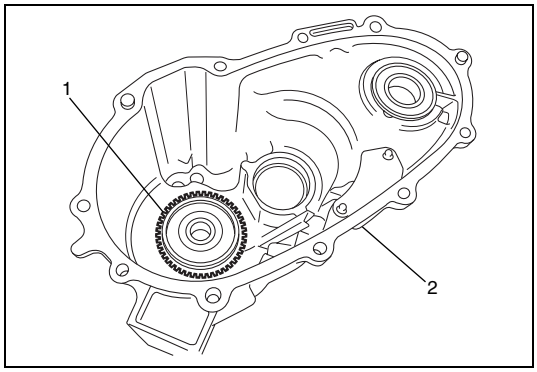
10) Remove counter gear assembly (1) from front case.



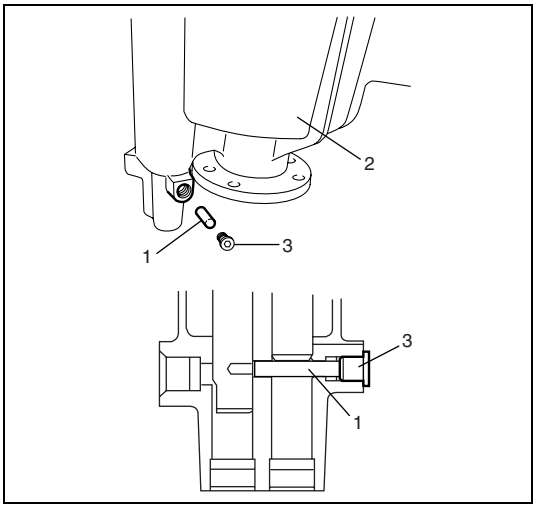
11) Remove output rear shaft assembly (3) with shift fork shaft No.1 (1) and No.2 (2) all at once.



12) Remove needle roller bearing (1) and synchronizer ring (2) from front case (3).



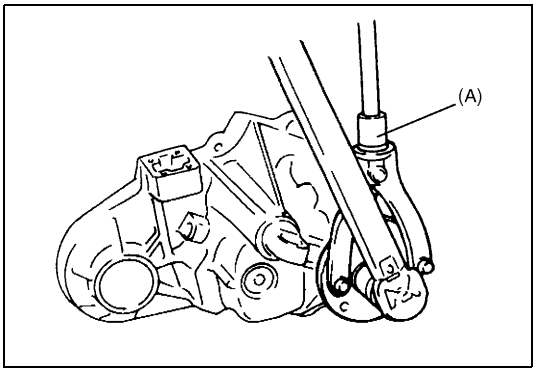
13) Remove output front shaft assembly (1) from front case (2).



14) Remove straight pin (1) and straight pin plug (3) from front case (2) as shown in figure.

Reassembly

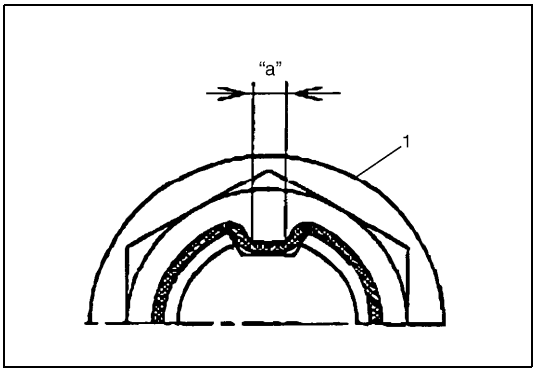
1) Install output front shaft to front case.



2) Install output front flange, tighten new flange nut with flange locked by special tool.

Special tool
(A): 09930-40113

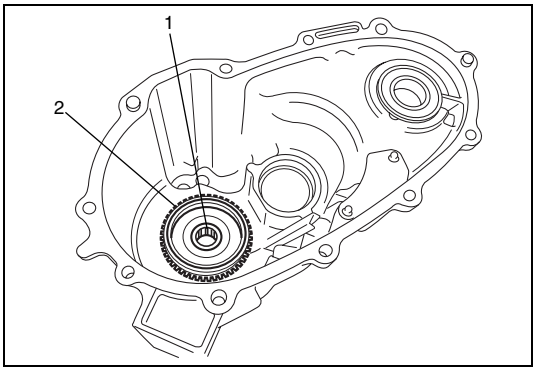
Tightening torque
Flange nut: 130 N·m (13.0 kg-m, 94 lb-ft)



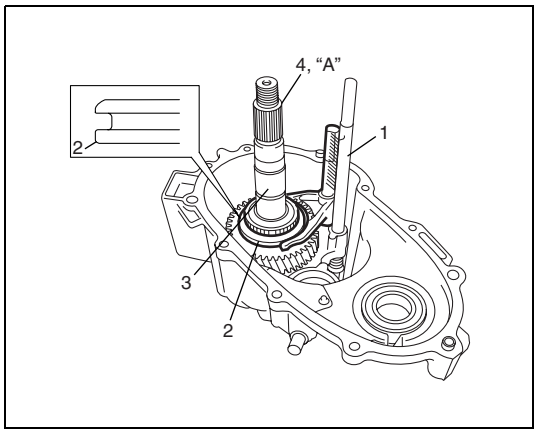
CAUTION:
Be sure to caulk flange nut on the output front shaft groove securely as shown in figure.
If not, it may cause for loosening flange nut.

3) Caulk flange nut (1).

"a": 3.8 mm (0.15 in.) or more



4) Apply transfer gear oil to needle roller bearing (1) and synchronizer ring (2), and then install them to output front shaft.



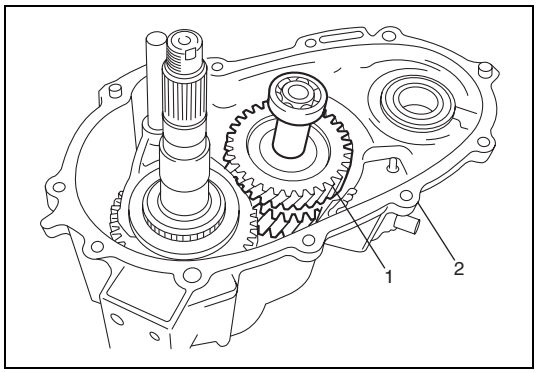
5) Join output rear shaft assembly (3), shift fork shaft assembly (1) and reduction clutch sleeve (2) all together, and then install them to front case.

NOTE:

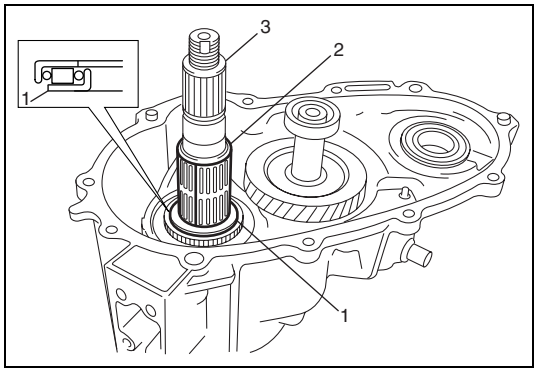
Be sure to install clutch sleeve (2) to proper direction as shown in figure.

6) Apply grease to new O-ring (4), and then install it to output rear shaft (3).

"A": Grease 99000-25010



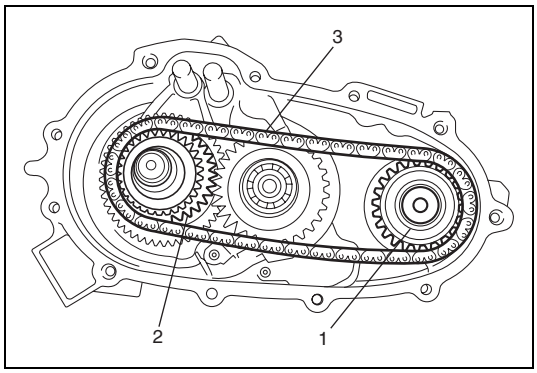
7) Install counter gear assembly (1) to front case (2).



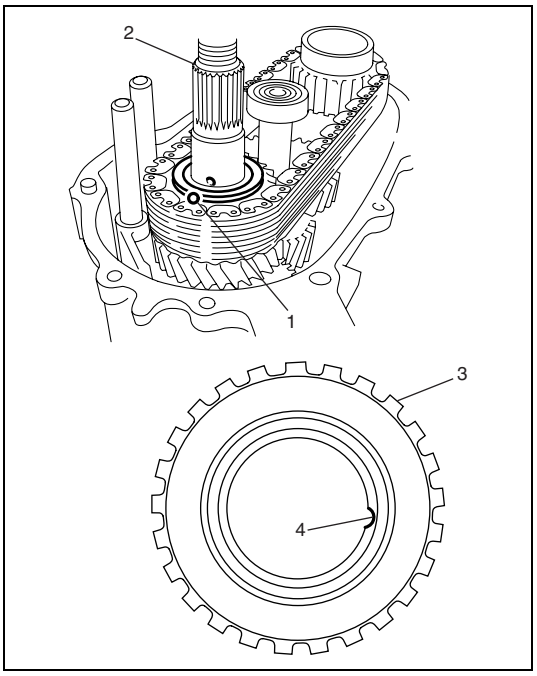
8) Apply transfer gear oil to thrust bearing (1) and needle roller bearing (2), and then install them to output rear shaft (3).

