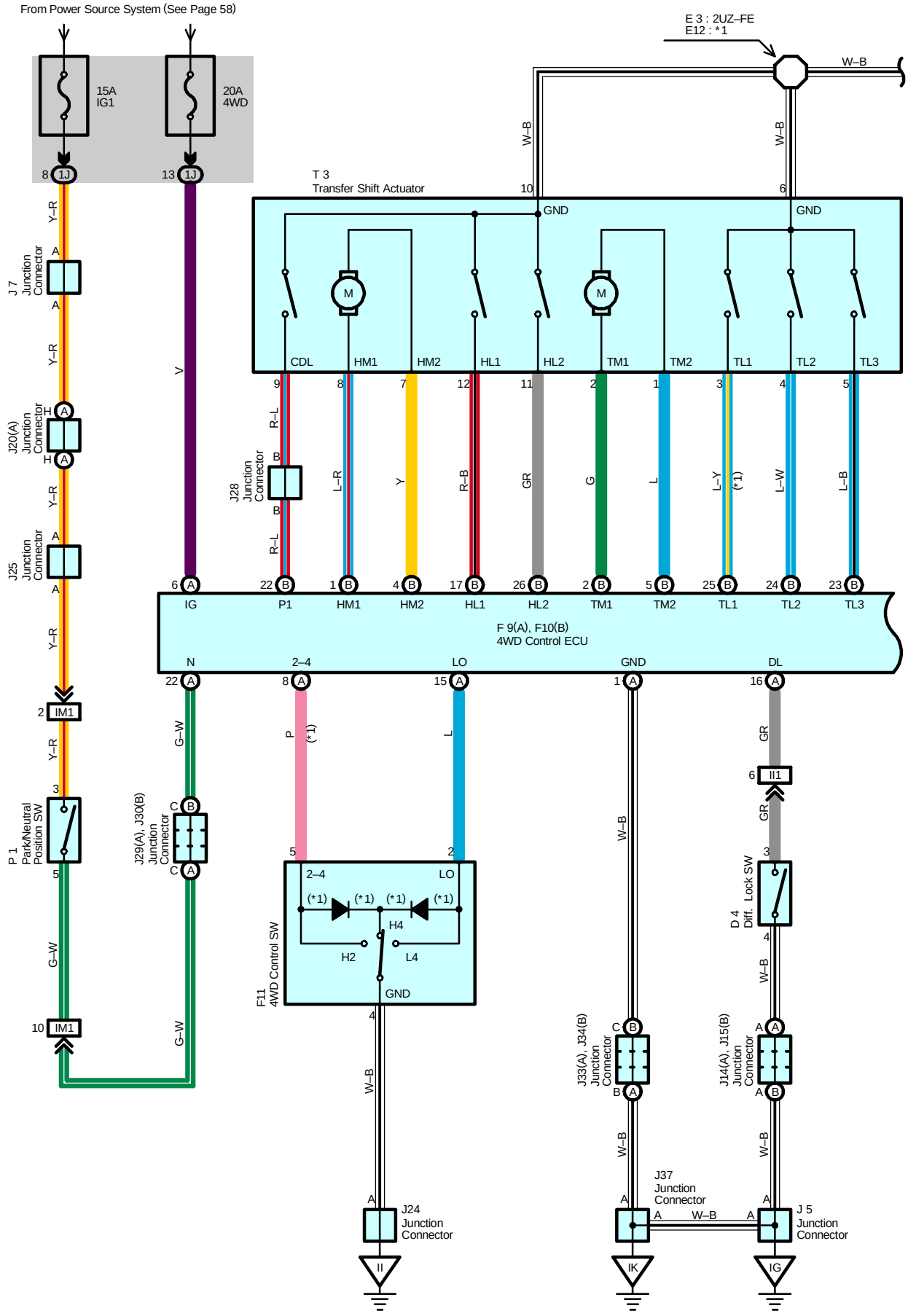
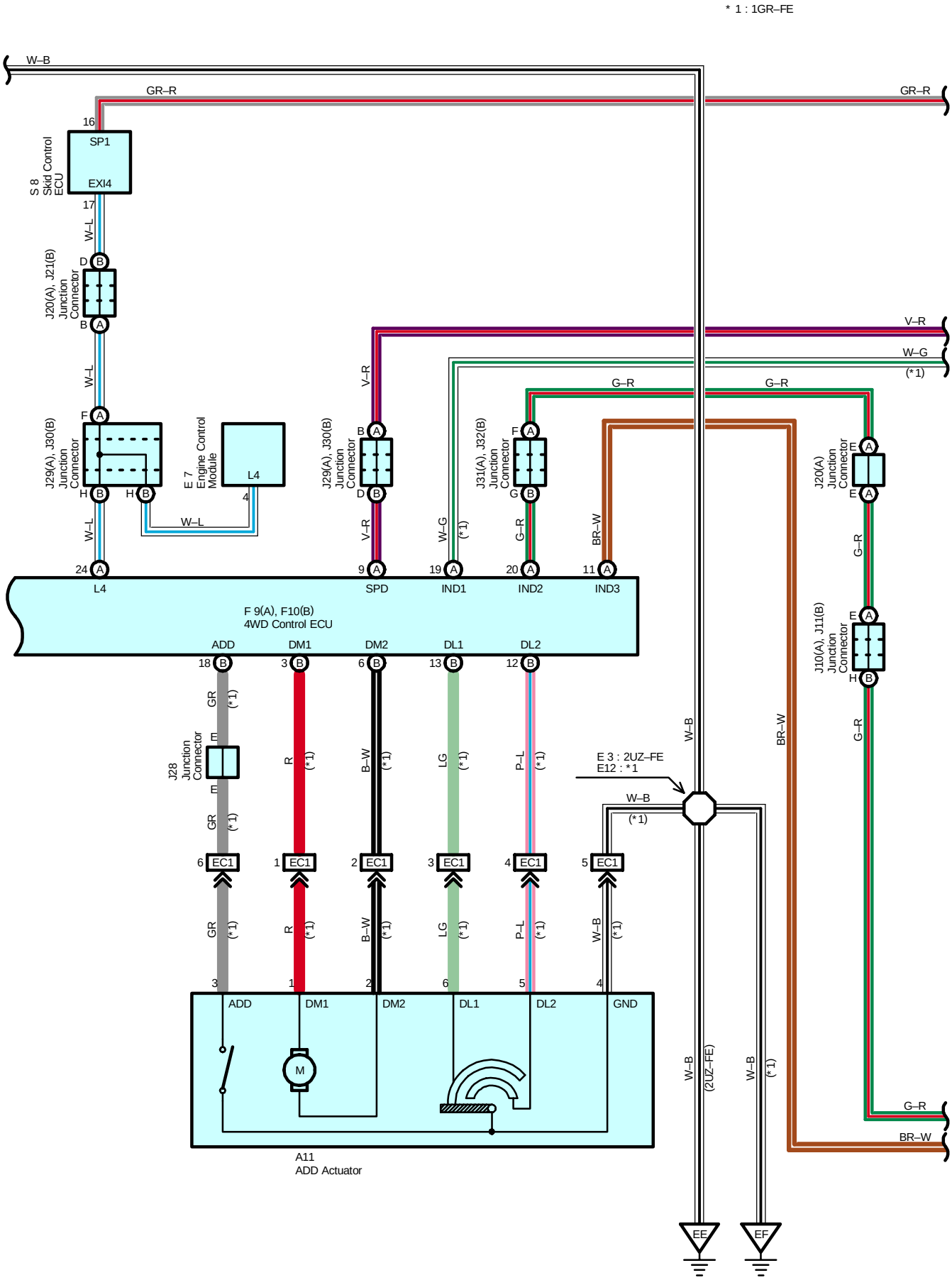
