SECTION 1

HOW TO USE ELECTRICAL WIRING DIAGRAM

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1) CONTENTS OF ELECTRICAL WIRING DIAGRAM (CIRCUIT)

Position	Explanation
A	- Upper horizontal lines : Power supply lines - Power supply lines : 30, 15, 15A, 15C, 58
B	- Ef20 or F2 : Fuse Number • Ef20 : Fuse No #20 in engine room compartment • F2 : Fuse No #2 in passenger room compartment
C	- Connector (C101 ~ C903) • Connector No C203 terminal No1 * Refer to Major Connector Position (Section 2)
D	- S201 : Splice pack (S201 ~ S207) * Refer to Major Splice Pack Position (Section2)
E	- Wiring Harness Color * Refer to Wiring Harness Color Abbreviation
F	- Internal circuit of component (Relay) (Component Name and Terminal Number)
G	- Internal circuit of component (Switch) (Component Name, Terminal Number and Connecting Wiring Circuit)
H	- Lower horizontal line : Ground line • Ground position (G101 ~ G402) • B : Body Ground * Refer to Major Ground Position (Section2)

2. CIRCUIT IDENTIFICATION SYMBOL

Identification Symbol	Meaning
C	Connector
D	Diode
Ef	Fuse in engine room fuse & relay box
F	Fuse in passenger room fuse box
G	Ground
S	Splice pack (Junction connector)

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Position	Explanation
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3. FUNCTION OF POWER SUPPLY LINE (NUMBER)

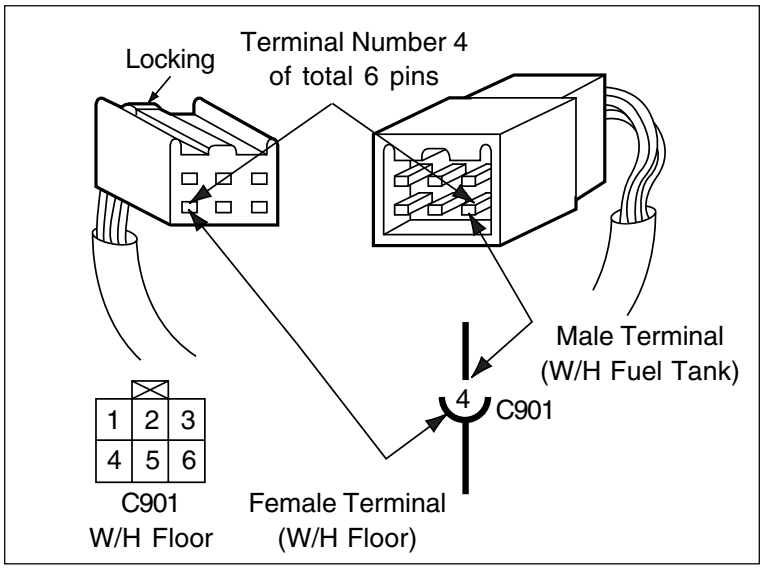
Power supply No.	Power supply condition
15	Battery Voltage (B+) supply in Ignition Switch “ON” and “ST” (IGN 1)
15A	Battery Voltage (B+) supply in Ignition Switch “ON” (IGN 2)
15C	Battery Voltage (B+) supply in Ignition Switch “ON” and “ACC”
30	Battery Voltage (B+) supply directly regardless of Ignition Switch
31	Ground connected to battery (-)
58	Battery Voltage (B+) supply in Head Lamp Switch 1st and 2nd step (Illumination circuit)

4. WIRING HARNESS COLOR IDENTIFICATION

Abbreviation	Color	Abbreviation	Color
Br	Brown	**Sb**	Sky Blue
G	Green	**R**	Red
V	Violet	**L**	Blue
P	Pink	**Y**	Yellow
W	White	**Gr**	Gray
Or	Orange	**B**	Black
Lg	Light Green		

5. HOW TO CHECK TERMINAL NUMBER OF CONNECTOR

- Terminal number is given based on Female Terminal Connector
  ex) Terminal Number 4 of C901 connection



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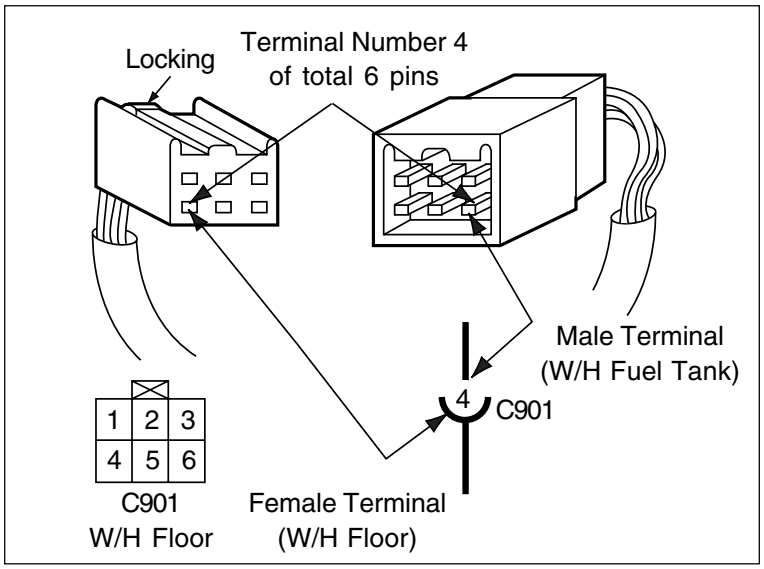

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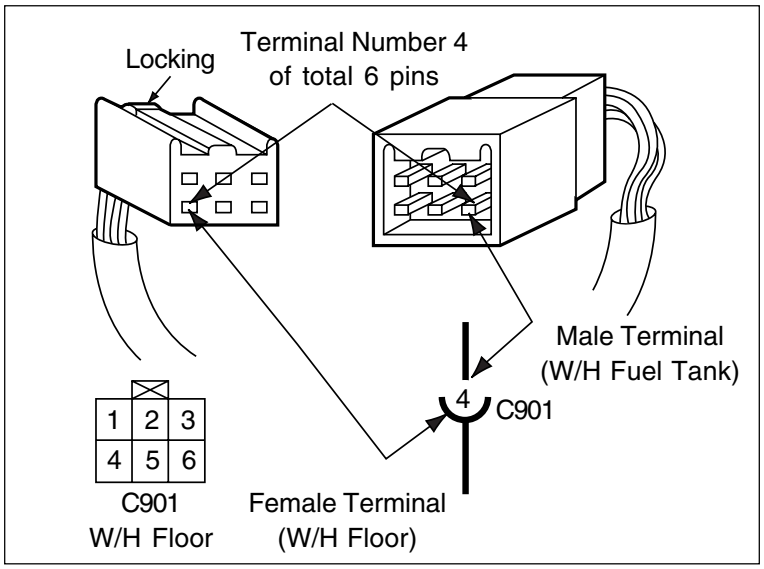
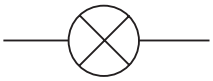
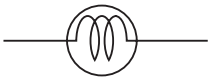
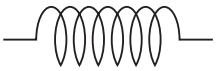
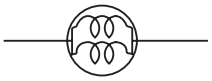
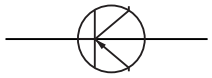
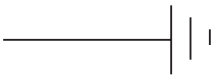
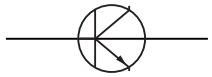
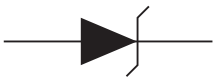
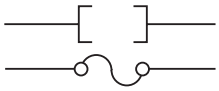
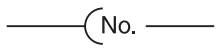
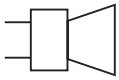
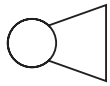


7. ELECTRIC SYMBOLS

Items	Symbols	Items	Symbols
Resistance		Lamp	
Rheostat		Single Bulb	
Coil, Inductance		Double Bulb	
Condenser, Capacitor		Transistor : PNP type	
Ground, Earth		Transistor : NPN type	
Diode		~Meter, ~Gauge	
Zener Diode		Voltmeter	
Photo Diode		Amperemeter	
Light Emitting Diode		Switch	
Battery		Thermistor	
Disconnected Wire		Junction Point	
Fuse		Fusible Link	
Motor		Connector	
Speaker		Horn	

SECTION 2

POSITION OF CONNECTORS AND GROUNDS

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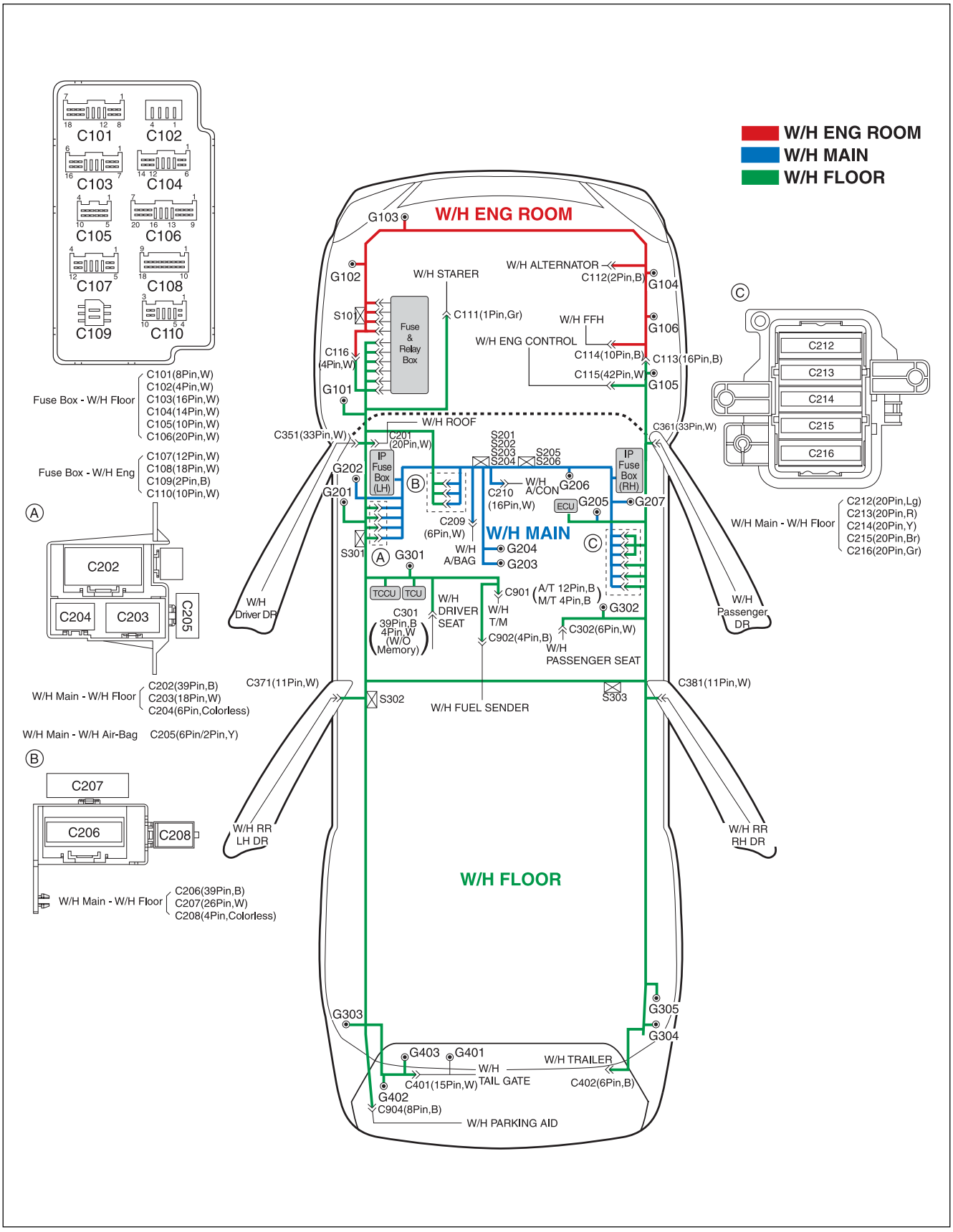
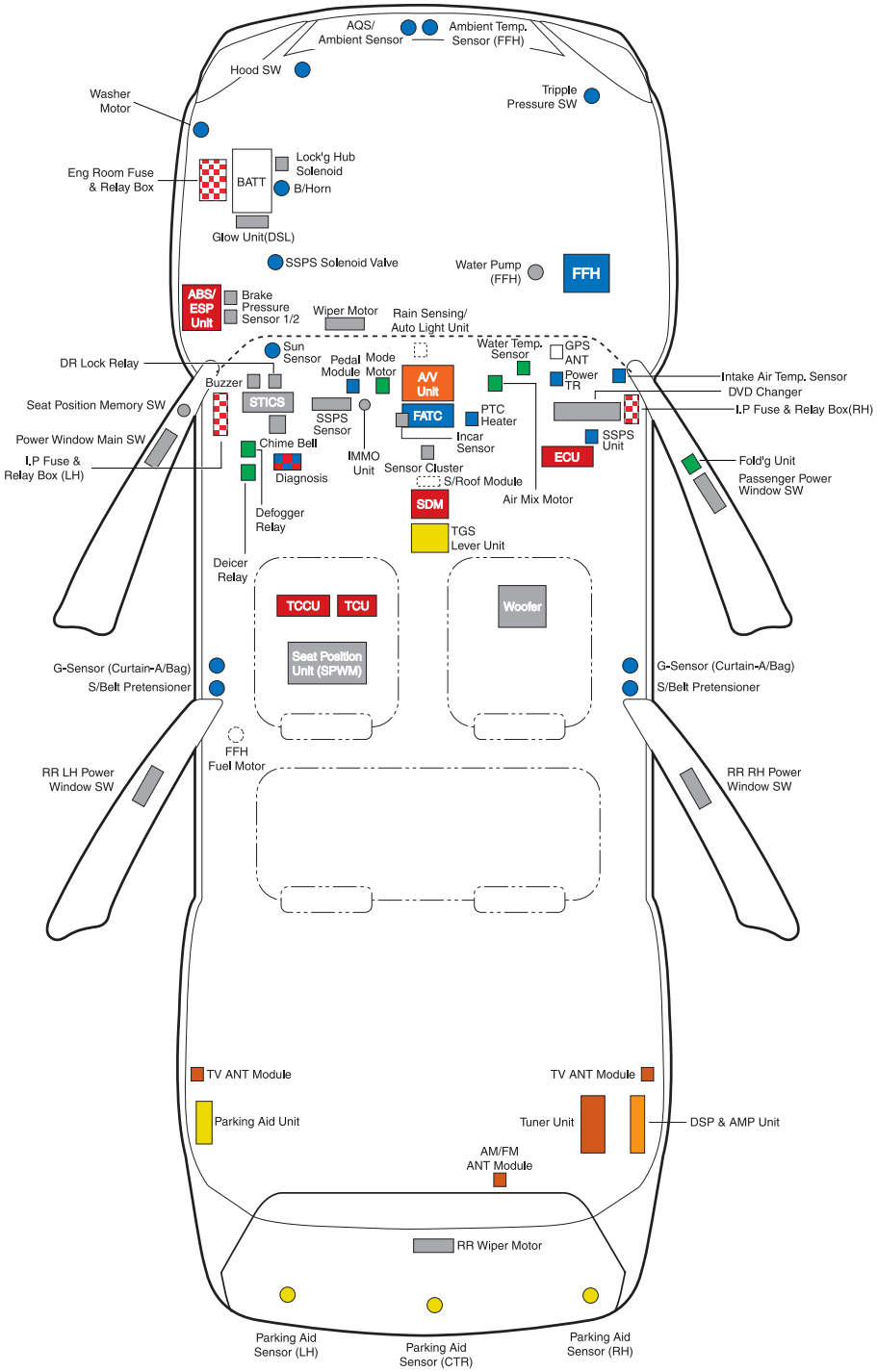
1. WIRING HARNESS, COMPONENTS LOCATION 0000

1) WIRING HARNESS



2) COMPONENTS LOCATION



3) CONNECTOR, GROUND & SPLICE PACK INFORMATION

▶ CONNECTOR

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C109 (2Pin, Black)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C111 (1Pin, Gray)	W/H Floor - Starter Motor	Under the Preheating Time Relay	Solenoid
C112 (2Pin, Black)	W/H Eng - W/H Alternator	Behind RH Head Lamp	Only D20DT
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C114 (10Pin, Black)	W/H Eng - W/H FFH	Right Eng Room Dash PNL	FFH
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C116 (4Pin, White)	W/H Eng - W/H Floor	Inside Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C204 (6Pin, Colorless)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C205 (2Pin, Yellow)	W/H Main - W/H A/Bag	Driver Cowl Side C/Holder	
C205 (6Pin, Yellow)	W/H Main - W/H A/Bag	Driver Cowl Side C/Holder	Curtain A/Bag
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C208 (4Pin, Colorless)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C211 (2Pin, Yellow)	W/H Main - W/H A/Bag	Passenger Cowl Side C/Holder	
C211 (6Pin, Yellow)	W/H Main - W/H A/Bag	Passenger Cowl Side C/Holder	Curtain A/Bag
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C215 (20Pin, Brown)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C216 (20Pin, Gray)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C301 (39Pin, Black)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/ Memory
C301 (4Pin, White)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/O Memory
C302 (6Pin, White)	W/H Floor - W/H Passenger Seat	Under the Passenger Seat	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” Pillar	
C371 (11Pin, White)	W/H Floor - W/H RR LH DR	Under the LH “B” Pillar	
C381 (11Pin, White)	W/H Floor - W/H RR RH DR	Under the RH “B” Pillar	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Under the RH T/Gate	
C402 (6Pin, Black)	W/H Floor - W/H Trailer	Under RH Bumper	
C901 (12Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	A/T
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
C902 (4Pin, Black)	W/H Floor - W/H Fuel Sender	Upper the T/M	
C904 (8Pin, Black)	W/H Floor - W/H PAS	Under LH Bumper	

▶ GROUND

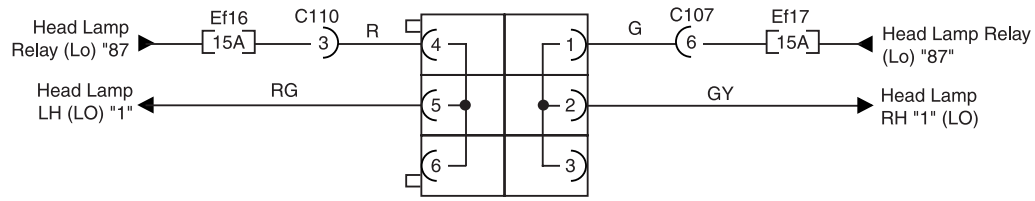
Connector Number	Connecting Wiring Harness	Connector Position	Remark
G101	W/H Floor	ABS/ESP Modulator	ABS/ESP
G102	W/H Eng Room	Behind LH Head Lamp	
G103	W/H Eng Room	LH FRT END PNL (LH Head Lamp Side)	
G104	W/H Eng Room	Behind RH Head Lamp	
G105	W/H Floor	RH Cowl Side PNL (Beside C114)	A/Bag
G106	W/H Eng Room	RH Fender PNL (Beside C113)	GSL
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G203	W/H Main (W/H A/Bag)	Beside A/Bag Unit	A/Bag
G204	W/H Main	Backside TGS Lever Unit	
G205	W/H Main	RH Eng ECU	ECU
G206	W/H Main	LH Eng ECU	PTC
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	
G305	W/H Floor	Passenger QTR PNL	Audio
G401	W/H T/Gate	Center the T/Gate	
G402	W/H Floor	Upper the LH T/Gate	Heater Glass
G403	W/H Floor	Upper the LH T/Gate	

▶ SPLICE PACK

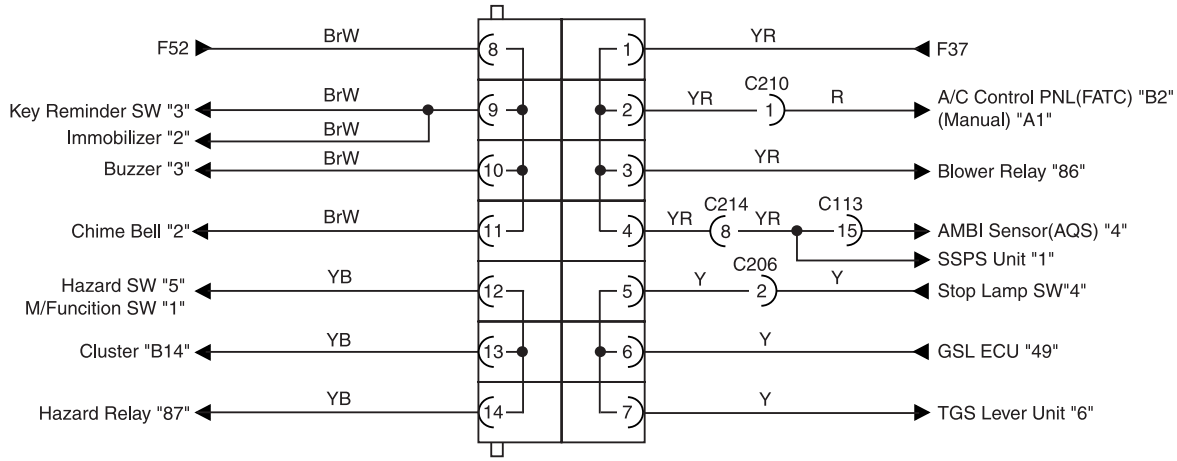
Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
S101 (6Pin, Black)	W/H Eng	Inside the Eng Room Fuse & Relay Box	Head Lamp
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	
S303 (8Pin, Black)	W/H Floor	Under the Passenger “B” PLR W/H Protector	DR Lock

4) SPLICE PACK CIRCUIT

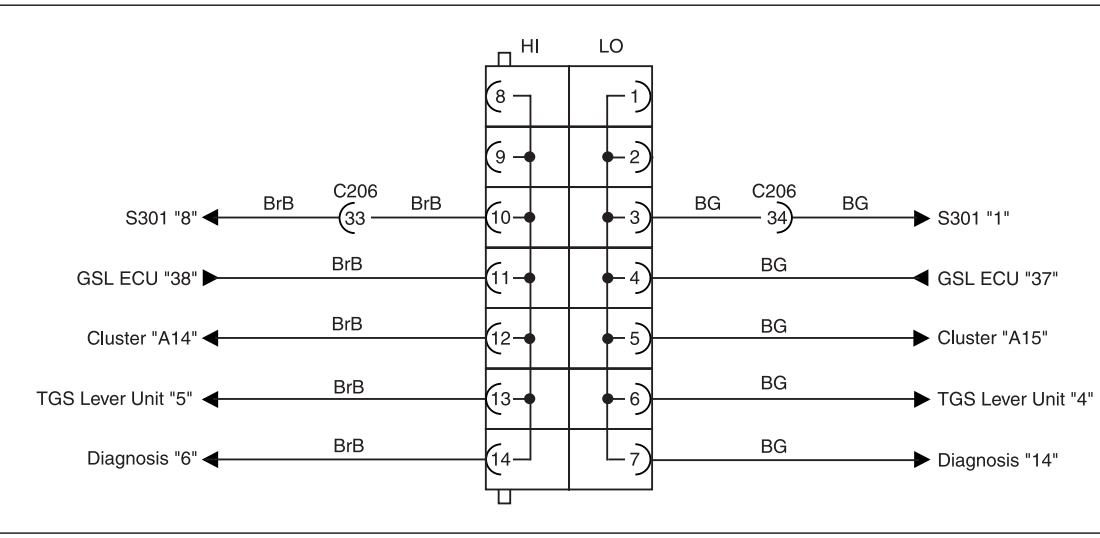
• **S101**



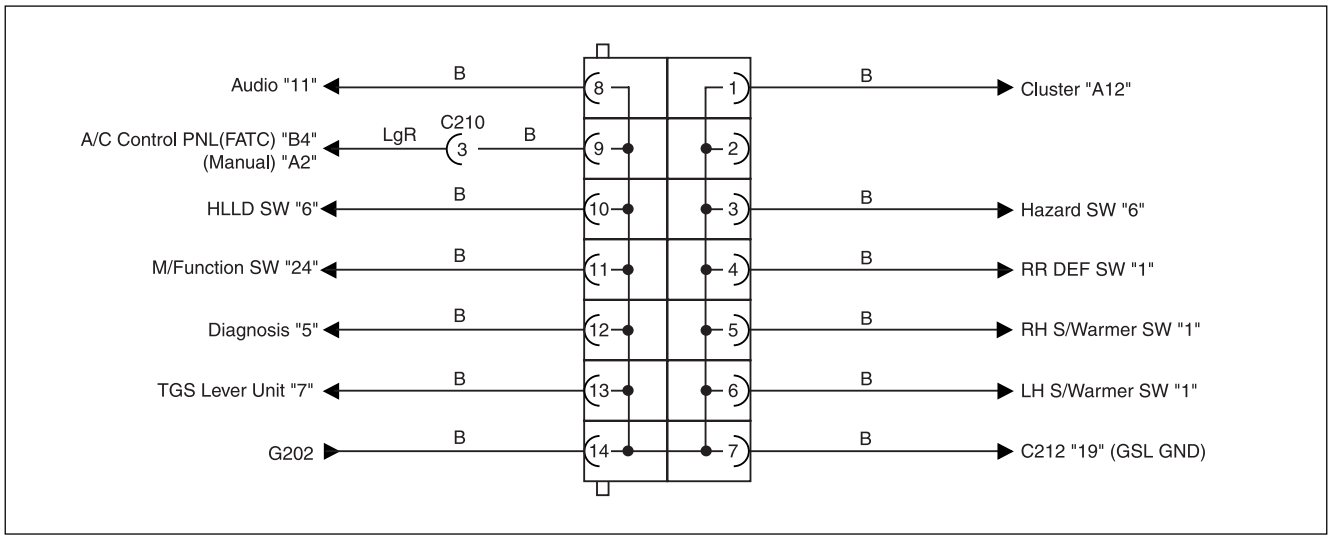
• **S201**



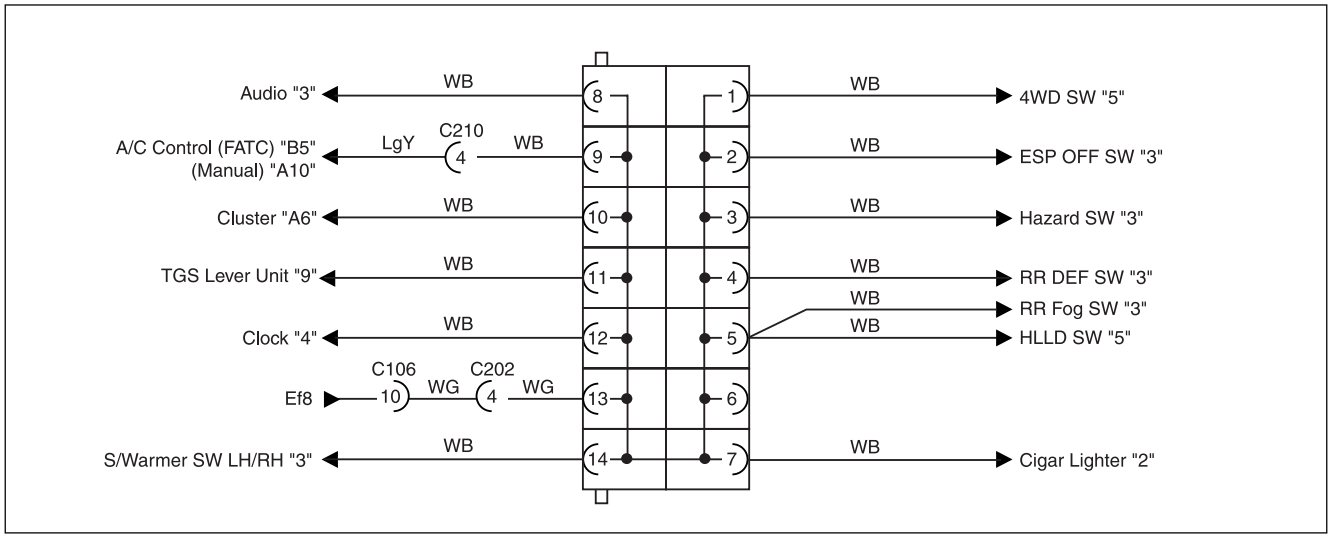
• **S202 (CAN)**



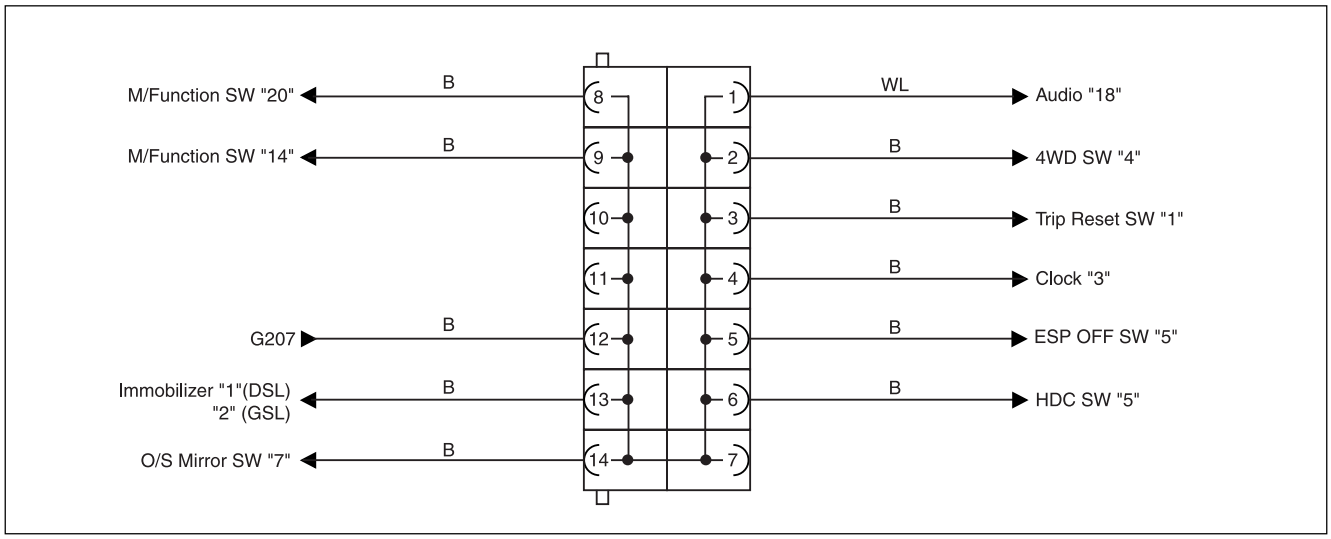
• **S203 (GND)**



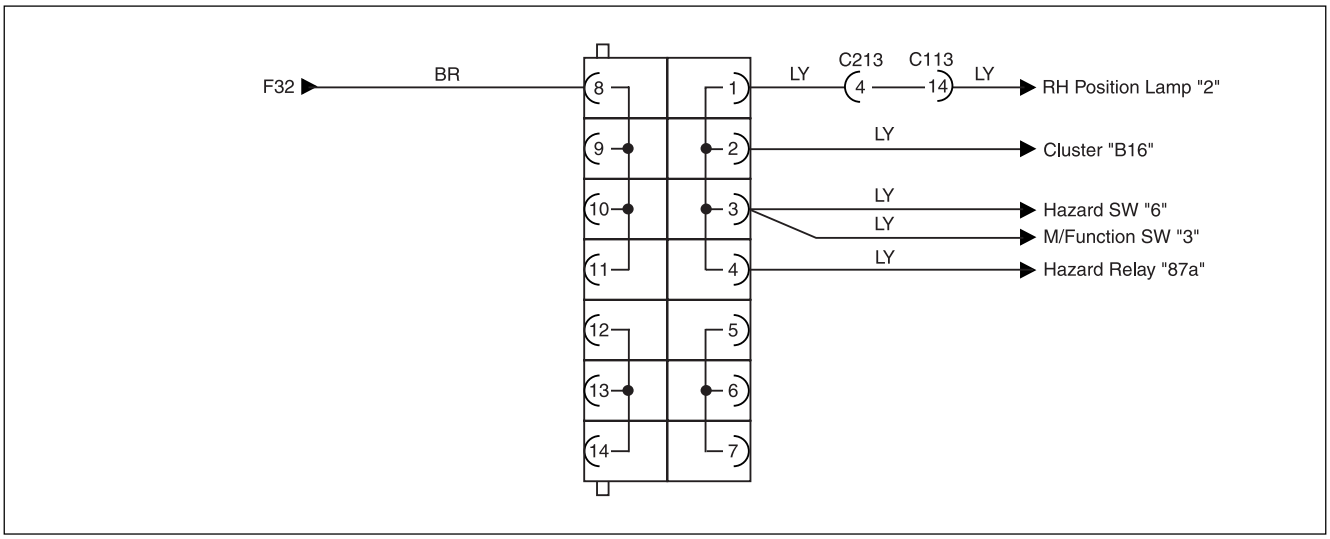
• **S204 (ILL+)**



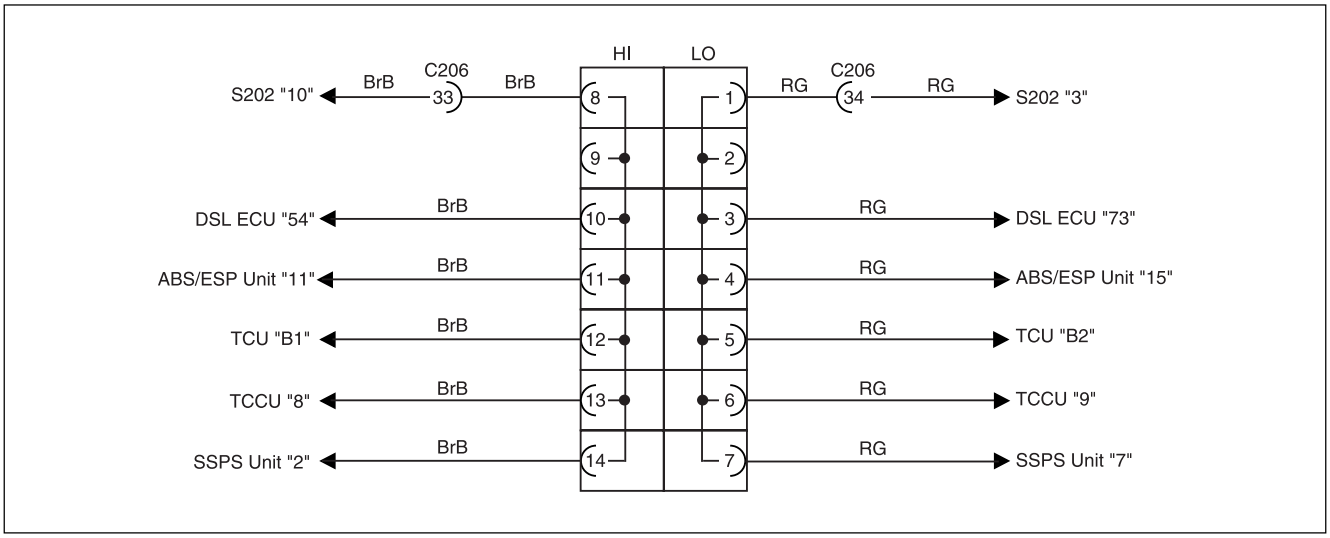
• **S205 (GND)**



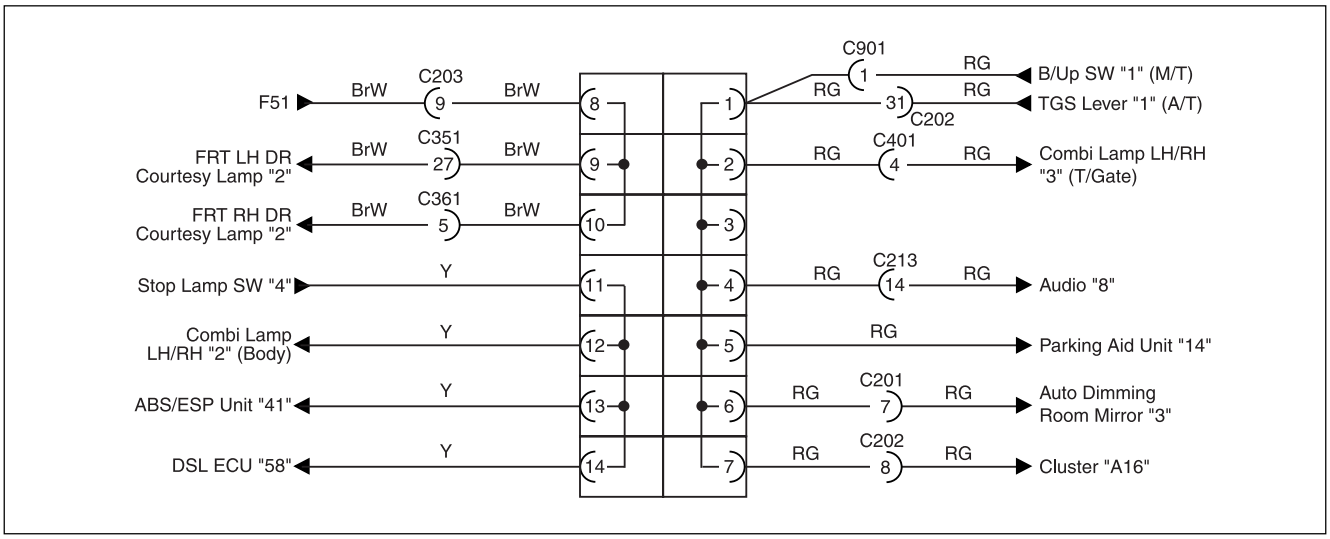
• **S206**



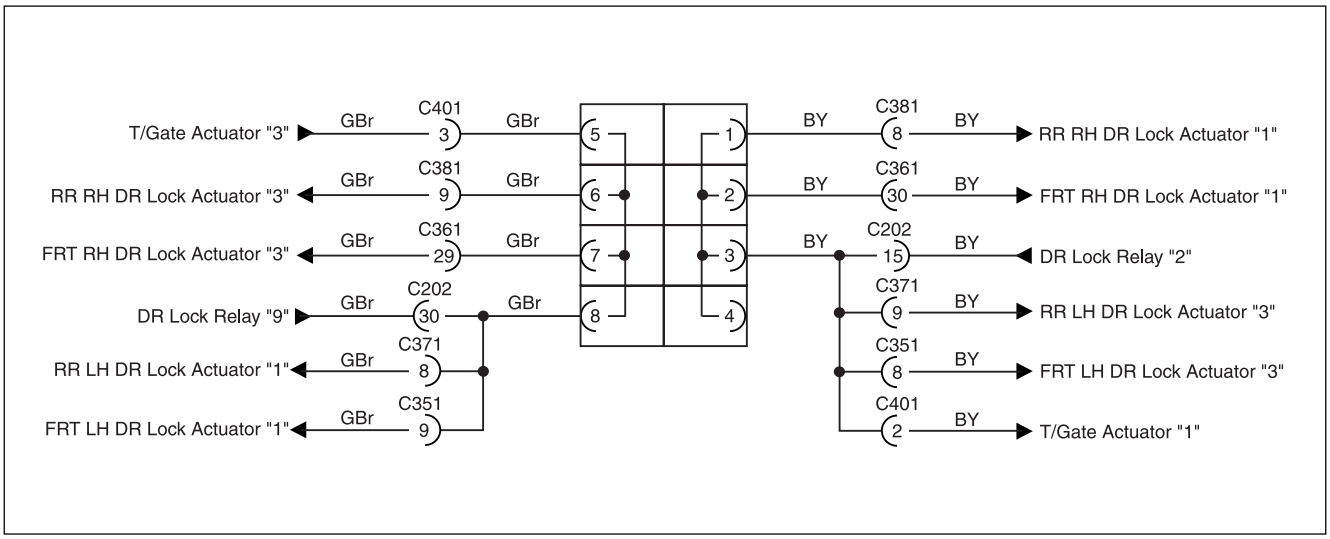
• **S301 (CAN)**



• **S302**

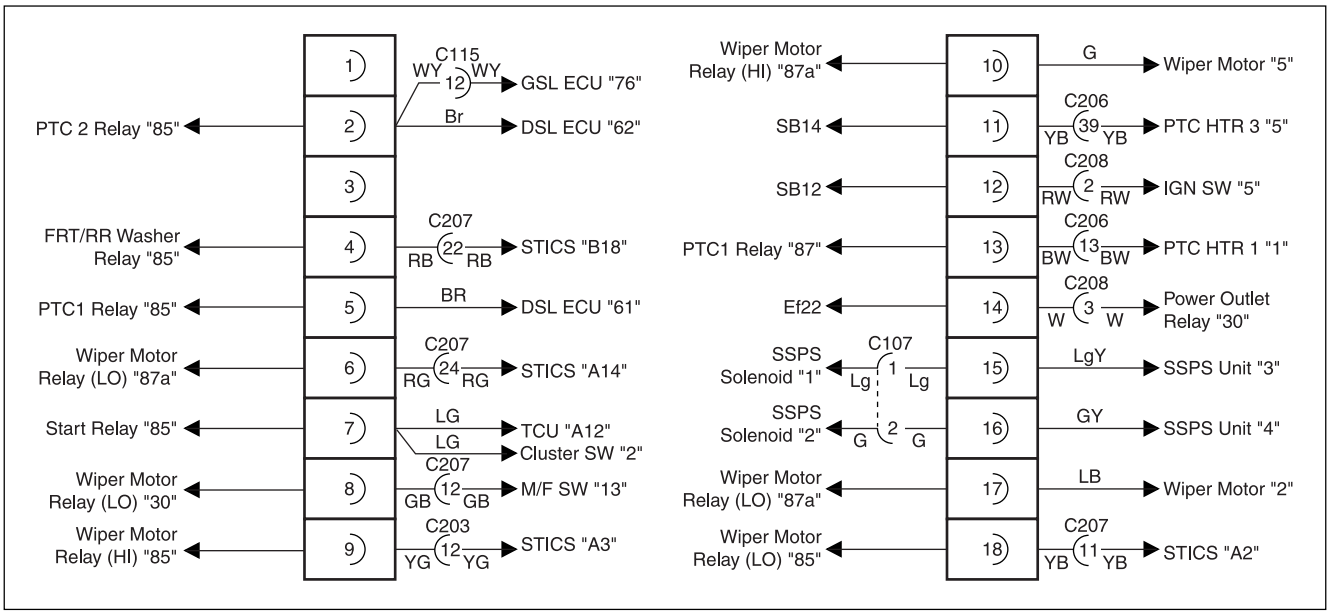


• **S303**

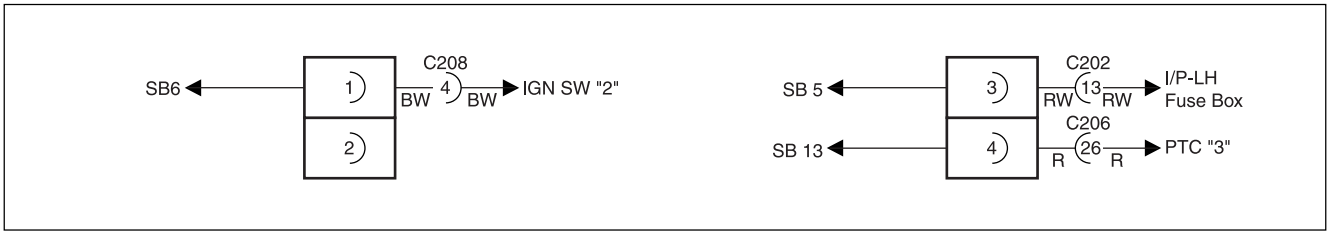

T/Gate Actuator "3"
GBr
C401
3
GBr
5
RR RH DR Lock Actuator "3"
GBr
C381
9
GBr
6
FRT RH DR Lock Actuator "3"
GBr
C361
29
GBr
7
DR Lock Relay "9"
GBr
C202
30
GBr
8
RR LH DR Lock Actuator "1"
GBr
C371
8
FRT LH DR Lock Actuator "1"
GBr
C351
9
1
BY
C381
8
BY
RR RH DR Lock Actuator "1"
2
BY
C361
30
BY
FRT RH DR Lock Actuator "1"
3
BY
C202
15
BY
DR Lock Relay "2"
4
C371
9
BY
RR LH DR Lock Actuator "3"
C351
8
BY
FRT LH DR Lock Actuator "3"
C401
2
BY
T/Gate Actuator "1"