NOTE:

Be sure to install thrust bearing (1) to proper direction as shown in figure.



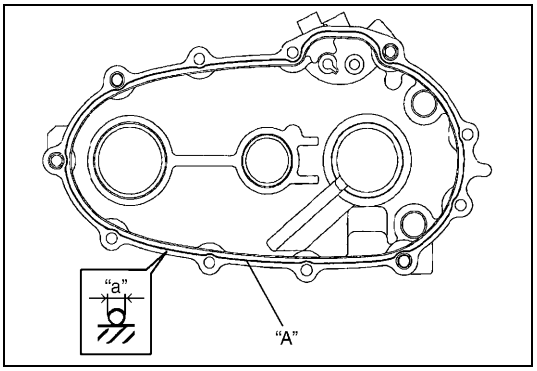
9) Install input shaft (1), sprocket output gear (2) and drive chain (3) as an assembly to front case.



10) Install steel ball (1) to output rear shaft (2), and then install VSS rotor (3) to output shaft aligning its slot (4) with steel ball.

NOTE:

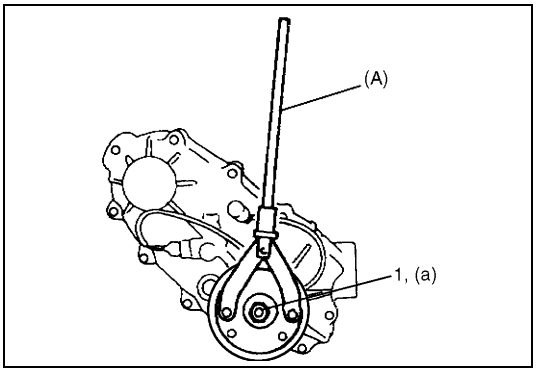
Turn VSS rotor, and check to rotate together with output rear shaft.



11) After cleaning mating surfaces of both cases, coat mating surface of front case with sealant evenly and put it over rear case.

"A": Sealant 99000-31260

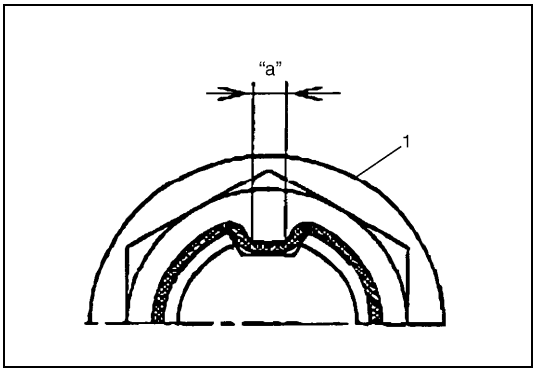
Sealant amount
Diameter "a": 1.2 mm (0.05 in.)



12) Align front case and rear case, then install rear flange, tighten new flange nut (1) with flange locked by special tool.

Special tool
(A): 09930-40113

Tightening torque
Flange nut (a): 130 N·m (13.0 kg-m, 94.0 lb-ft)

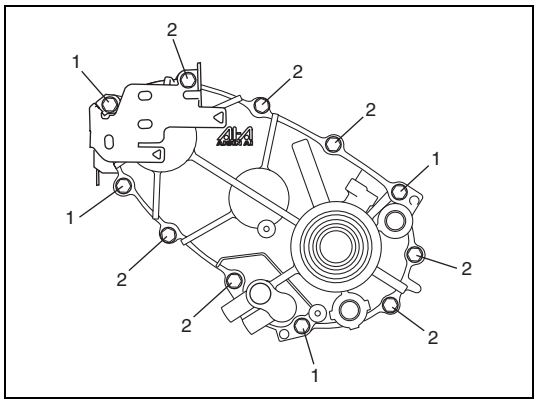


CAUTION:

Be sure to caulk flange nut on the output rear shaft groove securely as shown in figure.
If not, it may cause for loosening flange nut.

13) Caulk flange nut (1).

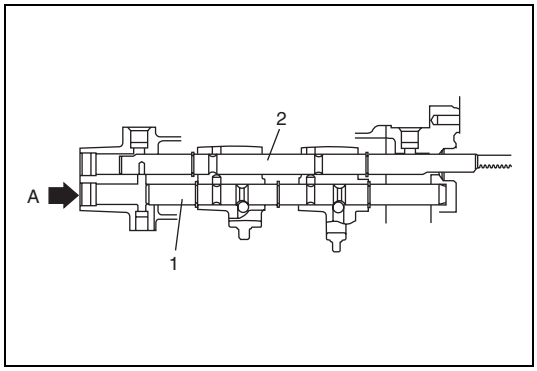
"a": 3.8 mm (0.15 in.) or more



14) Tighten 11 case bolts.

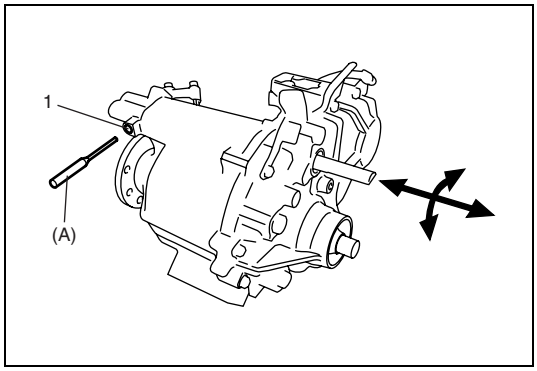
Tightening torque
Transfer case bolt (a): 18 N·m (1.8 kg-m, 13.0 lb-ft)

1.	Long bolt
2.	Short bolt



15) Push in shift fork shaft No.2 (1) in the direction of A to be set at 4H shift position.

2.	Shift fork shaft No.1

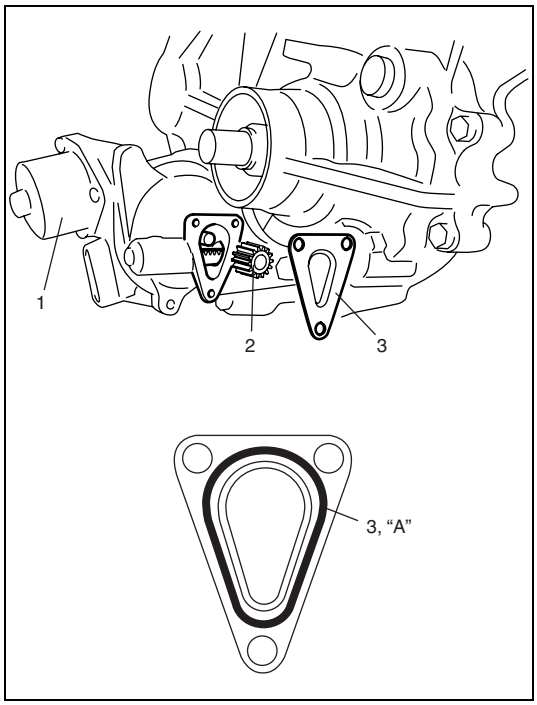


16) Insert special tool into hole (1) to fix shaft.

Special tool
(A): 09922-89810

NOTE:

Move shift shaft No.1 pushing special tool as shown in figure to facilitate installation.



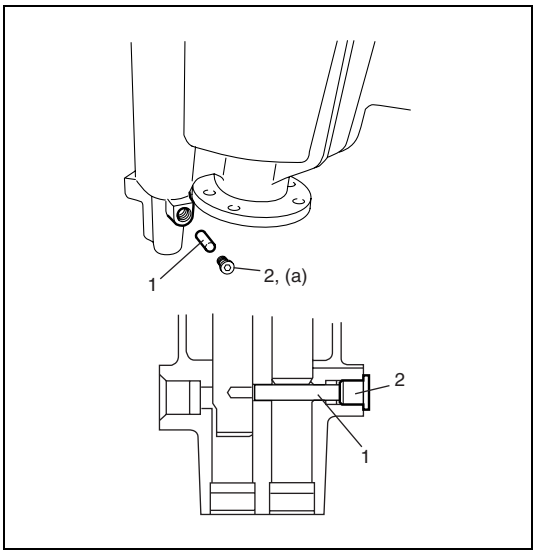
17) Install transfer shift actuator (1) and pinion gear (2), and then clean mating surfaces of both shift actuator and case cover (3), apply sealant to case cover as shown in figure by such amount that its section is 1.2 mm (0.047in.) in diameter then mate it with left case and then remove special tool.

"A": Sealant 99000-31260

NOTE:

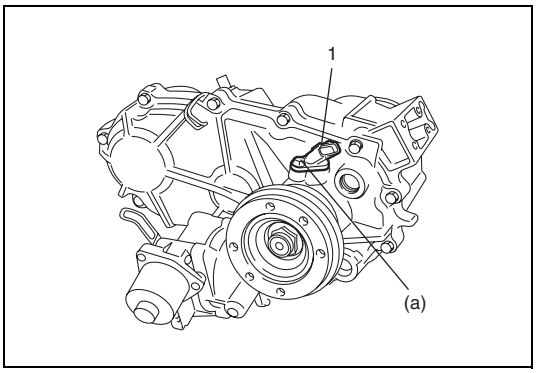
Check whether actuator is at 4H position, otherwise set it at 4H position referring to "Transfer Shift Actuator Inspection" in this section.