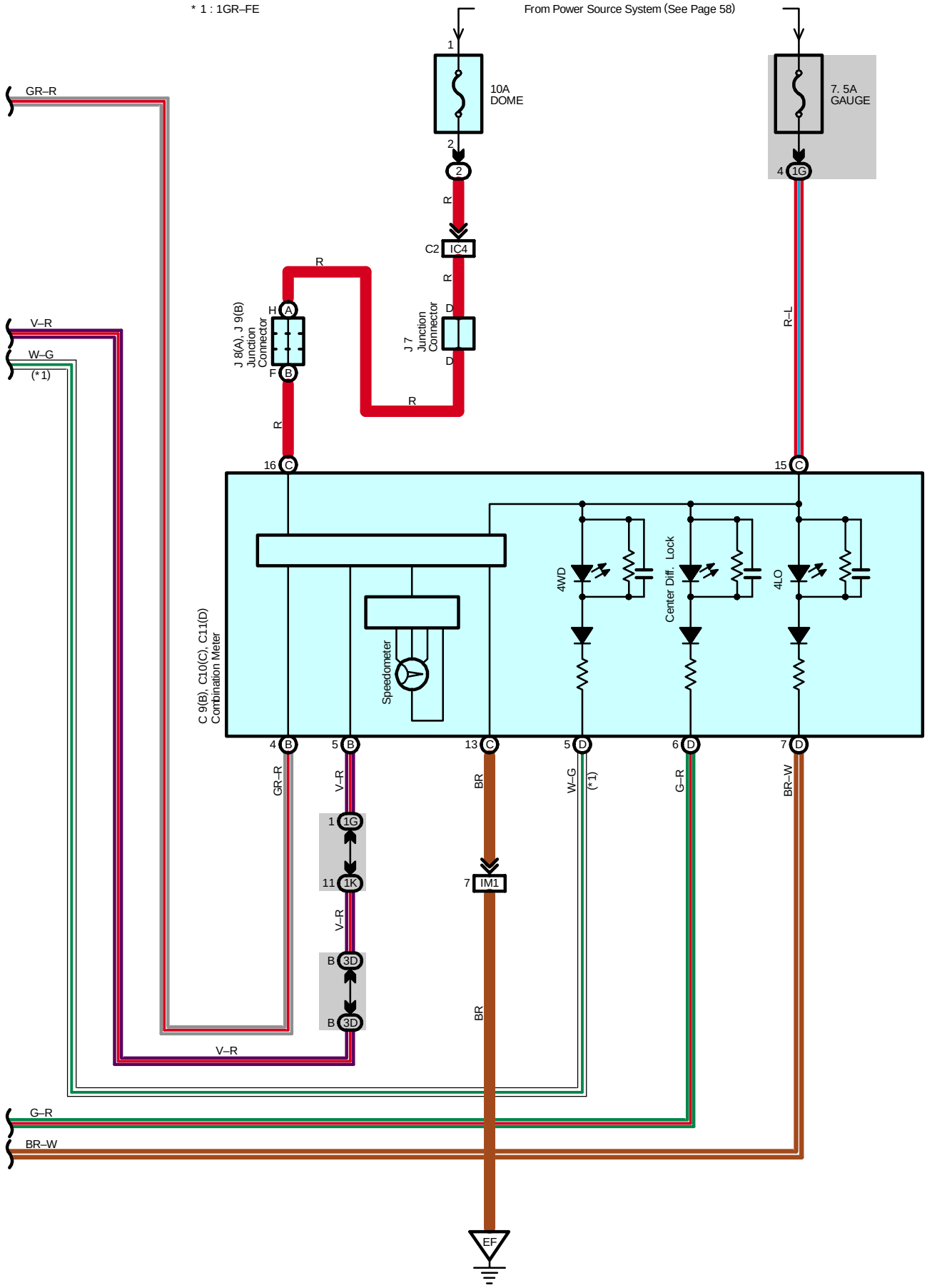