5) CONNECTOR

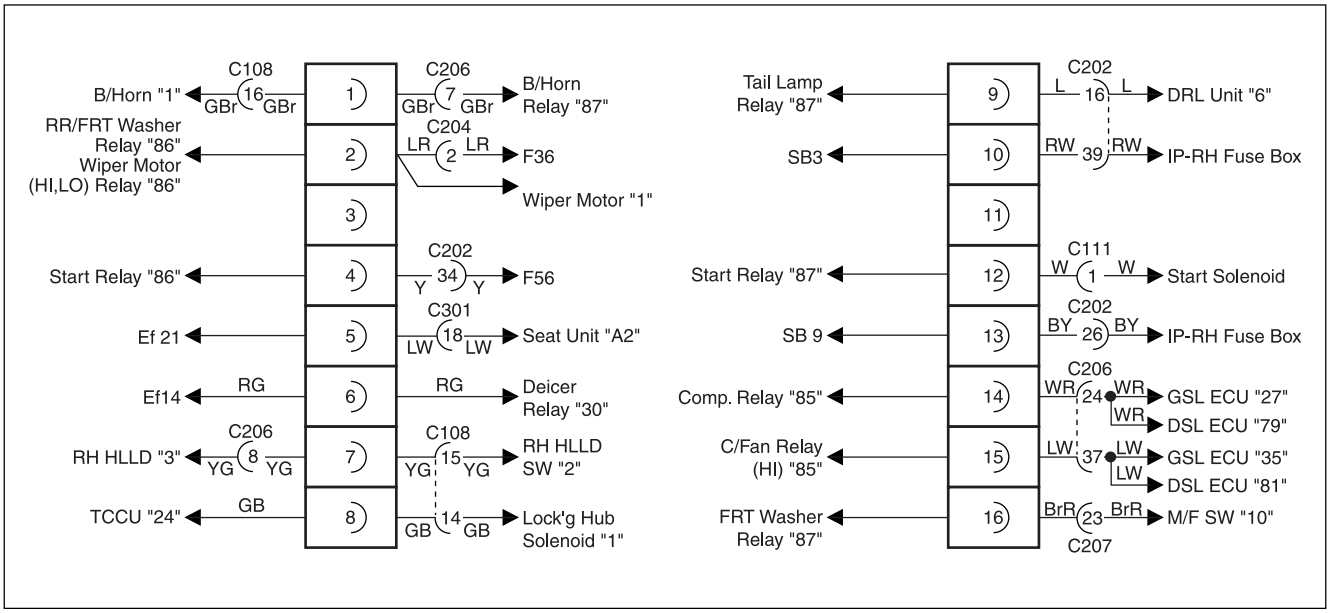
• C101



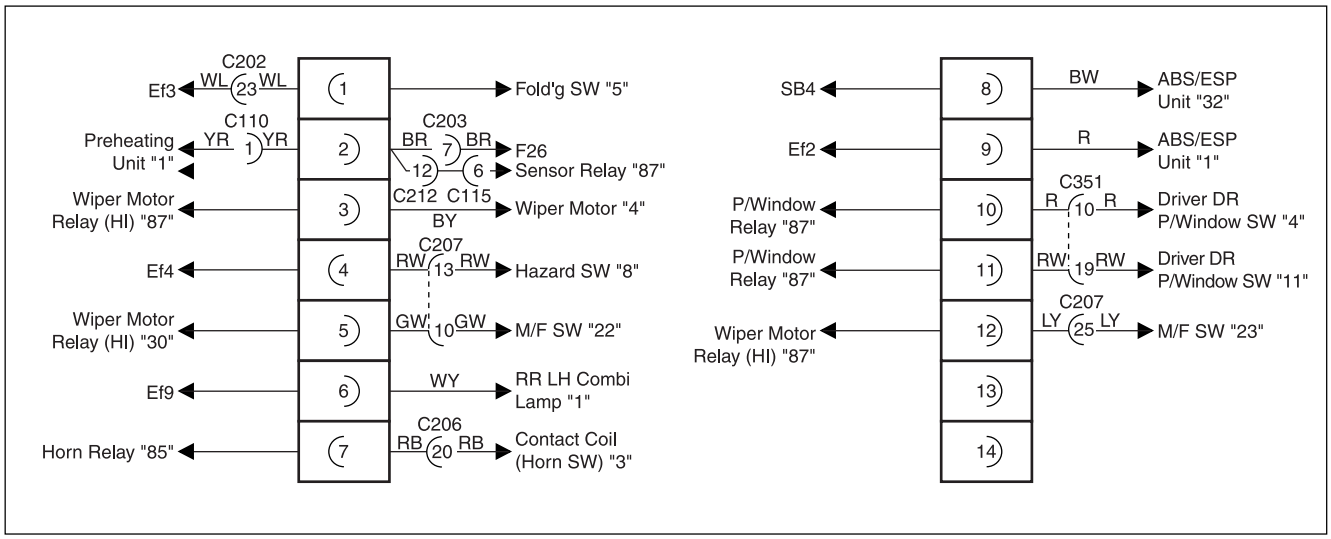
• C102



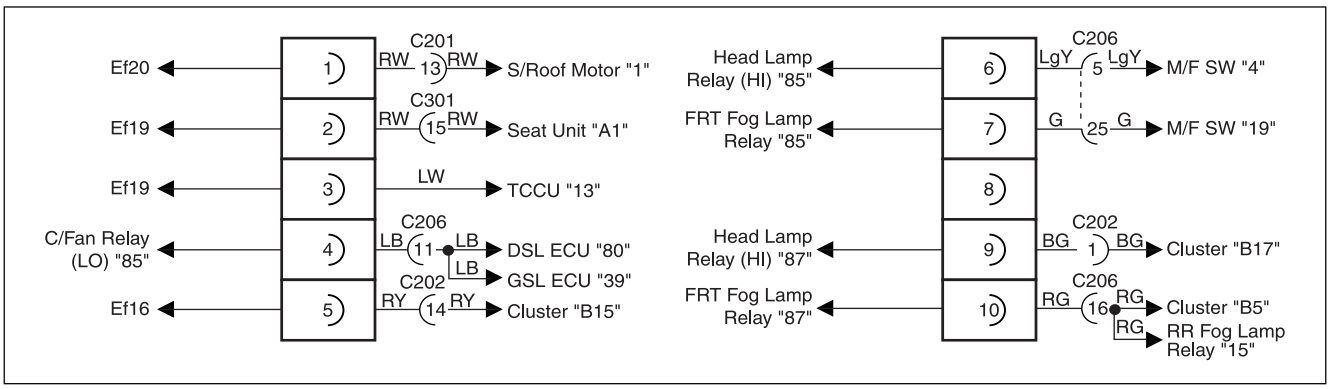
• C103



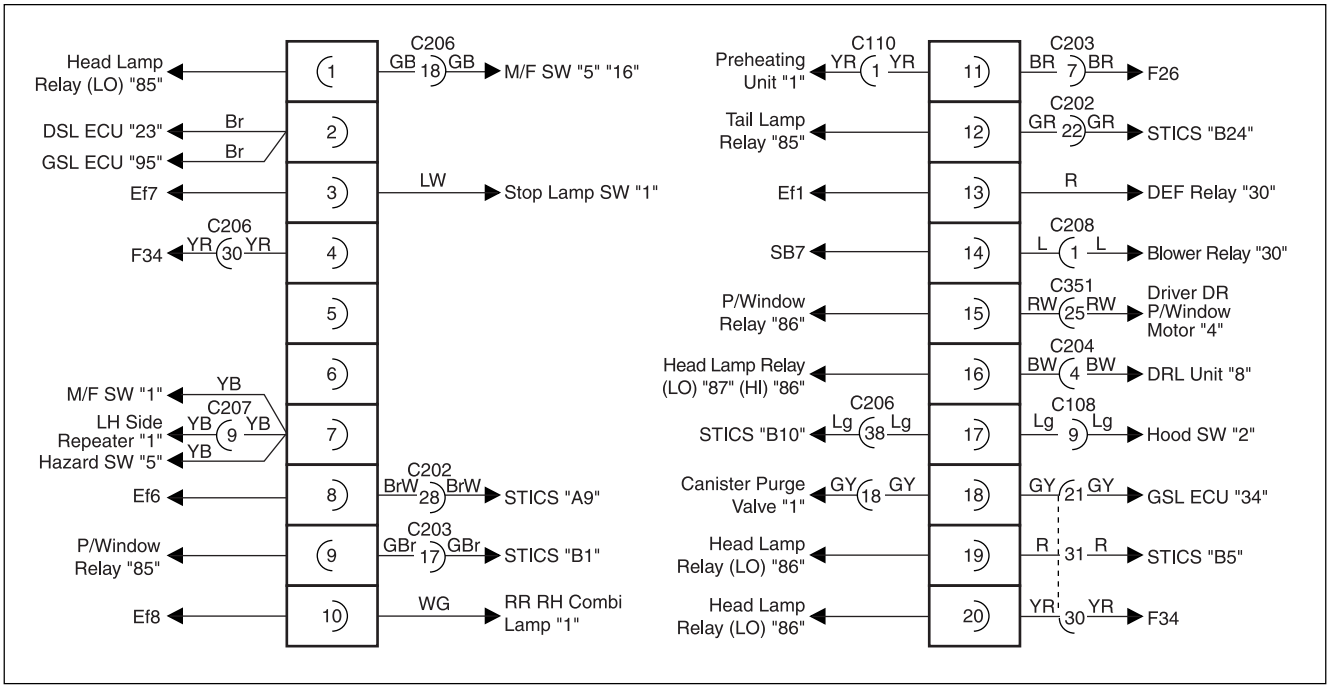
• **C104**



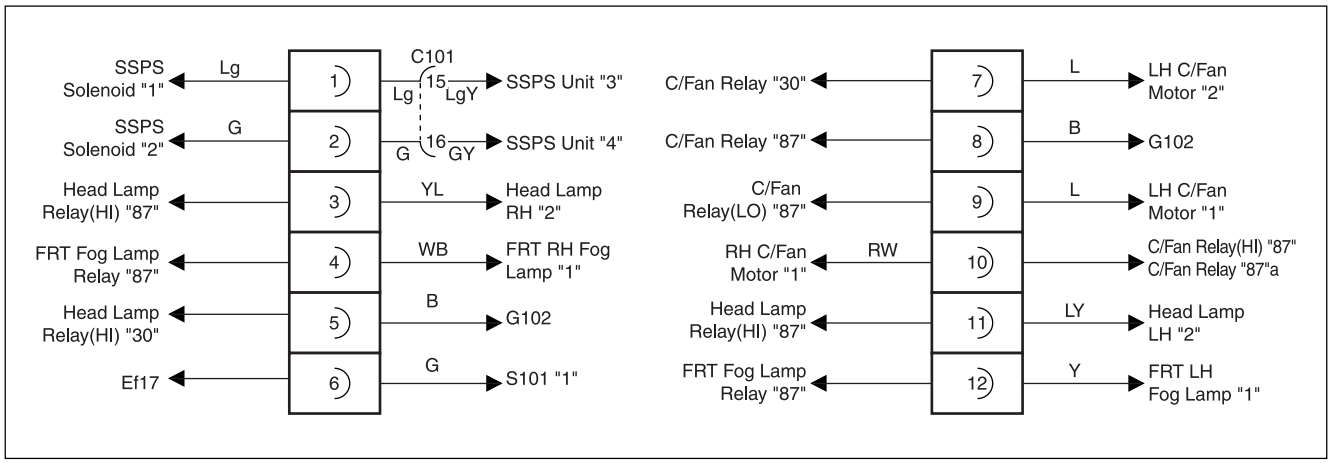
• **C105**



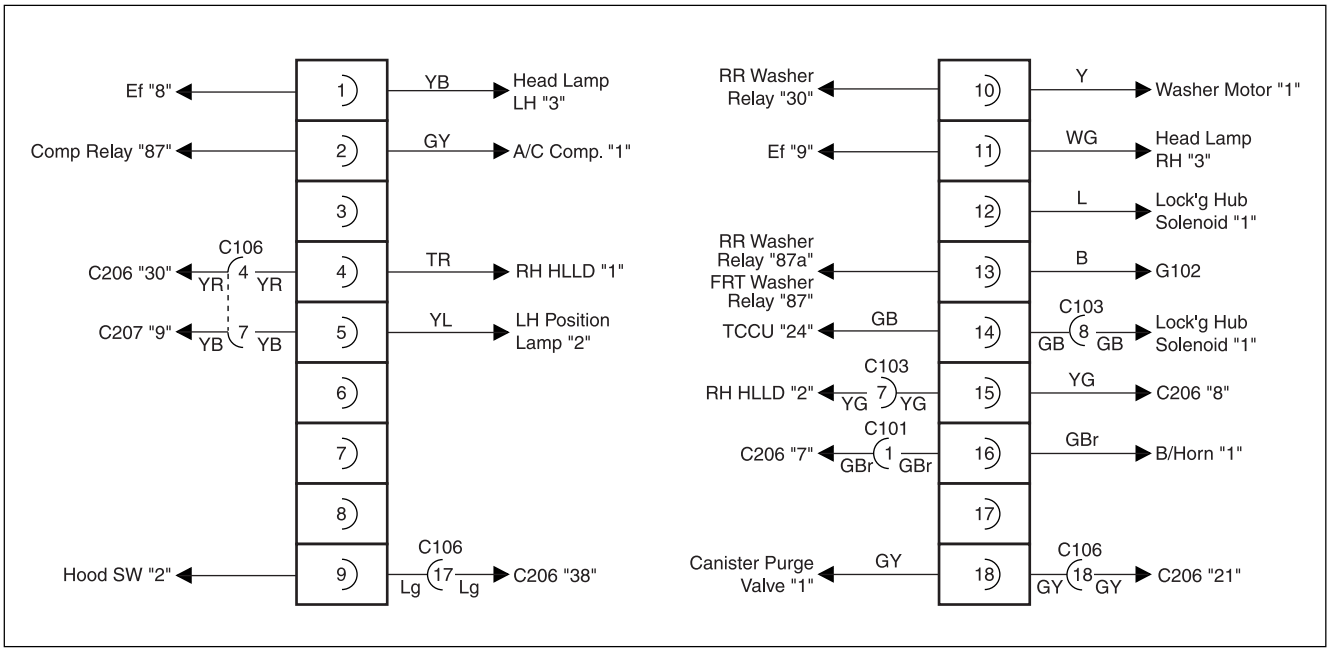
• **C106**



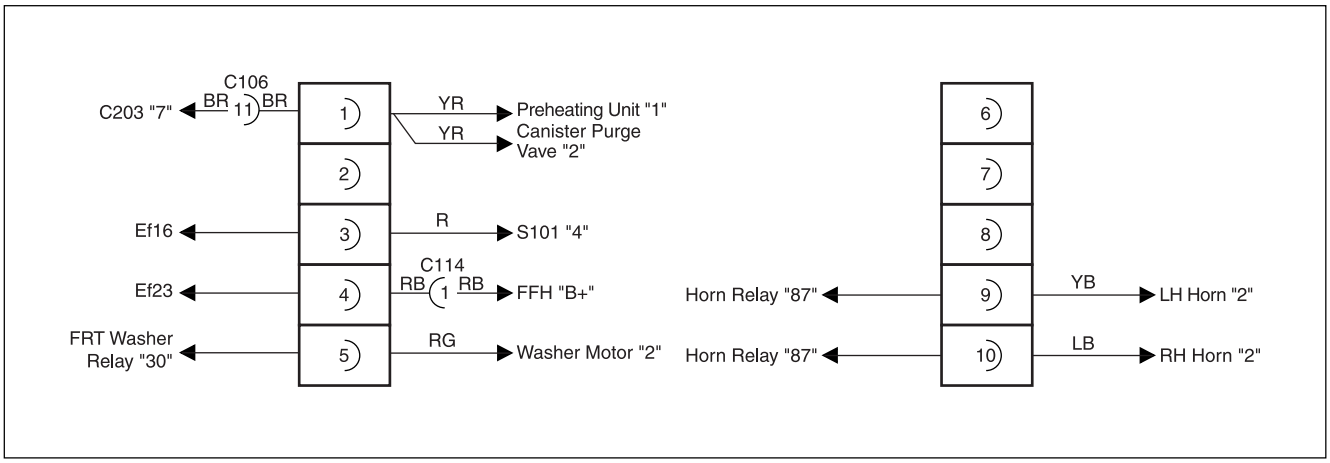
• **C107**



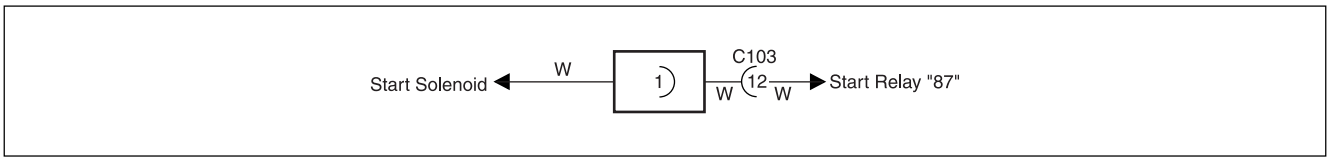
• **C108**



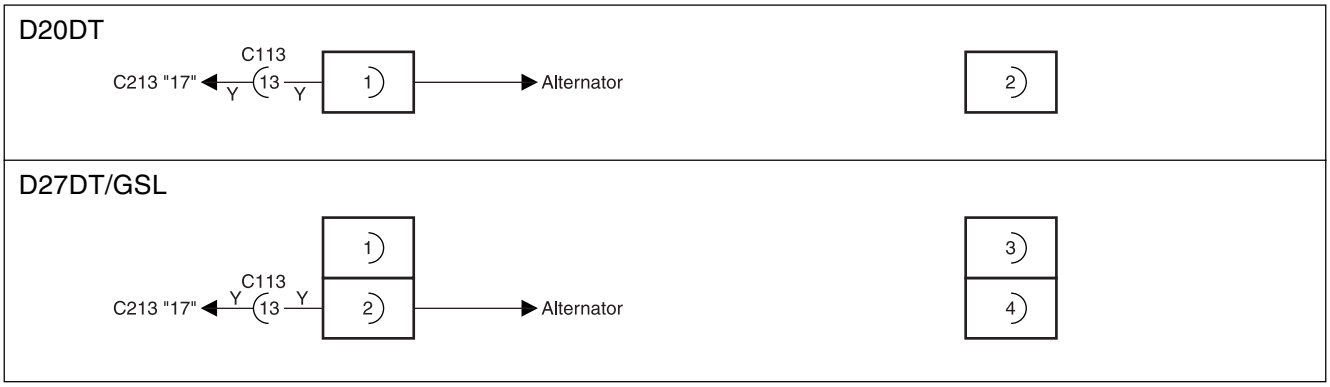
• **C110**



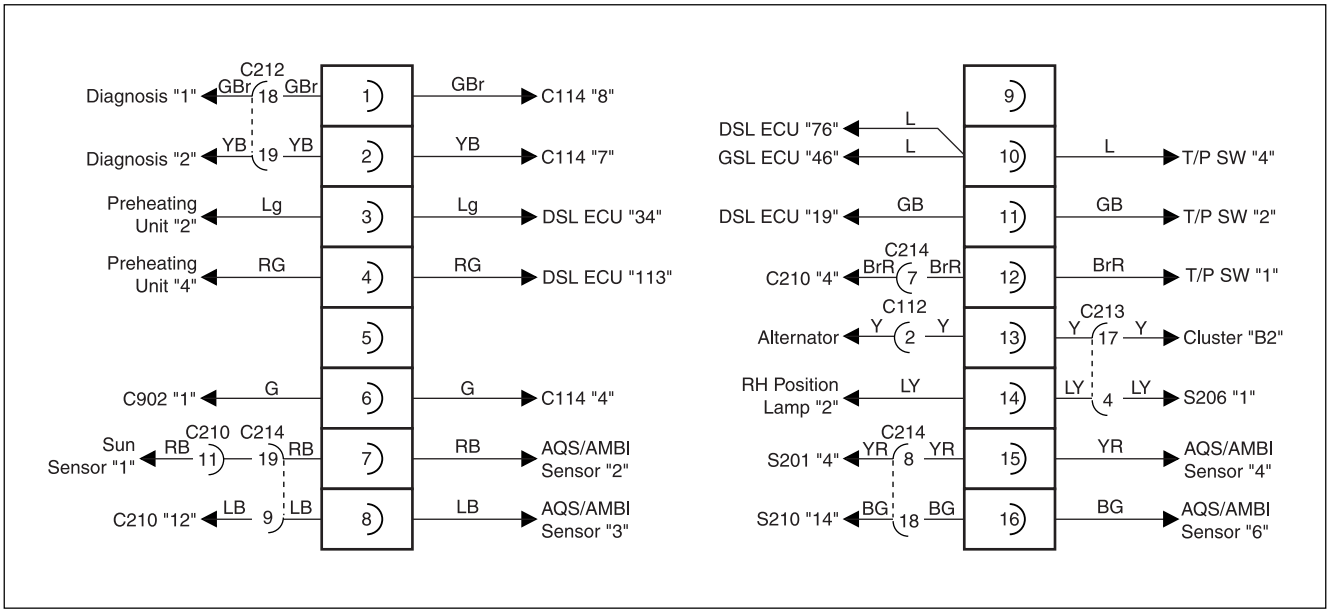
• **C111**



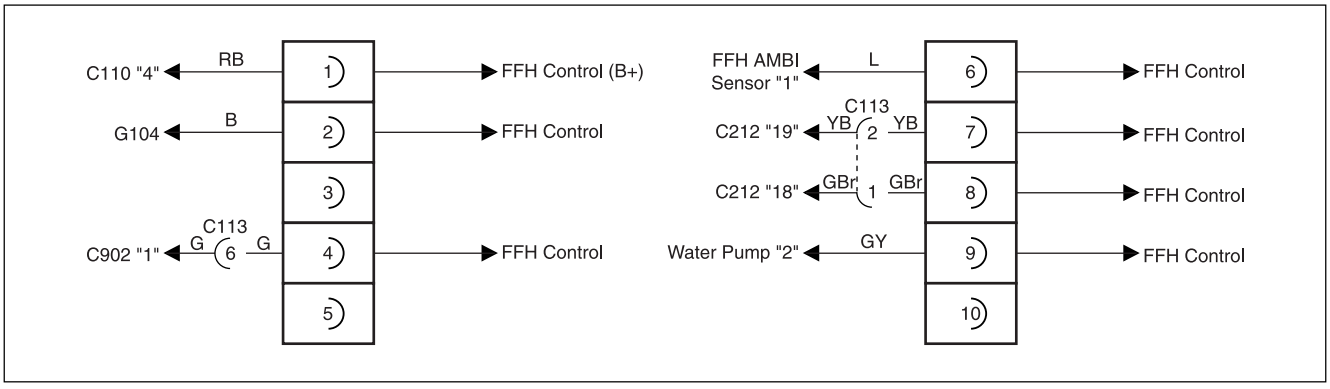
• **C112**



• **C113**

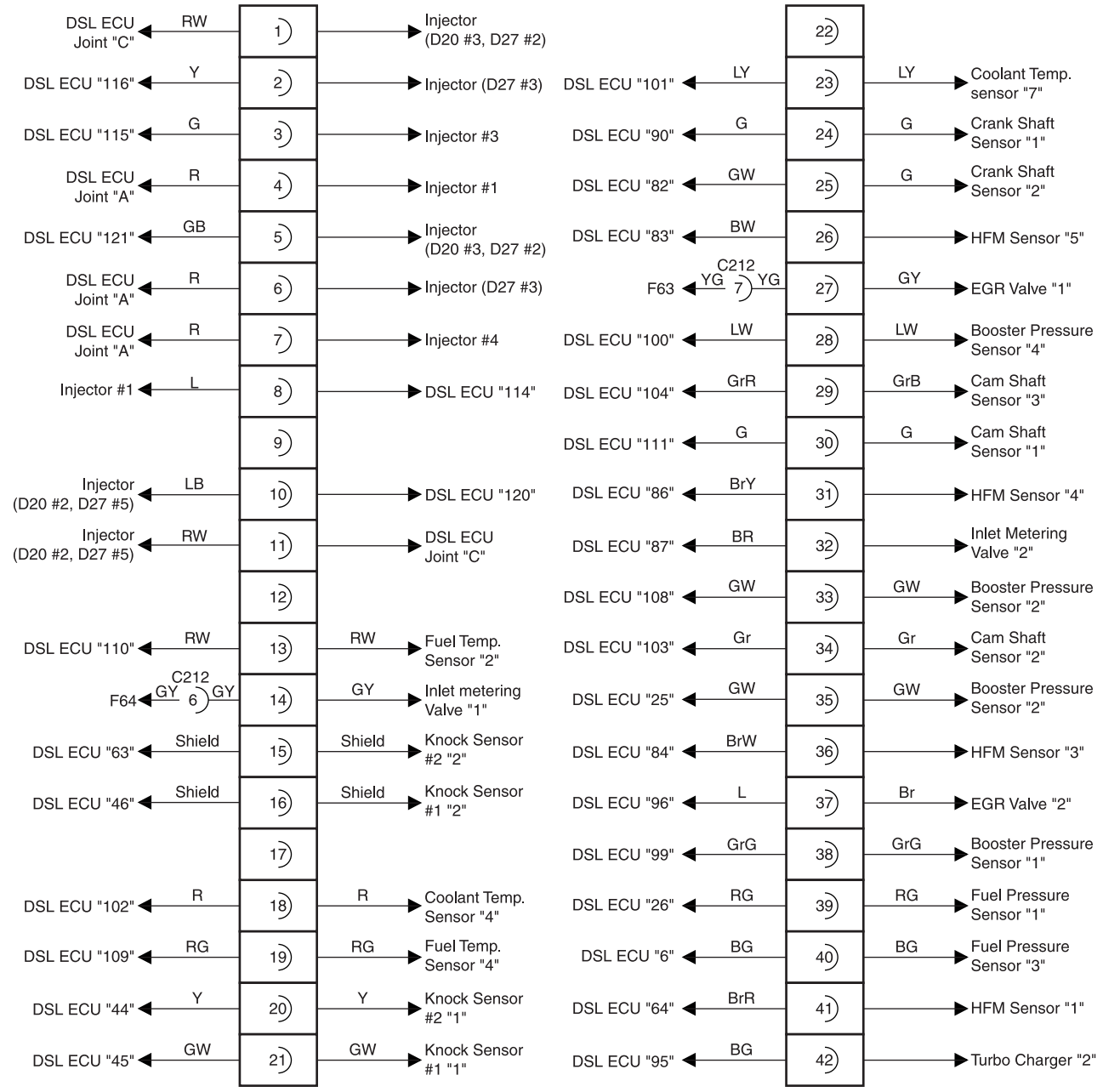


• **C114**

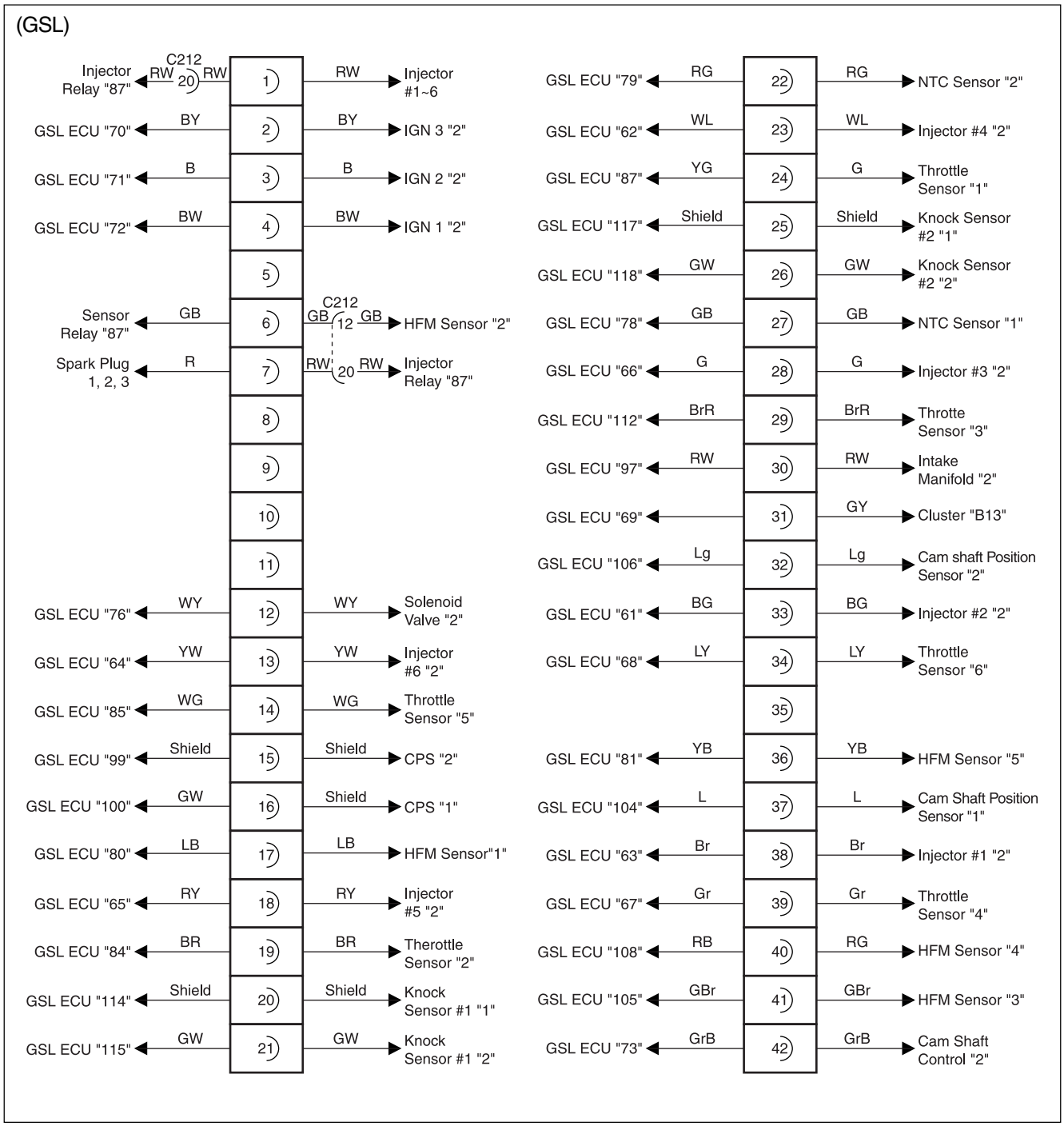


• **C115**

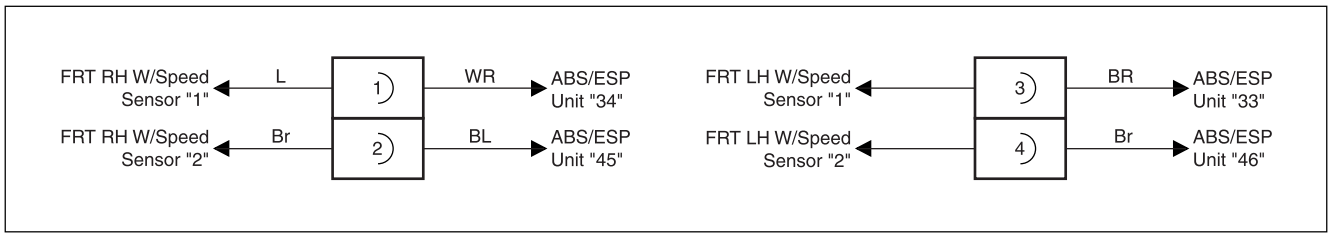
(DSL)


DSL ECU Joint "C" RW 1 Injector (D20 #3, D27 #2)
DSL ECU "116" Y 2 Injector (D27 #3)
DSL ECU "115" G 3 Injector #3
DSL ECU Joint "A" R 4 Injector #1
DSL ECU "121" GB 5 Injector (D20 #3, D27 #2)
DSL ECU Joint "A" R 6 Injector (D27 #3)
DSL ECU Joint "A" R 7 Injector #4
Injector #1 L 8 DSL ECU "114"
9
Injector (D20 #2, D27 #5) LB 10 DSL ECU "120"
Injector (D20 #2, D27 #5) RW 11 DSL ECU Joint "C"
12
DSL ECU "110" RW 13 RW Fuel Temp. Sensor "2"
F64 C212 GY 6 GY 14 GY Inlet metering Valve "1"
DSL ECU "63" Shield 15 Shield Knock Sensor #2 "2"
DSL ECU "46" Shield 16 Shield Knock Sensor #1 "2"
17
DSL ECU "102" R 18 R Coolant Temp. Sensor "4"
DSL ECU "109" RG 19 RG Fuel Temp. Sensor "4"
DSL ECU "44" Y 20 Y Knock Sensor #2 "1"
DSL ECU "45" GW 21 GW Knock Sensor #1 "1"
22
DSL ECU "101" LY 23 LY Coolant Temp. sensor "7"
DSL ECU "90" G 24 G Crank Shaft Sensor "1"
DSL ECU "82" GW 25 G Crank Shaft Sensor "2"
DSL ECU "83" BW 26 HFM Sensor "5"
F63 C212 YG 7 YG 27 GY EGR Valve "1"
DSL ECU "100" LW 28 LW Booster Pressure Sensor "4"
DSL ECU "104" GrR 29 GrB Cam Shaft Sensor "3"
DSL ECU "111" G 30 G Cam Shaft Sensor "1"
DSL ECU "86" BrY 31 HFM Sensor "4"
DSL ECU "87" BR 32 Inlet Metering Valve "2"
DSL ECU "108" GW 33 GW Booster Pressure Sensor "2"
DSL ECU "103" Gr 34 Gr Cam Shaft Sensor "2"
DSL ECU "25" GW 35 GW Booster Pressure Sensor "2"
DSL ECU "84" BrW 36 HFM Sensor "3"
DSL ECU "96" L 37 Br EGR Valve "2"
DSL ECU "99" GrG 38 GrG Booster Pressure Sensor "1"
DSL ECU "26" RG 39 RG Fuel Pressure Sensor "1"
DSL ECU "6" BG 40 BG Fuel Pressure Sensor "3"
DSL ECU "64" BrR 41 HFM Sensor "1"
DSL ECU "95" BG 42 Turbo Charger "2"

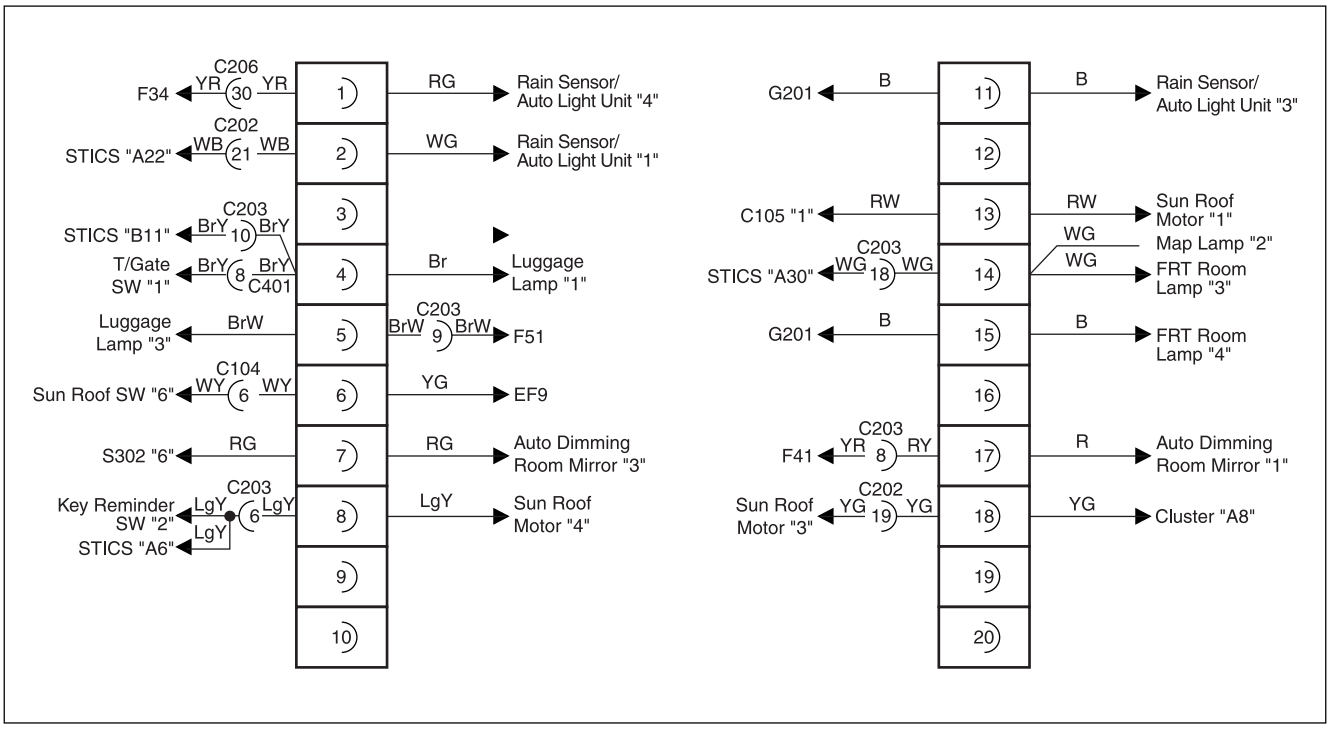
• **C115**


(GSL)
Injector Relay "87"
C212
RW
20
RW
1
RW
Injector #1~6
GSL ECU "70"
BY
2
BY
IGN 3 "2"
GSL ECU "71"
B
3
B
IGN 2 "2"
GSL ECU "72"
BW
4
BW
IGN 1 "2"
5
Sensor Relay "87"
GB
6
C212
GB
12
GB
HFM Sensor "2"
Spark Plug 1, 2, 3
R
7
RW
20
RW
Injector Relay "87"
8
9
10
11
GSL ECU "76"
WY
12
WY
Solenoid Valve "2"
GSL ECU "64"
YW
13
YW
Injector #6 "2"
GSL ECU "85"
WG
14
WG
Throttle Sensor "5"
GSL ECU "99"
Shield
15
Shield
CPS "2"
GSL ECU "100"
GW
16
Shield
CPS "1"
GSL ECU "80"
LB
17
LB
HFM Sensor"1"
GSL ECU "65"
RY
18
RY
Injector #5 "2"
GSL ECU "84"
BR
19
BR
Therottle Sensor "2"
GSL ECU "114"
Shield
20
Shield
Knock Sensor #1 "1"
GSL ECU "115"
GW
21
GW
Knock Sensor #1 "2"
GSL ECU "79"
RG
22
RG
NTC Sensor "2"
GSL ECU "62"
WL
23
WL
Injector #4 "2"
GSL ECU "87"
YG
24
G
Throttle Sensor "1"
GSL ECU "117"
Shield
25
Shield
Knock Sensor #2 "1"
GSL ECU "118"
GW
26
GW
Knock Sensor #2 "2"
GSL ECU "78"
GB
27
GB
NTC Sensor "1"
GSL ECU "66"
G
28
G
Injector #3 "2"
GSL ECU "112"
BrR
29
BrR
Throtte Sensor "3"
GSL ECU "97"
RW
30
RW
Intake Manifold "2"
GSL ECU "69"
31
GY
Cluster "B13"
GSL ECU "106"
Lg
32
Lg
Cam shaft Position Sensor "2"
GSL ECU "61"
BG
33
BG
Injector #2 "2"
GSL ECU "68"
LY
34
LY
Throttle Sensor "6"
35
GSL ECU "81"
YB
36
YB
HFM Sensor "5"
GSL ECU "104"
L
37
L
Cam Shaft Position Sensor "1"
GSL ECU "63"
Br
38
Br
Injector #1 "2"
GSL ECU "67"
Gr
39
Gr
Throttle Sensor "4"
GSL ECU "108"
RB
40
RG
HFM Sensor "4"
GSL ECU "105"
GBr
41
GBr
HFM Sensor "3"
GSL ECU "73"
GrB
42
GrB
Cam Shaft Control "2"

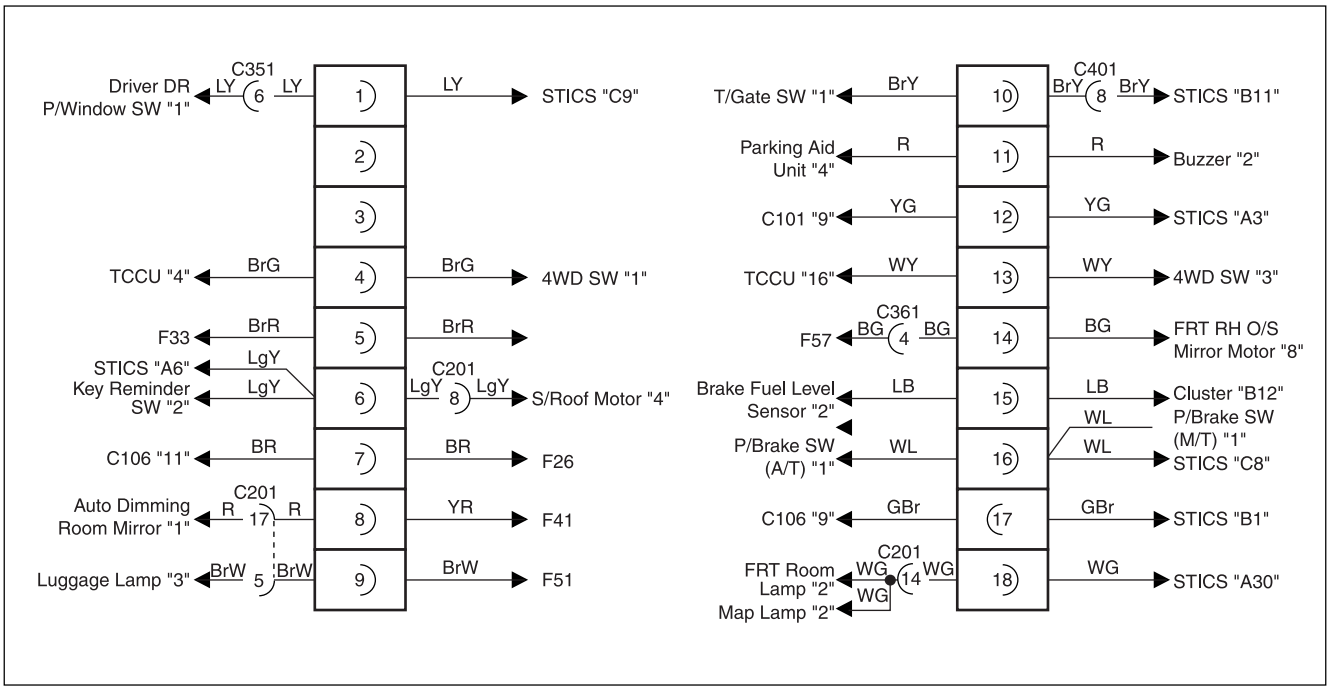
• **C116**


FRT RH W/Speed Sensor "1"
L
1
WR
ABS/ESP Unit "34"
FRT RH W/Speed Sensor "2"
Br
2
BL
ABS/ESP Unit "45"
FRT LH W/Speed Sensor "1"
3
BR
ABS/ESP Unit "33"
FRT LH W/Speed Sensor "2"
4
Br
ABS/ESP Unit "46"