Tightening torque
Transfer shift actuator bolt: 20 N·m (2.0 kg-m, 14.5 lb-ft)



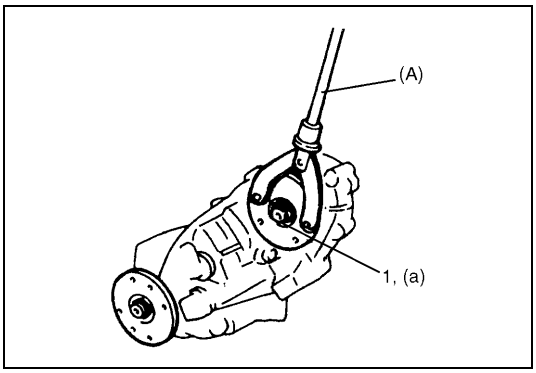
18) Remove special tool, and then install straight pin (1) and new straight pin plug (2).

Tightening torque
Straight pin plug (a): 25 N·m (2.5 kg-m, 18.0 lb-ft)



19) Install VSS (1) with new O-ring.

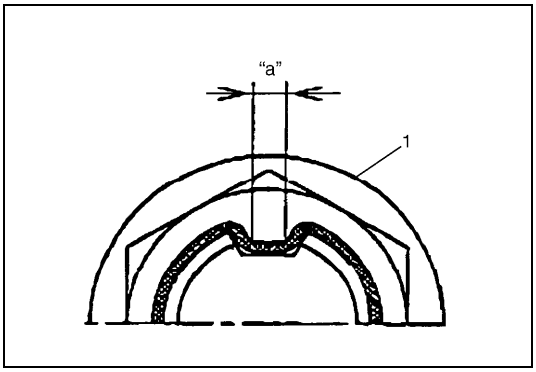
Tightening torque
VSS bolt (a): 5 N·m (0.5 kg-m, 3.5 lb-ft)



20) Install input front flange, tighten new flange nut (1) with flange locked by special tool.

Special tool
(A): 09930-40113

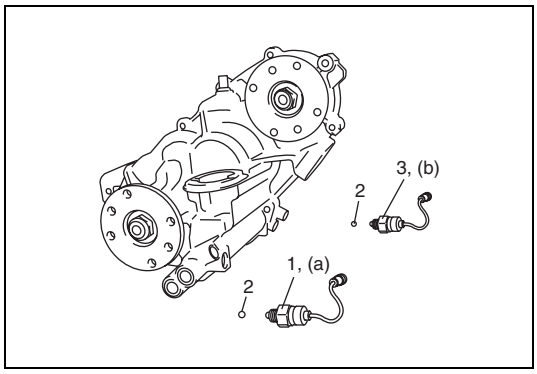
Tightening torque
Flange nut (a): 130 N·m (13.0 kg-m, 94.0 lb-ft)



CAUTION:
Be sure to caulk flange nut on the input shaft groove securely as shown in figure.
If not, it may cause for loosening flange nut.

21) Caulk flange nut (1).

"a": 3.8 mm (0.15 in.) or more

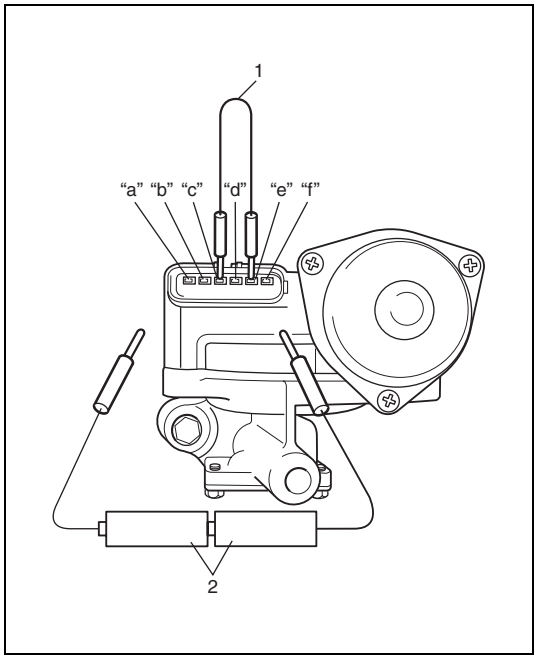


22) Install steel ball (2), 4WD switch (1) and 4WD low switch (3).

Tightening torque
4WD switch (a): 19 N·m (1.9 kg-m, 14.0 lb-ft)
4WD low switch (b): 19 N·m (1.9 kg-m, 14.0 lb-ft)

Transfer Shift Actuator Inspection

Inspect operation of transfer shift actuator as follows.
If actuator does not work correctly, replace actuator assembly.



1) Remove transfer shift actuator referring to "Transfer Unit Disassembly and Reassembly" in this section.
2) Connect 2 dry cell batteries in series.
3) Connect battery (+) to "a", (–) to "f" and service wire (1) to "c" and "e" respectively, then change motor position from 4H to 4L.
4) Connect battery (+) to "f", (–) to "d" and service wire (1) to "c" and "e" respectively, then change motor position from 4L to 4H.
5) Connect battery (+) to "f", (–) to "a" and service wire (1) to "c" and "e" respectively, then change motor position from 4H to 2H.
6) Connect battery (+) to "b", (–) to "f" and service wire (1) to "c" and "e" respectively, then change motor position from 2H to 4H.

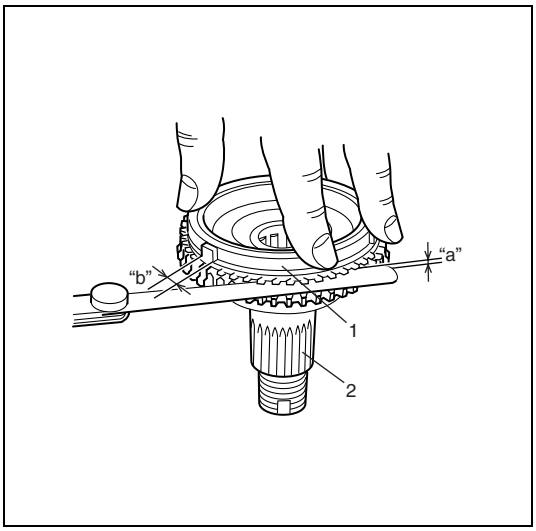
2. Dry cell battery of 1.5 V

Limit switch circuit table

Transfer shift conditions	Continuity between terminals of shift actuator limit switch			
	a	b	c	d
Completion of 2H shift change	×	●	●	×
2H⇔4H shifting	●	●	●	×
Completion of 4H shift change	●	×	●	×
4H⇔4L shifting	●	×	●	●
Completion of 4L shift change	×	×	●	●

Transfer Inspection

- Check each bearing for smooth rotation.
  If found abnormal, replace.
- Check needle bearing and bearing contacting surface for damage. Replace as required.
- Check drive chain and sprockets for abnormal wear or damage. Replace as required.
- Check oil seal for leakage and its lip for excessive hardness.
  If either is found, replace.
  Also, check corresponding surface of shaft where oil seal lip contacts. Correct or replace as necessary.



- Check clearance "a" between synchronizer ring (1) and output front shaft (2), protruding portion width "b" in synchronizer ring and each chamfered tooth of gear and synchronizer ring and synchronizer ring and replace with new one, if necessary. Also, check gear tooth.
  If protruding portion "b" is out of specification, replace synchronizer ring.

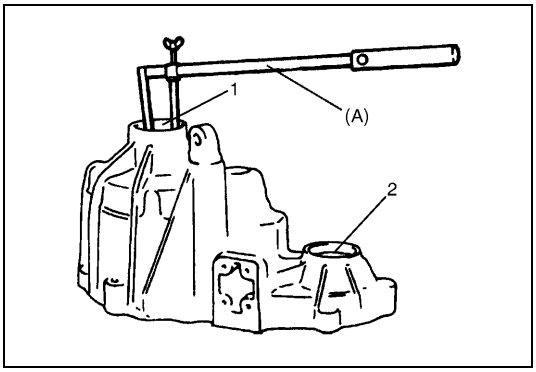
Clearance "a" between synchronizer ring and output front shaft
Standard: 0.83 – 1.53 mm (0.033 – 0.060 in.)
Service limit: 0.6 mm (0.024 in.)

Protruding portion width "b":
6.4 – 6.6 mm (0.252 – 0.260 in.)

Front Case Assembly Disassembly and Reassembly

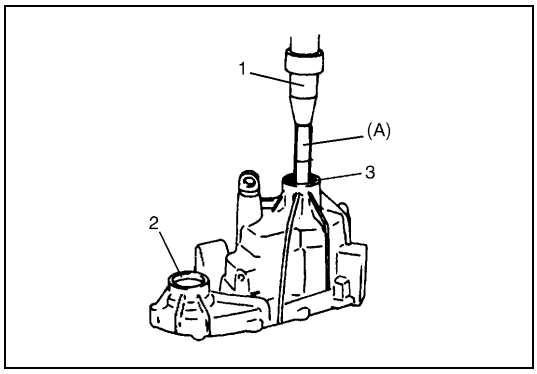
CAUTION:
Pave waste cloth under case in order to prevent mating surface from damage.