From Power Source System (See Page 58)
15A
IG1
20A
4WD
E 3 : 2UZ–FE
E12 : *1
W–B
T 3
Transfer Shift Actuator
GND
CDL
HM1
HM2
HL1
HL2
TM1
TM2
TL1
TL2
TL3
J 7
Junction
Connector
J20(A)
Junction
Connector
J25
Junction
Connector
J28
Junction
Connector
IG
P1
F 9(A), F10(B)
4WD Control ECU
N
2–4
LO
GND
DL
IM1
P 1
Park/Neutral
Position SW
J29(A), J30(B)
Junction
Connector
F11
4WD Control SW
H4
H2
L4
D 4
Diff. Lock SW
II1
J24
Junction
Connector
J33(A), J34(B)
Junction
Connector
J14(A), J15(B)
Junction
Connector
J37
Junction
Connector
J 5
Junction
Connector
II
IK
IG


* 1 : 1GR–FE
W–B
GR–R
S 8
Skid Control
ECU
16
SP1
EXI4
17
W–L
J20(A), J21(B)
Junction
Connector
D
B
B
A
W–L
F
A
J29(A), J30(B)
Junction
Connector
H
B
H
B
E 7
Engine Control
Module
L4
4
W–L
W–L
24
A
L4
V–R
J29(A), J30(B)
Junction
Connector
B
A
D
B
V–R
9
A
SPD
W–G
(*1)
19
A
IND1
J31(A), J32(B)
Junction
Connector
F
A
G
B
G–R
20
A
IND2
BR–W
11
A
IND3
V–R
W–G
(*1)
G–R
G–R
J20(A)
Junction
Connector
E
A
E
A
G–R
J10(A), J11(B)
Junction
Connector
E
A
H
B
G–R
F 9(A), F10(B)
4WD Control ECU
ADD
DM1
DM2
DL1
DL2
18
B
3
B
6
B
13
B
12
B
GR
(*1)
J28
Junction
Connector
E
F
GR
(*1)
R
(*1)
B–W
(*1)
LG
(*1)
P–L
(*1)
E 3 : 2UZ–FE
E12 : *1
W–B
(*1)
W–B
BR–W
6
EC1
1
EC1
2
EC1
3
EC1
4
EC1
5
EC1
GR
(*1)
R
(*1)
B–W
(*1)
LG
(*1)
P–L
(*1)
W–B
(*1)
3
1
2
6
5
4
ADD
DM1
DM2
DL1
DL2
GND
M
A11
ADD Actuator
W–B
(2UZ–FE)
W–B
(*1)
EE
EF
G–R
BR–W