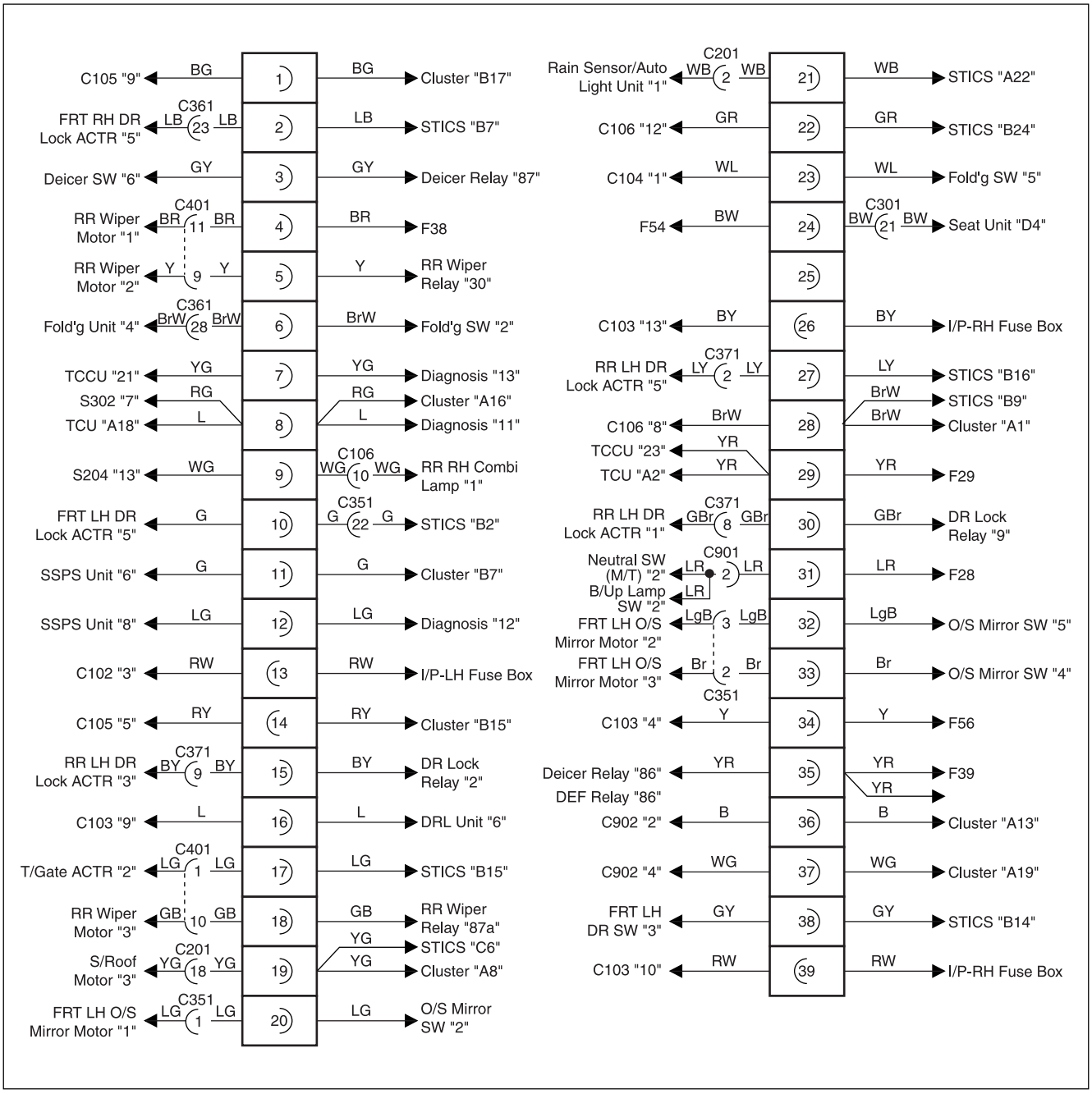
• **C201**


C206
F34
YR
30
YR
1
RG
Rain Sensor/ Auto Light Unit "4"
C202
STICS "A22"
WB
21
WB
2
WG
Rain Sensor/ Auto Light Unit "1"
3
C203
STICS "B11"
BrY
10
BrY
T/Gate SW "1"
BrY
8
BrY
C401
4
Br
Luggage Lamp "1"
Luggage Lamp "3"
BrW
5
C203
BrW
9
BrW
F51
C104
Sun Roof SW "6"
WY
6
WY
6
YG
EF9
S302 "6"
RG
7
RG
Auto Dimming Room Mirror "3"
C203
Key Reminder SW "2"
LgY
6
LgY
LgY
STICS "A6"
LgY
8
LgY
Sun Roof Motor "4"
9
10
G201
B
11
B
Rain Sensor/ Auto Light Unit "3"
12
C105 "1"
RW
13
RW
Sun Roof Motor "1"
WG
Map Lamp "2"
C203
STICS "A30"
WG
18
WG
14
WG
FRT Room Lamp "3"
G201
B
15
B
FRT Room Lamp "4"
16
C203
F41
YR
8
RY
17
R
Auto Dimming Room Mirror "1"
C202
Sun Roof Motor "3"
YG
19
YG
18
YG
Cluster "A8"
19
20

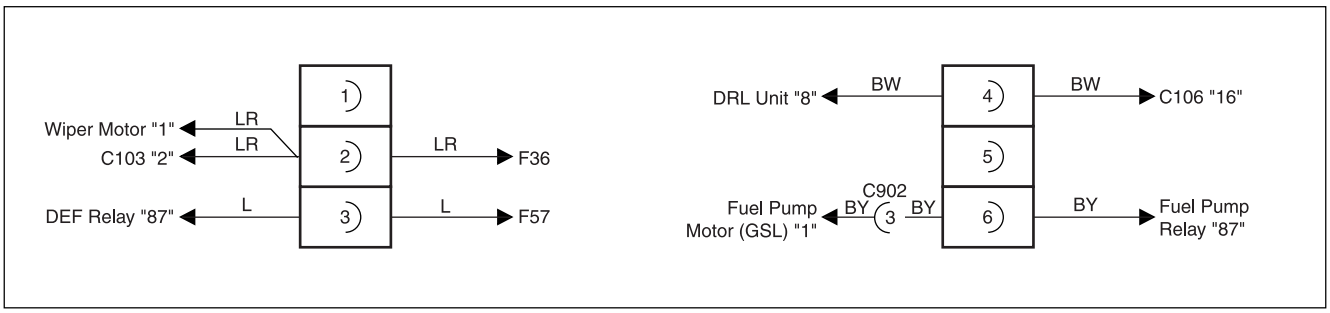
• **C203**


C351
Driver DR P/Window SW "1"
LY
6
LY
1
LY
STICS "C9"
2
3
TCCU "4"
BrG
4
BrG
4WD SW "1"
F33
BrR
5
BrR
STICS "A6"
LgY
Key Reminder SW "2"
LgY
6
C201
LgY
8
LgY
S/Roof Motor "4"
C106 "11"
BR
7
BR
F26
Auto Dimming Room Mirror "1"
C201
R
17
R
8
YR
F41
Luggage Lamp "3"
BrW
5
BrW
9
BrW
F51
T/Gate SW "1"
BrY
10
C401
BrY
8
BrY
STICS "B11"
Parking Aid Unit "4"
R
11
R
Buzzer "2"
C101 "9"
YG
12
YG
STICS "A3"
TCCU "16"
WY
13
WY
4WD SW "3"
C361
F57
BG
4
BG
14
BG
FRT RH O/S Mirror Motor "8"
Brake Fuel Level Sensor "2"
LB
15
LB
Cluster "B12"
P/Brake SW (A/T) "1"
WL
16
WL
P/Brake SW (M/T) "1"
WL
STICS "C8"
C106 "9"
GBr
17
GBr
STICS "B1"
FRT Room Lamp "2"
Map Lamp "2"
C201
WG
14
WG
WG
18
WG
STICS "A30"

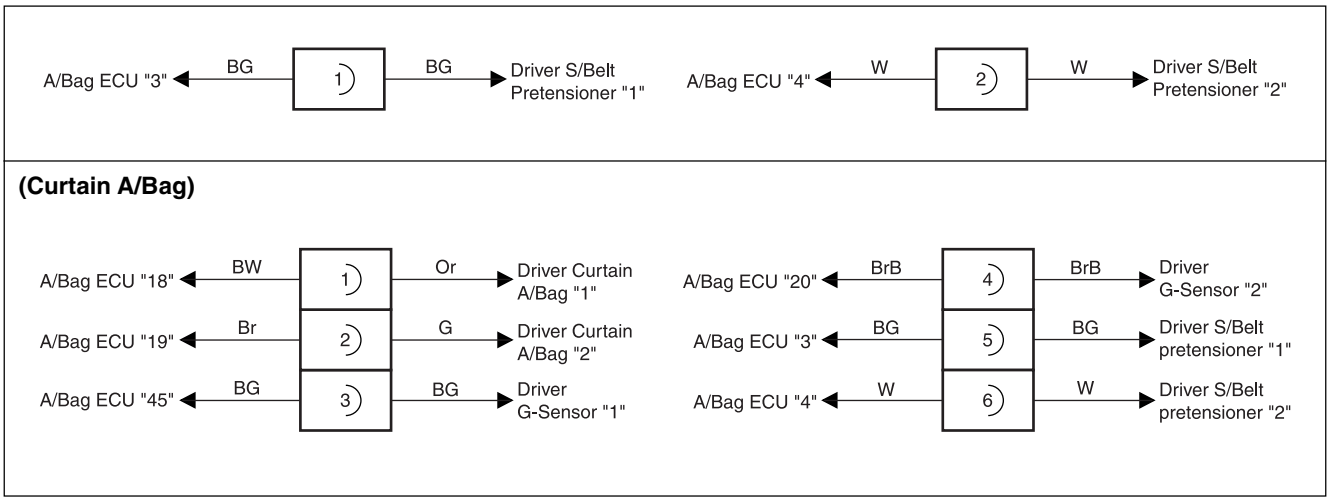
• **C202**


C105 "9" BG 1 BG Cluster "B17"
FRT RH DR Lock ACTR "5" C361 LB 23 LB 2 LB STICS "B7"
Deicer SW "6" GY 3 GY Deicer Relay "87"
RR Wiper Motor "1" C401 BR 11 BR 4 BR F38
RR Wiper Motor "2" Y 9 Y 5 Y RR Wiper Relay "30"
Fold'g Unit "4" C361 BrW 28 BrW 6 BrW Fold'g SW "2"
TCCU "21" YG 7 YG Diagnosis "13"
S302 "7" RG 8 RG Cluster "A16"
TCU "A18" L L Diagnosis "11"
S204 "13" WG 9 C106 WG 10 WG RR RH Combi Lamp "1"
FRT LH DR Lock ACTR "5" G 10 C351 G 22 G STICS "B2"
SSPS Unit "6" G 11 G Cluster "B7"
SSPS Unit "8" LG 12 LG Diagnosis "12"
C102 "3" RW 13 RW I/P-LH Fuse Box
C105 "5" RY 14 RY Cluster "B15"
RR LH DR Lock ACTR "3" C371 BY 9 BY 15 BY DR Lock Relay "2"
C103 "9" L 16 L DRL Unit "6"
T/Gate ACTR "2" C401 LG 1 LG 17 LG STICS "B15"
RR Wiper Motor "3" GB 10 GB 18 GB RR Wiper Relay "87a"
S/Roof Motor "3" C201 YG 18 YG 19 YG STICS "C6"
YG Cluster "A8"
FRT LH O/S Mirror Motor "1" C351 LG 1 LG 20 LG O/S Mirror SW "2"
Rain Sensor/Auto Light Unit "1" C201 WB 2 WB 21 WB STICS "A22"
C106 "12" GR 22 GR STICS "B24"
C104 "1" WL 23 WL Fold'g SW "5"
F54 BW 24 C301 BW 21 BW Seat Unit "D4"
25
C103 "13" BY 26 BY I/P-RH Fuse Box
RR LH DR Lock ACTR "5" C371 LY 2 LY 27 LY STICS "B16"
BrW STICS "B9"
C106 "8" BrW 28 BrW Cluster "A1"
TCCU "23" YR
TCU "A2" YR 29 YR F29
RR LH DR Lock ACTR "1" C371 GBr 8 GBr 30 GBr DR Lock Relay "9"
Neutral SW (M/T) "2" C901 LR 2 LR 31 LR F28
B/Up Lamp SW "2" LR
FRT LH O/S Mirror Motor "2" LgB 3 LgB 32 LgB O/S Mirror SW "5"
FRT LH O/S Mirror Motor "3" Br 2 Br 33 Br O/S Mirror SW "4"
C103 "4" C351 Y 34 Y F56
Deicer Relay "86" YR 35 YR F39
DEF Relay "86" YR
C902 "2" B 36 B Cluster "A13"
C902 "4" WG 37 WG Cluster "A19"
FRT LH DR SW "3" GY 38 GY STICS "B14"
C103 "10" RW 39 RW I/P-RH Fuse Box

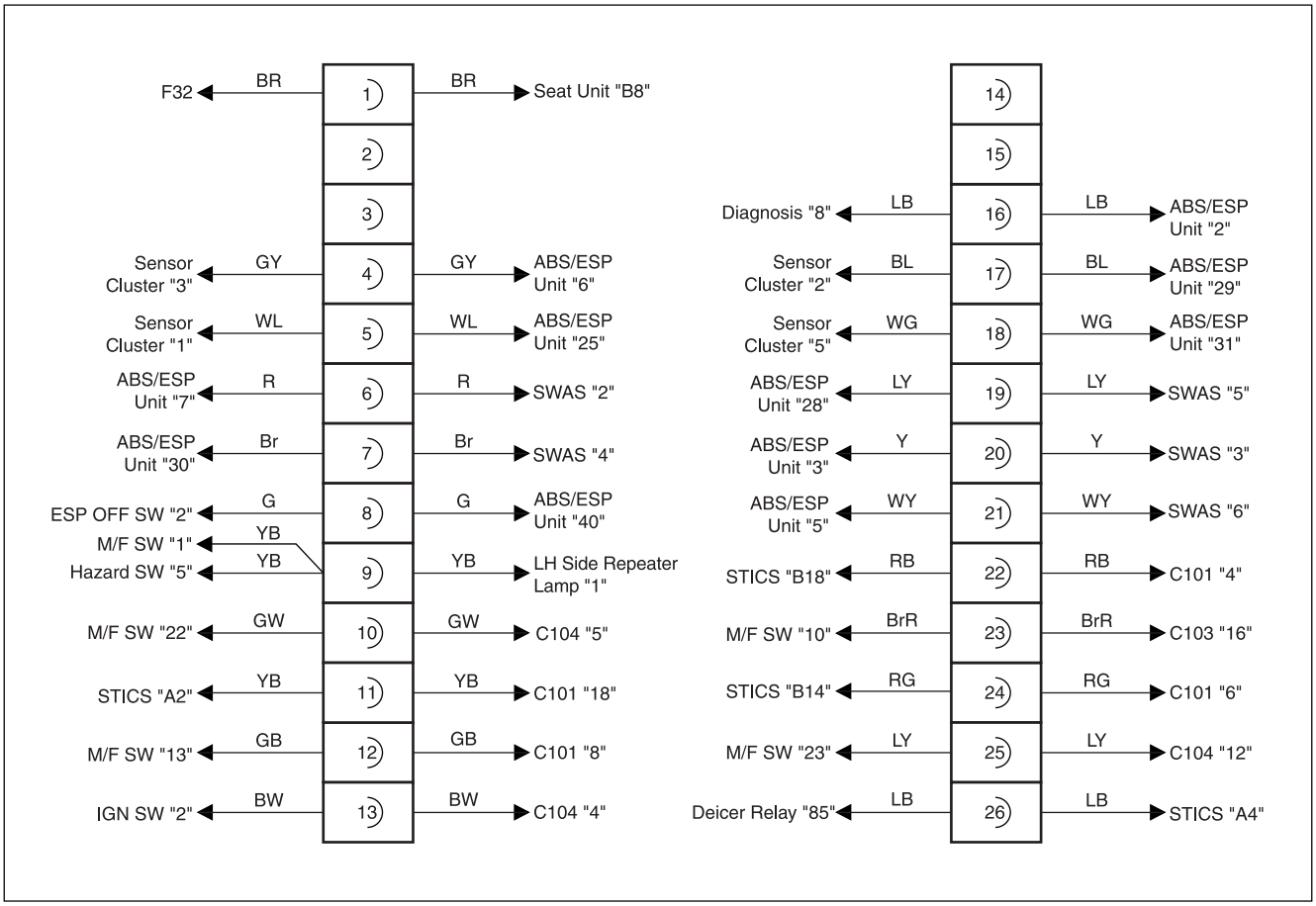
• **C204**


Wiper Motor "1" LR 1
C103 "2" LR 2 LR F36
DEF Relay "87" L 3 L F57
DRL Unit "8" BW 4 BW C106 "16"
5
Fuel Pump Motor (GSL) "1" C902 BY 3 BY 6 BY Fuel Pump Relay "87"

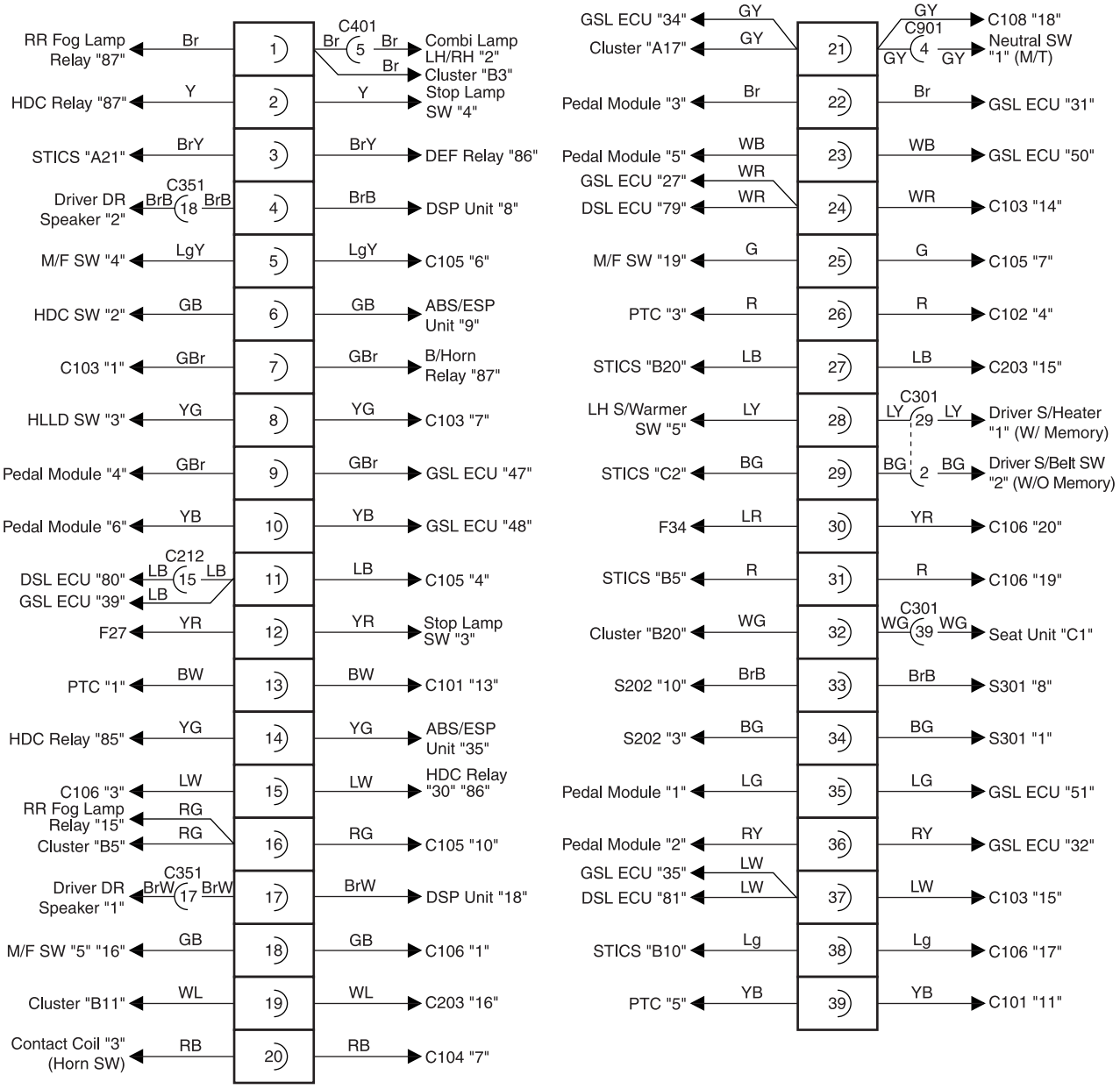
• **C205**


A/Bag ECU "3"
BG
1
BG
Driver S/Belt Pretensioner "1"
A/Bag ECU "4"
W
2
W
Driver S/Belt Pretensioner "2"
(Curtain A/Bag)
A/Bag ECU "18"
BW
1
Or
Driver Curtain A/Bag "1"
A/Bag ECU "19"
Br
2
G
Driver Curtain A/Bag "2"
A/Bag ECU "45"
BG
3
BG
Driver G-Sensor "1"
A/Bag ECU "20"
BrB
4
BrB
Driver G-Sensor "2"
A/Bag ECU "3"
BG
5
BG
Driver S/Belt pretensioner "1"
A/Bag ECU "4"
W
6
W
Driver S/Belt pretensioner "2"

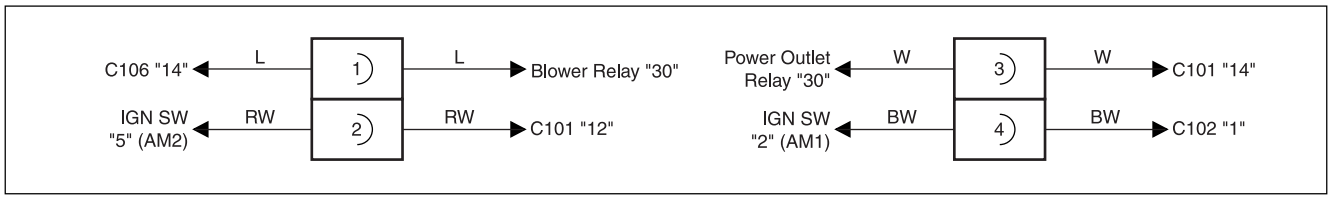
• **C207**


F32
BR
1
BR
Seat Unit "B8"
2
3
Sensor Cluster "3"
GY
4
GY
ABS/ESP Unit "6"
Sensor Cluster "1"
WL
5
WL
ABS/ESP Unit "25"
ABS/ESP Unit "7"
R
6
R
SWAS "2"
ABS/ESP Unit "30"
Br
7
Br
SWAS "4"
ESP OFF SW "2"
G
8
G
ABS/ESP Unit "40"
M/F SW "1"
YB
Hazard SW "5"
YB
9
YB
LH Side Repeater Lamp "1"
M/F SW "22"
GW
10
GW
C104 "5"
STICS "A2"
YB
11
YB
C101 "18"
M/F SW "13"
GB
12
GB
C101 "8"
IGN SW "2"
BW
13
BW
C104 "4"
14
15
Diagnosis "8"
LB
16
LB
ABS/ESP Unit "2"
Sensor Cluster "2"
BL
17
BL
ABS/ESP Unit "29"
Sensor Cluster "5"
WG
18
WG
ABS/ESP Unit "31"
ABS/ESP Unit "28"
LY
19
LY
SWAS "5"
ABS/ESP Unit "3"
Y
20
Y
SWAS "3"
ABS/ESP Unit "5"
WY
21
WY
SWAS "6"
STICS "B18"
RB
22
RB
C101 "4"
M/F SW "10"
BrR
23
BrR
C103 "16"
STICS "B14"
RG
24
RG
C101 "6"
M/F SW "23"
LY
25
LY
C104 "12"
Deicer Relay "85"
LB
26
LB
STICS "A4"

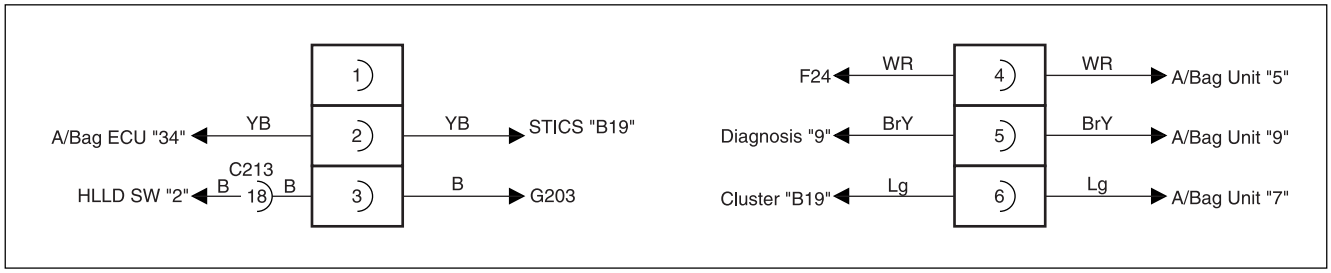
• **C206**


RR Fog Lamp Relay "87"
Br
1
C401
Br
5
Br
Combi Lamp LH/RH "2"
Br
Cluster "B3"
HDC Relay "87"
Y
2
Y
Stop Lamp SW "4"
STICS "A21"
BrY
3
BrY
DEF Relay "86"
Driver DR Speaker "2"
BrB
C351
18
BrB
4
BrB
DSP Unit "8"
M/F SW "4"
LgY
5
LgY
C105 "6"
HDC SW "2"
GB
6
GB
ABS/ESP Unit "9"
C103 "1"
GBr
7
GBr
B/Horn Relay "87"
HLLD SW "3"
YG
8
YG
C103 "7"
Pedal Module "4"
GBr
9
GBr
GSL ECU "47"
Pedal Module "6"
YB
10
YB
GSL ECU "48"
DSL ECU "80"
GSL ECU "39"
LB
C212
15
LB
LB
11
LB
C105 "4"
F27
YR
12
YR
Stop Lamp SW "3"
PTC "1"
BW
13
BW
C101 "13"
HDC Relay "85"
YG
14
YG
ABS/ESP Unit "35"
C106 "3"
LW
15
LW
HDC Relay "30" "86"
RR Fog Lamp Relay "15"
Cluster "B5"
RG
RG
16
RG
C105 "10"
Driver DR Speaker "1"
BrW
C351
17
BrW
17
BrW
DSP Unit "18"
M/F SW "5" "16"
GB
18
GB
C106 "1"
Cluster "B11"
WL
19
WL
C203 "16"
Contact Coil "3" (Horn SW)
RB
20
RB
C104 "7"
GSL ECU "34"
Cluster "A17"
GY
GY
21
GY
C901
4
GY
GY
C108 "18"
Neutral SW "1" (M/T)
Pedal Module "3"
Br
22
Br
GSL ECU "31"
Pedal Module "5"
WB
23
WB
GSL ECU "50"
GSL ECU "27"
DSL ECU "79"
WR
WR
24
WR
C103 "14"
M/F SW "19"
G
25
G
C105 "7"
PTC "3"
R
26
R
C102 "4"
STICS "B20"
LB
27
LB
C203 "15"
LH S/Warmer SW "5"
LY
28
LY
C301
29
LY
Driver S/Heater "1" (W/ Memory)
STICS "C2"
BG
29
BG
C301
2
BG
Driver S/Belt SW "2" (W/O Memory)
F34
LR
30
YR
C106 "20"
STICS "B5"
R
31
R
C106 "19"
Cluster "B20"
WG
32
WG
C301
39
WG
Seat Unit "C1"
S202 "10"
BrB
33
BrB
S301 "8"
S202 "3"
BG
34
BG
S301 "1"
Pedal Module "1"
LG
35
LG
GSL ECU "51"
Pedal Module "2"
RY
36
RY
GSL ECU "32"
GSL ECU "35"
DSL ECU "81"
LW
LW
37
LW
C103 "15"
STICS "B10"
Lg
38
Lg
C106 "17"
PTC "5"
YB
39
YB
C101 "11"

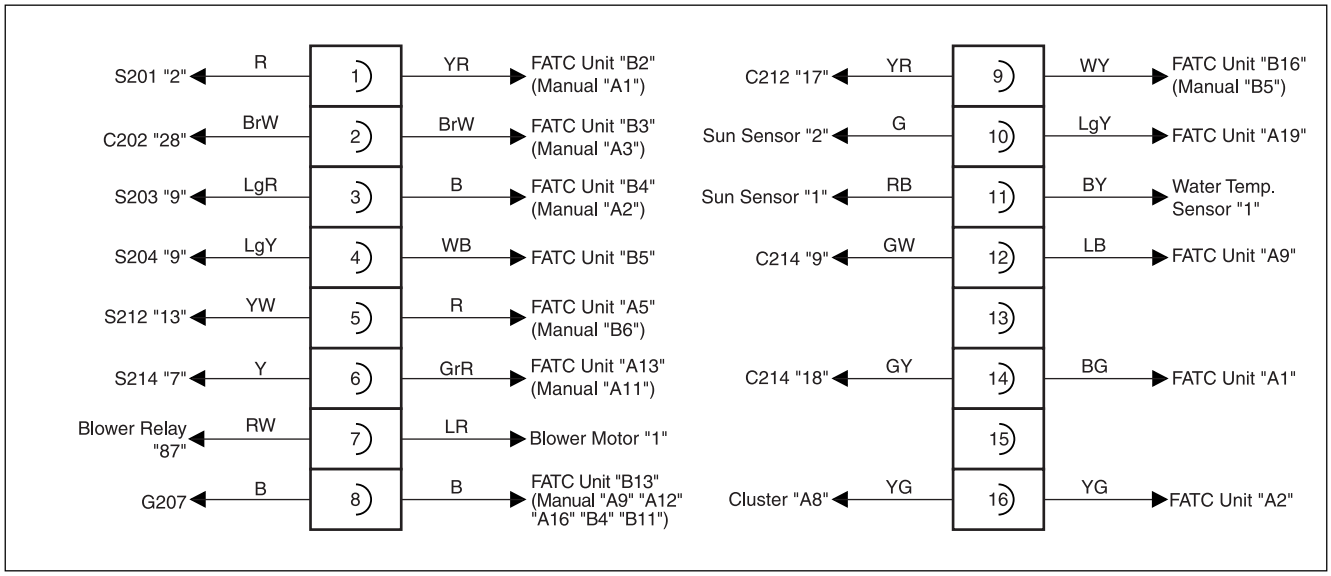
• **C208**



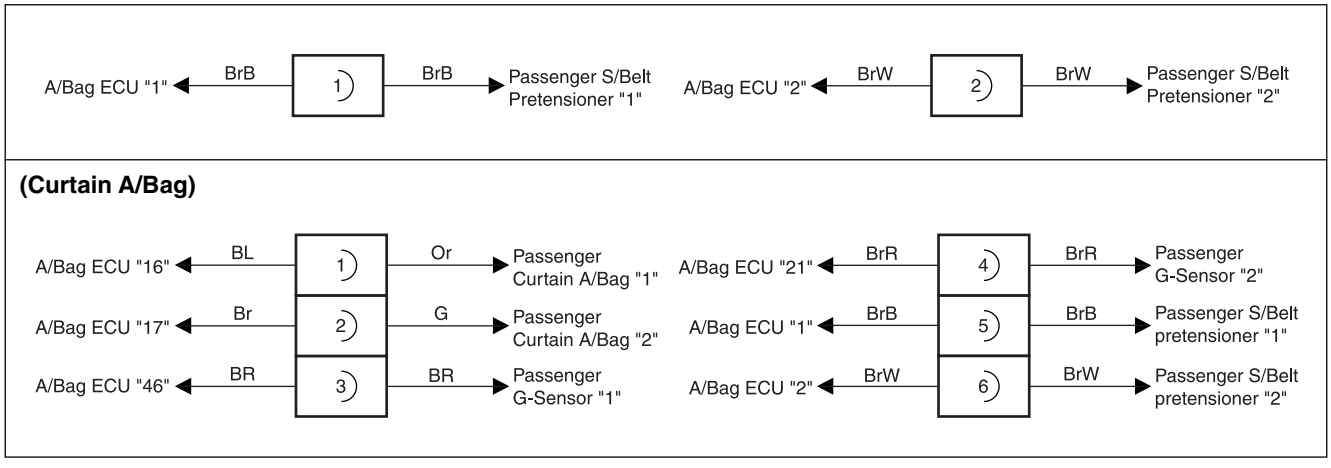
• **C209**



• **C210**

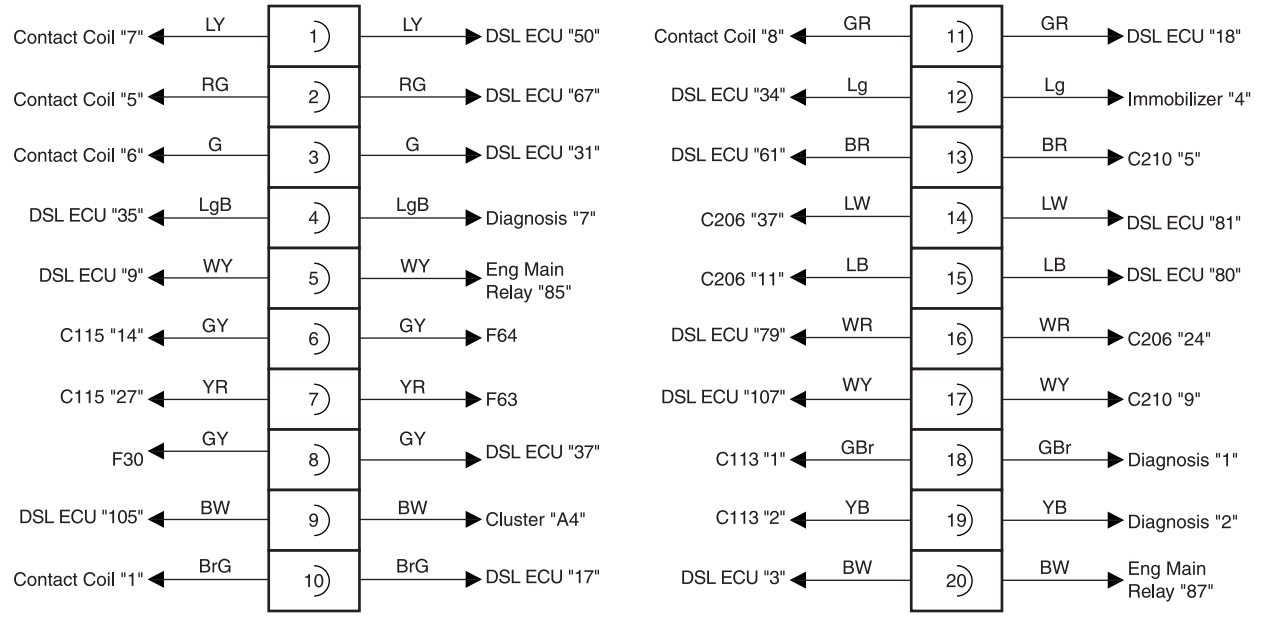


• **C211**

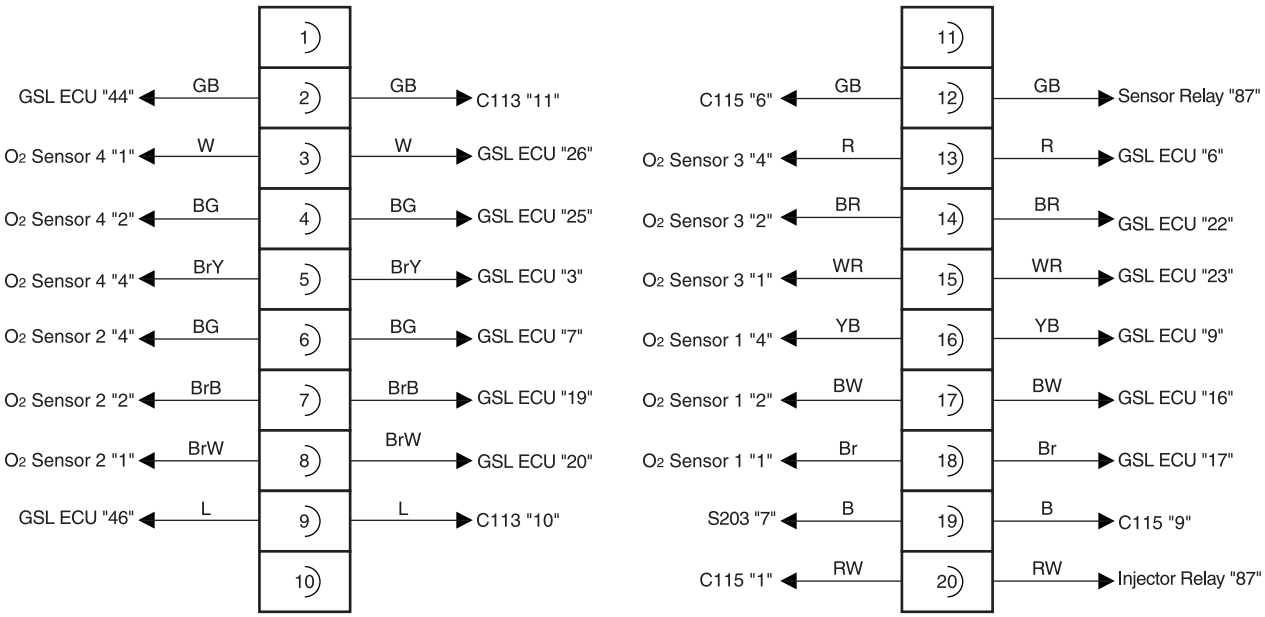


• **C212**

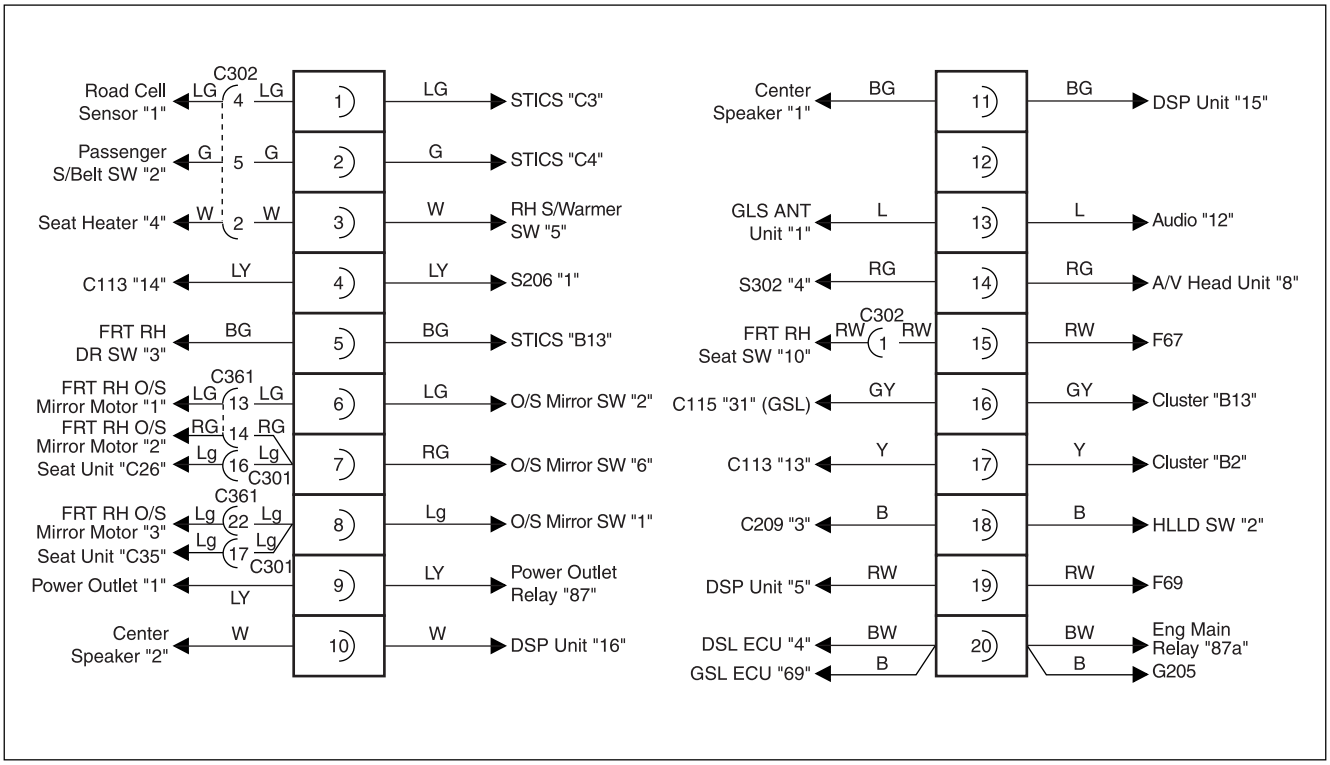
(DSL)


Contact Coil "7" LY 1 LY DSL ECU "50"
Contact Coil "5" RG 2 RG DSL ECU "67"
Contact Coil "6" G 3 G DSL ECU "31"
DSL ECU "35" LgB 4 LgB Diagnosis "7"
DSL ECU "9" WY 5 WY Eng Main Relay "85"
C115 "14" GY 6 GY F64
C115 "27" YR 7 YR F63
F30 GY 8 GY DSL ECU "37"
DSL ECU "105" BW 9 BW Cluster "A4"
Contact Coil "1" BrG 10 BrG DSL ECU "17"
Contact Coil "8" GR 11 GR DSL ECU "18"
DSL ECU "34" Lg 12 Lg Immobilizer "4"
DSL ECU "61" BR 13 BR C210 "5"
C206 "37" LW 14 LW DSL ECU "81"
C206 "11" LB 15 LB DSL ECU "80"
DSL ECU "79" WR 16 WR C206 "24"
DSL ECU "107" WY 17 WY C210 "9"
C113 "1" GBr 18 GBr Diagnosis "1"
C113 "2" YB 19 YB Diagnosis "2"
DSL ECU "3" BW 20 BW Eng Main Relay "87"

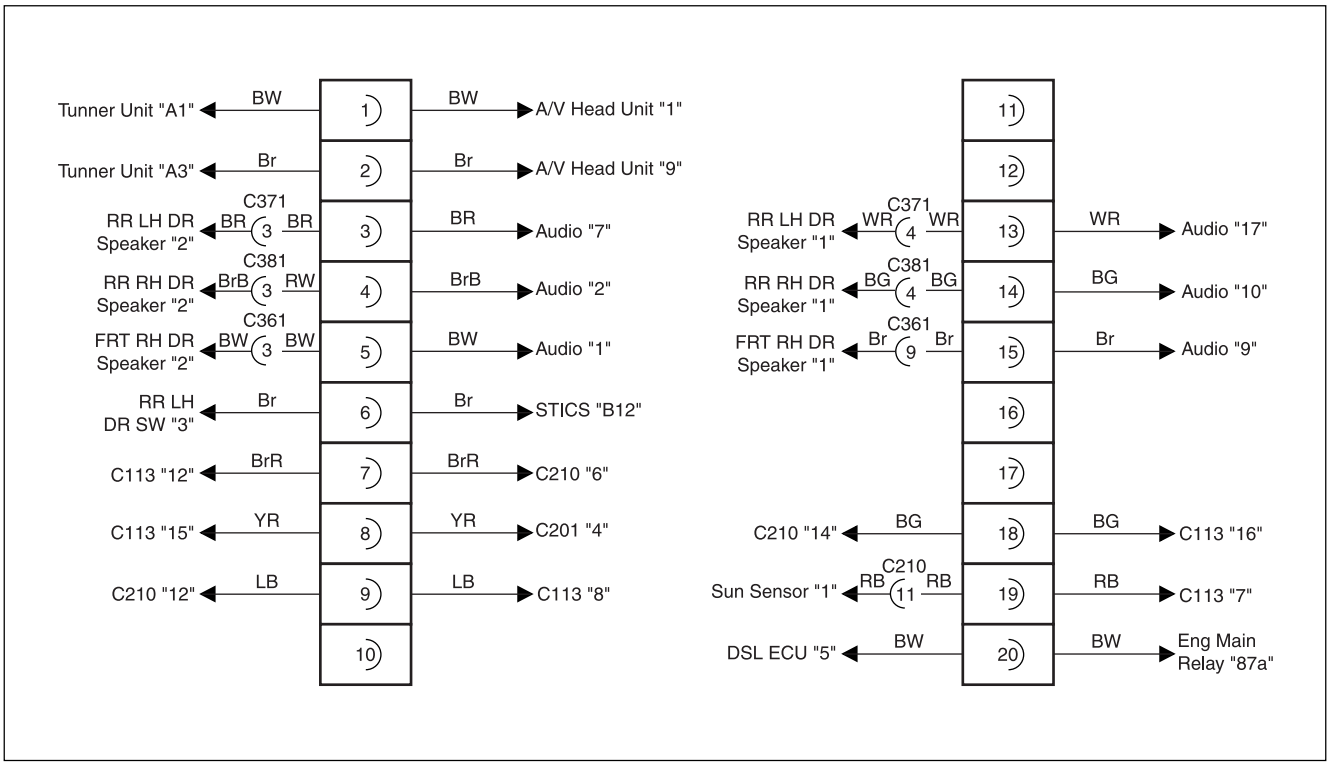
(GSL)


1
GSL ECU "44" GB 2 GB C113 "11"
O2 Sensor 4 "1" W 3 W GSL ECU "26"
O2 Sensor 4 "2" BG 4 BG GSL ECU "25"
O2 Sensor 4 "4" BrY 5 BrY GSL ECU "3"
O2 Sensor 2 "4" BG 6 BG GSL ECU "7"
O2 Sensor 2 "2" BrB 7 BrB GSL ECU "19"
O2 Sensor 2 "1" BrW 8 BrW GSL ECU "20"
GSL ECU "46" L 9 L C113 "10"
10
11
C115 "6" GB 12 GB Sensor Relay "87"
O2 Sensor 3 "4" R 13 R GSL ECU "6"
O2 Sensor 3 "2" BR 14 BR GSL ECU "22"
O2 Sensor 3 "1" WR 15 WR GSL ECU "23"
O2 Sensor 1 "4" YB 16 YB GSL ECU "9"
O2 Sensor 1 "2" BW 17 BW GSL ECU "16"
O2 Sensor 1 "1" Br 18 Br GSL ECU "17"
S203 "7" B 19 B C115 "9"
C115 "1" RW 20 RW Injector Relay "87"