Disassembly



1) By using special tool, remove front case No.1 oil seal (1) and front case No.2 oil seal (2) from front case.

Special tool
(A): 09913-50121

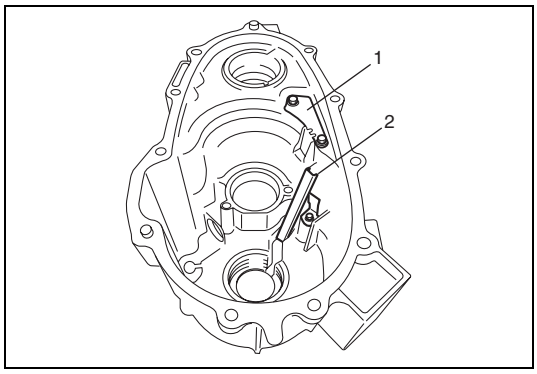


2) Remove circlip, and then remove front case No.1 bearing (3) from front case using special tool and hydraulic press (1).

Special tool
(A): 09913-75830

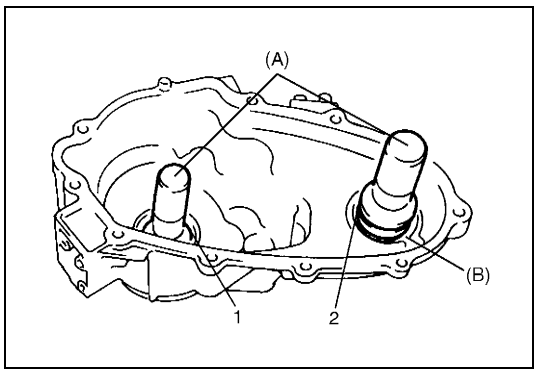
3) Remove front case No.2 bearing (2) from front case using special tool and hydraulic press (1).

Special tool
(A): 09913-75830



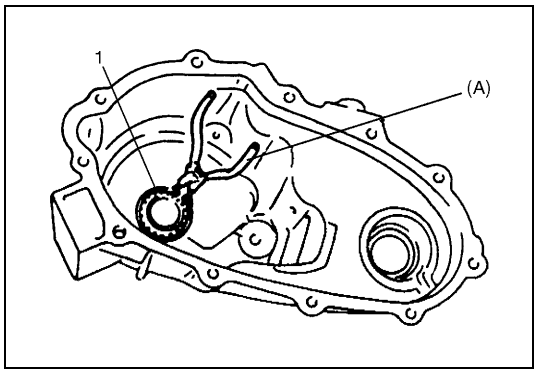
4) Remove oil protect plate (1) and oil receiver (2) from front case, if necessary.

Reassembly



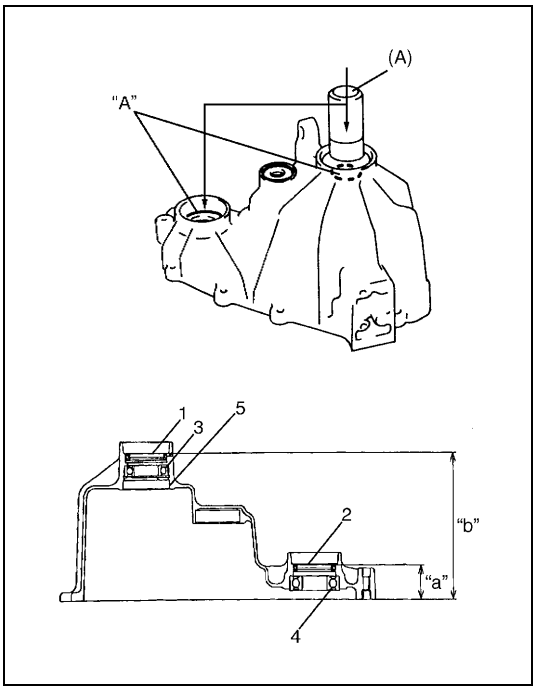
1) Install front case No.1 bearing (1) and front case No.2 bearing (2) to front case using special tools and hammer.

Special tool
(A): 09913-75810
(B): 09944-66020



2) Fix front case No.1 bearing with new circlip (1) using special tool.

Special tool
(A): 09900-06108



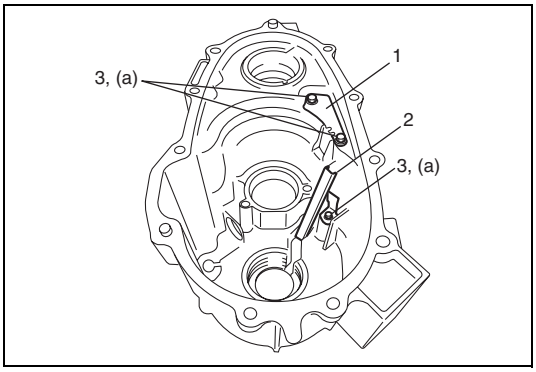
3) By using special tool and hummer, install front case No.1 oil seal (1) and front case No.2 oil seal (2) to front case at specified position as shown in figure. Apply grease to each oil seal lip.

Special tool
(A): 09913-75810

"A": Grease 99000-25010

Transfer front case oil seal installing position
"a": 38.2 – 39.2 mm (1.50 – 1.54 in.)
"b": 164.3 – 165.3 mm (6.47 – 6.51 in.)

3. Front case No.1 bearing
4. Front case No.2 bearing
5. Circlip



4) Install transfer oil protect plate (1) and transfer oil receiver (2) to front case.

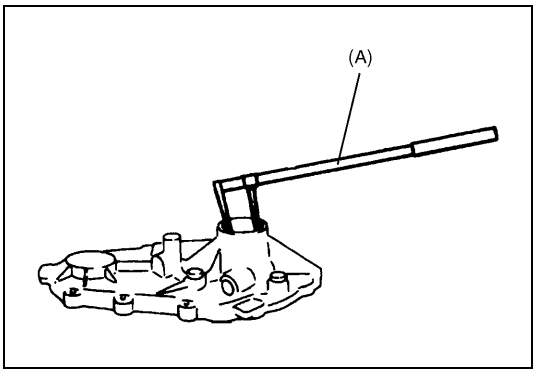
Tightening torque
Transfer oil protect plate bolt (a): 5 N·m (0.5 kg-m, 3.5 lb-ft)

3. Transfer oil protect plate bolt

Rear Case Assembly Disassembly and Reassembly

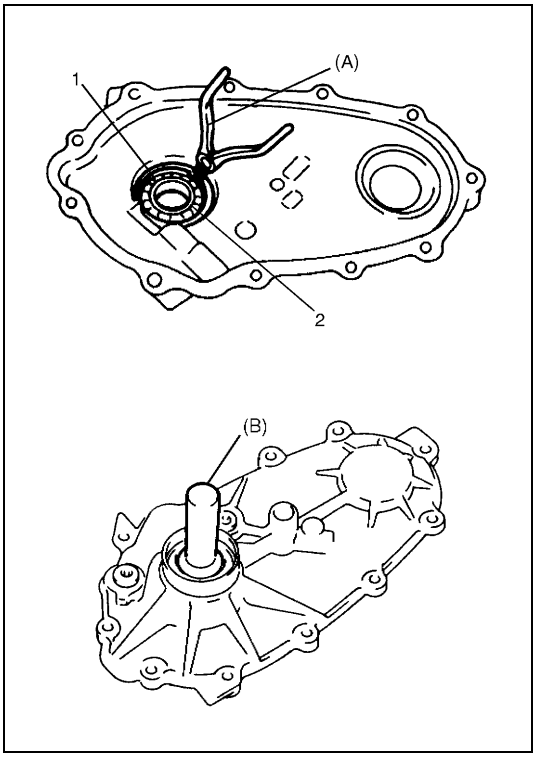
CAUTION:
Pave waste cloth under case in order to prevent mating surface from damage.

Disassembly



1) Remove rear case oil seal from rear case using special tool.

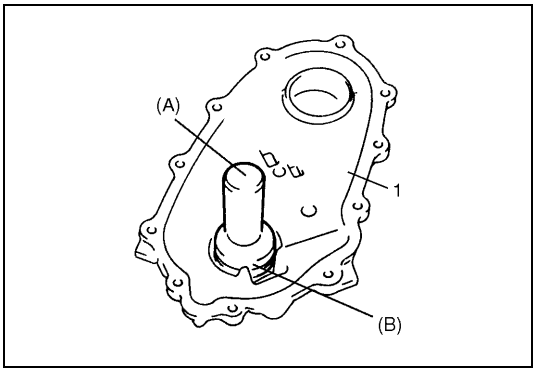
Special tool
(A): 09913-50121



2) Remove circlip (1) using special tool (A), and then remove rear case bearing (2) using special tool (B).