* 1 : 1GR–FE
From Power Source System (See Page 58)
10A
DOME
7. 5A
GAUGE
GR–R
V–R
W–G
(*1)
R–L
J 8(A), J 9(B)
Junction
Connector
J 7
Junction
Connector
C2 1C4
C 9(B), C10(C), C11(D)
Combination Meter
Speedometer
4WD
Center Diff. Lock
4LO
GR–R
V–R
BR
W–G
(*1)
G–R
BR–W
1G
1K
3D
1M1
EF

System Outline

Depending on the transfer shift actuator status and ADD actuator (1GR–FE) status, the 4WD control ECU drives the transfer shift actuator and ADD actuator (1GR–FE) to electrically change the gear position selected by the driver according to vehicle speed signal and neutral start switch signal.

1. Shift Select Control

Shifting from H2 into H4 position (1GR–FE)
When the 4WD control switch is turned from H2 into H4, this signal is input into 4WD control ECU (TERMINAL 2–4). Then, the 4WD control ECU moves the 2–4 select motor (TERMINAL 2, TERMINAL 1) in the transfer shift actuator until the shift fork shaft shifts to the diff. free position, performing a shift into H4 position

Switching diff. lock ON when in H4 position.
When the diff. lock switch is turned ON with the 4WD control switch in H4 position, this signal is input into the 4WD control ECU (TERMINAL DL). Then, the 4WD control ECU drives the 2–4 select motor (TERMINAL 2, TERMINAL 1) in the transfer shift actuator until the shift fork shaft shifts to the diff. lock position, locking it in H4 position with the diff. lock.

Shifting from H4 into L4 position
When the 4WD control switch is turned from H4 into L4, this signal is input into 4WD control ECU (TERMINAL LO). Then, the 4WD control ECU drives the H–L select motor (TERMINAL 8, TERMINAL 7) in the transfer shift actuator, shifting the shift fork shaft, performing a shift into L4 position.

Switching diff. lock ON when in L4 position.
When the diff. lock switch is turned ON with the 4WD control switch in L4 position, this signal is input into the 4WD control ECU (TERMINAL DL). Then, the 4WD control ECU drives the 2–4 select motor (TERMINAL 2, TERMINAL 1) in the transfer shift actuator until the shift fork shaft shifts to the diff. lock position, locking it in L4 position with the diff. lock.