• **C213**

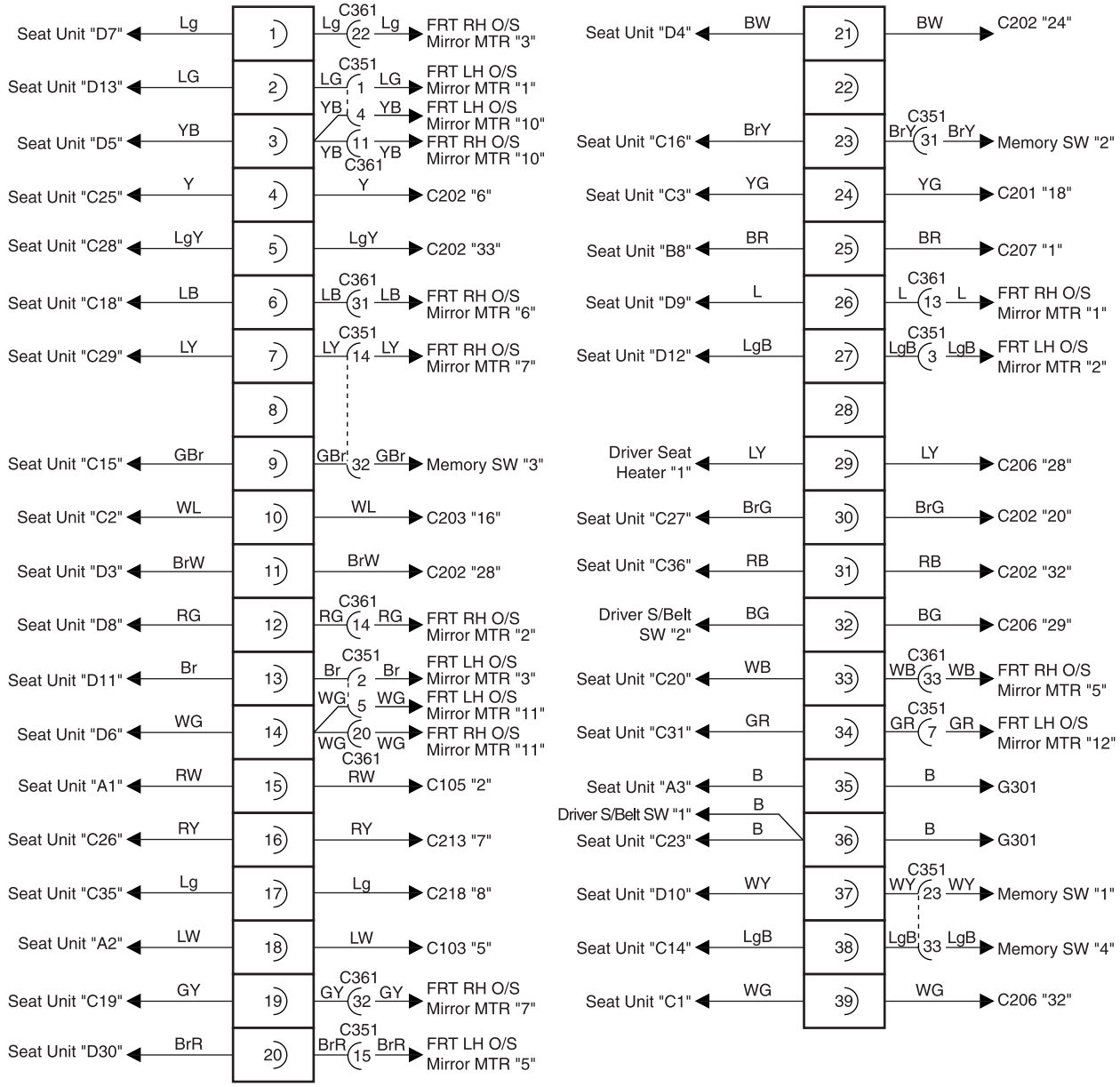

Road Cell Sensor "1"
C302
LG
4
LG
1
LG
STICS "C3"
Passenger S/Belt SW "2"
G
5
G
2
G
STICS "C4"
Seat Heater "4"
W
2
W
3
W
RH S/Warmer SW "5"
C113 "14"
LY
4
LY
S206 "1"
FRT RH DR SW "3"
BG
5
BG
STICS "B13"
FRT RH O/S Mirror Motor "1"
C361
LG
13
LG
6
LG
O/S Mirror SW "2"
FRT RH O/S Mirror Motor "2"
Seat Unit "C26"
RG
14
RG
Lg
16
Lg
C301
7
RG
O/S Mirror SW "6"
FRT RH O/S Mirror Motor "3"
Seat Unit "C35"
C361
Lg
22
Lg
Lg
17
Lg
C301
8
Lg
O/S Mirror SW "1"
Power Outlet "1"
LY
9
LY
Power Outlet Relay "87"
Center Speaker "2"
W
10
W
DSP Unit "16"
Center Speaker "1"
BG
11
BG
DSP Unit "15"
12
GLS ANT Unit "1"
L
13
L
Audio "12"
S302 "4"
RG
14
RG
A/V Head Unit "8"
FRT RH Seat SW "10"
C302
RW
1
RW
15
RW
F67
C115 "31" (GSL)
GY
16
GY
Cluster "B13"
C113 "13"
Y
17
Y
Cluster "B2"
C209 "3"
B
18
B
HLLD SW "2"
DSP Unit "5"
RW
19
RW
F69
DSL ECU "4"
GSL ECU "69"
BW
B
20
BW
B
Eng Main Relay "87a"
G205

• **C214**

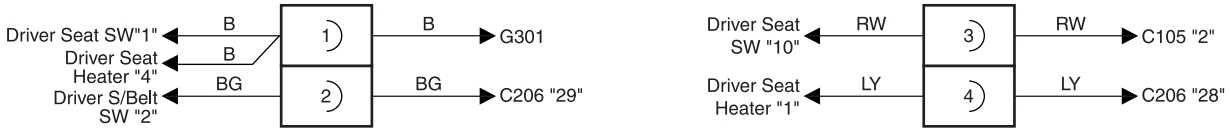

Tunner Unit "A1"
BW
1
BW
A/V Head Unit "1"
Tunner Unit "A3"
Br
2
Br
A/V Head Unit "9"
RR LH DR Speaker "2"
C371
BR
3
BR
3
BR
Audio "7"
RR RH DR Speaker "2"
C381
BrB
3
RW
4
BrB
Audio "2"
FRT RH DR Speaker "2"
C361
BW
3
BW
5
BW
Audio "1"
RR LH DR SW "3"
Br
6
Br
STICS "B12"
C113 "12"
BrR
7
BrR
C210 "6"
C113 "15"
YR
8
YR
C201 "4"
C210 "12"
LB
9
LB
C113 "8"
10
11
12
RR LH DR Speaker "1"
C371
WR
4
WR
13
WR
Audio "17"
RR RH DR Speaker "1"
C381
BG
4
BG
14
BG
Audio "10"
FRT RH DR Speaker "1"
C361
Br
9
Br
15
Br
Audio "9"
16
17
C210 "14"
BG
18
BG
C113 "16"
Sun Sensor "1"
C210
RB
11
RB
19
RB
C113 "7"
DSL ECU "5"
BW
20
BW
Eng Main Relay "87a"

• **C301**

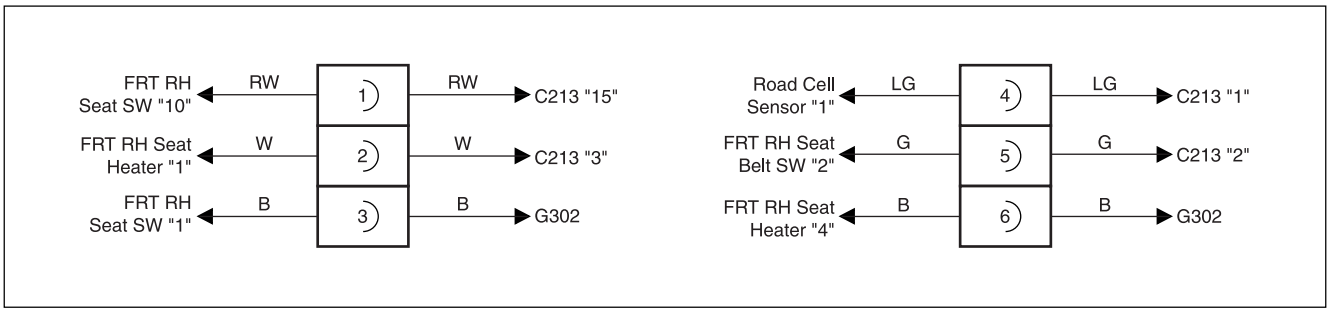
(Power Seat, W/ Memory)



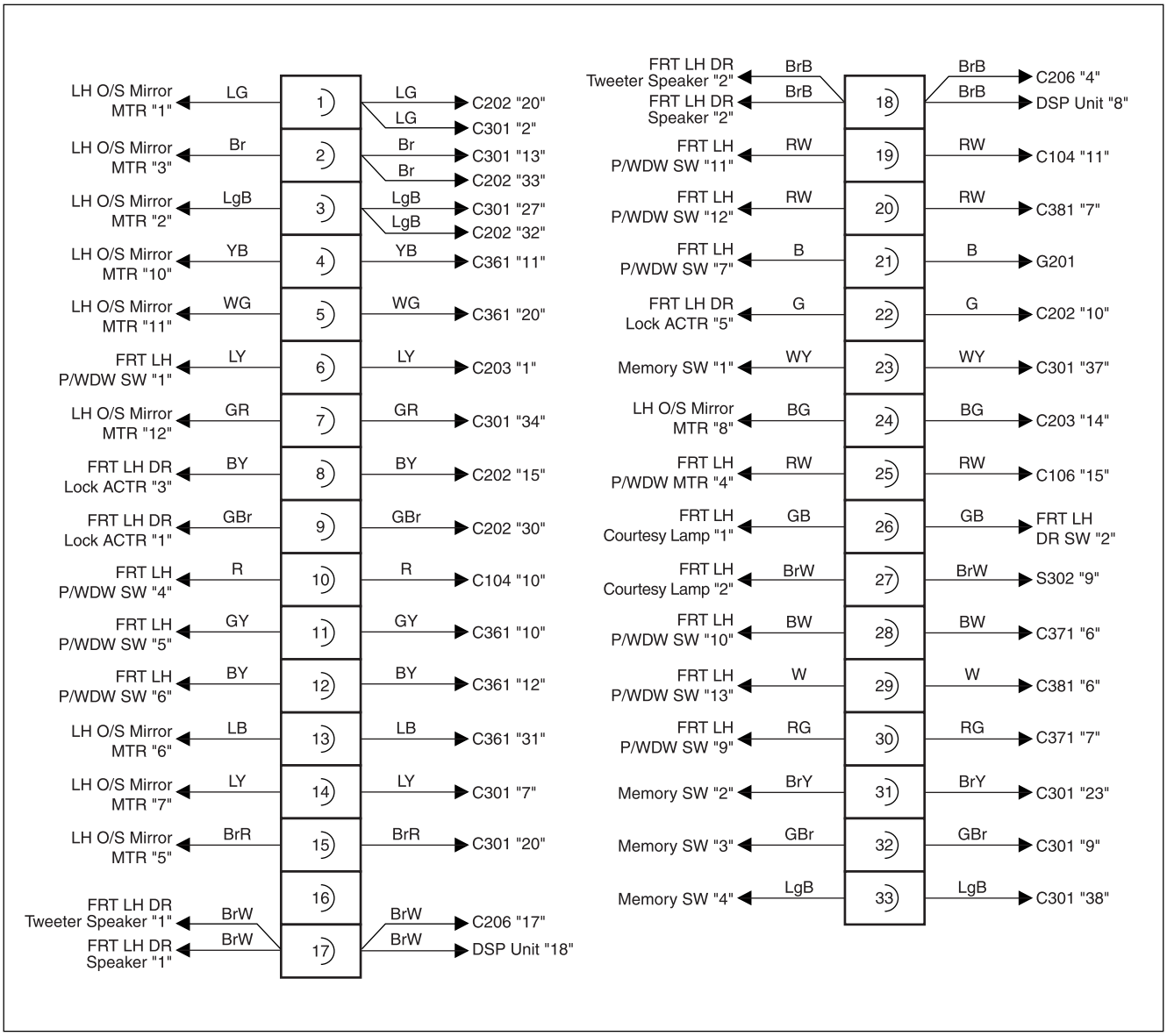
(Manual Seat, W/O Memory)



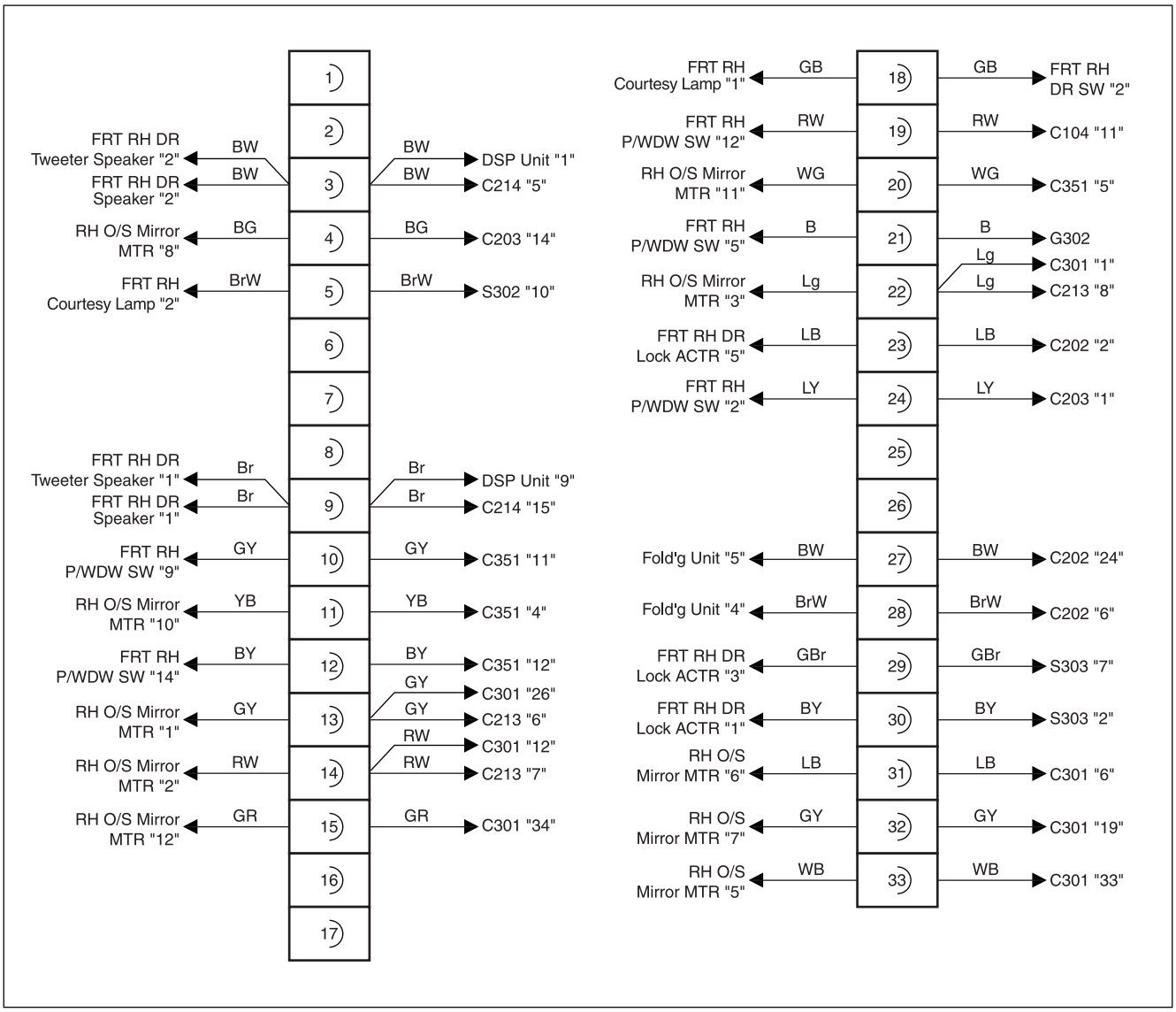
• **C302**


FRT RH Seat SW "10"
RW
1
RW
C213 "15"
FRT RH Seat Heater "1"
W
2
W
C213 "3"
FRT RH Seat SW "1"
B
3
B
G302
Road Cell Sensor "1"
LG
4
LG
C213 "1"
FRT RH Seat Belt SW "2"
G
5
G
C213 "2"
FRT RH Seat Heater "4"
B
6
B
G302

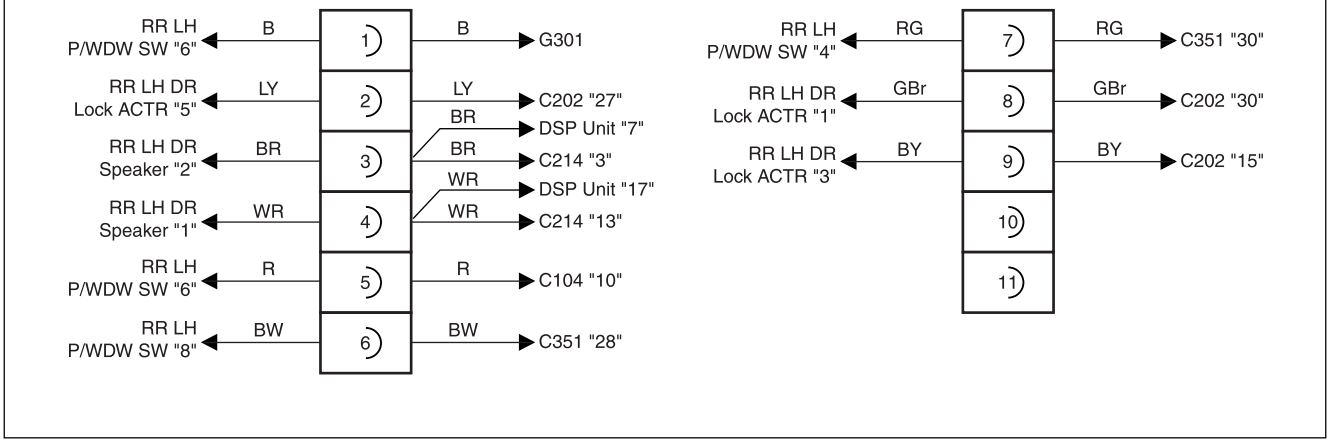
• **C351**


LH O/S Mirror MTR "1"
LG
1
LG
C202 "20"
LG
C301 "2"
LH O/S Mirror MTR "3"
Br
2
Br
C301 "13"
Br
C202 "33"
LH O/S Mirror MTR "2"
LgB
3
LgB
C301 "27"
LgB
C202 "32"
LH O/S Mirror MTR "10"
YB
4
YB
C361 "11"
LH O/S Mirror MTR "11"
WG
5
WG
C361 "20"
FRT LH P/WDW SW "1"
LY
6
LY
C203 "1"
LH O/S Mirror MTR "12"
GR
7
GR
C301 "34"
FRT LH DR Lock ACTR "3"
BY
8
BY
C202 "15"
FRT LH DR Lock ACTR "1"
GBr
9
GBr
C202 "30"
FRT LH P/WDW SW "4"
R
10
R
C104 "10"
FRT LH P/WDW SW "5"
GY
11
GY
C361 "10"
FRT LH P/WDW SW "6"
BY
12
BY
C361 "12"
LH O/S Mirror MTR "6"
LB
13
LB
C361 "31"
LH O/S Mirror MTR "7"
LY
14
LY
C301 "7"
LH O/S Mirror MTR "5"
BrR
15
BrR
C301 "20"
16
FRT LH DR Tweeter Speaker "1"
BrW
17
BrW
C206 "17"
FRT LH DR Speaker "1"
BrW
BrW
DSP Unit "18"
FRT LH DR Tweeter Speaker "2"
BrB
18
BrB
C206 "4"
FRT LH DR Speaker "2"
BrB
BrB
DSP Unit "8"
FRT LH P/WDW SW "11"
RW
19
RW
C104 "11"
FRT LH P/WDW SW "12"
RW
20
RW
C381 "7"
FRT LH P/WDW SW "7"
B
21
B
G201
FRT LH DR Lock ACTR "5"
G
22
G
C202 "10"
Memory SW "1"
WY
23
WY
C301 "37"
LH O/S Mirror MTR "8"
BG
24
BG
C203 "14"
FRT LH P/WDW MTR "4"
RW
25
RW
C106 "15"
FRT LH Courtesy Lamp "1"
GB
26
GB
FRT LH DR SW "2"
FRT LH Courtesy Lamp "2"
BrW
27
BrW
S302 "9"
FRT LH P/WDW SW "10"
BW
28
BW
C371 "6"
FRT LH P/WDW SW "13"
W
29
W
C381 "6"
FRT LH P/WDW SW "9"
RG
30
RG
C371 "7"
Memory SW "2"
BrY
31
BrY
C301 "23"
Memory SW "3"
GBr
32
GBr
C301 "9"
Memory SW "4"
LgB
33
LgB
C301 "38"

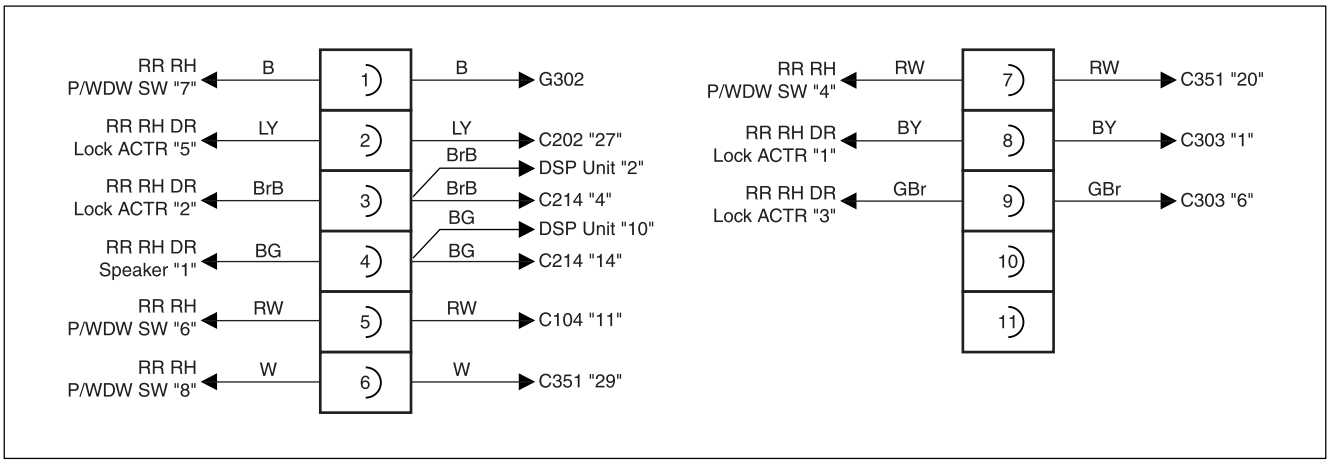
• **C361**


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
FRT RH DR Tweeter Speaker "2" BW
FRT RH DR Speaker "2" BW
RH O/S Mirror MTR "8" BG
FRT RH Courtesy Lamp "2" BrW
FRT RH DR Tweeter Speaker "1" Br
FRT RH DR Speaker "1" Br
FRT RH P/WDW SW "9" GY
RH O/S Mirror MTR "10" YB
FRT RH P/WDW SW "14" BY
RH O/S Mirror MTR "1" GY
RH O/S Mirror MTR "2" RW
RH O/S Mirror MTR "12" GR
BW DSP Unit "1"
BW C214 "5"
BG C203 "14"
BrW S302 "10"
Br DSP Unit "9"
Br C214 "15"
GY C351 "11"
YB C351 "4"
BY C351 "12"
GY C301 "26"
GY C213 "6"
RW C301 "12"
RW C213 "7"
GR C301 "34"
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
FRT RH Courtesy Lamp "1" GB
FRT RH P/WDW SW "12" RW
RH O/S Mirror MTR "11" WG
FRT RH P/WDW SW "5" B
RH O/S Mirror MTR "3" Lg
FRT RH DR Lock ACTR "5" LB
FRT RH P/WDW SW "2" LY
Fold'g Unit "5" BW
Fold'g Unit "4" BrW
FRT RH DR Lock ACTR "3" GBr
FRT RH DR Lock ACTR "1" BY
RH O/S Mirror MTR "6" LB
RH O/S Mirror MTR "7" GY
RH O/S Mirror MTR "5" WB
GB FRT RH DR SW "2"
RW C104 "11"
WG C351 "5"
B G302
Lg C301 "1"
Lg C213 "8"
LB C202 "2"
LY C203 "1"
BW C202 "24"
BrW C202 "6"
GBr S303 "7"
BY S303 "2"
LB C301 "6"
GY C301 "19"
WB C301 "33"

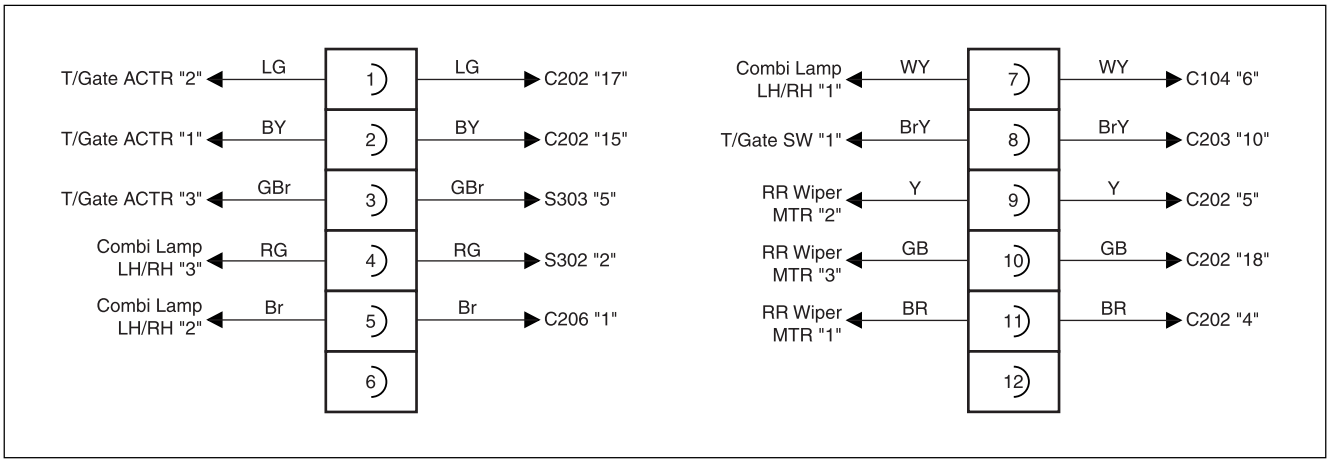
• **C371**


1
2
3
4
5
6
7
8
9
10
11
RR LH P/WDW SW "6" B
RR LH DR Lock ACTR "5" LY
RR LH DR Speaker "2" BR
RR LH DR Speaker "1" WR
RR LH P/WDW SW "6" R
RR LH P/WDW SW "8" BW
RR LH P/WDW SW "4" RG
RR LH DR Lock ACTR "1" GBr
RR LH DR Lock ACTR "3" BY
B G301
LY C202 "27"
BR DSP Unit "7"
BR C214 "3"
WR DSP Unit "17"
WR C214 "13"
R C104 "10"
BW C351 "28"
RG C351 "30"
GBr C202 "30"
BY C202 "15"

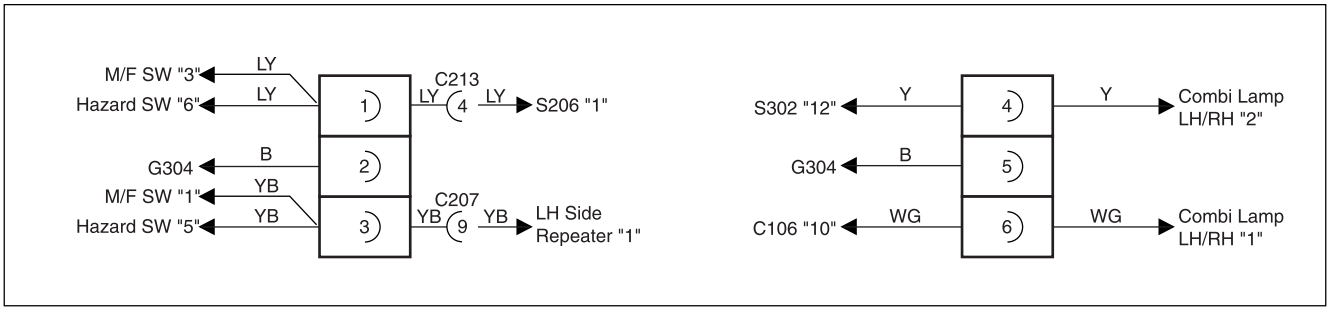
• **C381**



• **C401**

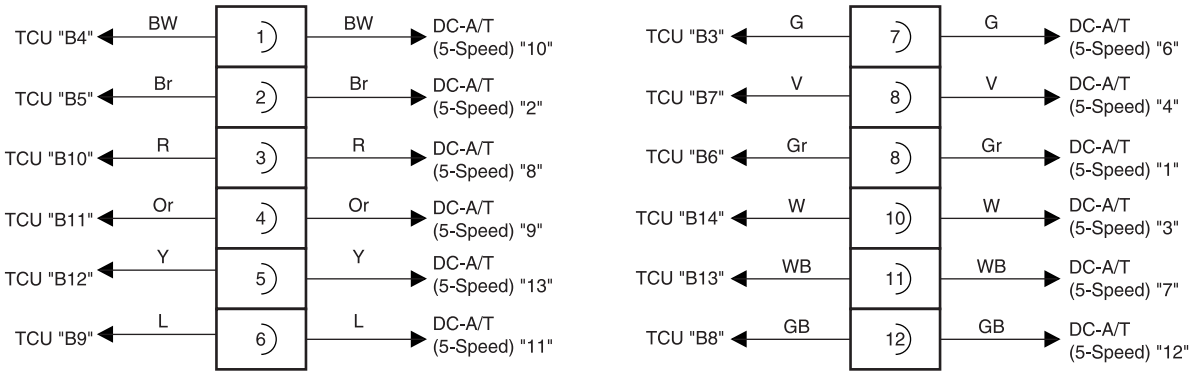


• **C402**

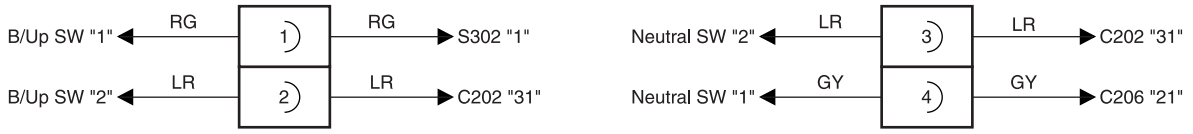


• **C901**

(Auto T/M)

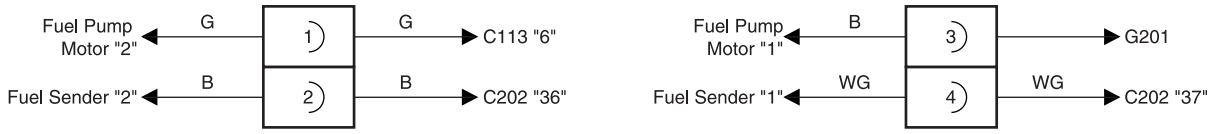


(Manual T/M)

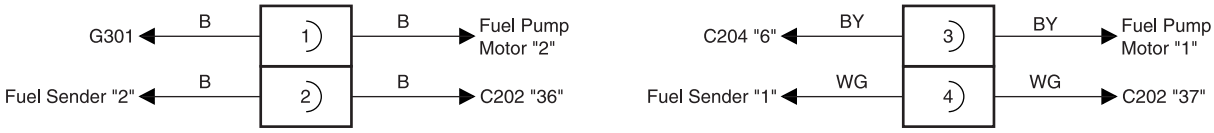


• **C902**

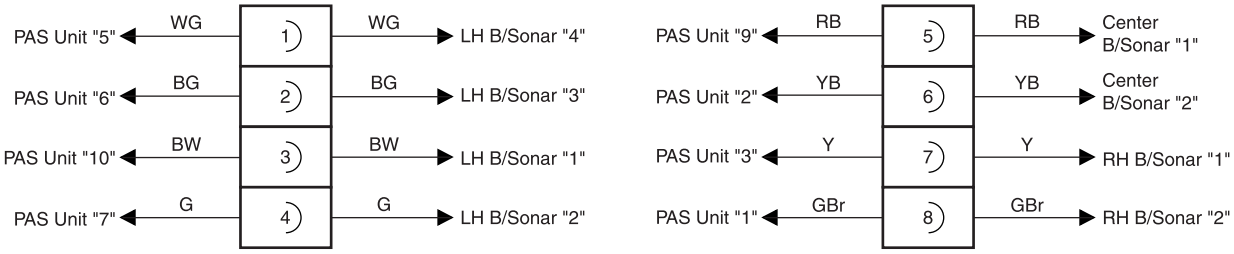
(DSL)



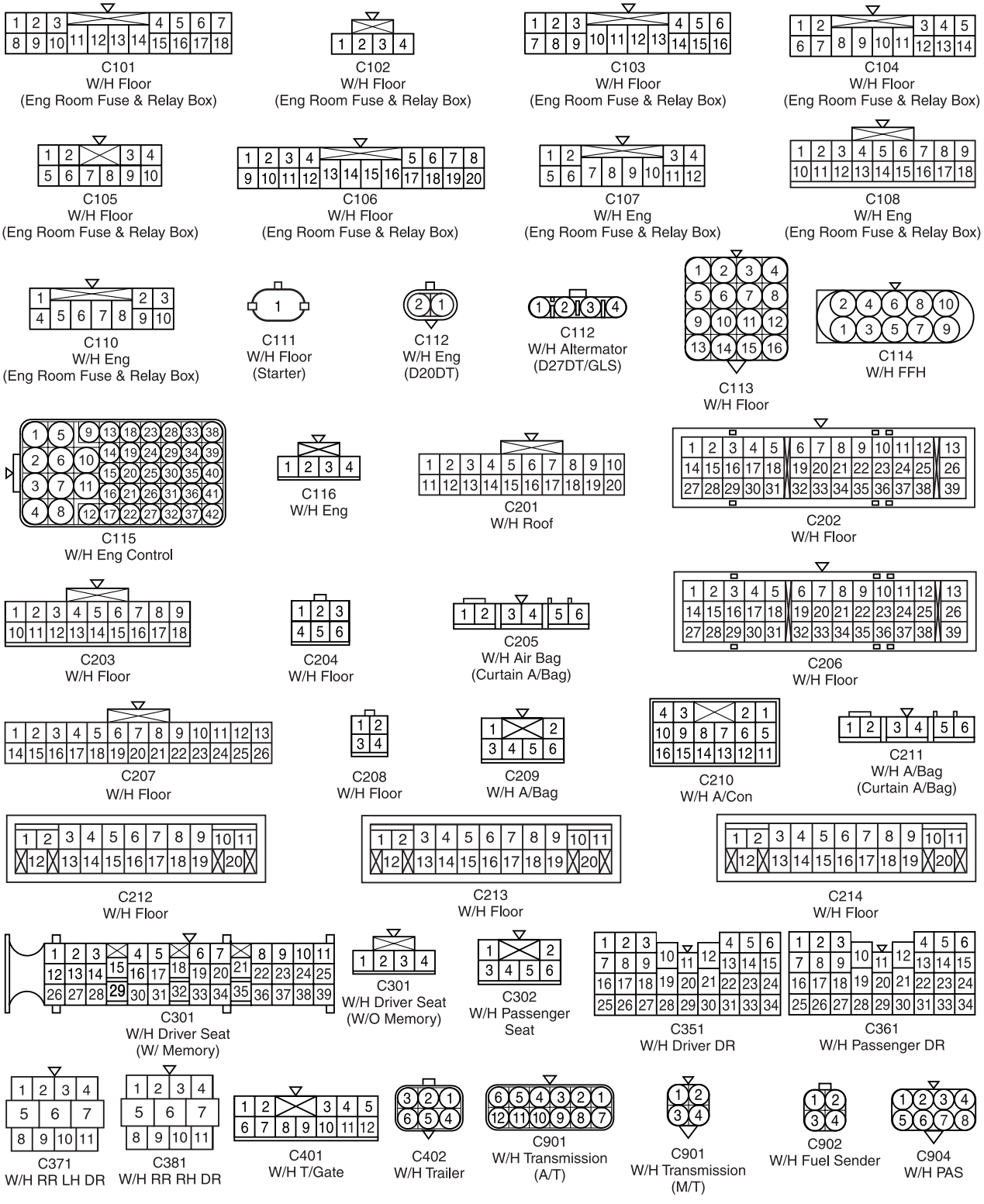
(GSL)