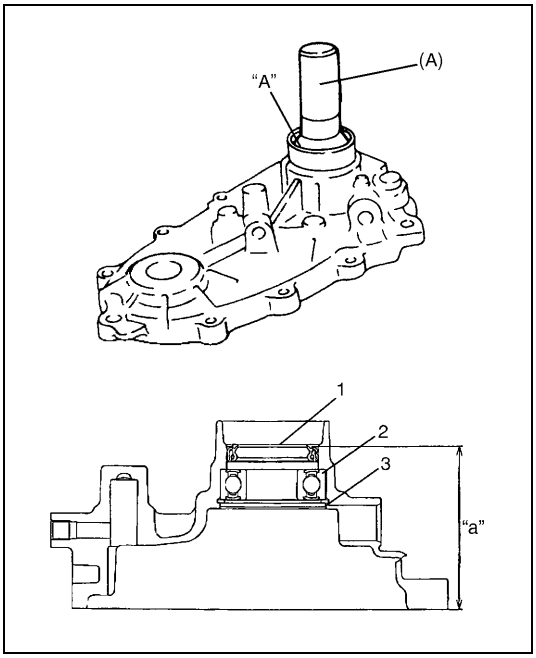
Special tool
(A): 09900-06108
(B): 09913-75830

Reassembly



1) Install rear case bearing to rear case (1) using special tool and hammer, and fix it with new circlip.

Special tool
(A): 09913-75810
(B): 09944-66020



2) Using special tool and hammer, install rear case oil seal (1) to rear case at specified position. Apply grease to oil seal lip.

Special tool
(A): 09913-75810

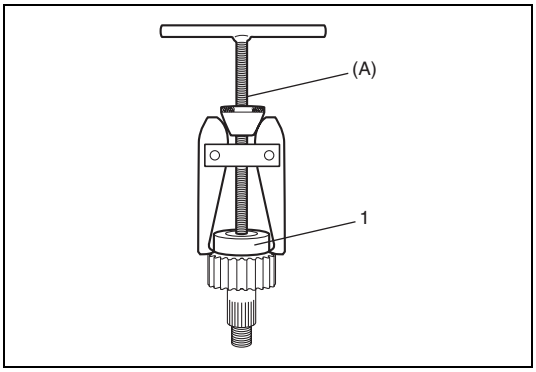
"A": Grease 99000-25010

Transfer rear case oil seal installing position
"a": 83.9 – 84.9 mm (3.30 – 3.34 in.)

2. Rear case bearing
3. Circlip

Transfer Input Shaft Assembly Disassembly and Reassembly

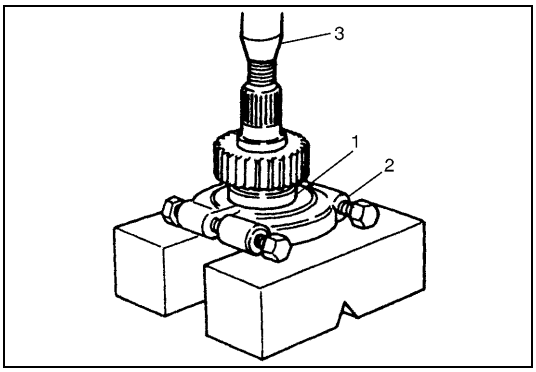
Disassembly



1) Pull out input shaft bearing (1) from input shaft using special tool.

Special tool
(A): 09913-60910

Reassembly

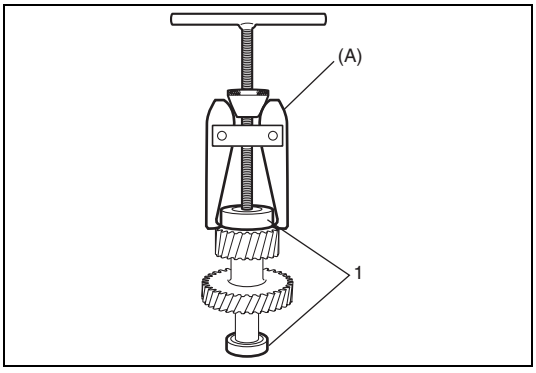


CAUTION:
Be sure to fit bearing puller at inner race of bearing in order to prevent bearing from damage.

1) Press fit input shaft bearing (1) to input shaft using bearing puller (2) and hydraulic press (3).

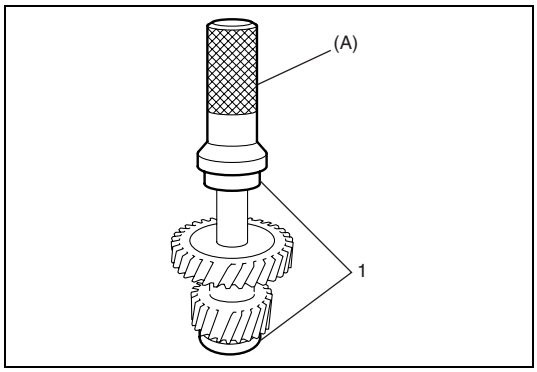
Transfer Counter Gear Assembly Disassembly and Reassembly

Disassembly



1) Pull out counter gear bearings (1) using special tool.

Special tool
(A): 09913-60910



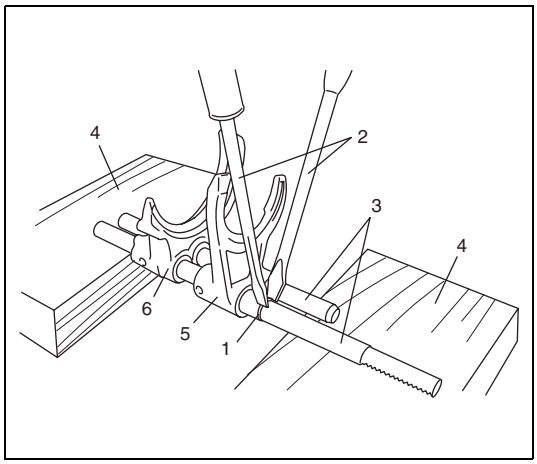
Reassembly

1) Press fit counter gear bearings (1) to counter gear respectively using special tool and hydraulic press.

Special tool
(A): 09913-70123

Shift Fork Shaft Assembly Disassembly and Reassembly

Disassembly



CAUTION:
Support shift fork shafts (3) with wood blocks (4) as shown in figure in order to prevent it from damage.

1) Remove snap rings (1) using flat end rods (2) or the like.

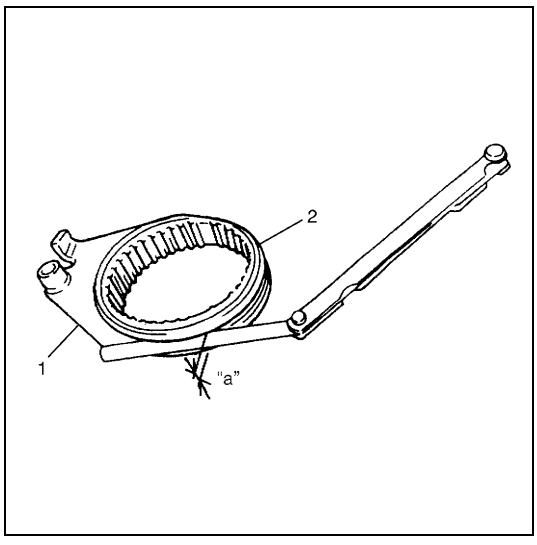
CAUTION:
When removing shaft, put cloth on it to prevent balls and springs from scattering.

2) Remove high & low shift fork (5) and front drive gear shift fork (6) from shift fork shafts.

Reassembly

Reverse disassembly procedure for reassembly noting the following point.

Shift Fork Shaft Assembly Inspection



- Using feeler gauge, check clearance between high & low shift fork (1) and reduction clutch sleeve (2).
  If clearance "a" is out of specification, replace reduction clutch sleeve and high & low shift fork.

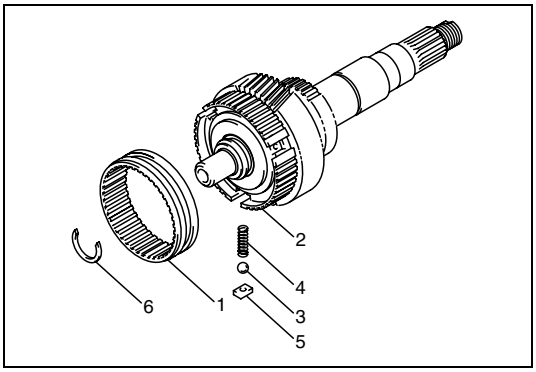
Clearance Between Reduction Clutch Sleeve and High & Low Shift Fork "a": 0.1 – 0.4 mm (0.004 – 0.015 in.)

- Using feeler gauge, check clearance between front drive gear shift fork (1) and front drive clutch hub sleeve (2).
  If clearance "a" is out of specification, replace front drive clutch hub sleeve and front drive gear shift fork.

Clearance Between Front Drive Clutch Hub Sleeve and Front Drive Gear Shift Fork "a":
0.15 – 0.35 mm (0.006 – 0.013 in.)