2. Function of Limit Switch

H4L limit switch (TERMINAL 12 and TERMINAL 11 of transfer shift actuator)
The H4L limit switch in the transfer shift actuator feeds back the current shift position status (H4 or L4) information, which is based on the ON/OFF combination of the two switches, to the 4WD control ECU.

4WD limit switch (TERMINAL 3 (1GR–FE), TERMINAL 4 and TERMINAL 5 of transfer shift actuator)
The 4WD limit switch in the transfer shift actuator feeds back the current shift position status (H2 or H4) (1GR–FE) and diff. lock or diff. free status information, which is based on the ON/OFF combination of the two (2UZ–FE) or three (1GR–FE) switches, to the 4WD control ECU.

ADD limit switch (TERMINAL 6 and TERMINAL 5 of ADD actuator) (1GR–FE)
The ADD limit switch in the ADD actuator feeds back the current front diff. lock or free status information, which is based on the ON/OFF combination of the two switches, to the 4WD control ECU.

3. Shift Limit Control

The 4WD control ECU interrupts the shift select control and give the driver a warning by means of buzzer (Integrated into the ECU) sound and blinking indicator light on the combination meter when the following shift change conditions exist.
The warning, however, can be canceled — when the 4WD control switch is canceled and the switch position is returned to where it was before the warning occurred.

* Shift change (1GR–FE) from H2 into H4 with vehicle traveling at a speed reaching or exceeding 100 km/h (Buzzer sound and blinking 4WD and center diff. lock indicator lights)
* Shift change from H4 into L4 with vehicle traveling at a speed reaching or exceeding 5 km/h but within the A/T shift position N range (Buzzer sound and blinking L4 indicator light)

4. ADD Actuator Control (1GR–FE)

When switching between H2 (2WD) and H4 (4WD), the 4WD control ECU controls the way power is supplied to the ADD motor in the ADD actuator, as shown below, to run the ADD motor in normal or reverse direction, thereby changing the status of the front diff. from free to lock, or vice versa.

For locking front diff.	TERMINAL DM1	+B
	TERMINAL DM2	GROUND
For unlocking front diff.	TERMINAL DM1	GROUND
	TERMINAL DM2	+B

: Parts Location

Code	See Page	Code	See Page	Code	See Page
A11	34 (1GR–FE)	J9 B	38	J31 A	38
C9 B	37	J10 A	38	J32 B	38
C10 C	37	J11 B	38	J33 A	38
C11 D	37	J14 A	38	J34 B	38
D4	37	J15 B	38	J37	38
E7	37	J20 A	38	P1	33 (2UZ–FE)
F9 A	37	J21 B	38		35 (1GR–FE)
F10 B	37	J24	38	S8	39
F11	37	J25	38	T3	33 (2UZ–FE)
J5	38	J28	38		35 (1GR–FE)
J7	38	J29 A	38		
J8 A	38	J30 B	38		

: Relay Blocks

Code	See Page	Relay Blocks (Relay Block Location)
2	22	Engine Room R/B (Engine Compartment Left)

: Junction Block and Wire Harness Connector

Code	See Page	Junction Block and Wire Harness (Connector Location)
1G	25	Instrument Panel Wire and Driver Side J/B (Lower Finish Panel)
1J		
1K		
3D	28	Instrument Panel Wire and Center J/B (Instrument Panel Brace RH)

: Connector Joining Wire Harness and Wire Harness

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EC1	46 (1GR–FE)	Engine Wire and Differential Wire (Near the Front Differential)
IC4	48	Instrument Panel Wire and Engine Room Main Wire (Left Kick Panel)
II1	50	Instrument Panel Wire and Instrument Panel Wire (Instrument Panel Brace LH)
IM1	52	Engine Wire and Instrument Panel Wire (Right Side of Blower Unit)

: Ground Points

Code	See Page	Ground Points Location
EE	44 (2UZ–FE)	Rear Side of Right Bank Cylinder Block
EF	44 (2UZ–FE)	Rear Side of Left Bank Cylinder Block
	46 (1GR–FE)	
IG	48	Left Kick Panel
II	48	Instrument Panel Brace RH
IK	48	Right Kick Panel

: Splice Points

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E3	44 (2UZ–FE)	Engine Wire	E12	46 (1GR–FE)	Engine Wire