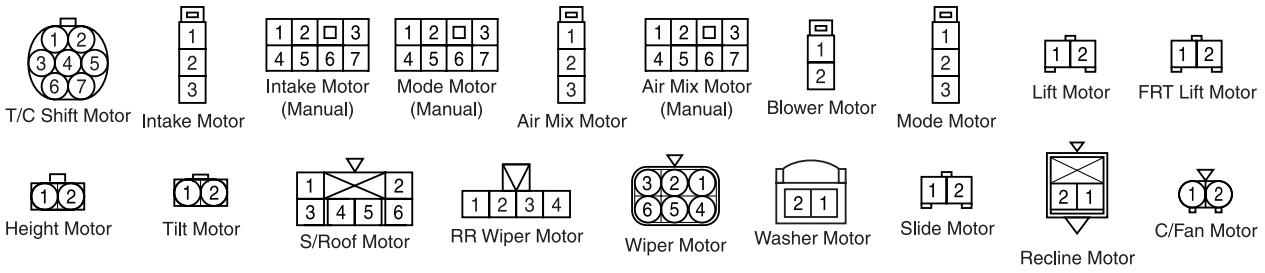
• **C904**



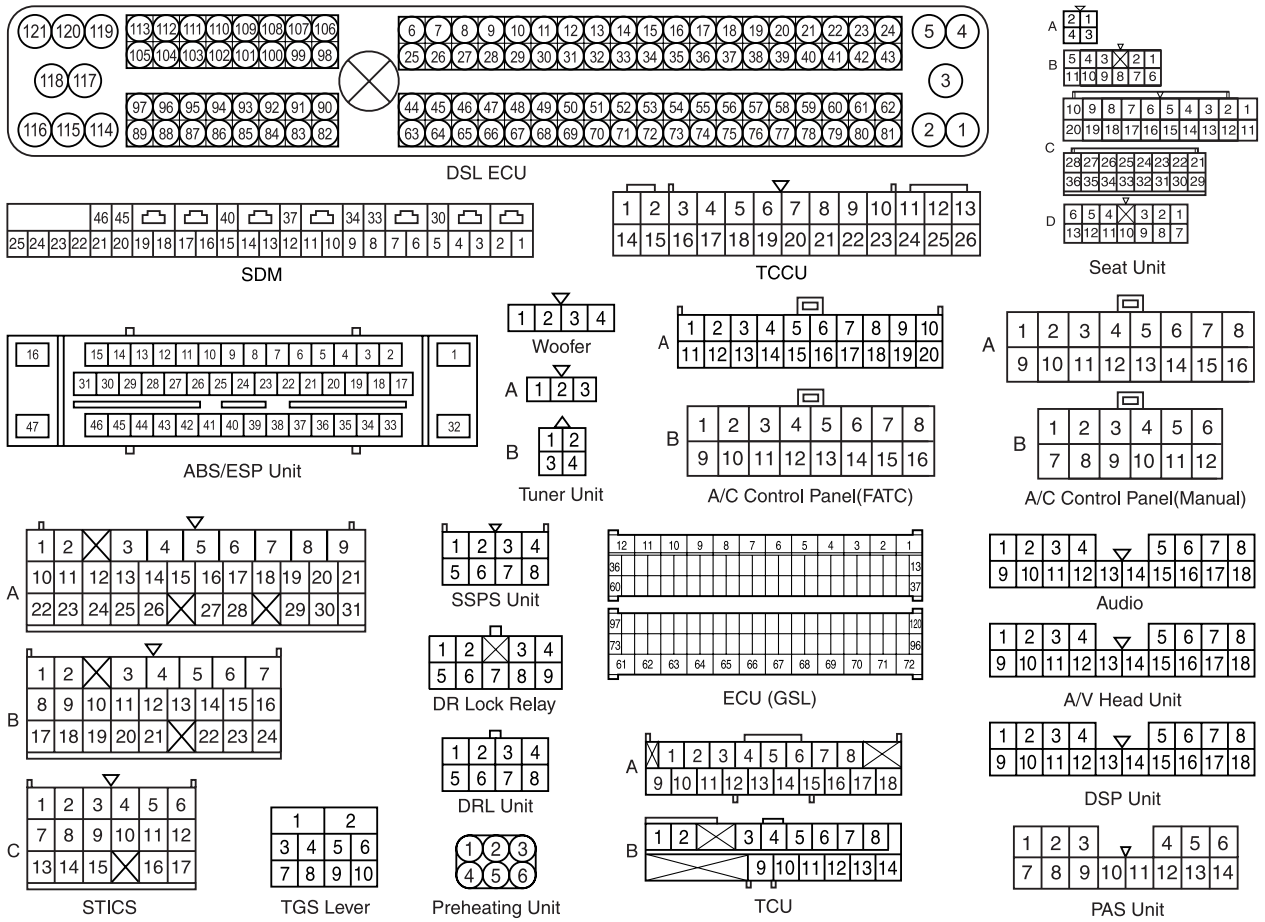
• WIRNING CONNECTOR



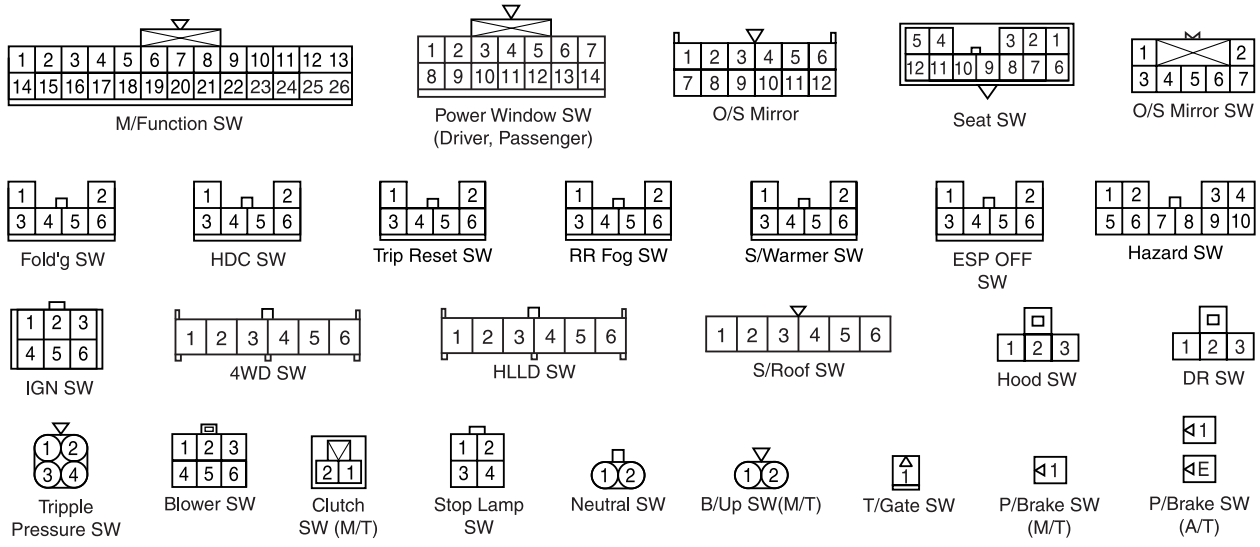
• MODE CONNECTOR



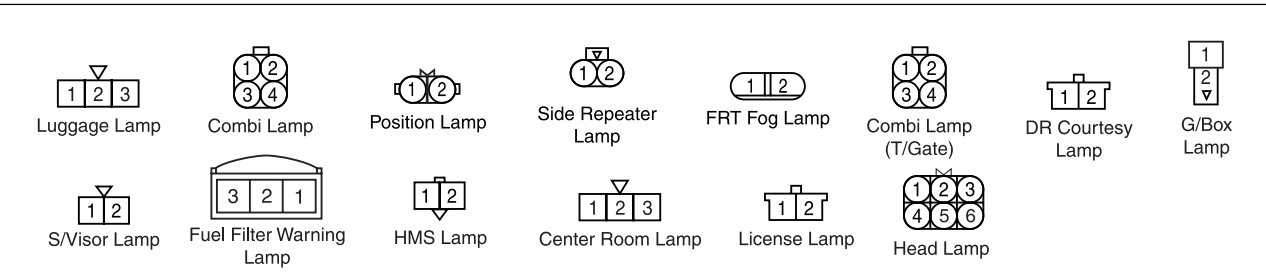
• UNIT CONNECTOR



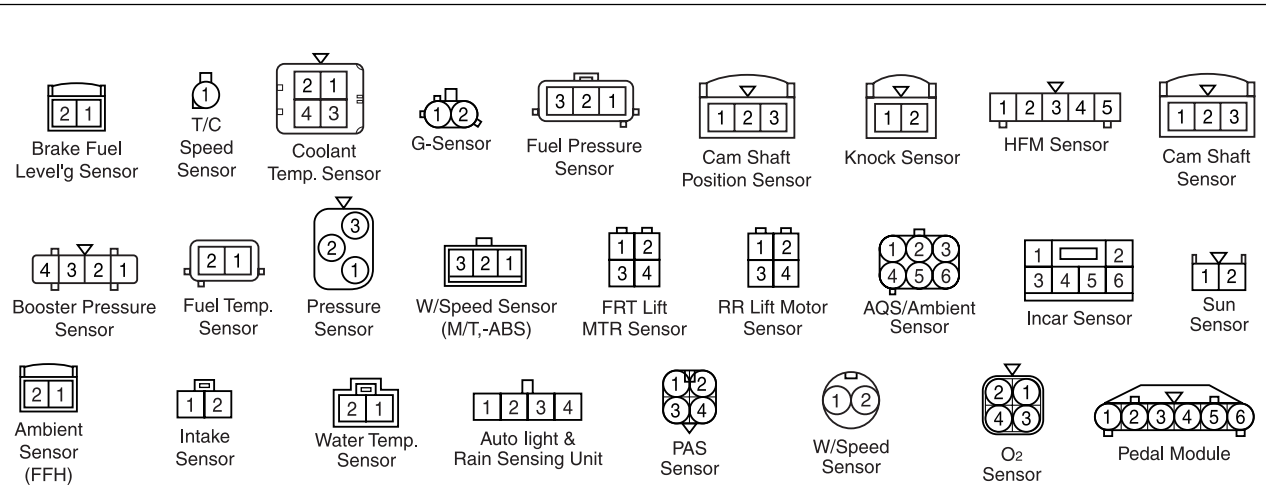
• SWITCH CONNECTOR



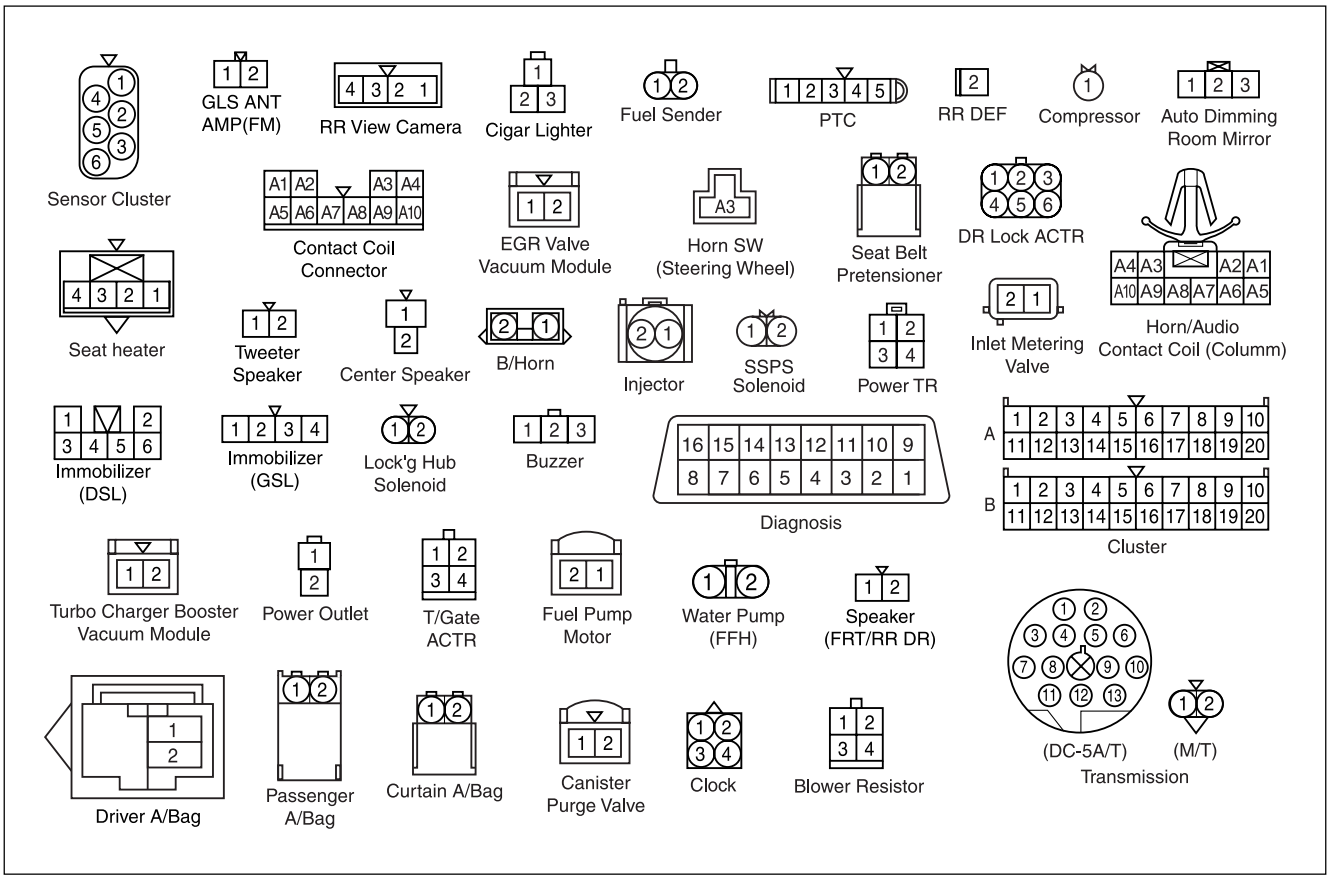
• LAMP CONNECTOR



• SENSOR CONNECTOR

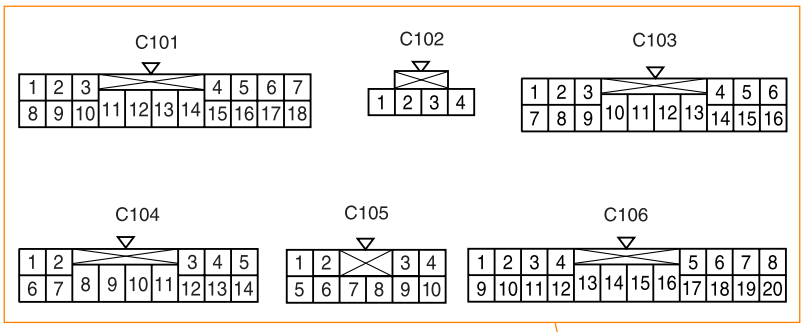


• **ETC.**

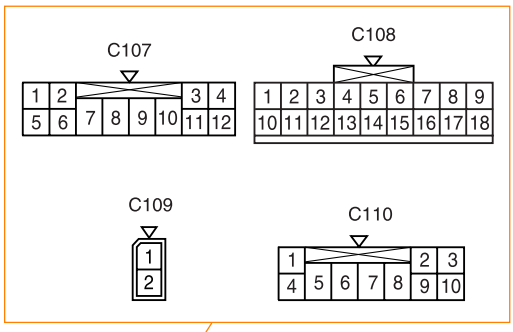

Sensor Cluster
GLS ANT AMP(FM)
RR View Camera
Cigar Lighter
Fuel Sender
PTC
RR DEF
Compressor
Auto Dimming Room Mirror
Contact Coil Connector
EGR Valve Vacuum Module
Horn SW (Steering Wheel)
Seat Belt Pretensioner
DR Lock ACTR
Seat heater
Tweeter Speaker
Center Speaker
B/Horn
Injector
SSPS Solenoid
Power TR
Inlet Metering Valve
Horn/Audio Contact Coil (Columm)
Immobilizer (DSL)
Immobilizer (GSL)
Lock'g Hub Solenoid
Buzzer
Diagnosis
Cluster
Turbo Charger Booster Vacuum Module
Power Outlet
T/Gate ACTR
Fuel Pump Motor
Water Pump (FFH)
Speaker (FRT/RR DR)
Driver A/Bag
Passenger A/Bag
Curtain A/Bag
Canister Purge Valve
Clock
Blower Resistor
(DC-5A/T)
(M/T)
Transmission

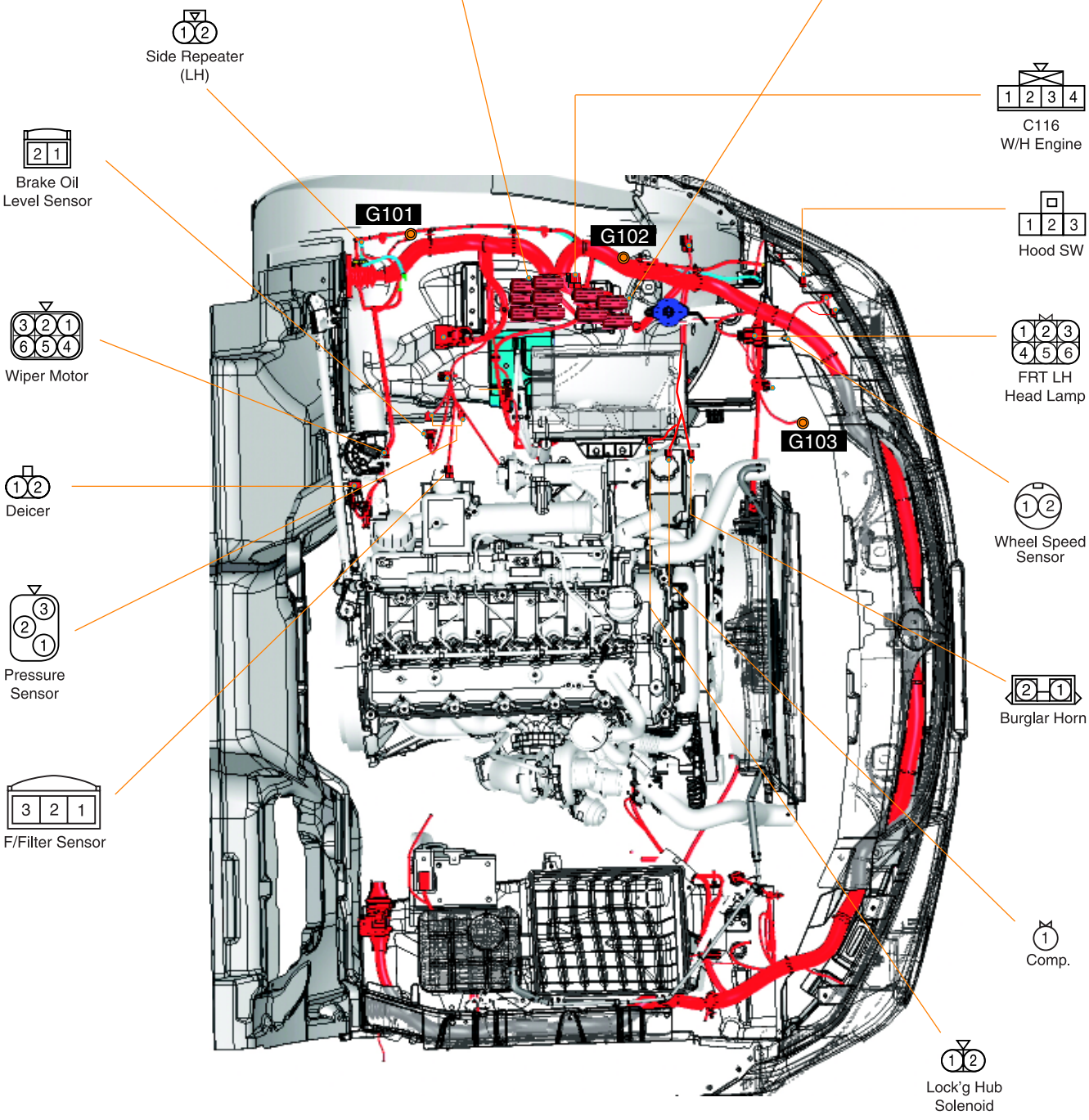
2. W/H ENGINE ROOM 8210

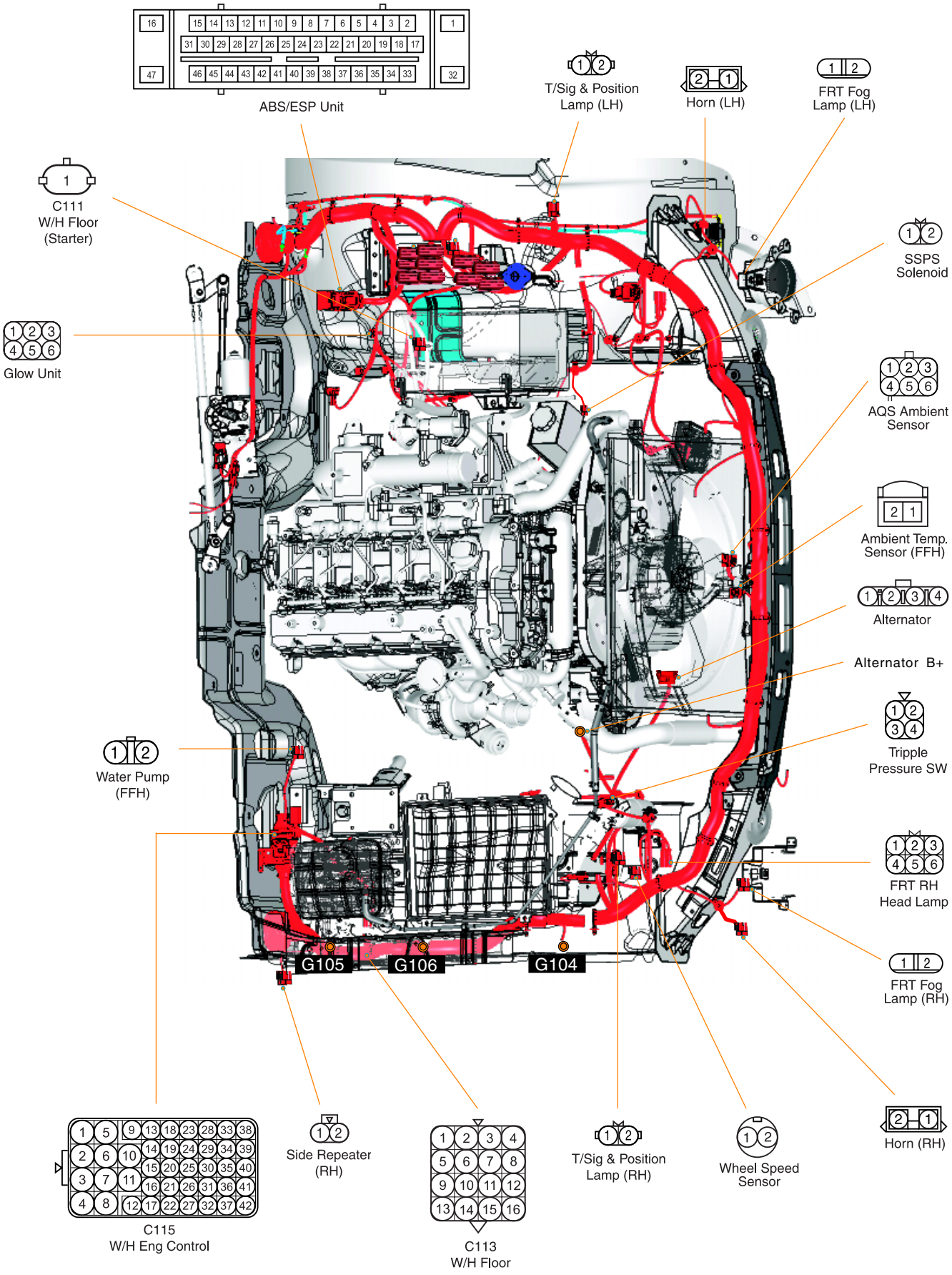
W/H FLOOR CONNECTOR (C101 ~ C106)



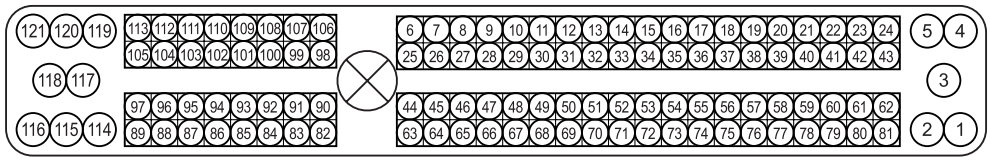
W/H FLOOR CONNECTOR (C107 ~ C110)



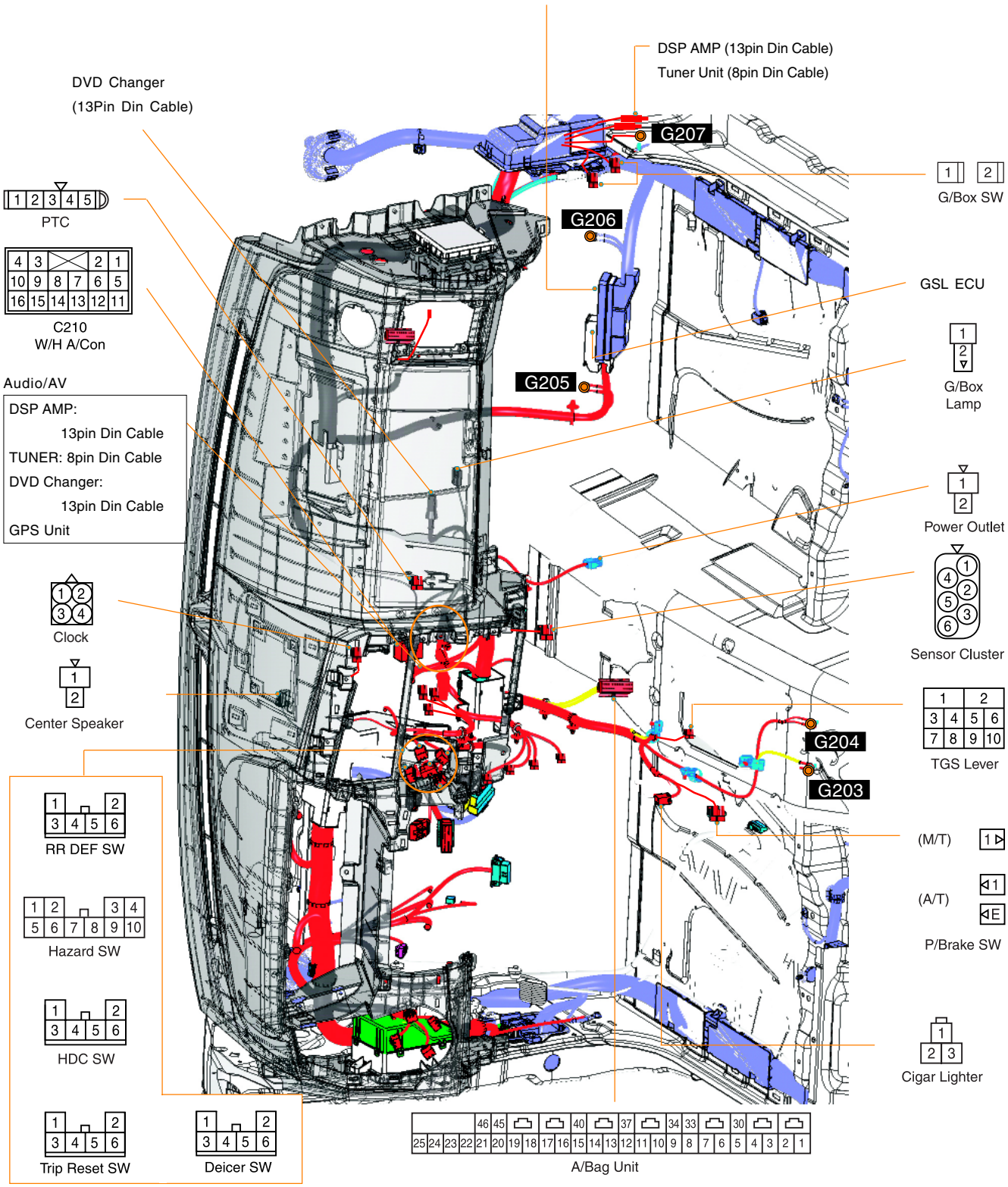


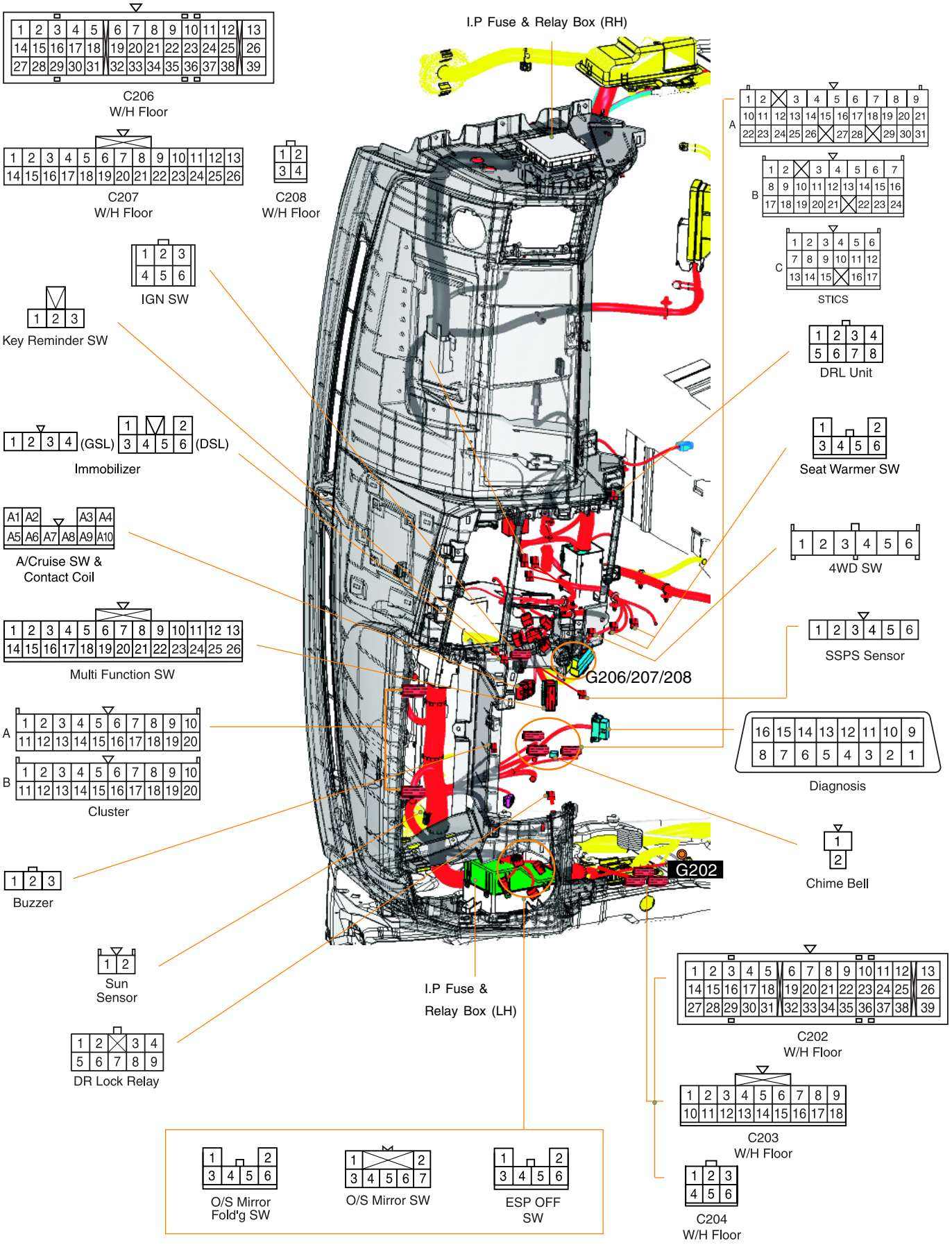

ABS/ESP Unit
T/Sig & Position Lamp (LH)
Horn (LH)
FRT Fog Lamp (LH)
C111 W/H Floor (Starter)
SSPS Solenoid
Glow Unit
AQS Ambient Sensor
Ambient Temp. Sensor (FFH)
Alternator
Alternator B+
Water Pump (FFH)
Tripple Pressure SW
FRT RH Head Lamp
G105
G106
G104
FRT Fog Lamp (RH)
C115 W/H Eng Control
Side Repeater (RH)
C113 W/H Floor
T/Sig & Position Lamp (RH)
Wheel Speed Sensor
Horn (RH)

3. W/H MAIN 8210



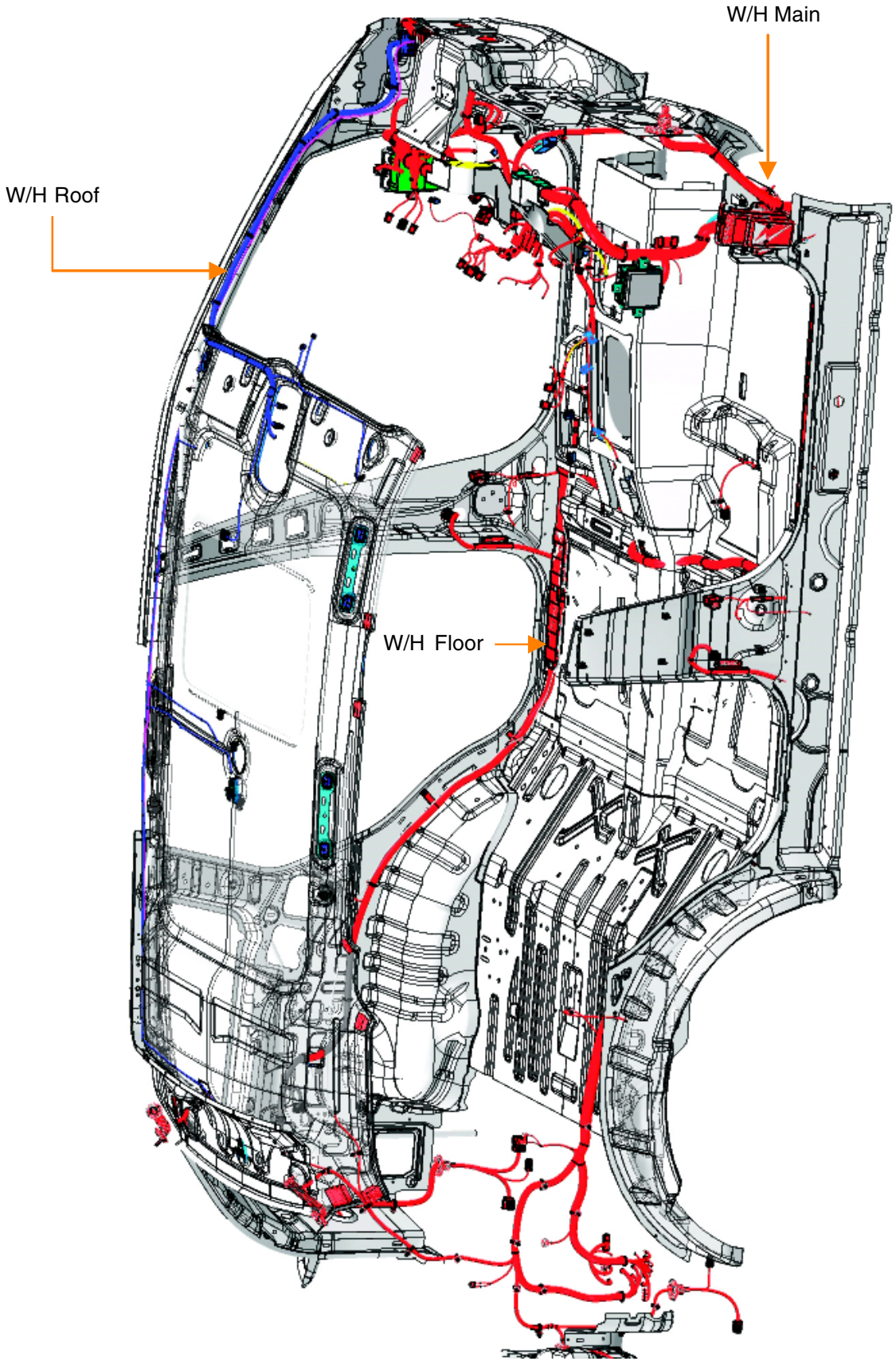
DSL ECU (W/H Floor)

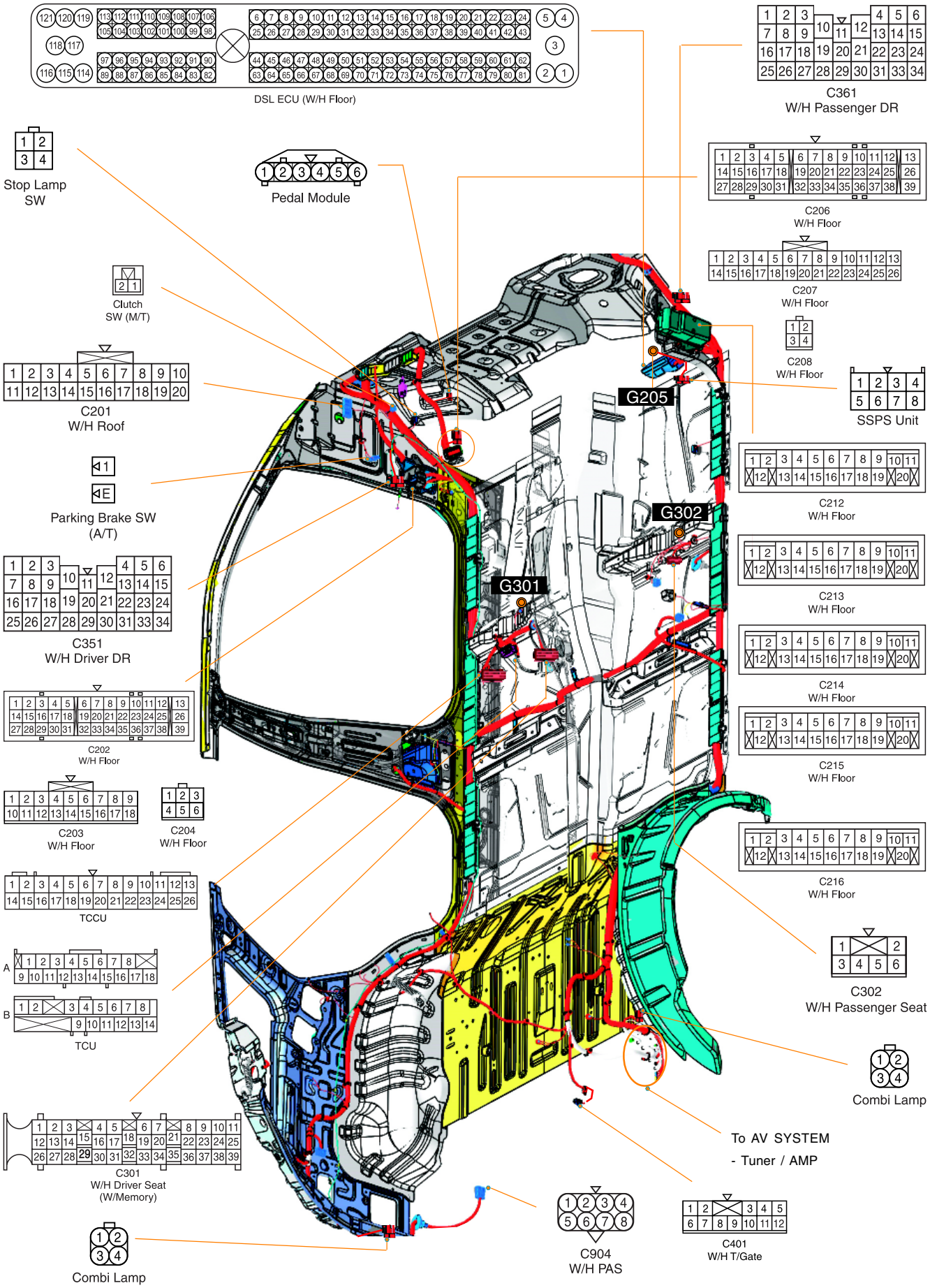


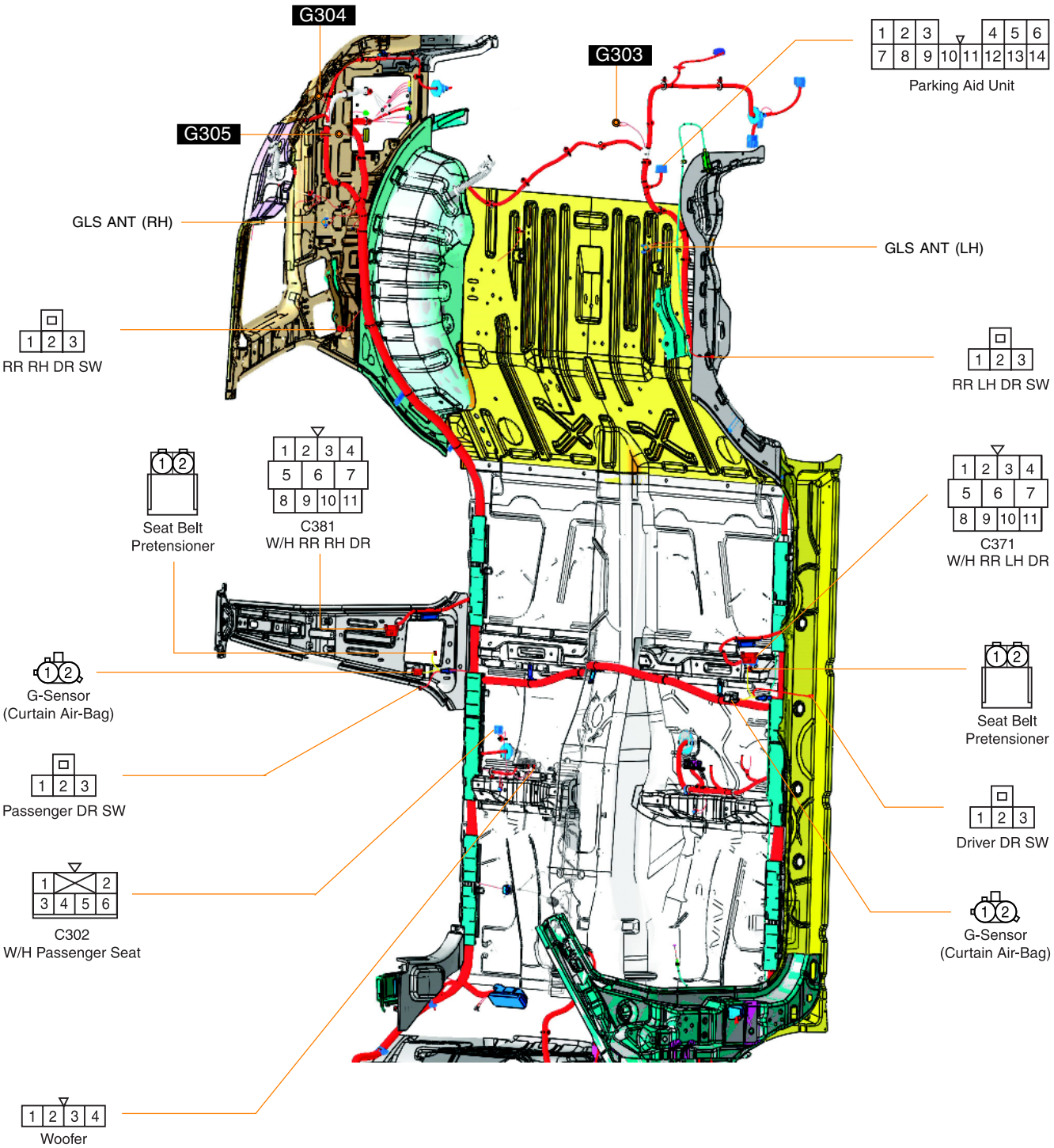

C206
W/H Floor
C207
W/H Floor
C208
W/H Floor
I.P Fuse & Relay Box (RH)
IGN SW
Key Reminder SW
Immobilizer
(GSL)
(DSL)
A/Cruise SW &
Contact Coil
Multi Function SW
Cluster
Buzzer
Sun
Sensor
DR Lock Relay
G206/207/208
G202
I.P Fuse &
Relay Box (LH)
STICS
DRL Unit
Seat Warmer SW
4WD SW
SSPS Sensor
Diagnosis
Chime Bell
C202
W/H Floor
C203
W/H Floor
C204
W/H Floor
O/S Mirror
Fold'g SW
O/S Mirror SW
ESP OFF
SW

4. W/H FLOOR 8210

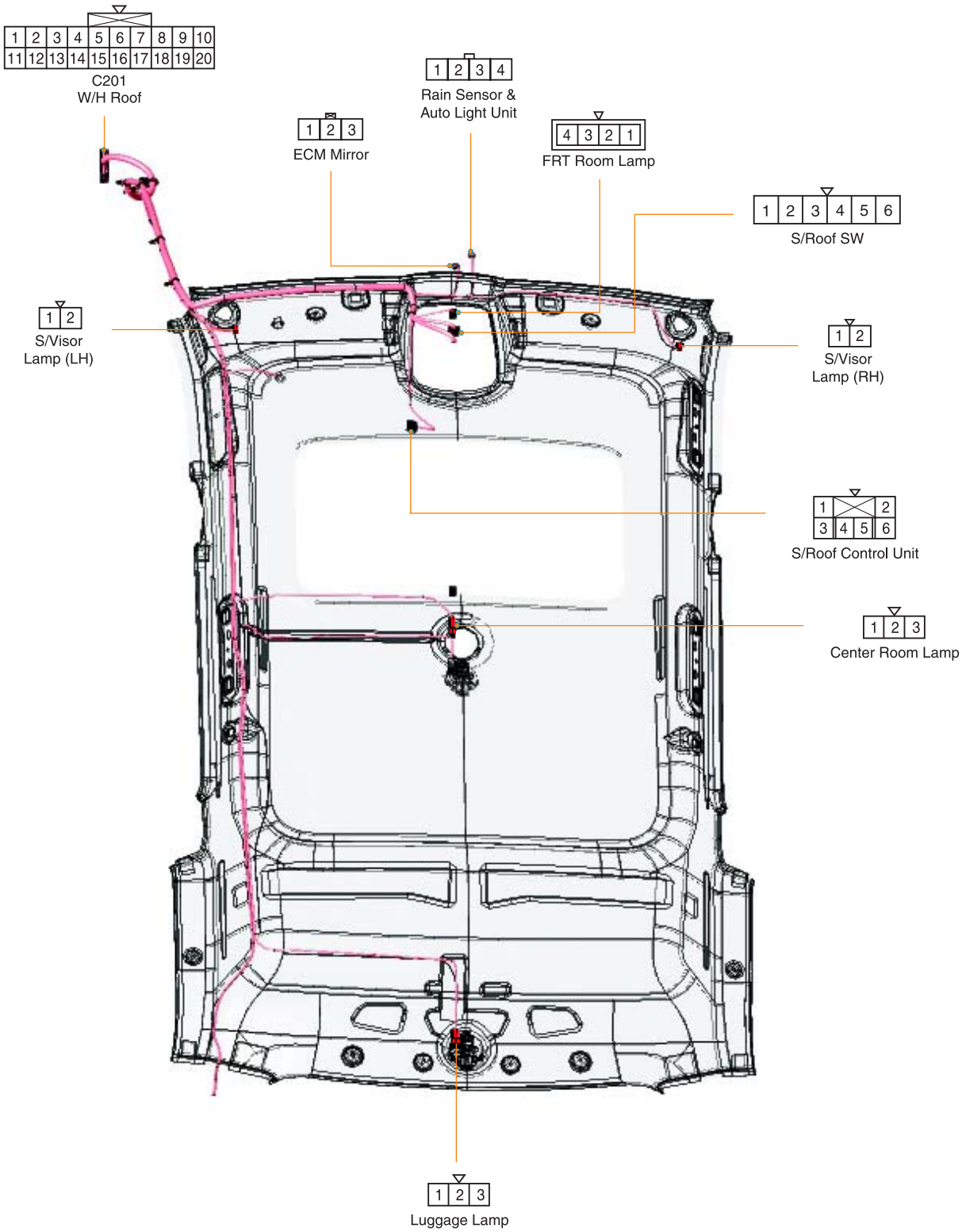
W/H FLOOR & W/H CONNECT



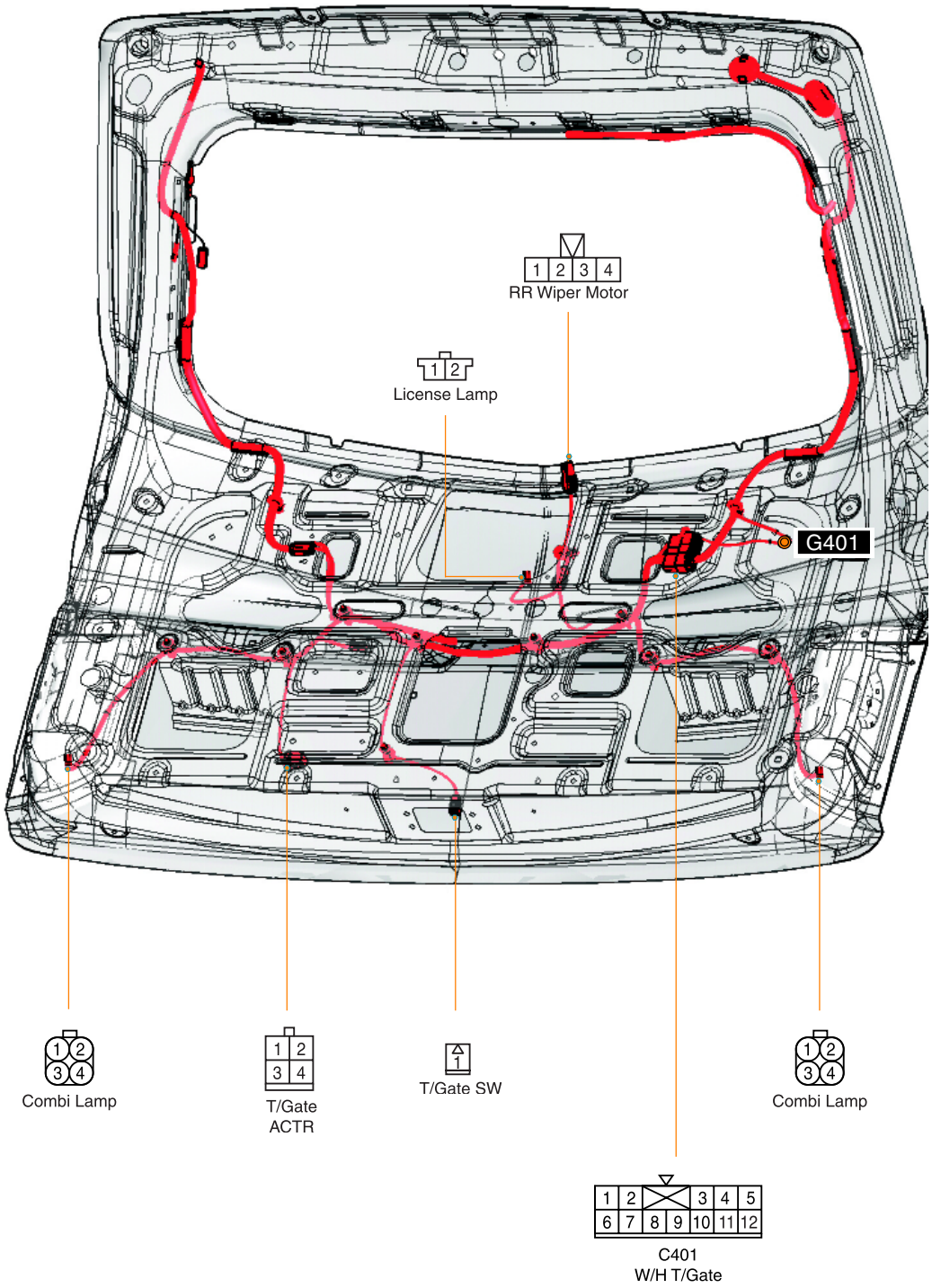

DSL ECU (W/H Floor)
C361
W/H Passenger DR
Stop Lamp SW
Pedal Module
C206
W/H Floor
C207
W/H Floor
Clutch SW (M/T)
C208
W/H Floor
SSPS Unit
C201
W/H Roof
G205
C212
W/H Floor
Parking Brake SW (A/T)
G302
G301
C213
W/H Floor
C351
W/H Driver DR
C214
W/H Floor
C202
W/H Floor
C215
W/H Floor
C203
W/H Floor
C204
W/H Floor
C216
W/H Floor
TCCU
C302
W/H Passenger Seat
TCU
Combi Lamp
To AV SYSTEM
- Tuner / AMP
C301
W/H Driver Seat
(W/Memory)
C904
W/H PAS
C401
W/H T/Gate
Combi Lamp