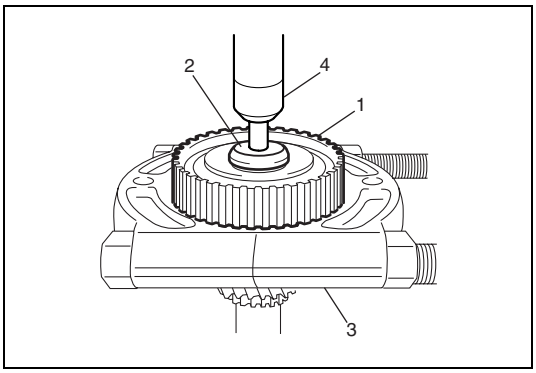
Transfer Output Rear Shaft Assembly Disassembly and Reassembly

Disassembly



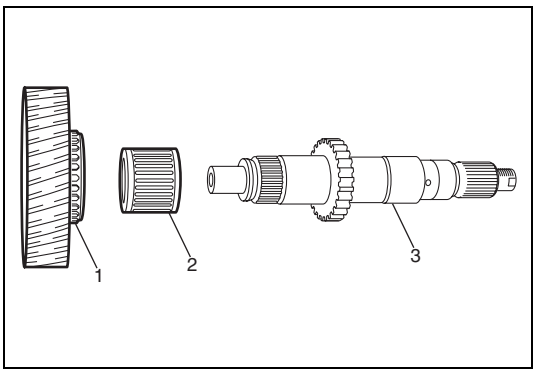
1) Pull out front drive clutch hub sleeve (1) from front drive clutch hub (2) gradually with holding down steel balls (3) in order to prevent steel balls and springs (4) from jumping out.
2) Remove snap ring (6) from output rear shaft.

5. Key



CAUTION:
To avoid gear teeth from being damaged, support it at flat side of bearing puller.

3) Drive out output low gear (1) from output rear shaft (2) using bearing puller (3) and hydraulic press (4).

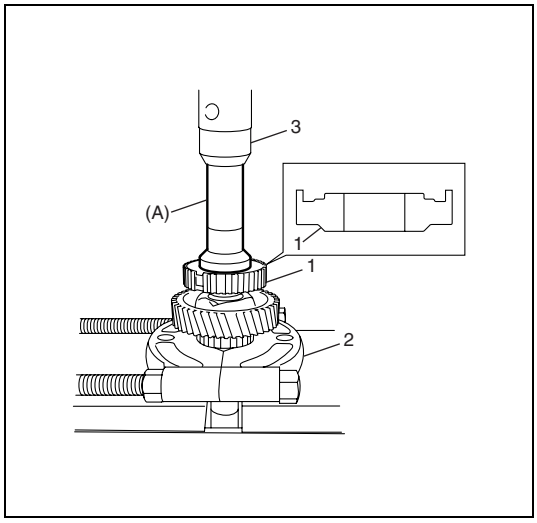


4) Remove output low gear (1) and needle roller bearing (2) from output rear shaft (3).

Reassembly

NOTE:

Install front drive clutch hub and front drive clutch hub sleeve, and check to move smoothly.



CAUTION:

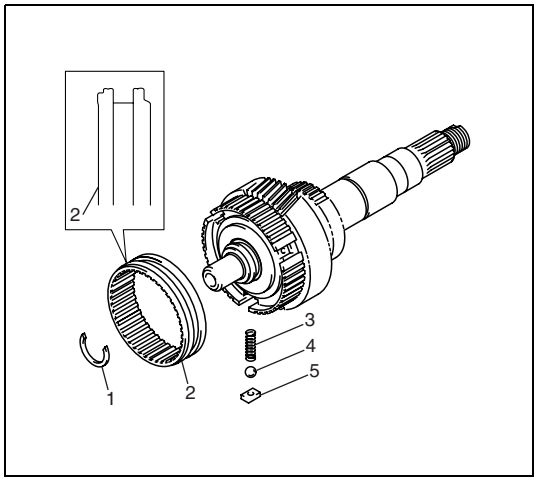
To avoid gear teeth from being damaged, support it at flat side of bearing puller.

1) Press fit front drive clutch hub (1) using special tool, bearing puller (2) and hydraulic press (3).

Special tool
(A): 09913-70123

NOTE:

Be sure to install front drive clutch hub (1) to proper direction as shown in figure.



2) Install front drive clutch hub sleeve (2), and then install steel balls (4), key springs (3) and keys (5).

NOTE:

Be sure to install front drive clutch hub sleeve (2) to proper direction as shown in figure.

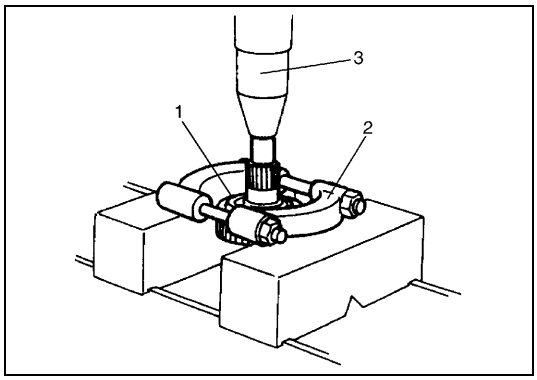
3) Install applicable output shaft snap ring (1) according to "Output Shaft Snap Ring Adjustment" in this section.

NOTE:

After assembly check that each gear moves smoothly.

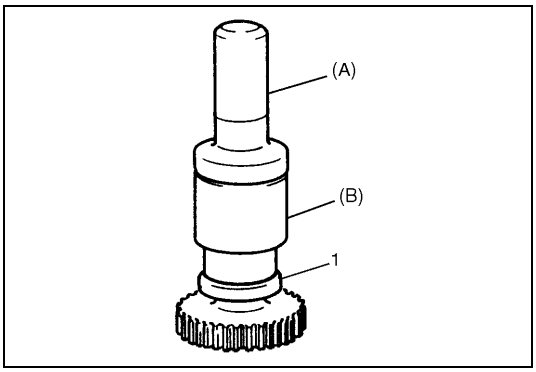
Transfer Output Front Shaft Assembly Disassembly and Reassembly

Disassembly



1) Pull out output front shaft bearing (1) using bearing puller (2) and hydraulic press (3).

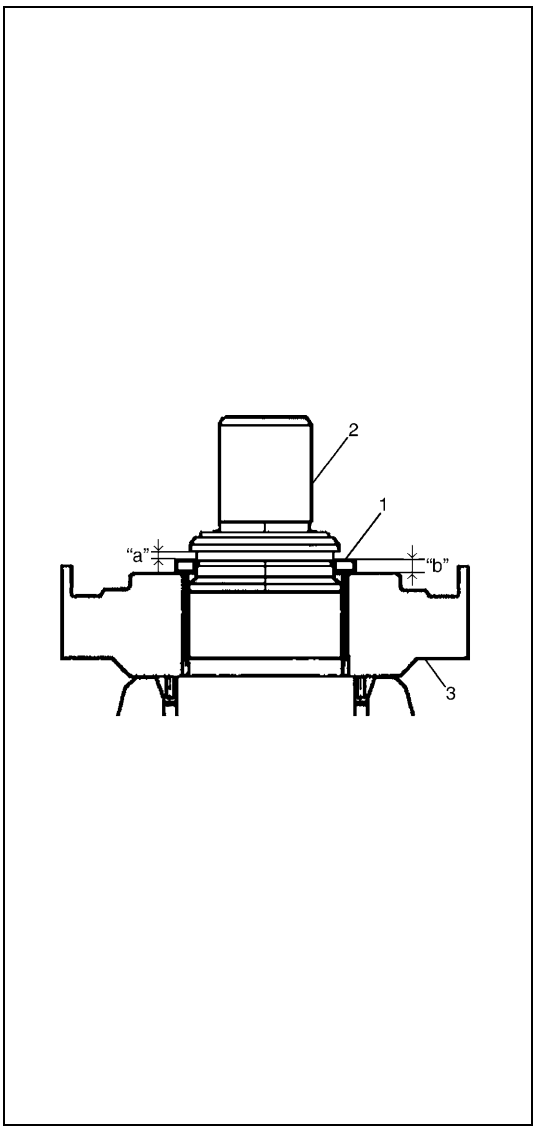
Reassembly



1) By using special tools and hydraulic press, install output front shaft bearing (1) to output front shaft.

Special tool
(A): 09913-75520
(B): 09940-53111

Output Shaft Snap Ring Adjustment



1) Install removed output shaft snap ring to output shaft.
2) Measure clearance "a" between snap ring (1) and end face of output rear shaft (2).
3) Remove snap ring, and then measure removed snap ring thickness "b".
4) Obtain adjusting snap ring thickness "c" by the following equation.

"c" = "a" + "b" – 0.05 mm (0.002 in.)