G304
G303
G305
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Parking Aid Unit
GLS ANT (RH)
GLS ANT (LH)
1 2 3
RR RH DR SW
1 2 3
RR LH DR SW
1 2
Seat Belt Pretensioner
1 2 3 4 5 6 7 8 9 10 11
C381 W/H RR RH DR
1 2 3 4 5 6 7 8 9 10 11
C371 W/H RR LH DR
1 2
G-Sensor (Curtain Air-Bag)
1 2
Seat Belt Pretensioner
1 2 3
Passenger DR SW
1 2 3
Driver DR SW
1 2 3 4 5 6
C302 W/H Passenger Seat
1 2
G-Sensor (Curtain Air-Bag)
1 2 3 4
Woofer

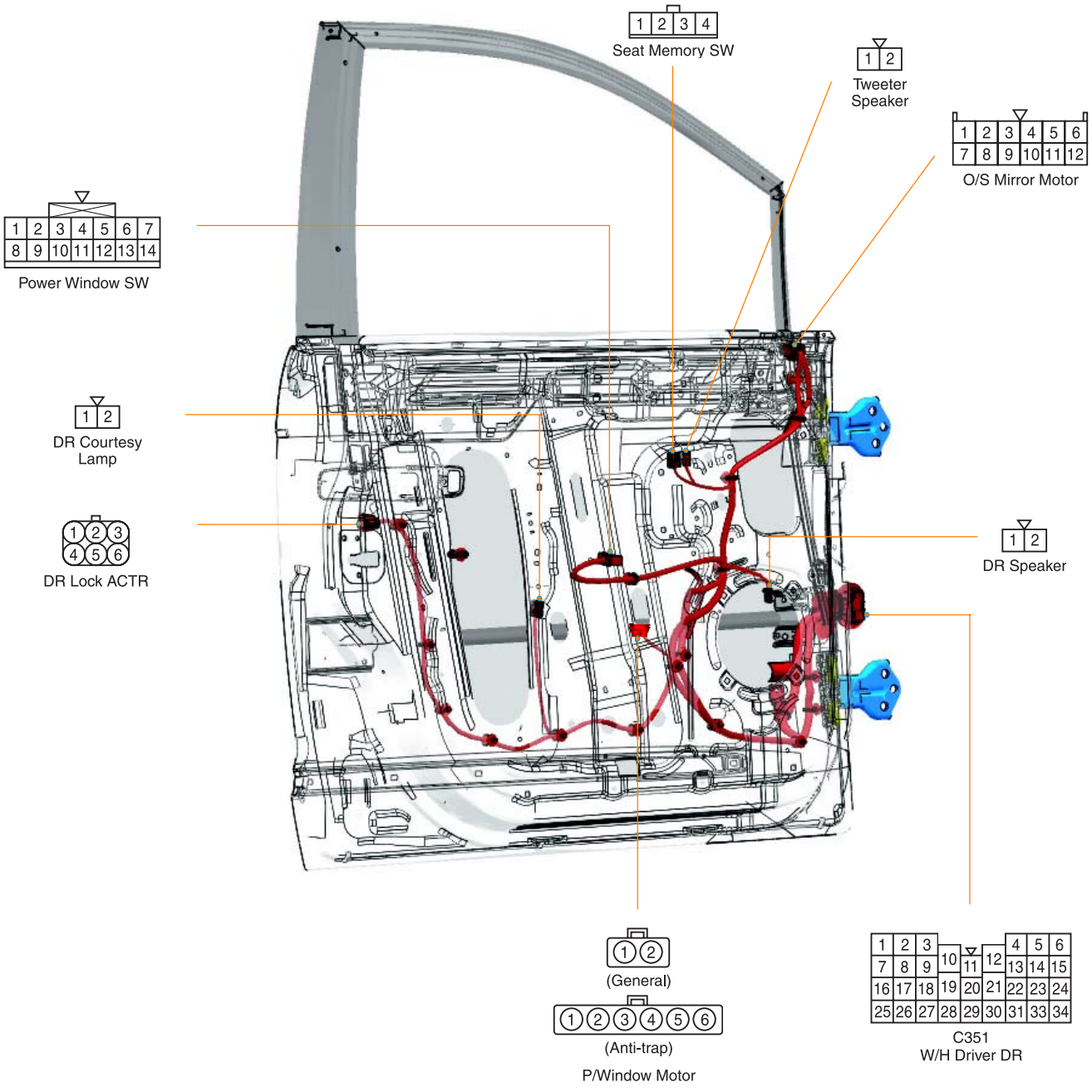
5. W/H ROOF 8210



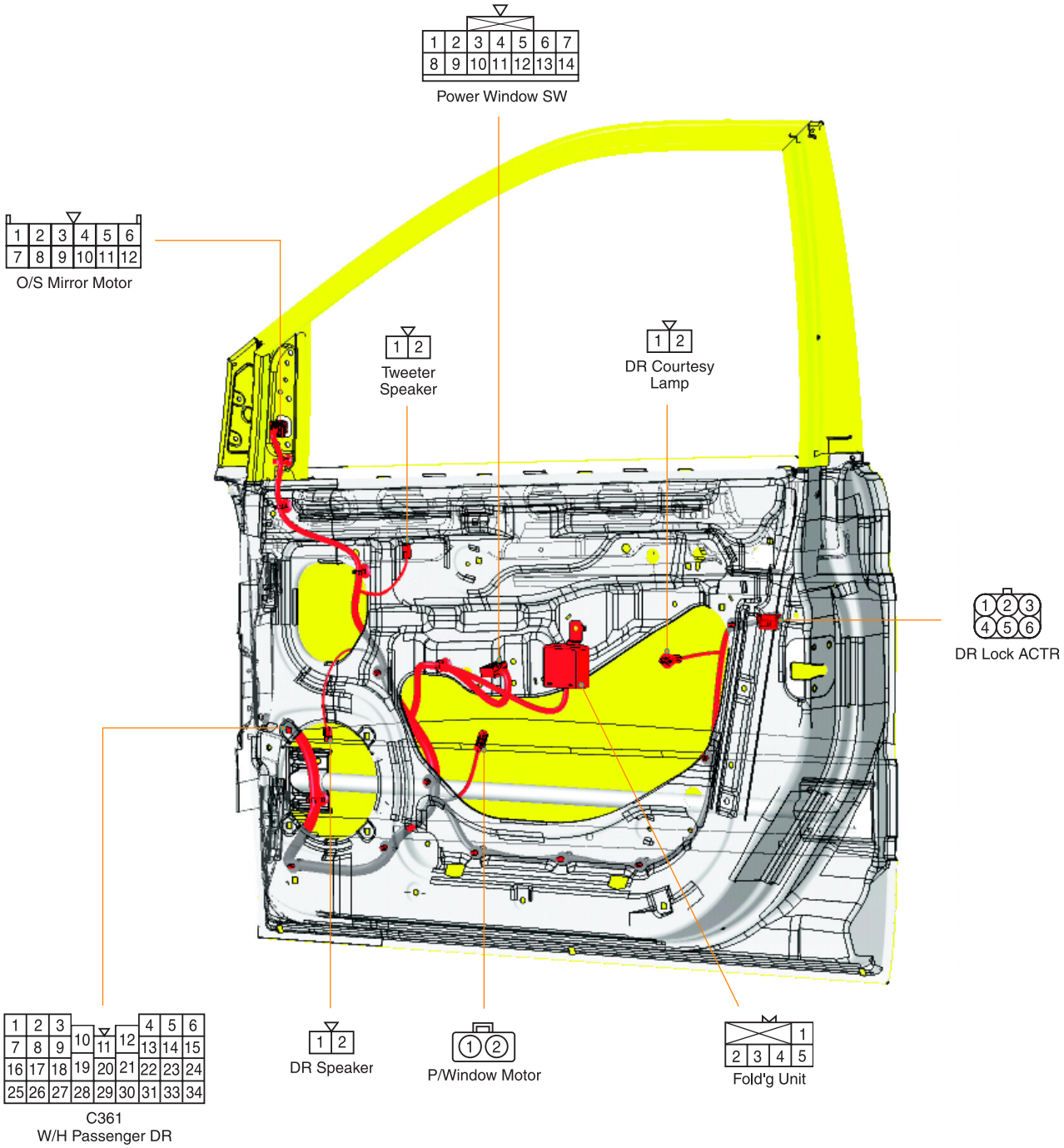
6. W/H TAIL GATE 8210



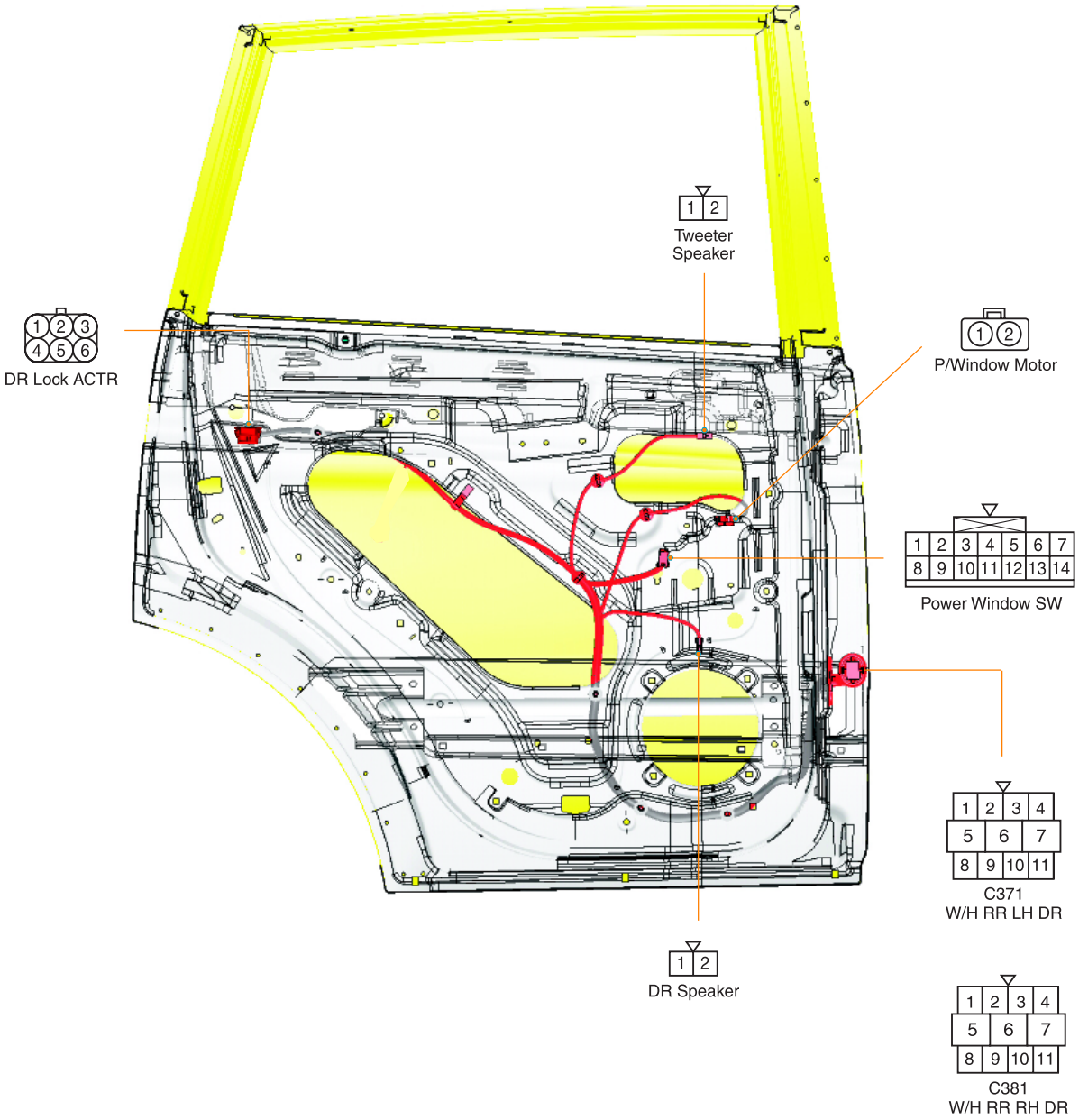
7. W/H DRIVER DOOR 8210



8. W/H PASSENGER DOOR 8210



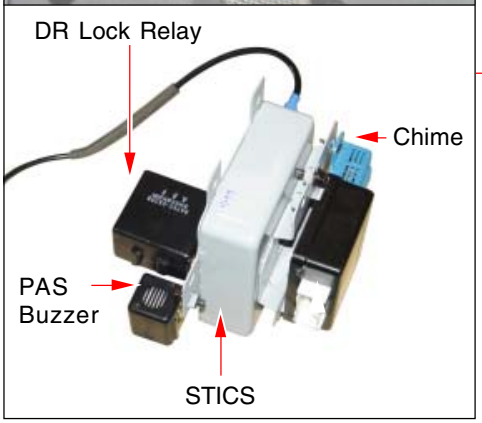
9. W/H RR DOOR 8210



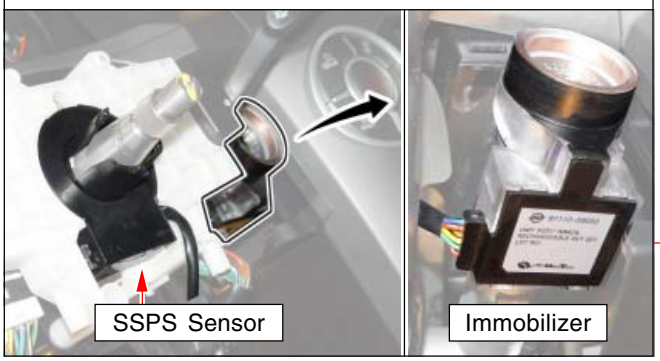
10. ELECTRICAL SYSTEM LAY-OUT 8000

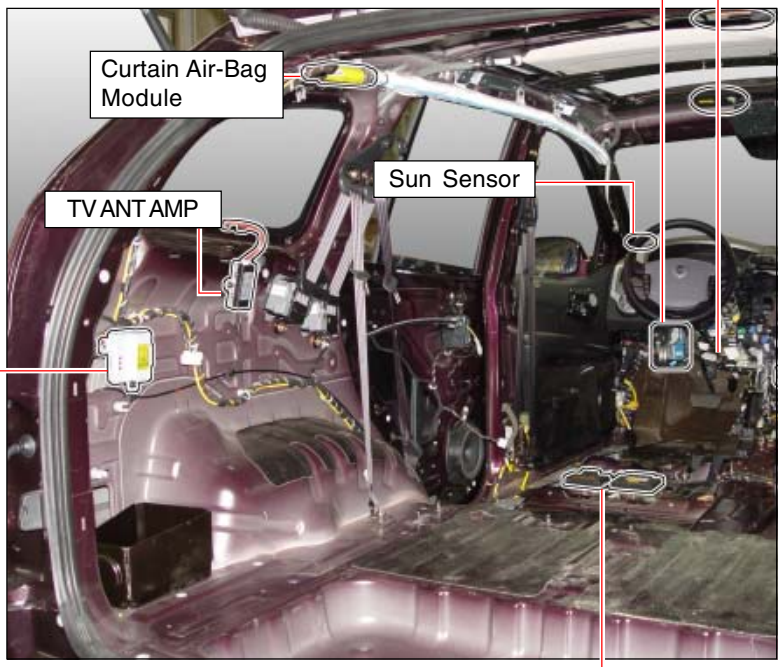
1) POSITION OF INTERIOR UNIT & SENSOR

Under the I/P (Driver Seat)



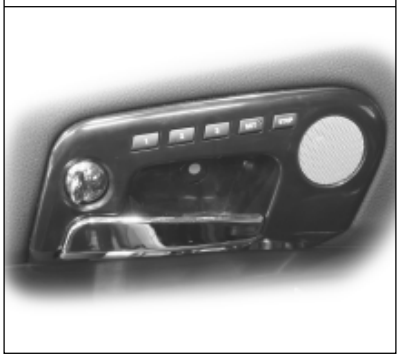
SSPS Sensor (D27DT) / Immobilizer



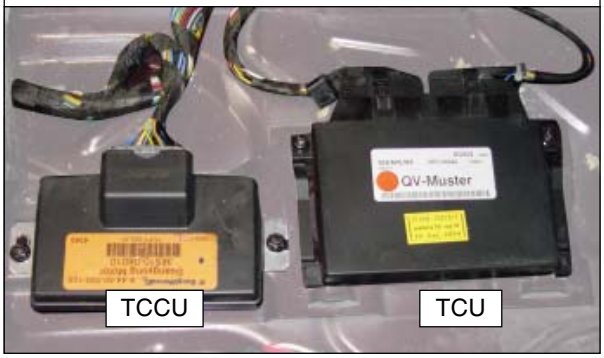


PAS Unit

Driver Seat Memory SW



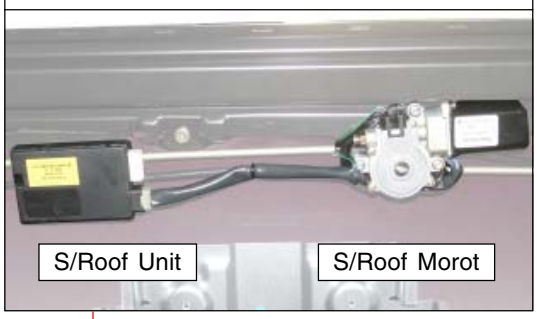
TCCU / TCU



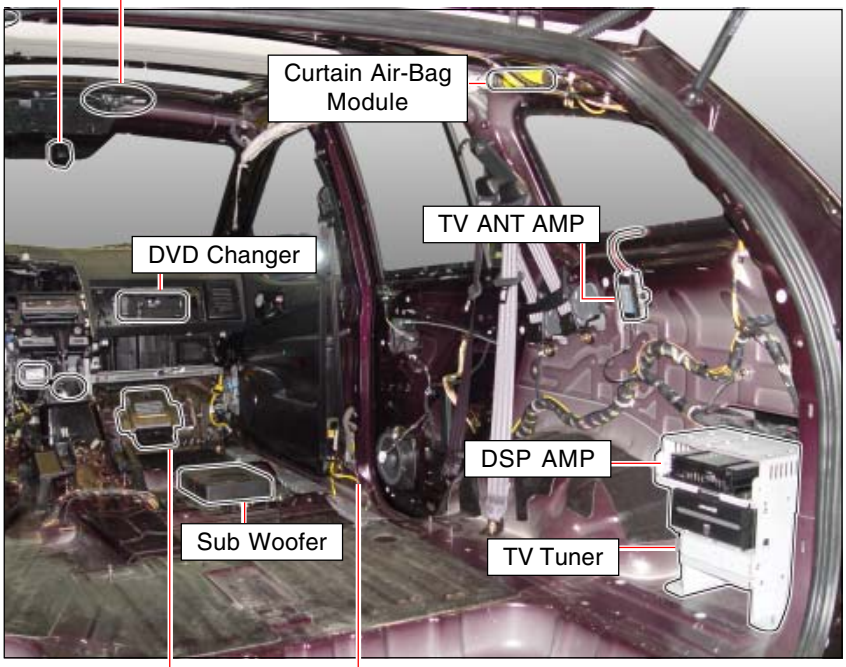
Rain Sensing Unit (Auto Light)/ECM

Sensor Cluster

S/Roof Unit / Motor

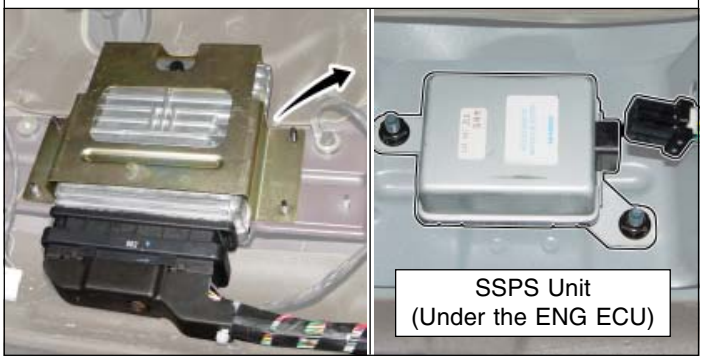


Air-Bag ECU



Curtain Air-Bag Sensor

ENG ECU / SSPS Unit

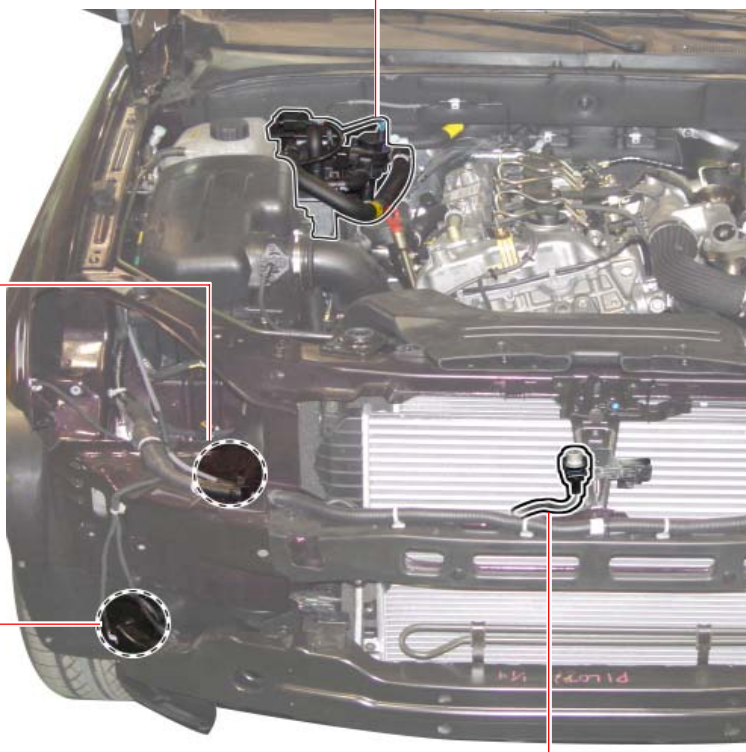


Incar Sensor

2) ENGINE ROOM SWITCH, UNIT & SENSOR

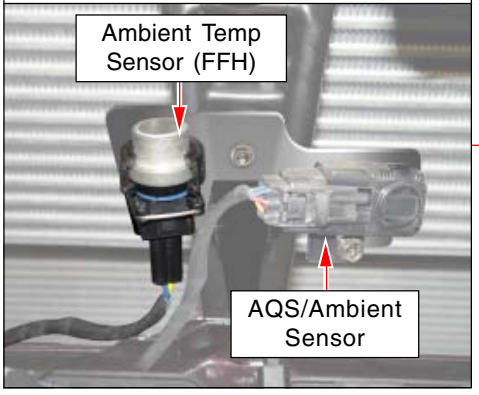
FFH Ass'y

Receiver Dryer/Tripple Pressure SW



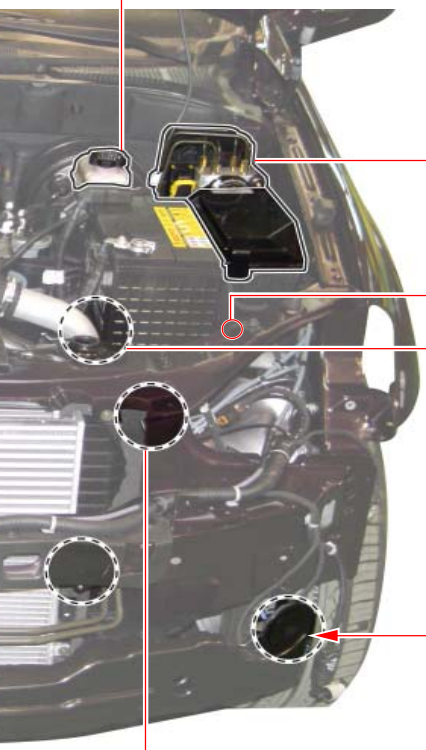
Horn (RH)

AQS Sensor/Ambient Temp Sensor (FFH)



ESP Pressure Sensor 1,2

ABS (ESP) HECU



Hood SW

IWE Solenoid Valve (4WD)

(Under the BATT TRAY)

Horn (LH)

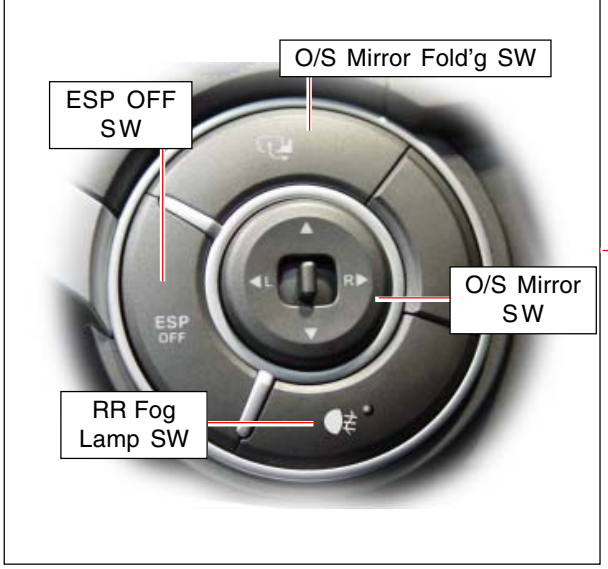
Burglar Horn (Under the BATT)

Fuse & Relay Box

3) INTERIOR SWITCH

Steering Wheel Remocon SW

O/S Mirror SW Bezel Ass'y

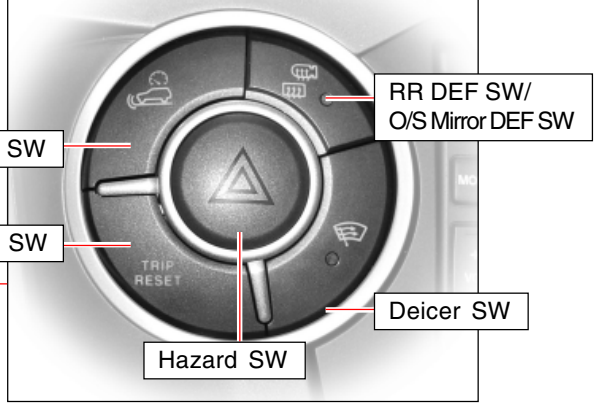


Driver Seat Memory SW

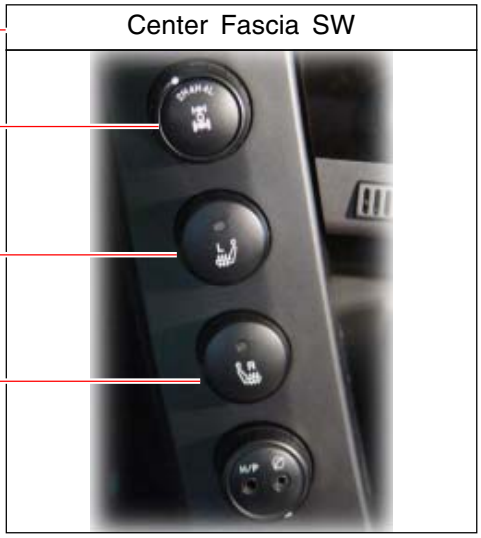
P/Window Main SW (Driver)

S/Roof SW

Hazard SW Bezel Ass'y

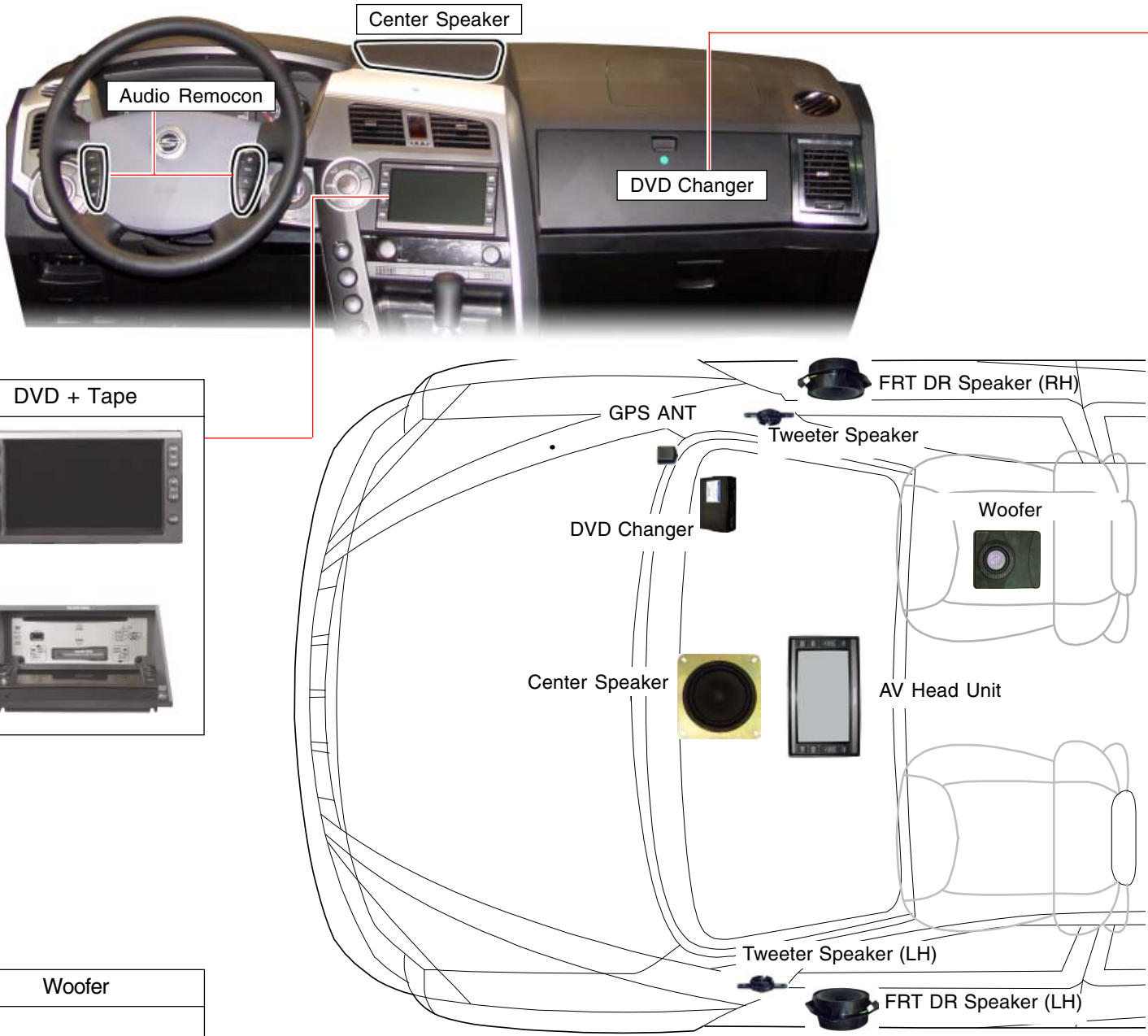


Center Fascia SW



Passenger P/Window SW

4) AV SYSTEM


Center Speaker
Audio Remocon
DVD Changer
DVD + Tape
FRT DR Speaker (RH)
GPS ANT
Tweeter Speaker
DVD Changer
Woofer
Center Speaker
AV Head Unit
Tweeter Speaker (LH)
FRT DR Speaker (LH)
Woofer
AV System

Position: Upper the G/Box panel

6pcs DVD Changer
(AV System)

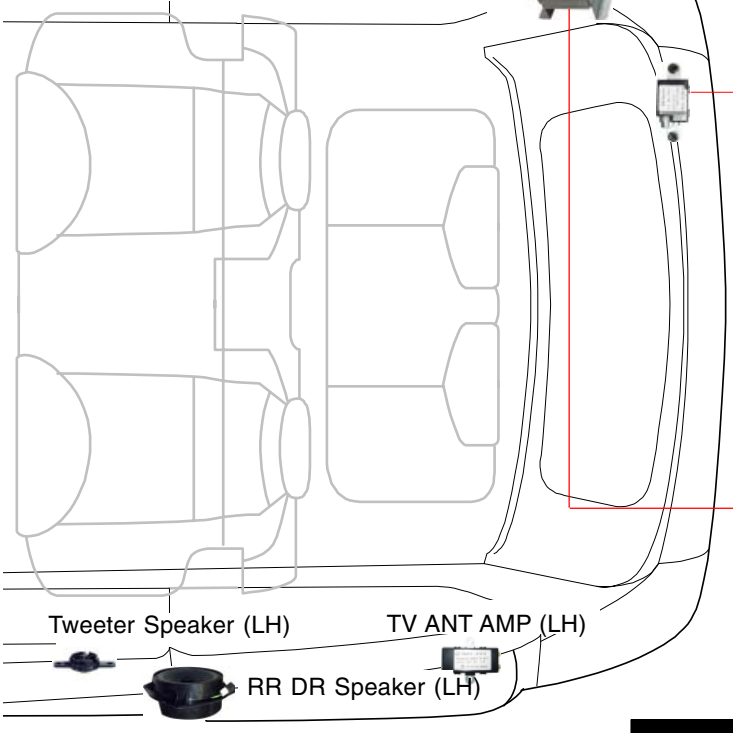
TV ANT AMP (RH)

RR DR Speaker (RH)

Tuner/AMP

Tweeter Speaker (RH)

Radio ANT AMP

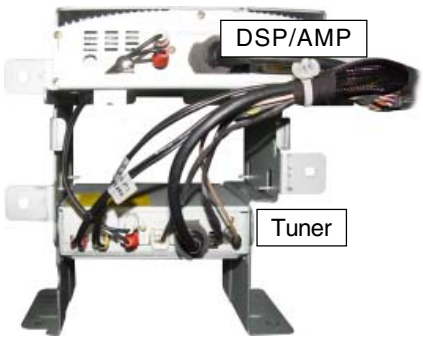


Tweeter Speaker (LH)

TV ANT AMP (LH)

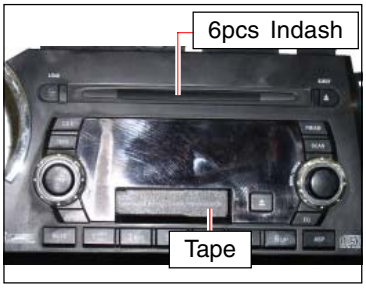
RR DR Speaker (LH)

AV SYSTEM



Etc Audio Head Unit

1. 6pcs INDASH CD+TAPE+RADIO
2. CD++RADIO



5) A/CON SYSTEM

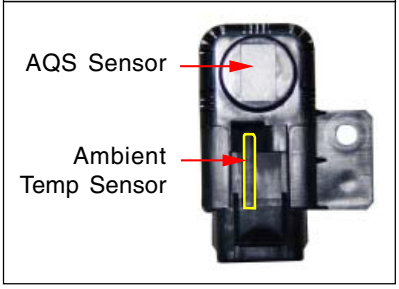
Type	A/Con Controller
FATC	
Manual A/C	

Sun Sensor (Upper the IP LH)

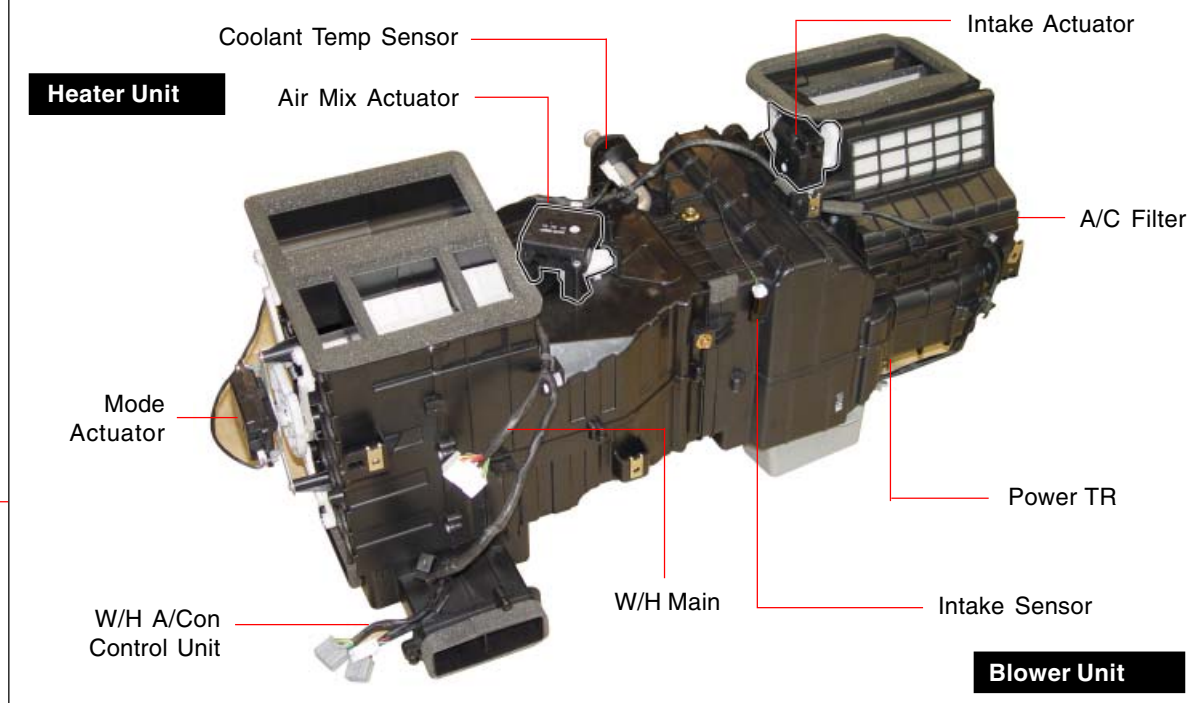
AQS Mode SW

Compressor

AQS/Ambient Temp Sensor



A/Con Module Ass'y

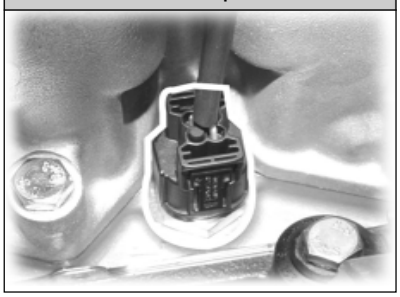


Condensor

Receiver Dryer (LH)

ENG ECU

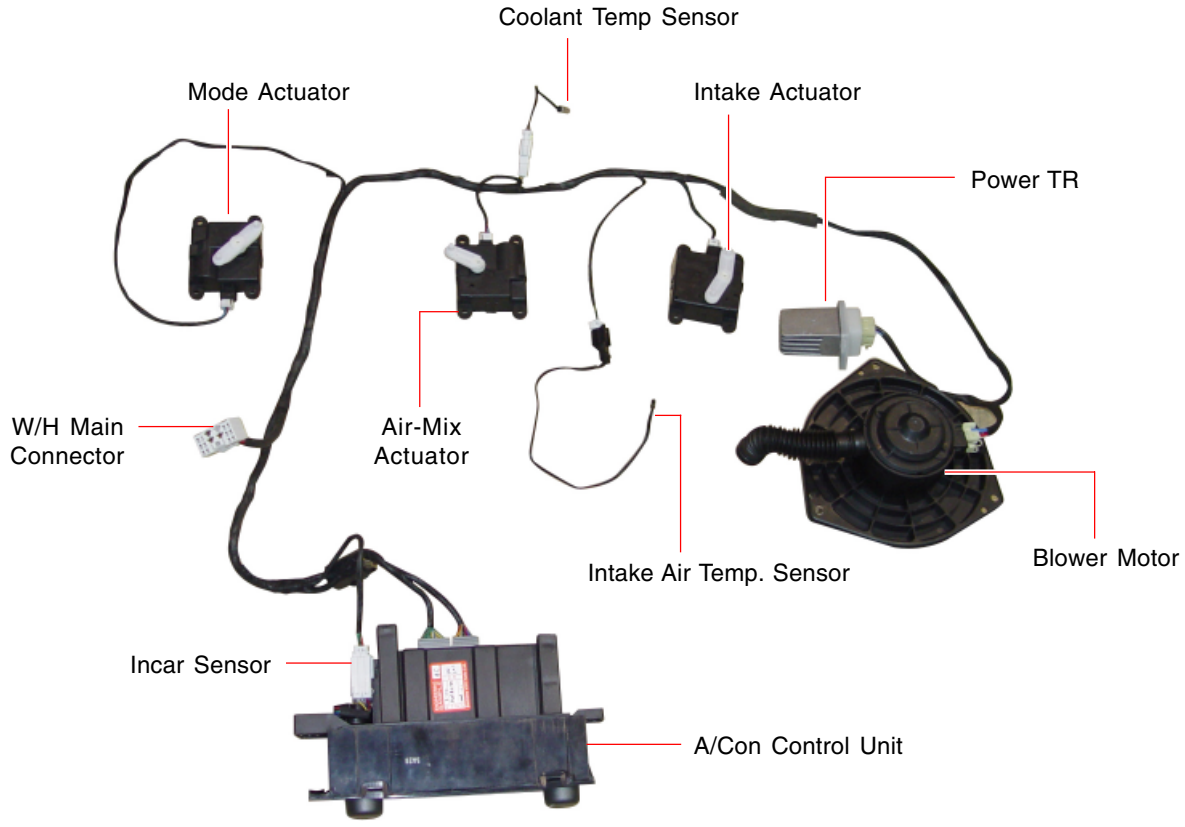
Coolant Temp Sensor



▶ AIR-DUCT LAY-OUT

▶ W/H A/CON MODULE

A/Con Wiring Setting



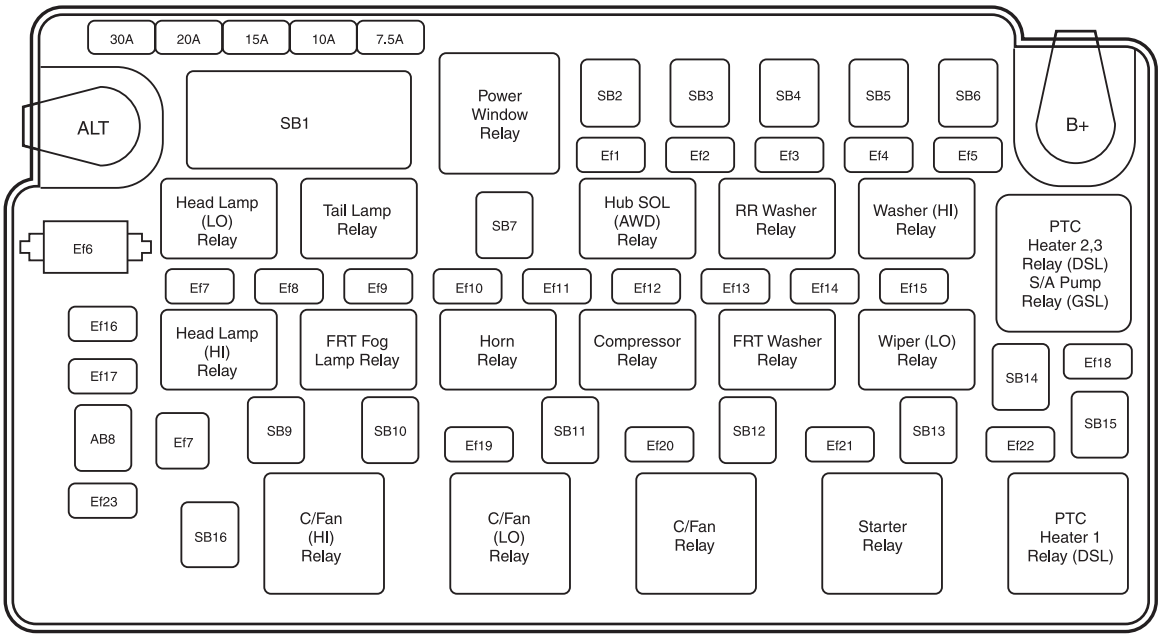
SECTION 3

USAGE AND CAPACITY OF FUSES IN FUSE BLOCK

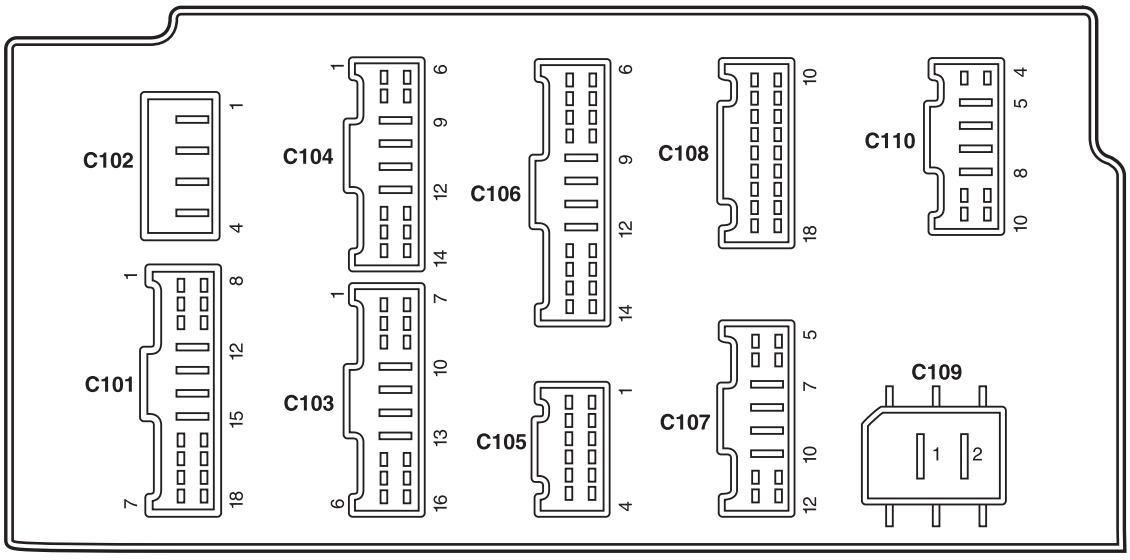
TABLE OF CONTENTS

1. ENGINE ROOM FUSE & RELAY BOX 8210

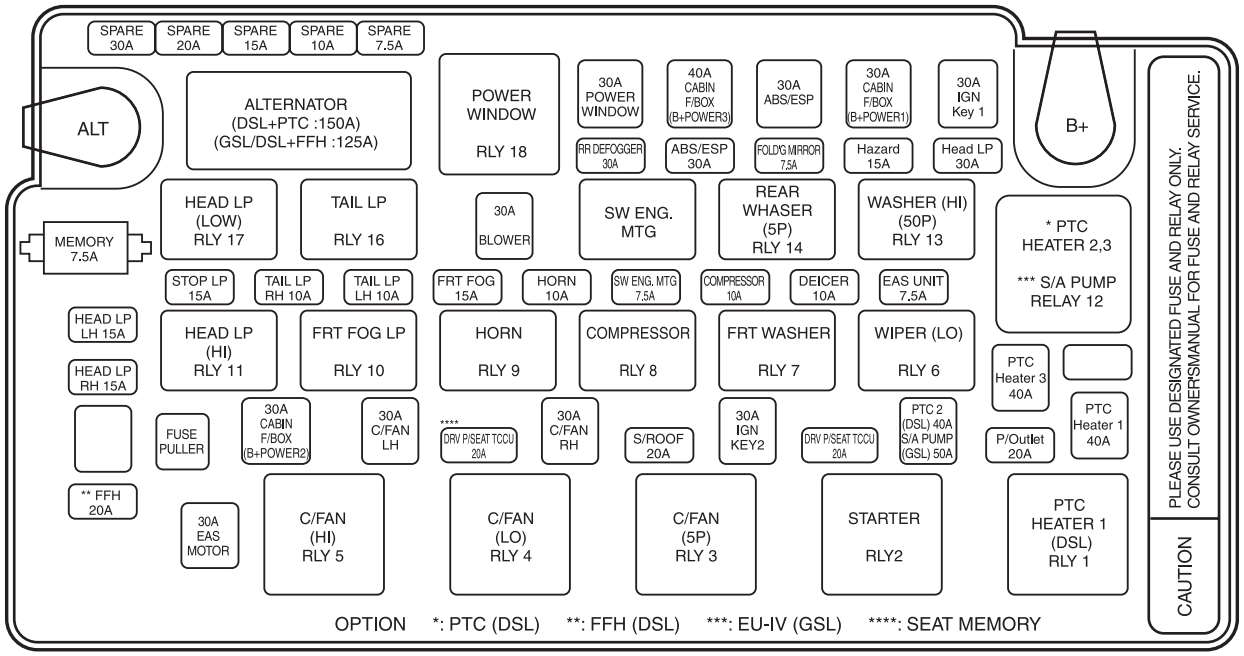
1) UPPER



2) LOW



3) ENGINE ROOM FUSE & RELAY BOX



4) USAGE OF FUSE IN ENGINE ROOM FUSE BOX

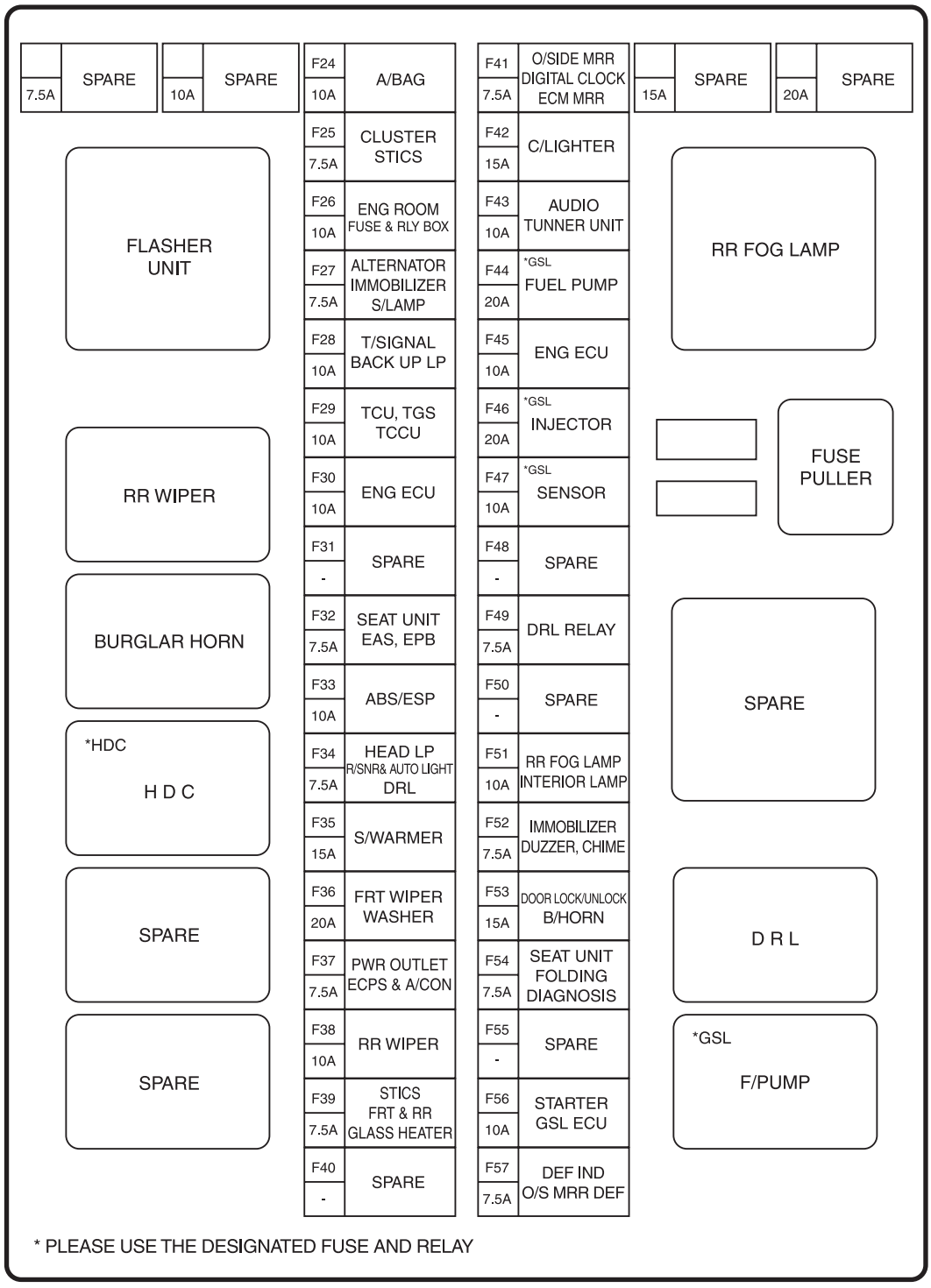
Fuse No.	Capacity	Usage	Fuse No.	Capacity	Usage
SB1	150A/125A	Alternator (PTC/FFH)	Ef5	30A	Head Lamp
SB2	30A	Power Window	Ef6	7.5A	Memory
SB3	40A	IP-RH Fuse Box (B+) F65~F71	Ef7	15A	Stop Lamp
SB4	30A	ABS/ESP	Ef8	10A	Tail Lamp (RH)
SB5	30A	IP-LH Fuse Box (B+) F44~F50	Ef9	10A	Tail Lamp (LH)
SB6	30A	IGN Key 1	Ef10	15A	FRT Fog
SB7	30A	Blower Motor	Ef11	10A	Horn
SB8	-	-	Ef12	7.5A	Hub Solenoid
SB9	30A	IP-LH Fuse Box (B+) F51~F55	Ef13	10A	Compressor
SB10	30A	C/Fan LH	Ef14	10A	Deicer
SB11	30A	C/Fan RH	Ef15	-	-
SB12	30A	IGN Key 2	Ef16	15A	Head Lamp (LH)
SB13	40A	P.T.C Heater 2 (DSL)	Ef17	15A	Head Lamp (RH)
	50A	S/Air Pump (GSL)	Ef18	-	-
SB14	40A	P.T.C Heater 3 (DSL)	Ef19	20A	Driver P/Seat (Memory)
SB15	40A	P.T.C Heater 1 (DSL)	Ef20	20A	S/Roof
Ef1	30A	RR Defogger	Ef21	20A	Driver P/Seat
Ef2	30A	ABS/ESP	Ef22	20A	P/Outlet
Ef3	7.5A	Fold'g Mirror	Ef23	20A	FFH
Ef4	15A	Hazard			

5) ENGINE ROOM FUSE BOX CONNECTOR NUMBER

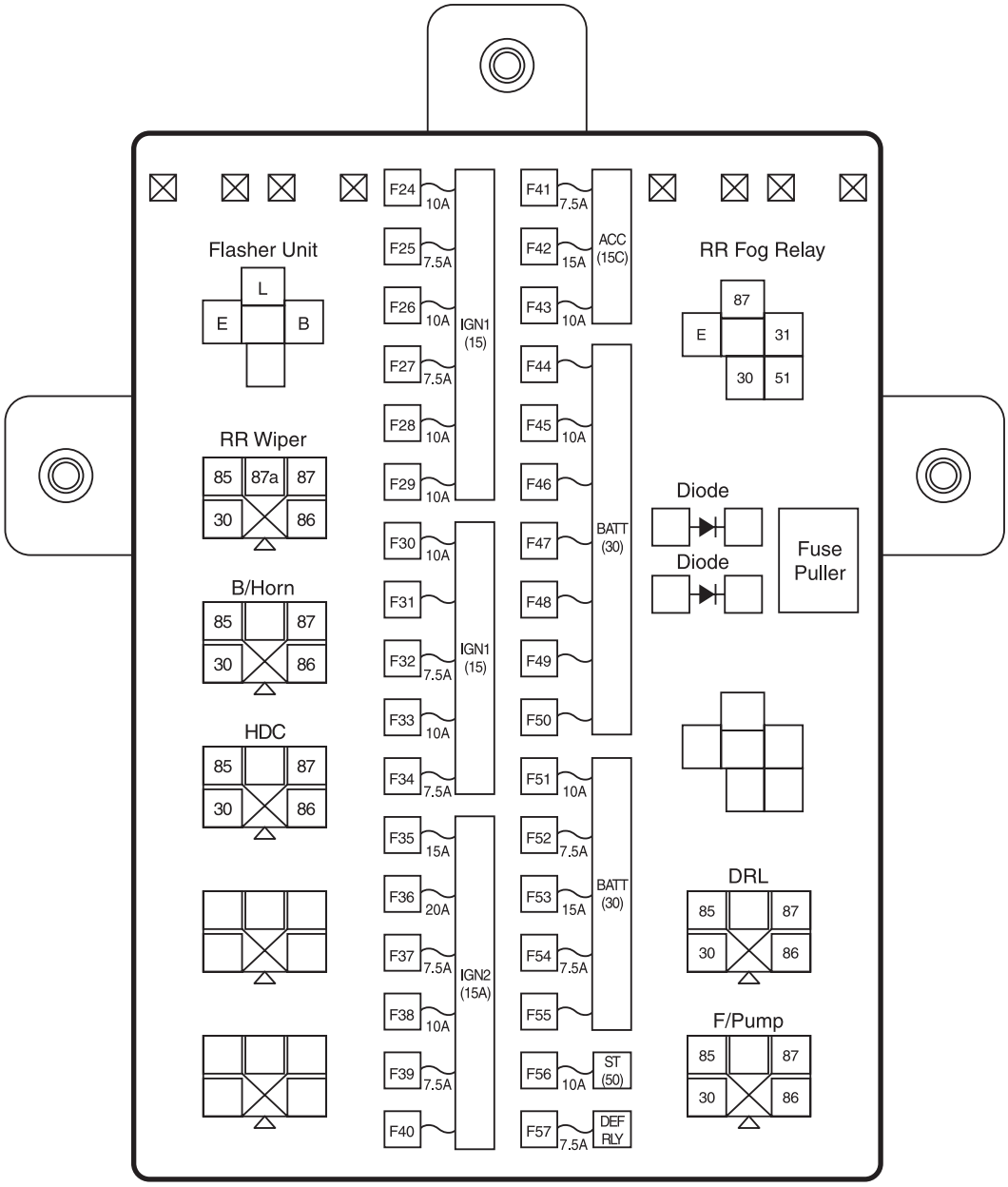
Connector No.	Pin No.	Connector Color
C101	18	White
C102	4	White
C103	16	White
C104	14	White
C105	10	White
C106	20	White
C107	12	White
C108	18	White
C109	2	Black
C110	10	White

2. I/P - LH FUSE & RELAY BOX 8410

1) I/P - LH FUSE & RELAY BOX

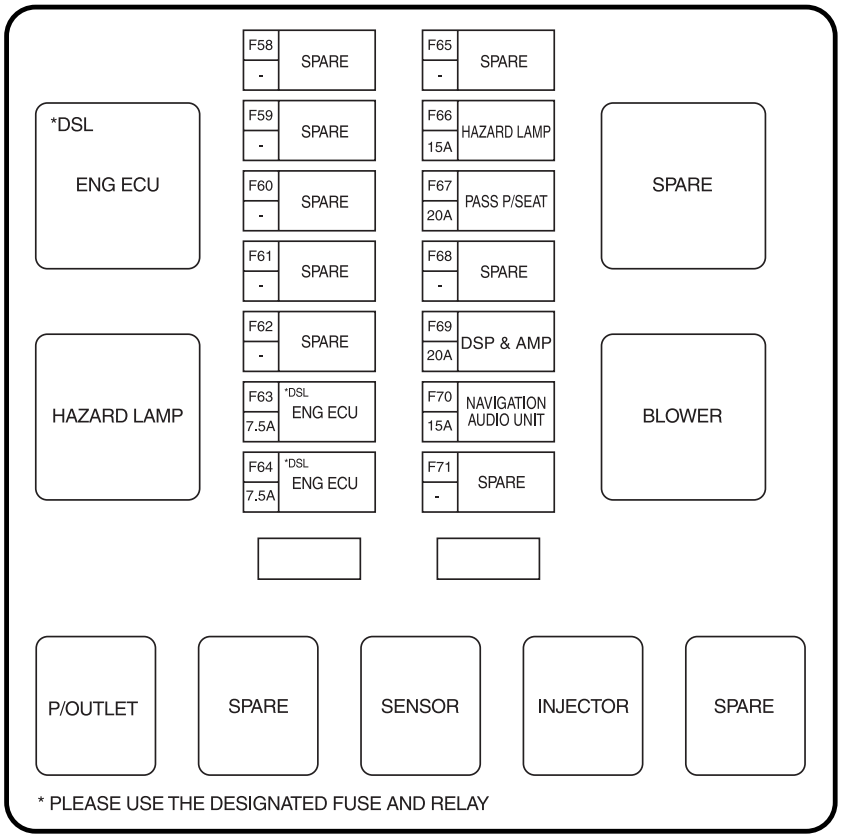


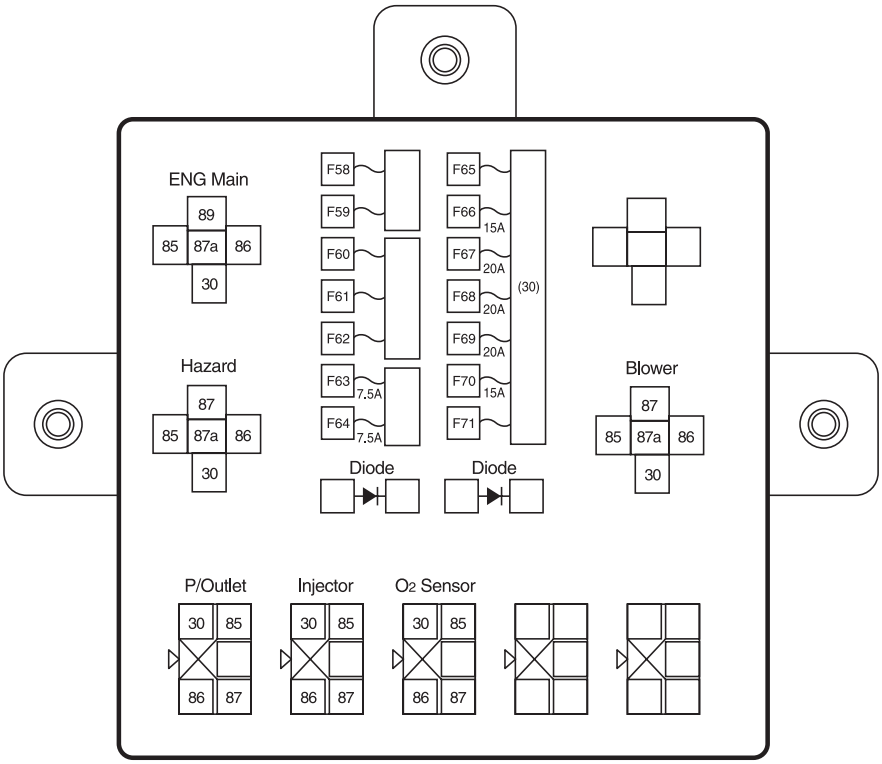
2) POWER SUPPLY



3. I/P - RH FUSE & RELAY BOX 8410

1) I/P - RH FUSE & RELAY BOX





SECTION 4

WIRING DIAGRAM FOR POWER SUPPLIES

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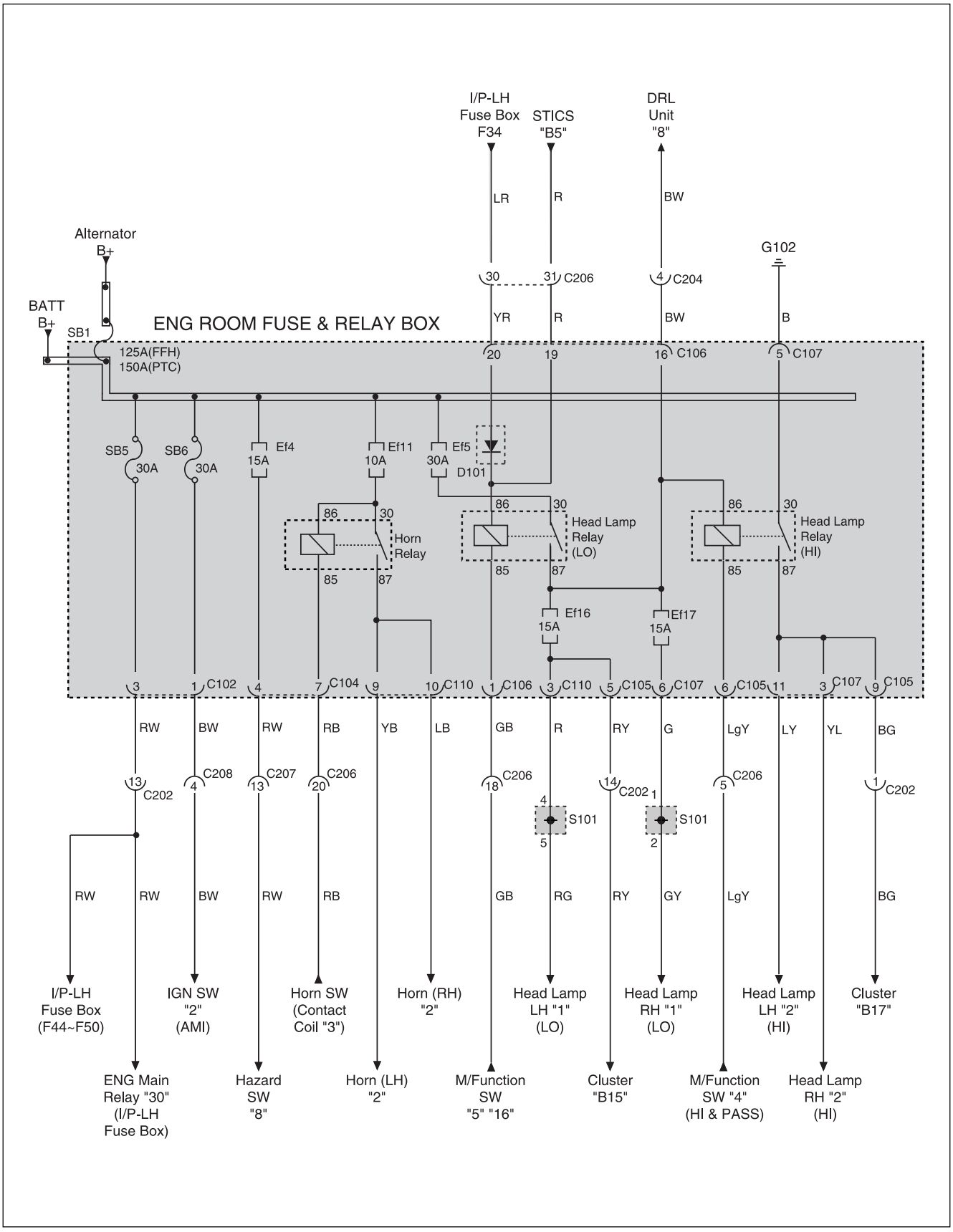
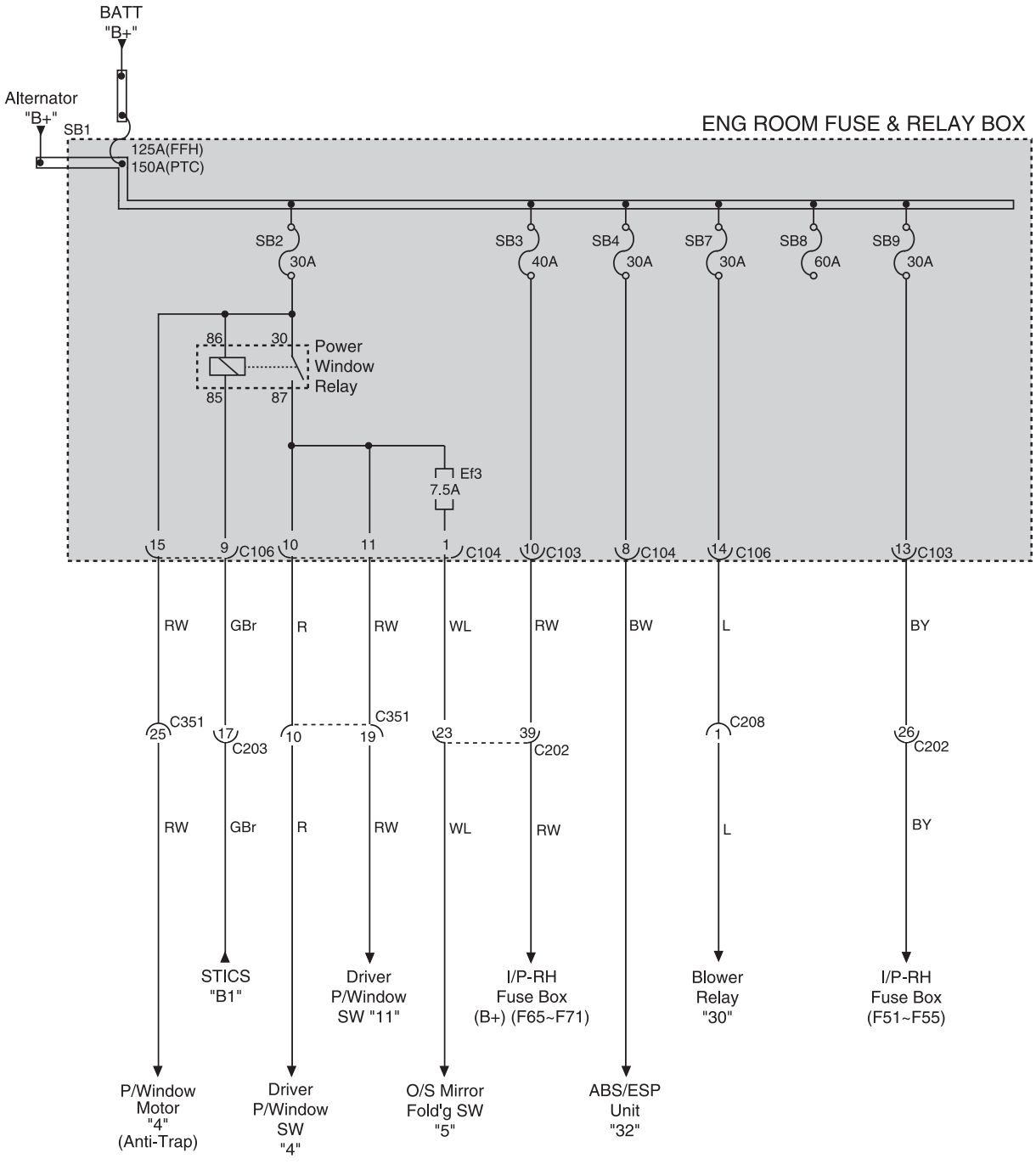
1. ENGINE ROOM FUSE & RELAY BOX CIRCUIT 8210

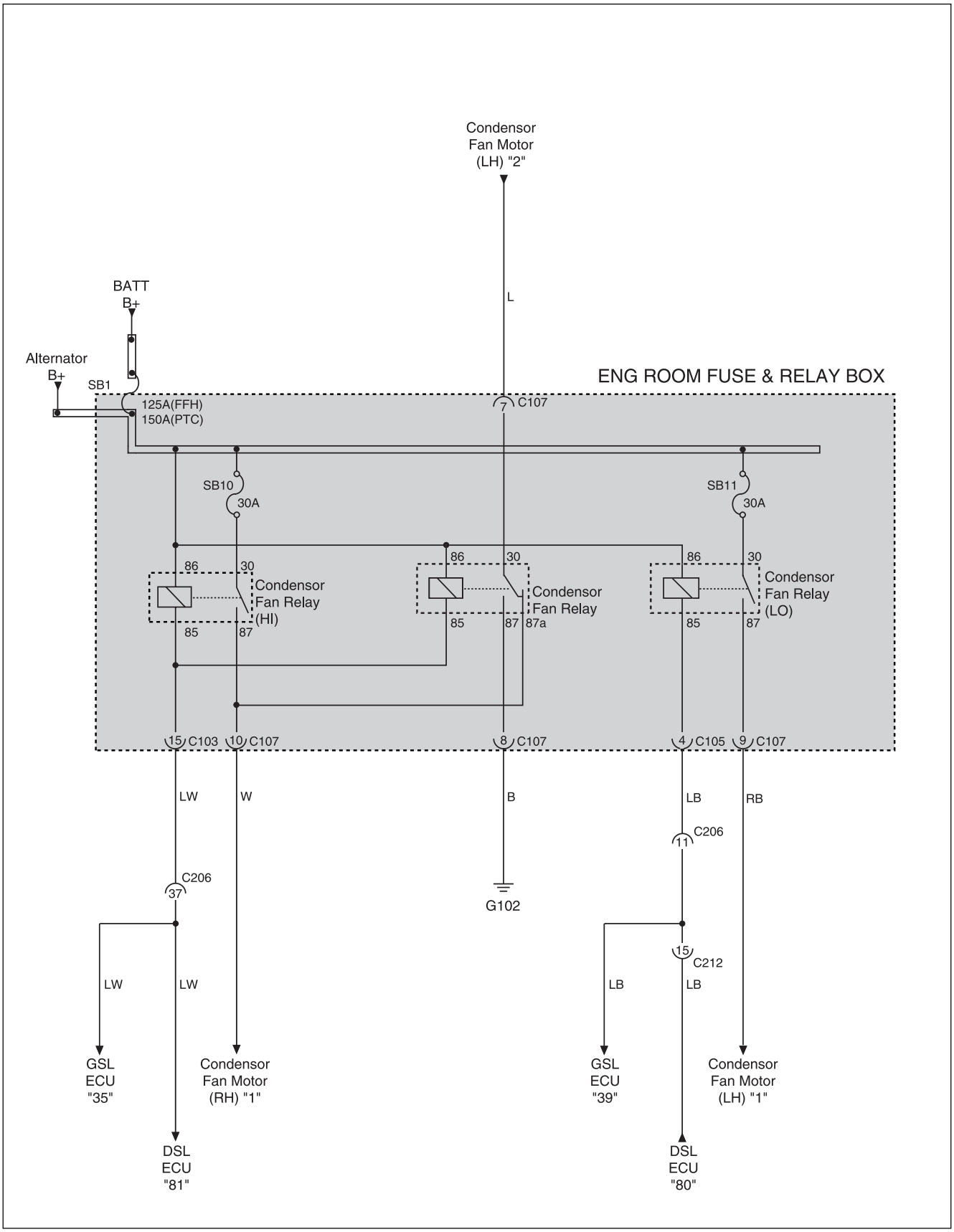
1) SB5, SB6, Ef4, Ef5, Ef11, HORN RELAY, HEAD LAMP RELAY (HI, LO)



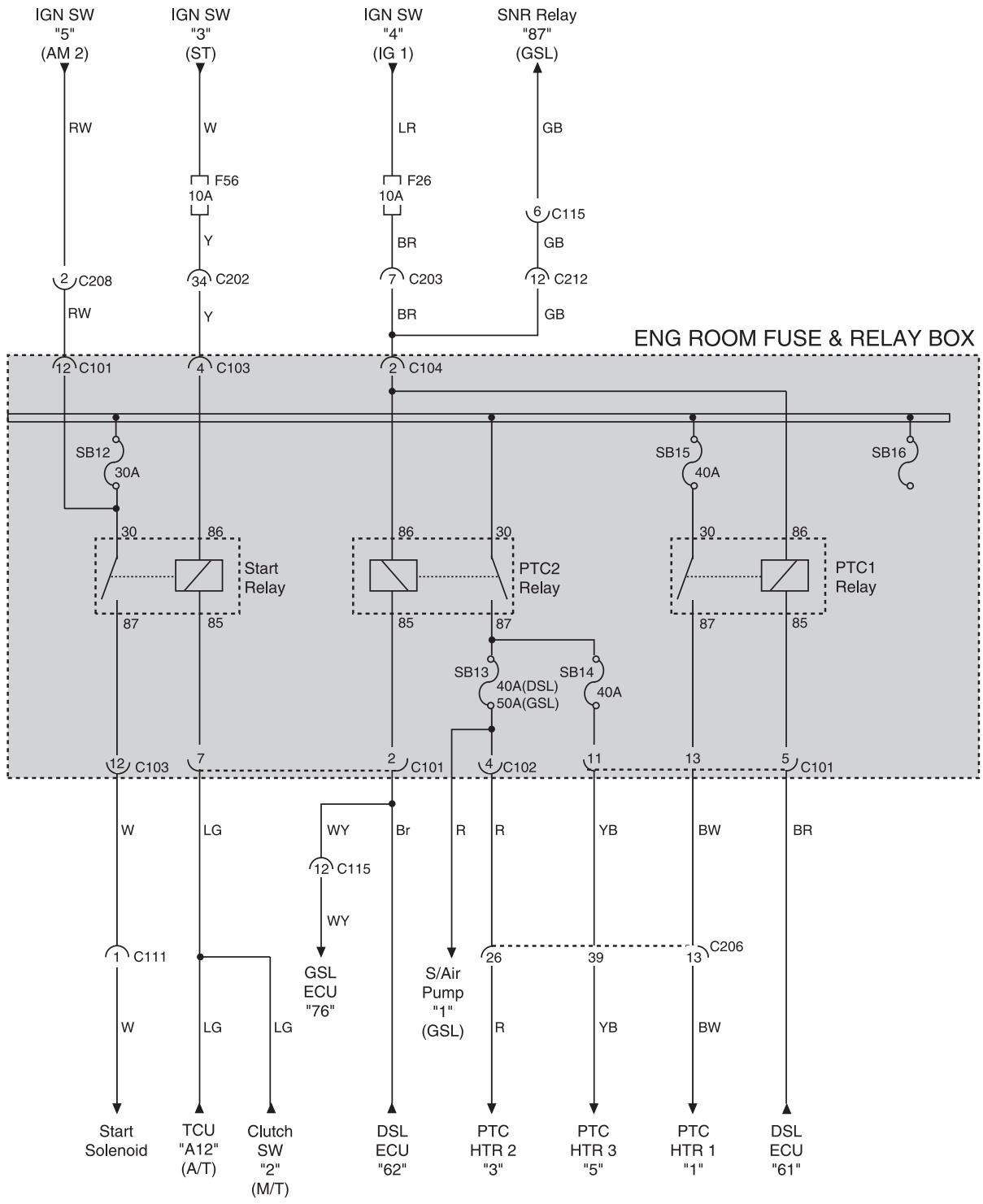
2) SB2 ~ SB4, SB7 ~ SB9, Ef3, P/WINDOW RELAY



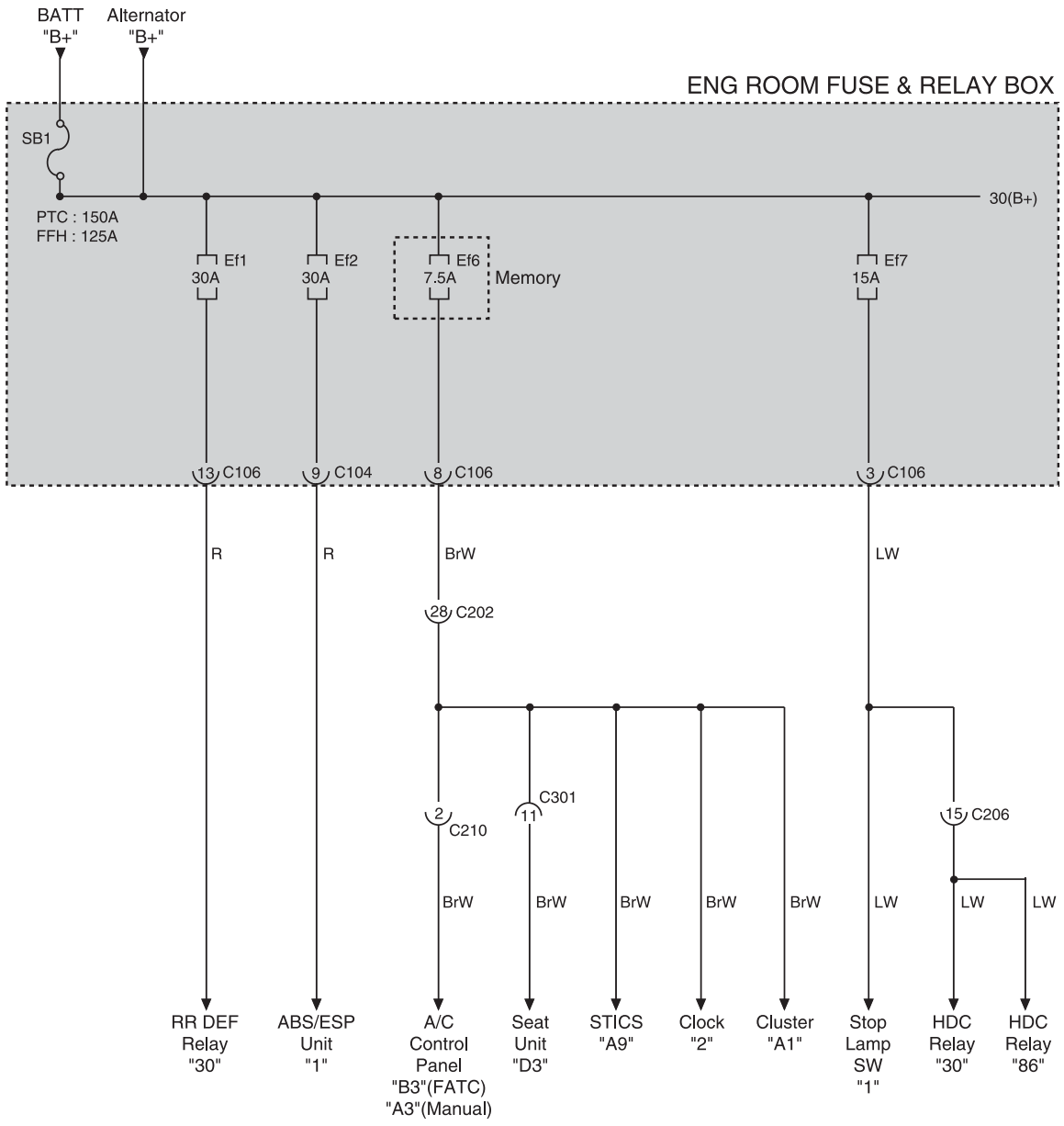
3) SB10 ~ SB11, CONDENSOR FAN RELAY (HI, LO)



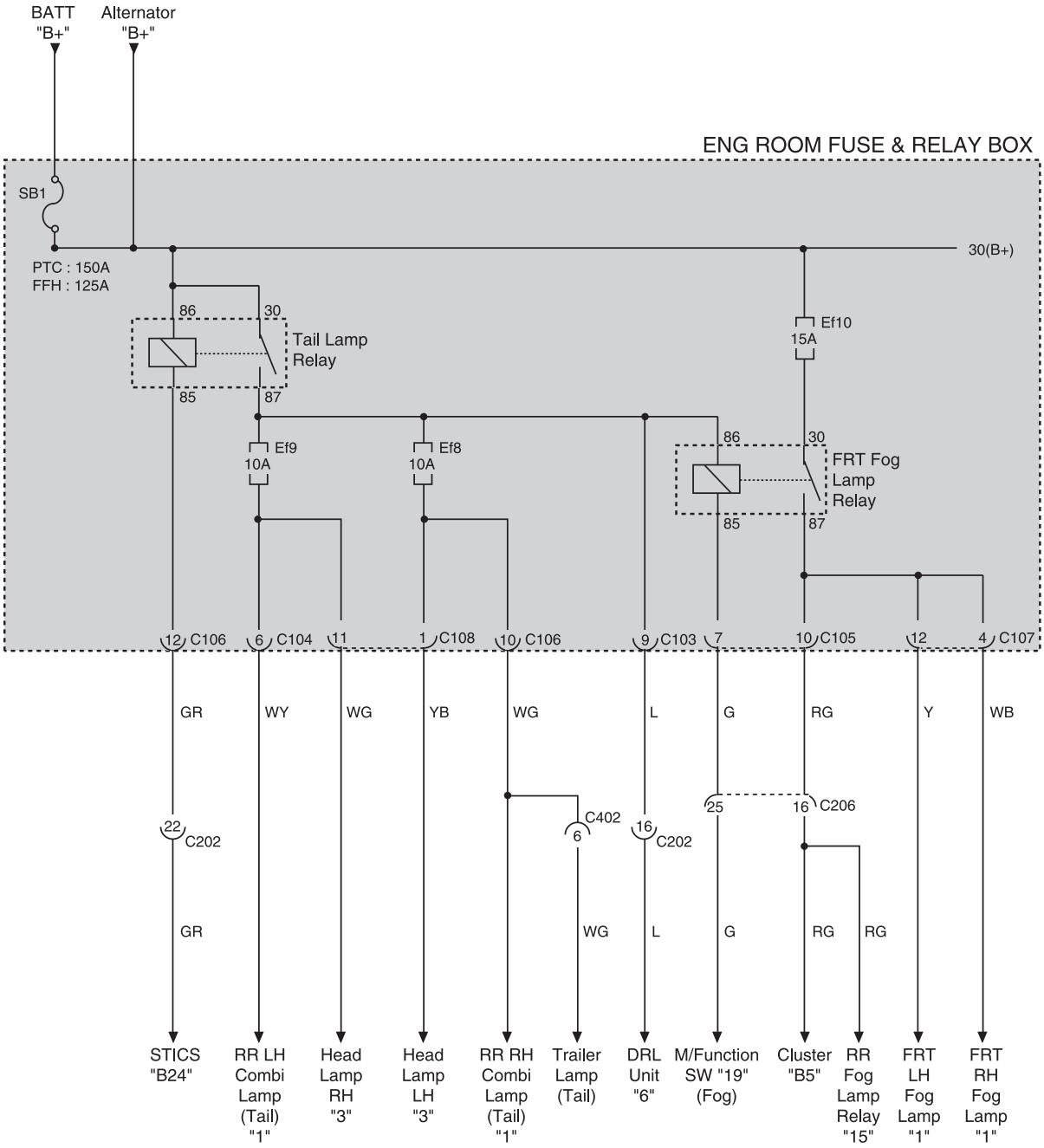
4) SB12 ~ SB16, START RELAY, PTC RELAY



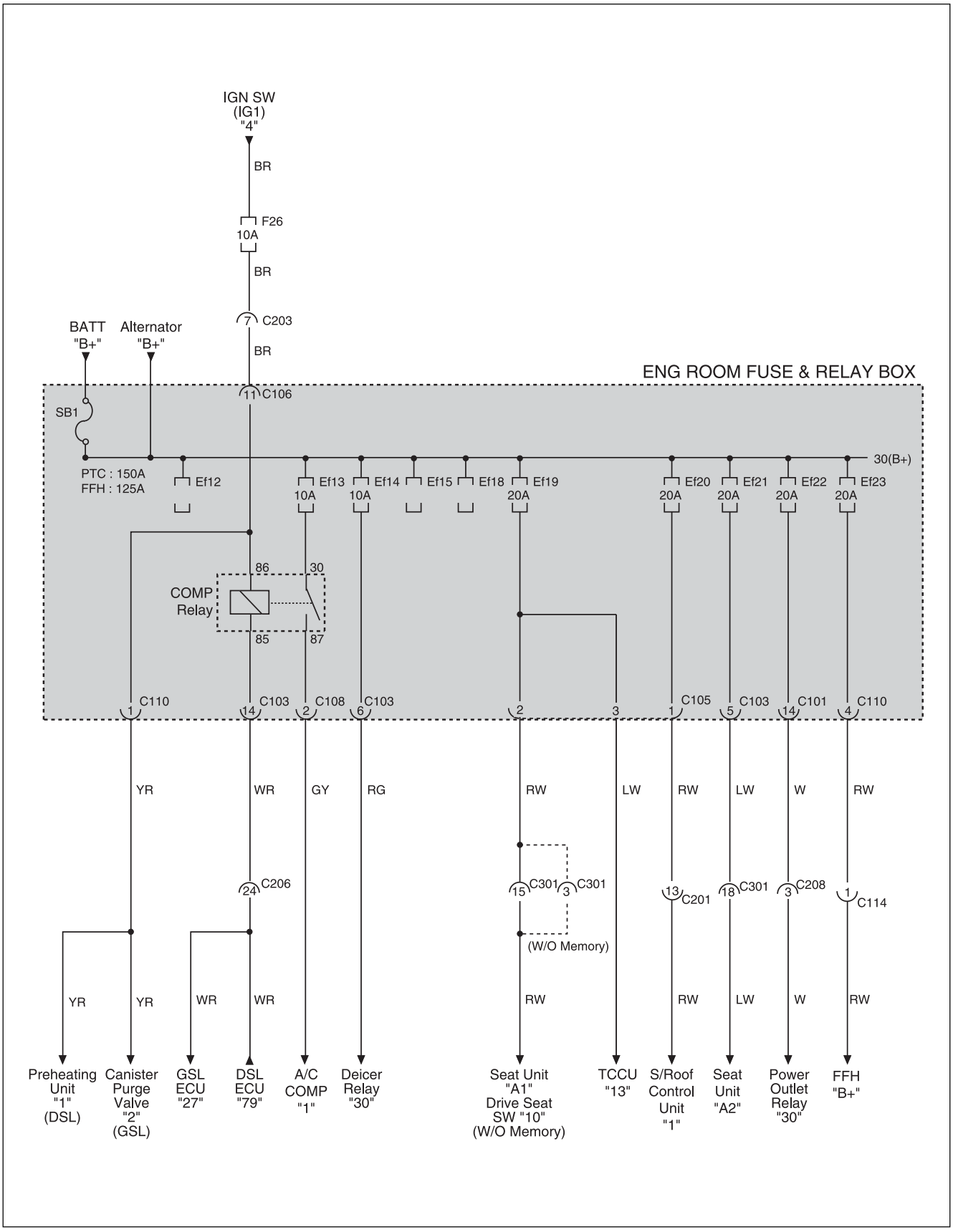
5) Ef1, Ef2, Ef6, Ef7



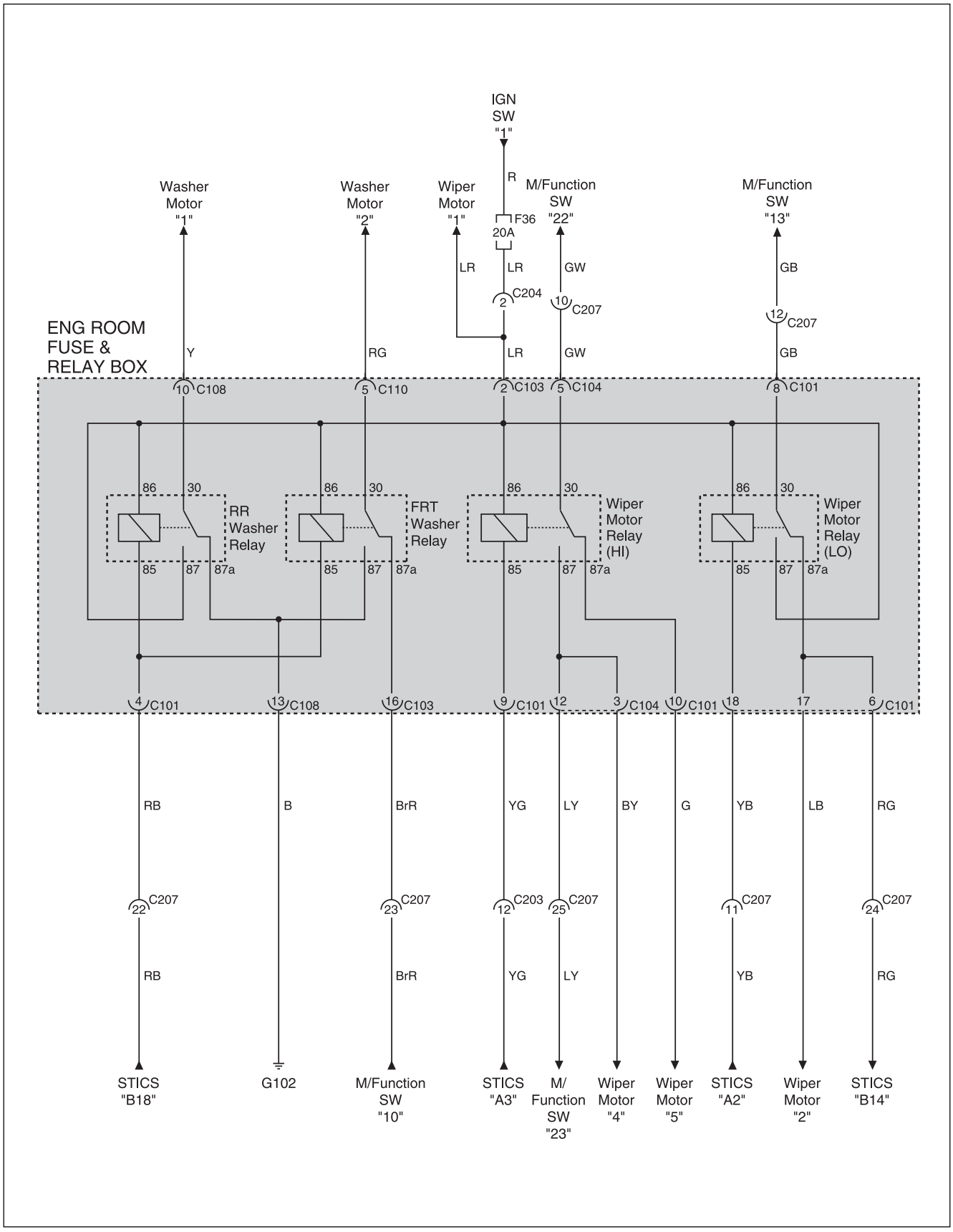
6) Ef8 ~ Ef10, TAIL LAMP RELAY, FRT FOG LAMP RELAY