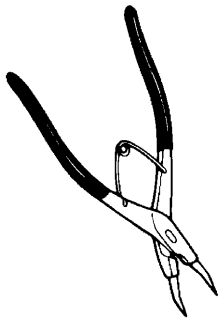
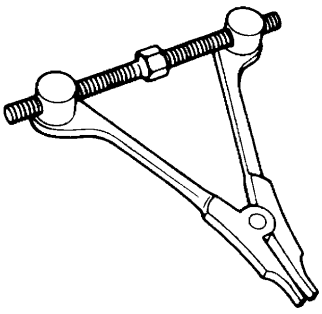
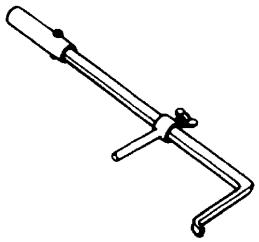
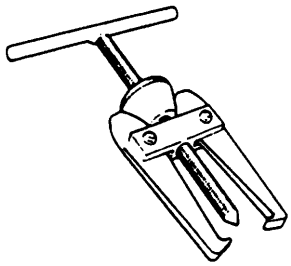
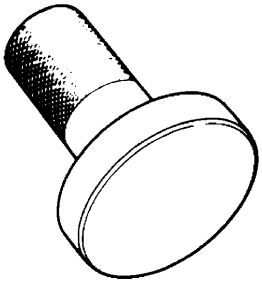
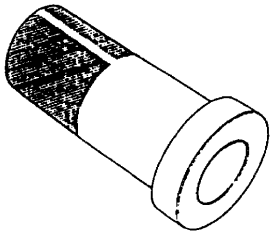
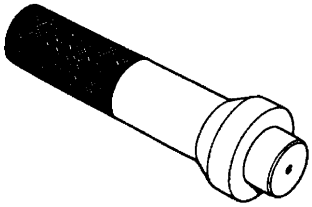
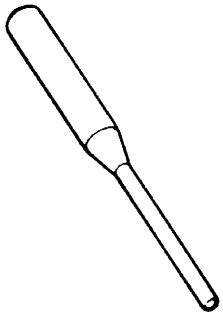
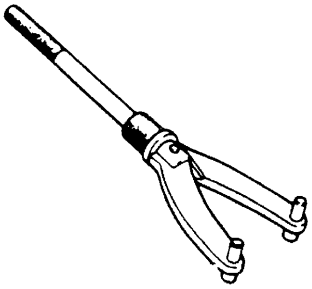
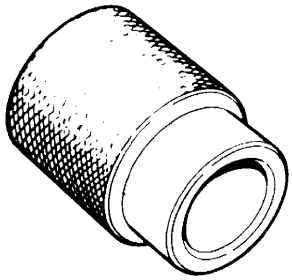
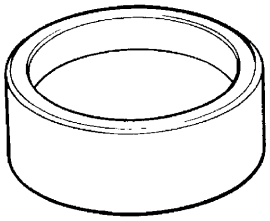
5) Select snap ring with a thickness nearest calculated snap ring thickness "c" by the following.
6) Install selected snap ring to output shaft.
7) Check clearance "a" between snap ring and end face of output rear shaft, again. If it is more than 0.11 mm (0.004 in.), repeat step 2) through 7).

Available snap ring thickness

Identification mark	Thickness
0	2.30 mm (0.091 in.)
1	2.36 mm (0.093 in.)
2	2.42 mm (0.095 in.)
3	2.48 mm (0.098 in.)
4	2.54 mm (0.100 in.)
5	2.60 mm (0.102 in.)
6	2.12 mm (0.083 in.)
7	2.18 mm (0.086 in.)
8	2.24 mm (0.088 in.)

3. Front drive clutch hub

Special Tool

 09900-06108 Snap ring plier (Closing type)	 09912-34510 Separator	 09913-50121 Oil seal remover	 09913-60910 Bearing puller
 09913-75520 Bearing installer	 09913-75810 Bearing installer	 09913-75830 Bearing installer	 09922-89810 Shifter lock pin remover
 09930-40113 Flange holder	 09940-53111 Differential side bearing installer	 09944-66020 Bearing installer	

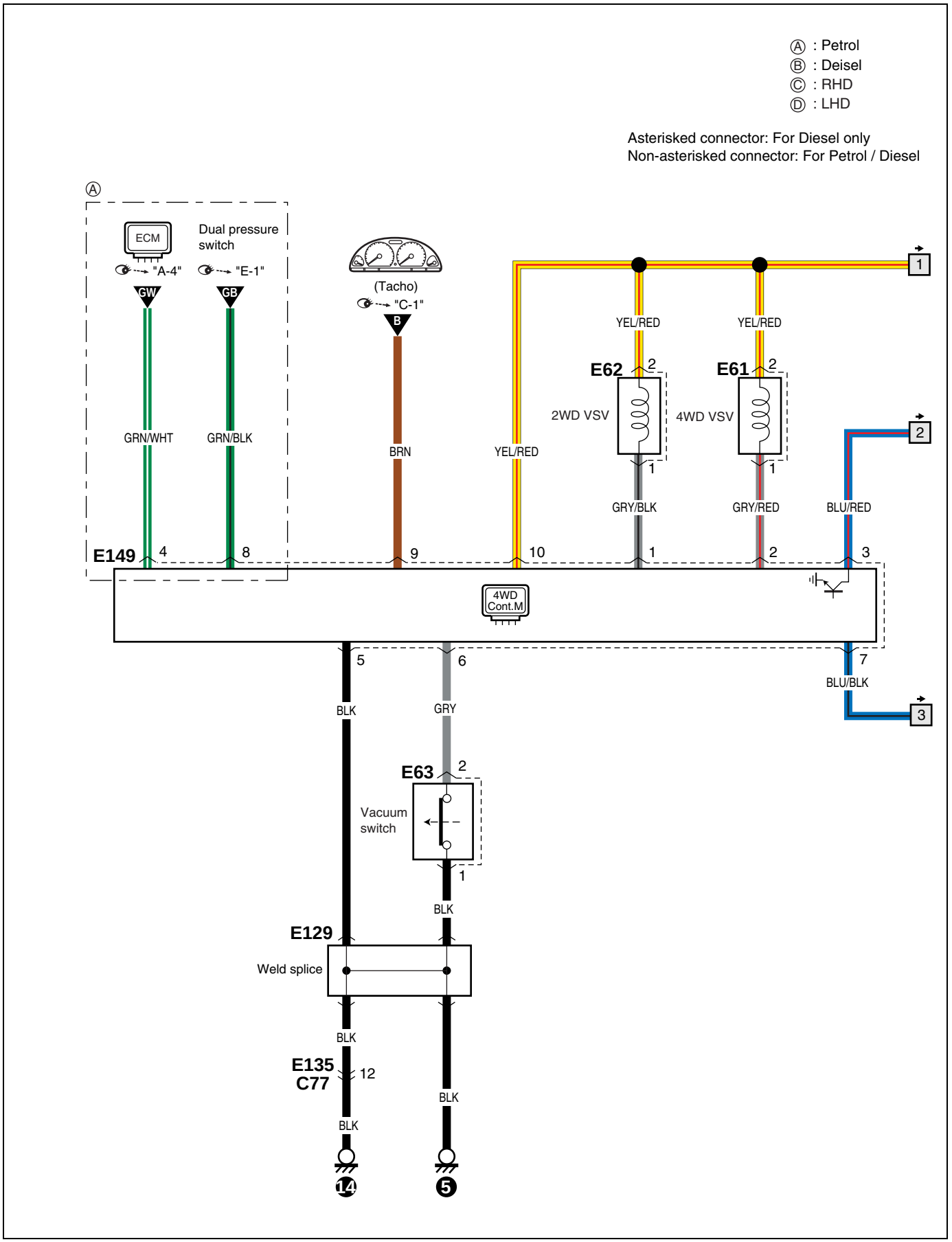
Tightening Torque Specification

Fastening part	Tightening torque		
	N•m	kg-m	lb-ft
Oil filler / level and drain plug	23	2.3	17.0
Transfer mounting nut	30	3.0	22.0
Transfer mounting bracket bolt	23	2.3	17.0
Flange nut	130	13.0	94.0
Transfer case bolt	18	1.8	13.0
4WD switch	19	1.9	14.0
4WD low switch	19	1.9	14.0
Straight pin plug	25	2.5	18.0
VSS bolt	5	0.5	3.5
Transfer oil protect plat bolt	5	0.5	3.5
Locating plug	18	1.8	13.0
Transfer shift actuator bolt	20	2.0	14.5

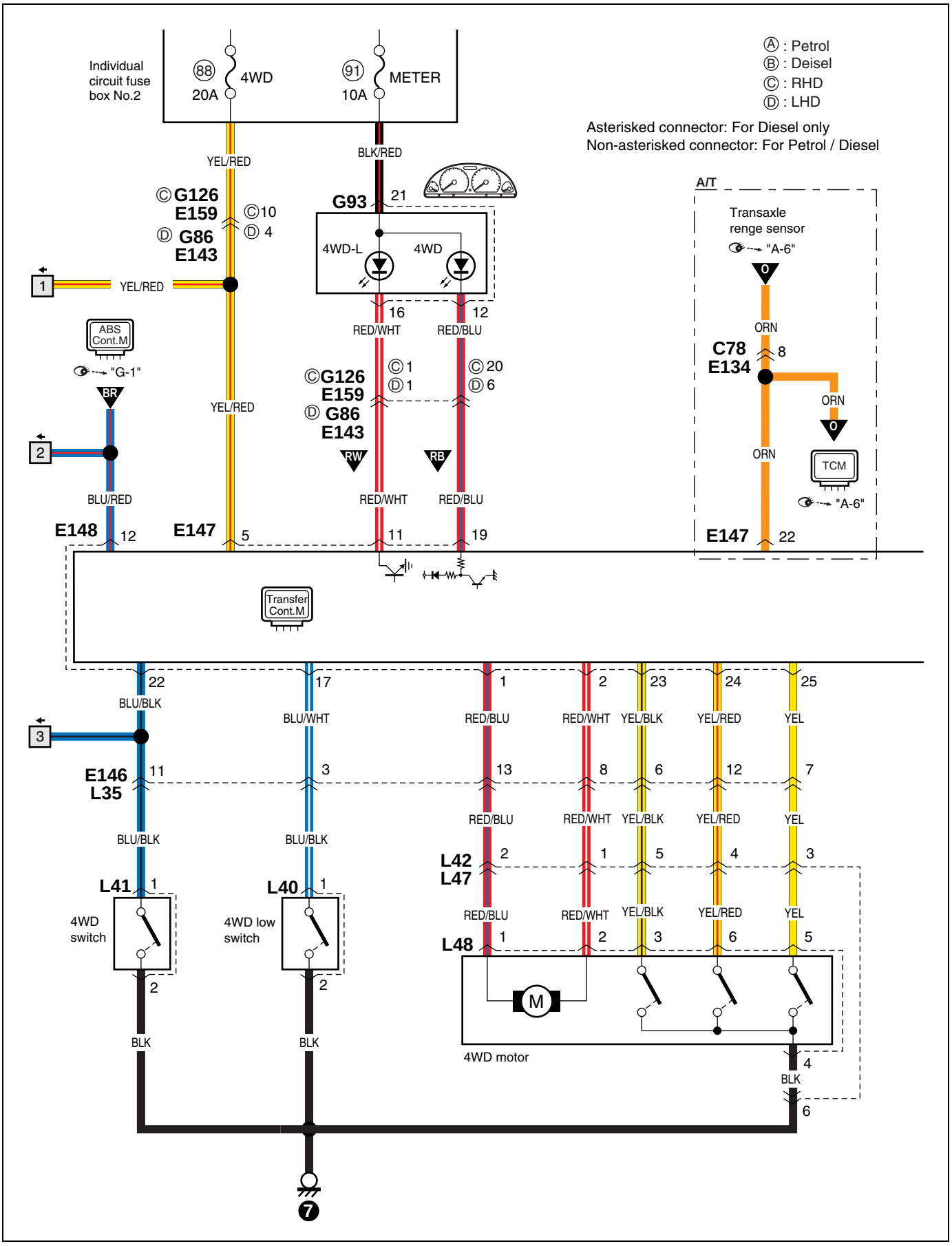
Required Service Material

Material	Recommended products (Part Number)	Use
Lithium grease	SUZUKI SUPER GREASE A (99000-25010)	• Oil seal lip • O-ring
Sealant	SUZUKI BOND NO. 1217G (99000-31260)	• Mating surface of front case • Case cover

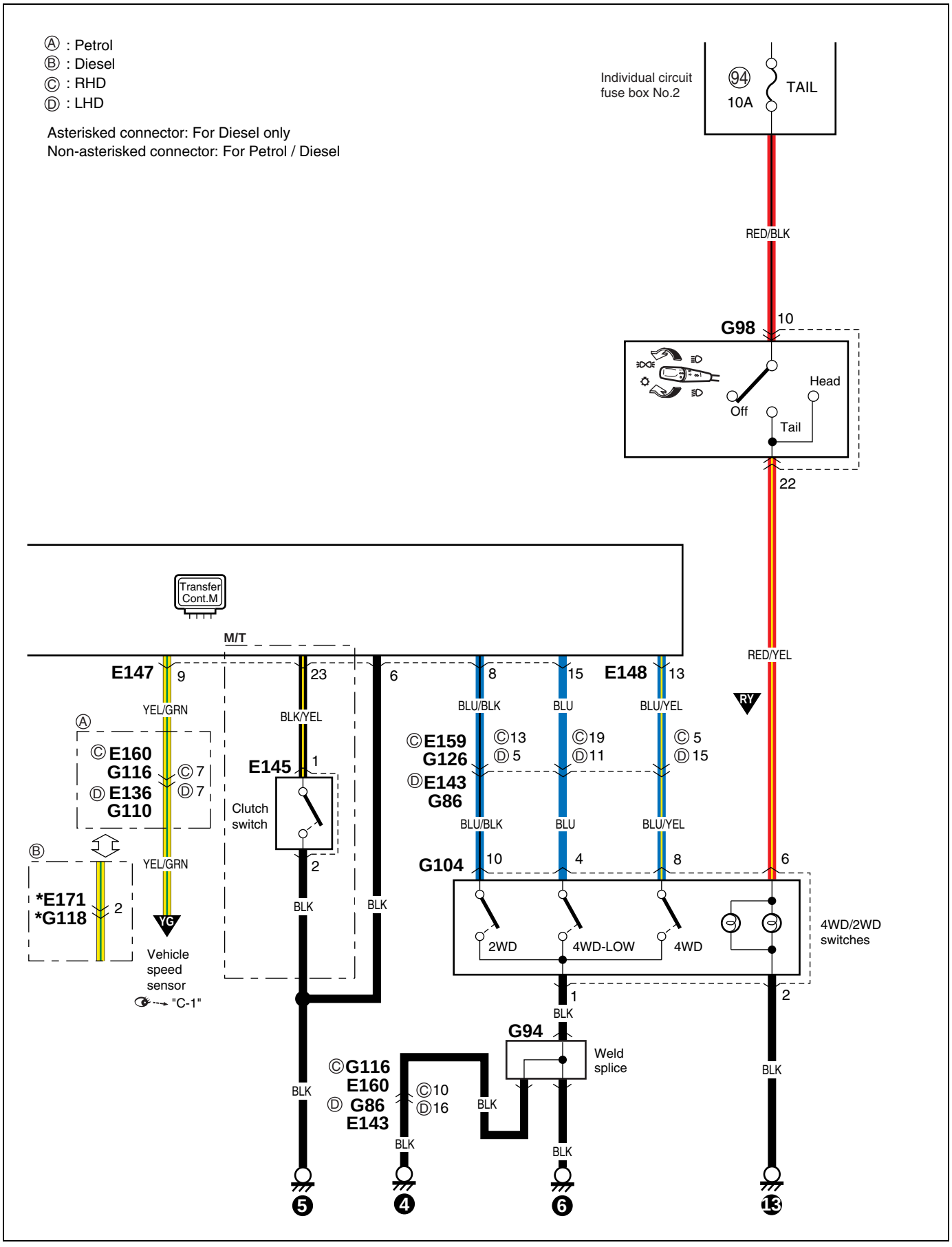
A-7: 4WD control system
A-7: 4WD steuersystem
A-7: Système de commande 4WD
A-7: Sistema de control de tracción en las cuatro ruedas
(1/3)



(2/3)


Individual circuit fuse box No.2
88
20A
4WD
91
10A
METER
Ⓐ : Petrol
Ⓑ : Deisel
Ⓒ : RHD
Ⓓ : LHD
Asterisked connector: For Diesel only
Non-asterisked connector: For Petrol / Diesel
A/T
Transaxle renge sensor
"A-6"
YEL/RED
BLK/RED
Ⓒ G126
E159
Ⓓ G86
E143
Ⓒ10
Ⓓ 4
G93
21
4WD-L
4WD
16
12
RED/WHT
RED/BLU
1
YEL/RED
ABS Cont.M
"G-1"
BR
2
BLU/RED
E148
12
E147
5
Ⓒ1
Ⓓ1
Ⓒ20
Ⓓ6
RW
RB
11
19
ORN
C78
E134
8
TCM
22
Transfer Cont.M
BLU/BLK
BLU/WHT
17
3
E146
L35
11
L41
L40
4WD switch
4WD low switch
BLK
RED/BLU
RED/WHT
YEL/BLK
YEL/RED
YEL
1
2
23
24
25
13
8
6
12
7
L42
L47
L48
5
4
M
4WD motor
BLK
4
6
7

(3/3)


Ⓐ : Petrol
Ⓑ : Diesel
Ⓒ : RHD
Ⓓ : LHD
Asterisked connector: For Diesel only
Non-asterisked connector: For Petrol / Diesel
Individual circuit fuse box No.2
94
10A
TAIL
RED/BLK
G98
10
Head
Off
Tail
22
RED/YEL
RY
Transfer Cont.M
M/T
E147
9
YEL/GRN
Ⓐ
ⒸE160
G116
Ⓒ7
ⒹE136
G110
Ⓓ7
Ⓑ
*E171
*G118
2
YEL/GRN
YG
Vehicle speed sensor
"C-1"
23
BLK/YEL
E145
1
Clutch switch
2
BLK
6
BLK
E148
13
8
15
BLU/BLK
BLU
BLU/YEL
ⒸE159
G126
ⒹE143
G86
Ⓒ13
Ⓓ5
Ⓒ19
Ⓓ11
Ⓒ5
Ⓓ15
BLU/BLK
BLU
BLU/YEL
G104
10
4
8
6
2WD
4WD-LOW
4WD
4WD/2WD switches
1
2
BLK
G94
Weld splice
ⒸG116
E160
ⒹG86
E143
Ⓒ10
Ⓓ16
BLK
BLK
BLK
BLK
BLK
5
4
6
13