7) Ef12 ~ Ef15, Ef18 ~ Ef23, COMPRESSOR RELAY

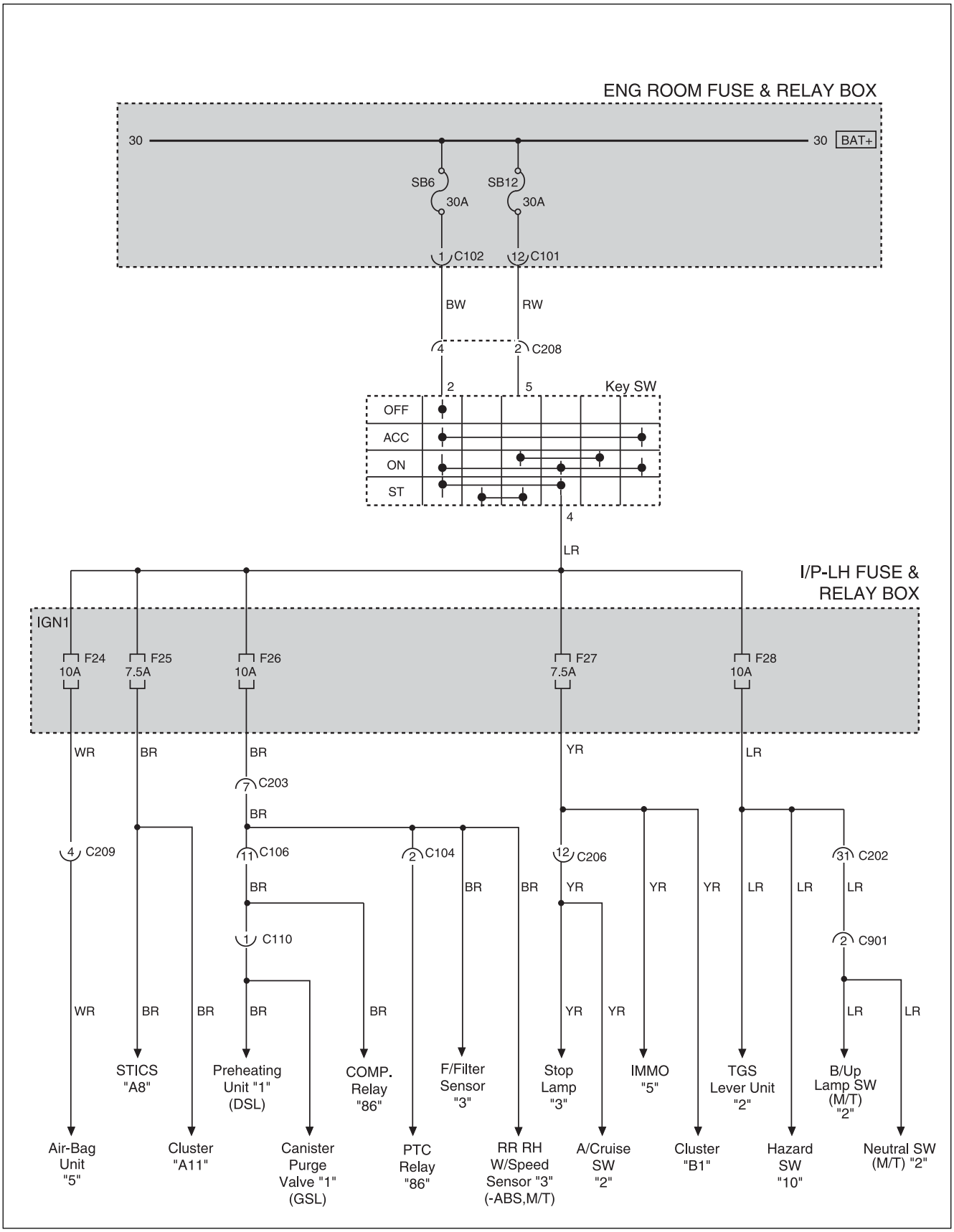


8) WIPER MOTOR RELAY (HI, LO), WASHER RELAY (FRT, RR)

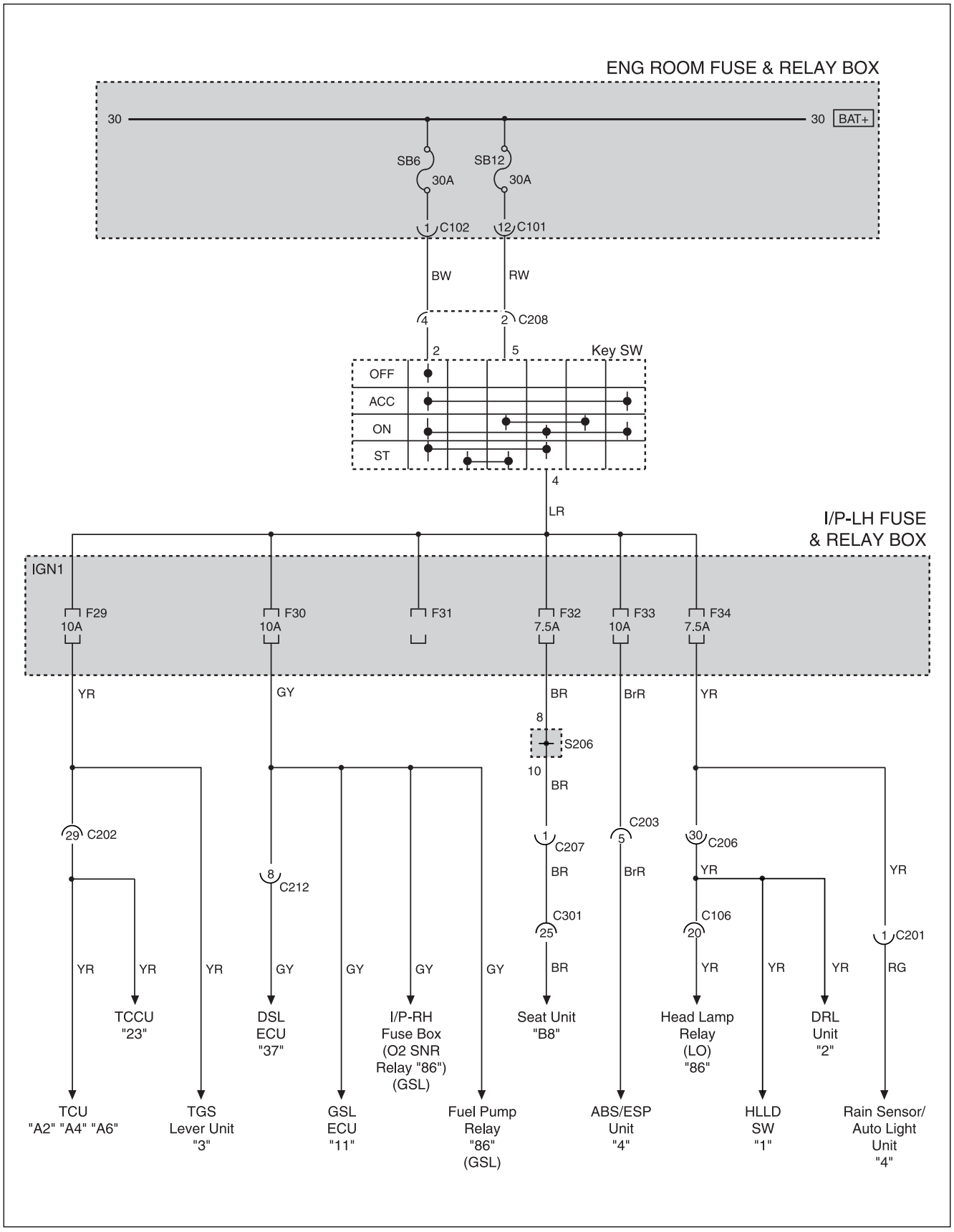


2. I/P - LH FUSE & RELAY BOX CIRCUIT 8410

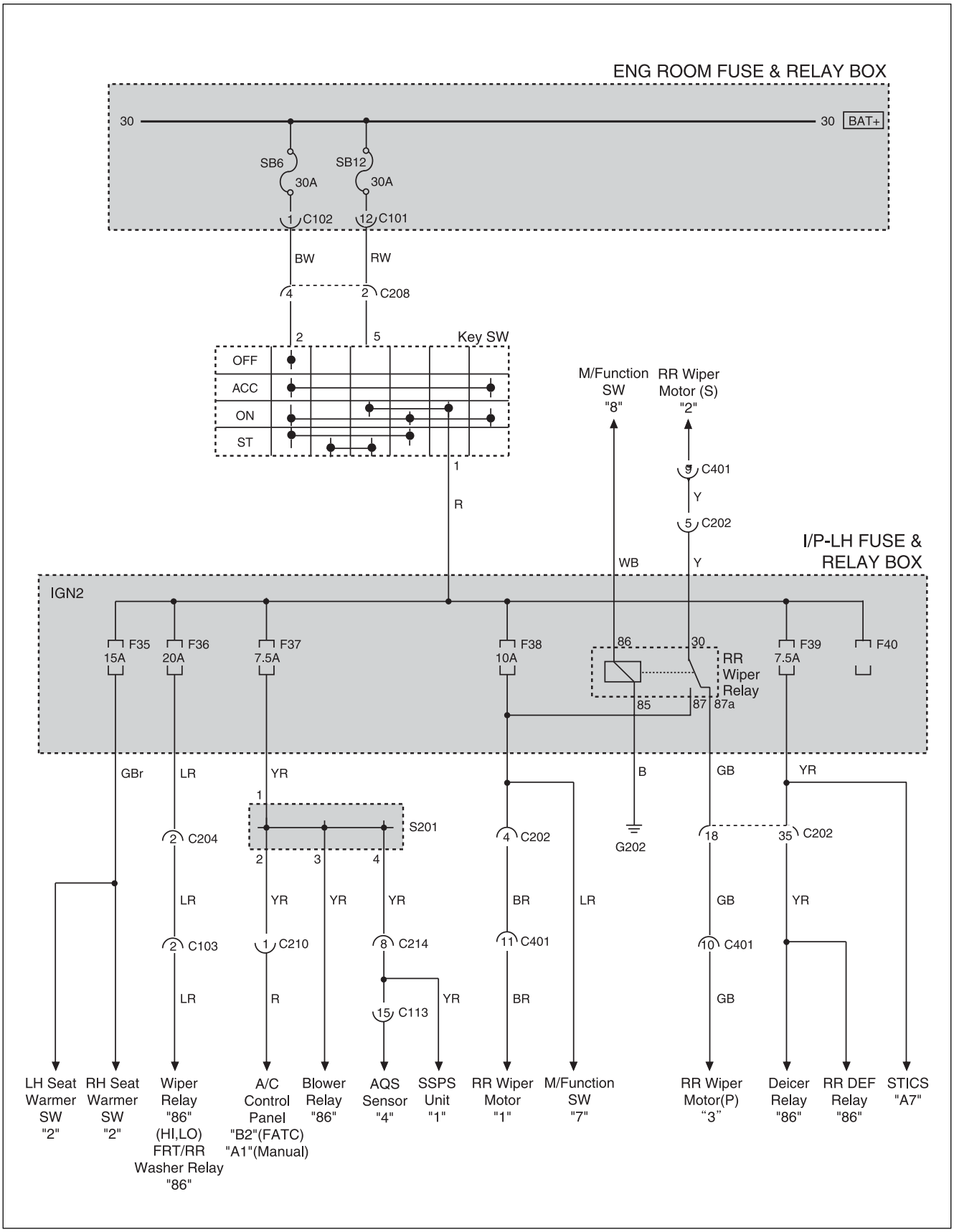
1) F24 ~ F28



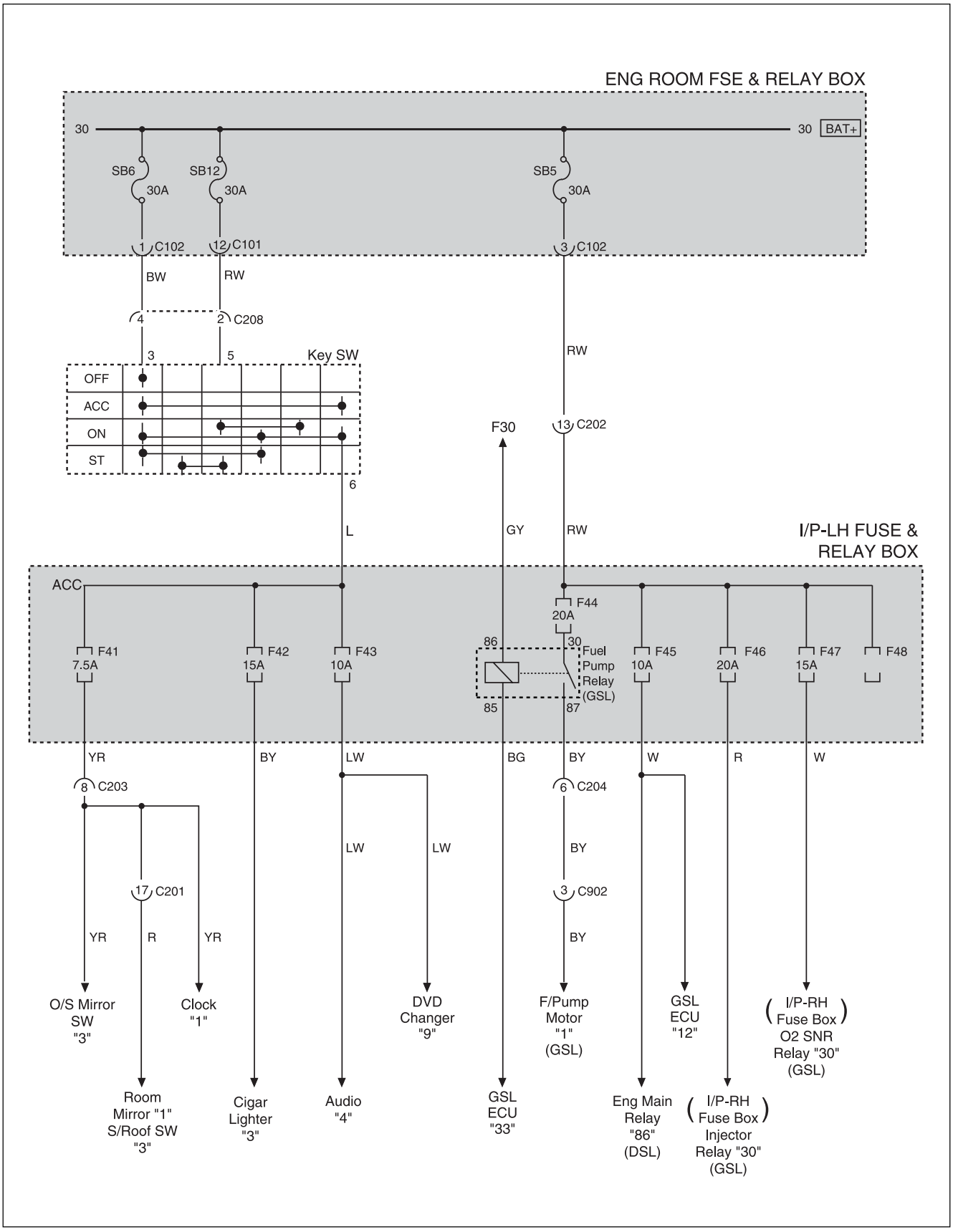
2) F29 ~ F34


ENG ROOM FUSE & RELAY BOX
30
30
BAT+
SB6
30A
SB12
30A
1
C102
12
C101
BW
RW
4
2
C208
2
5
Key SW
OFF
ACC
ON
ST
4
LR
I/P-LH FUSE
& RELAY BOX
IGN1
F29
10A
F30
10A
F31
F32
7.5A
F33
10A
F34
7.5A
YR
GY
BR
BrR
YR
8
S206
10
BR
29
C202
8
C212
1
C207
C203
5
30
C206
BR
BrR
YR
YR
C301
25
C106
20
1
C201
YR
YR
YR
GY
GY
GY
GY
BR
YR
YR
YR
RG
TCCU
"23"
DSL
ECU
"37"
I/P-RH
Fuse Box
(O2 SNR
Relay "86")
(GSL)
Seat Unit
"B8"
Head Lamp
Relay
(LO)
"86"
DRL
Unit
"2"
TCU
"A2" "A4" "A6"
TGS
Lever Unit
"3"
GSL
ECU
"11"
Fuel Pump
Relay
"86"
(GSL)
ABS/ESP
Unit
"4"
HLLD
SW
"1"
Rain Sensor/
Auto Light
Unit
"4"

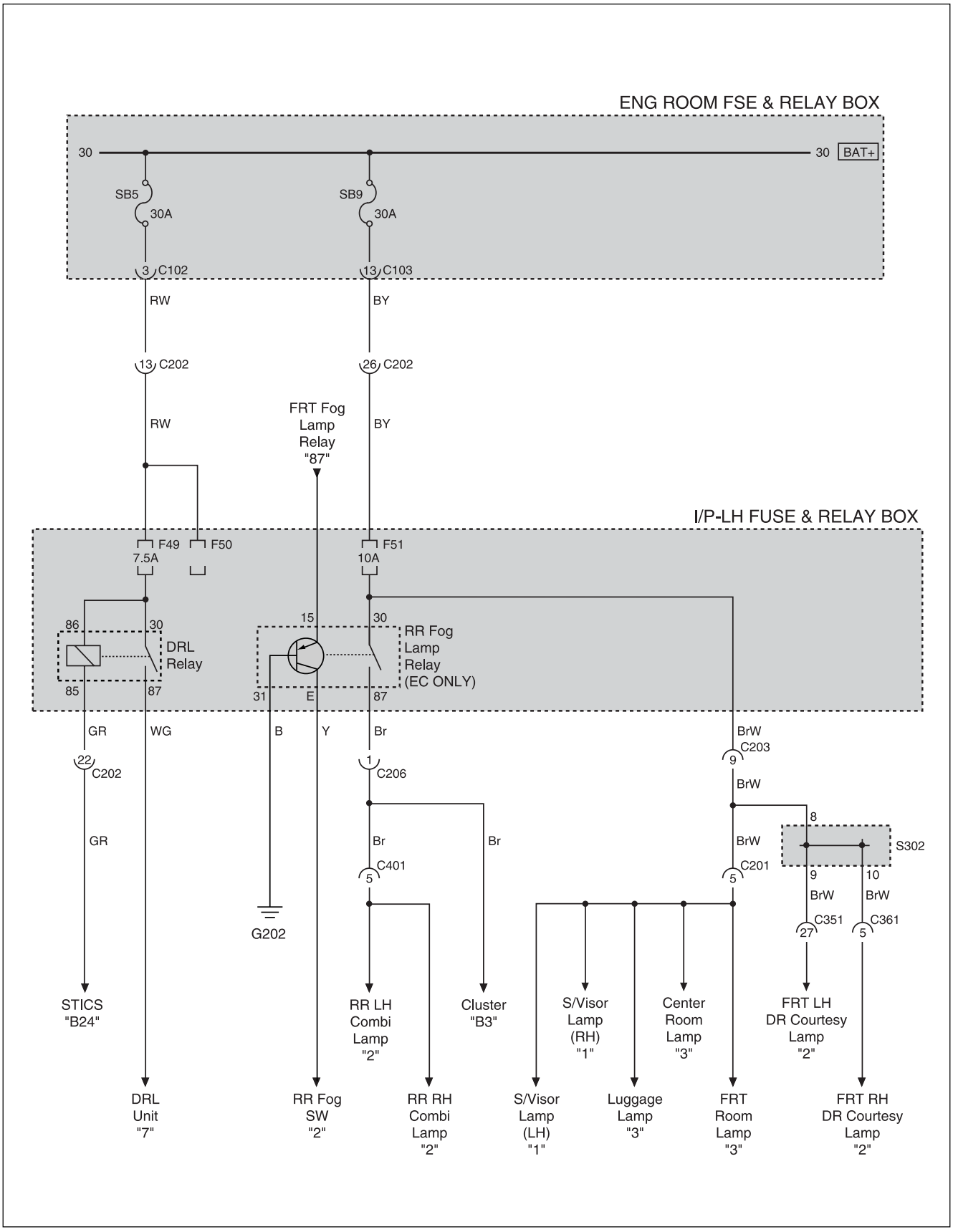
3) F35 ~ F40, RR WIPER RELAY



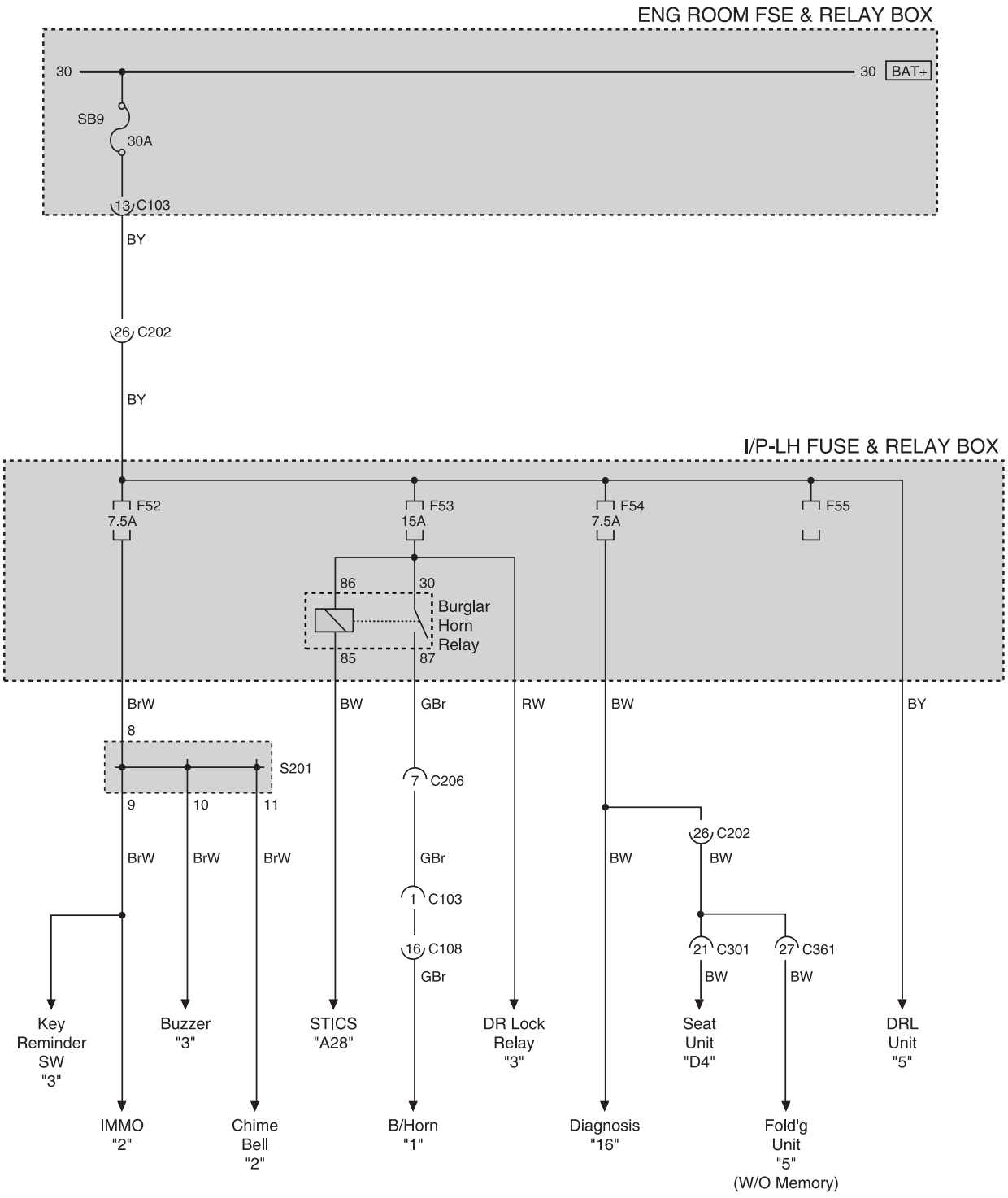
4) F41 ~ F48


ENG ROOM FSE & RELAY BOX
30
30 BAT+
SB6
30A
SB12
30A
SB5
30A
1 C102
12 C101
3 C102
BW
RW
4
2 C208
3
5
Key SW
OFF
ACC
ON
ST
6
RW
F30
13 C202
L
GY
RW
I/P-LH FUSE & RELAY BOX
ACC
F41
7.5A
F42
15A
F43
10A
F44
20A
86
30
85
87
Fuel Pump Relay (GSL)
F45
10A
F46
20A
F47
15A
F48
YR
BY
LW
BG
BY
W
R
W
8 C203
6 C204
LW
LW
BY
17 C201
3 C902
YR
R
YR
BY
O/S Mirror SW "3"
Clock "1"
DVD Changer "9"
F/Pump Motor "1" (GSL)
GSL ECU "12"
(I/P-RH Fuse Box O2 SNR Relay "30" (GSL))
Room Mirror "1" S/Roof SW "3"
Cigar Lighter "3"
Audio "4"
GSL ECU "33"
Eng Main Relay "86" (DSL)
(I/P-RH Fuse Box Injector Relay "30" (GSL))

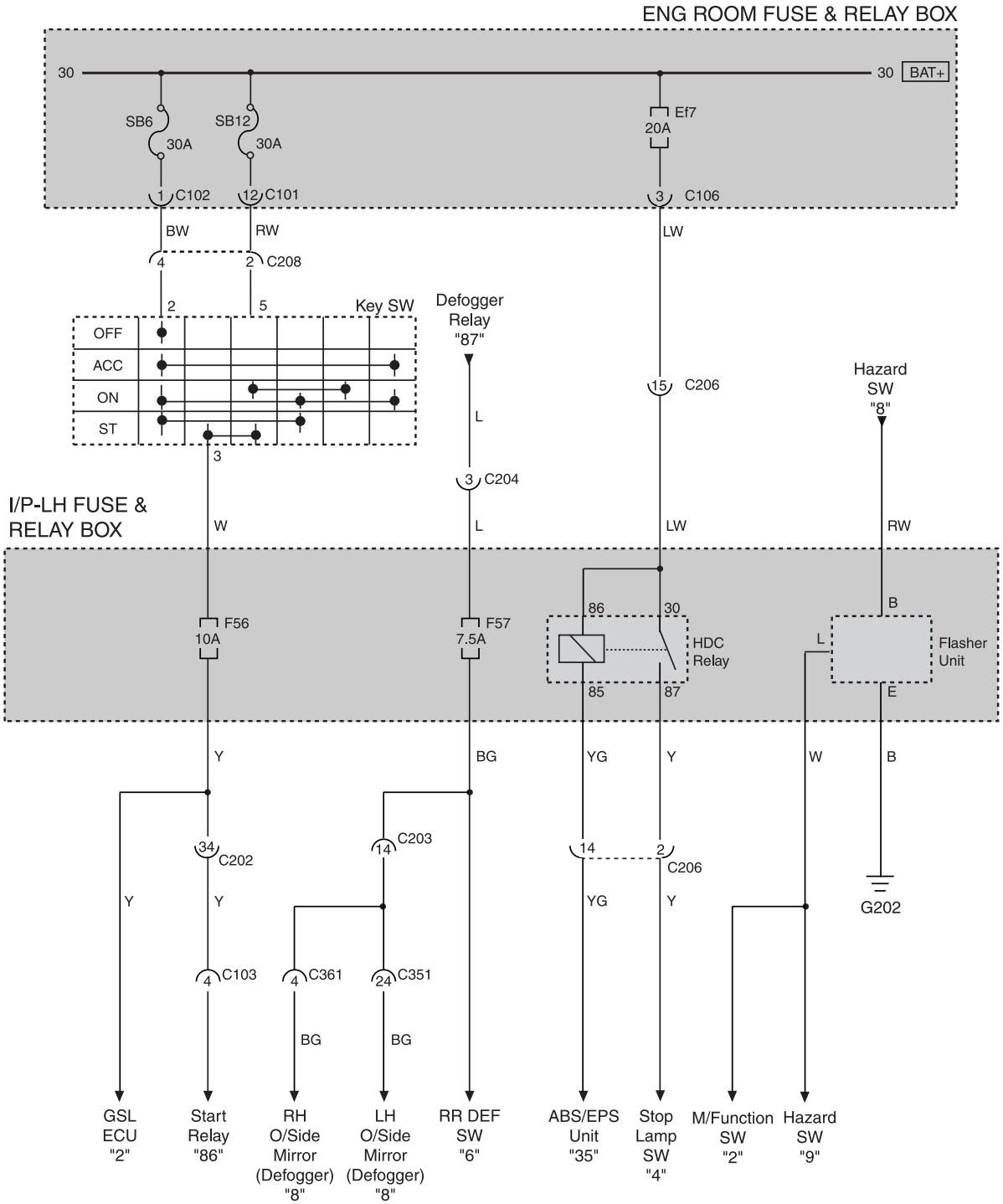
5) F49 ~ F51, DRL RELAY, RR FOG LAMP RELAY



6) F52 ~ F55, BURGLAR HORN RELAY

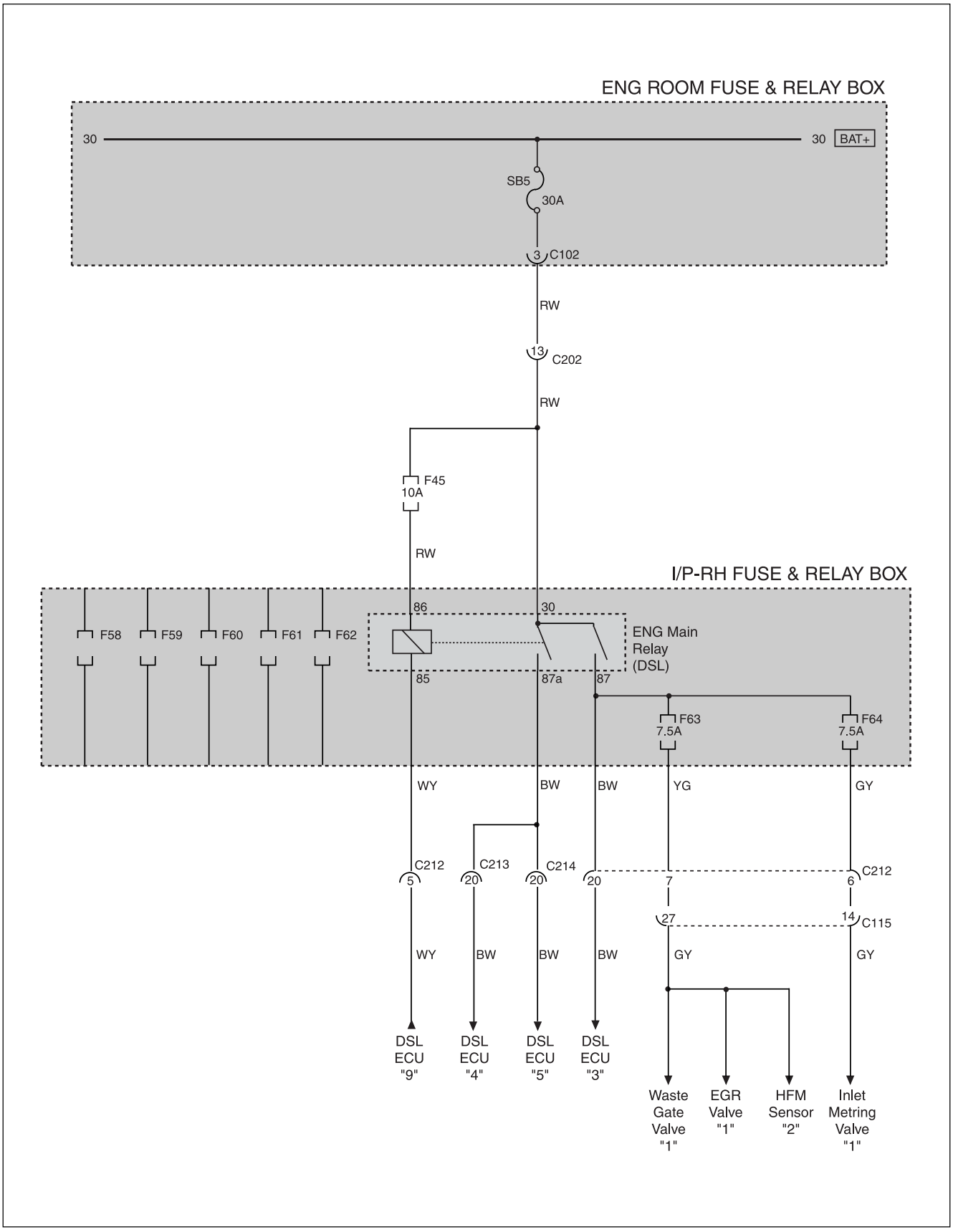


7) F56 ~ F57, HDC RELAY, FLASHER UNIT

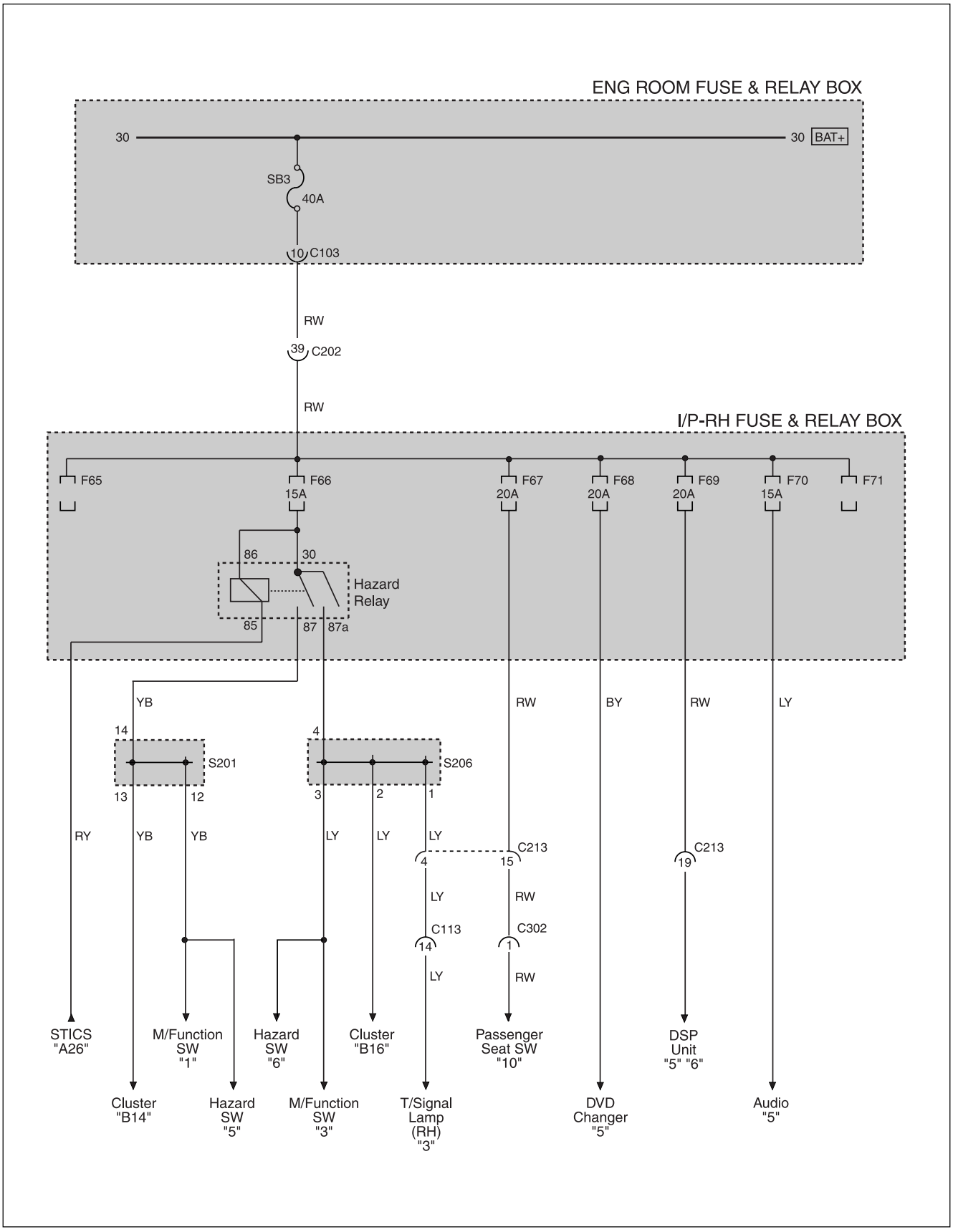


3. I/P - RH FUSE & RELAY BOX CIRCUIT 8410

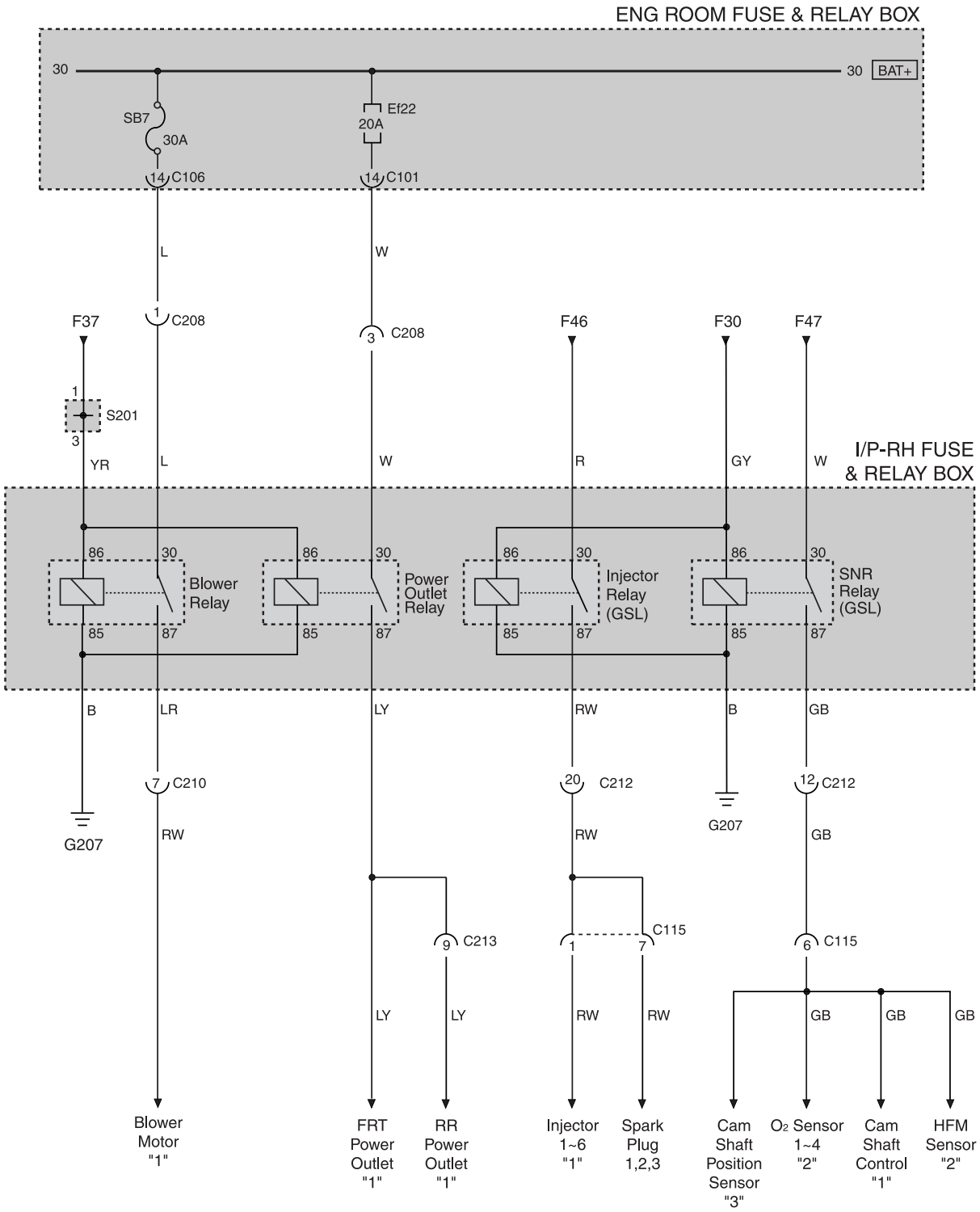
1) F58 ~ F64, ENG MAIN RELAY



2) F65 ~ F71, HAZARD RELAY



3) BLOWER RELAY, P/OUTLET RELAY, INJECTOR RELAY, SNR RELAY



SECTION 5

ELECTRICAL WIRING DIAGRAMS

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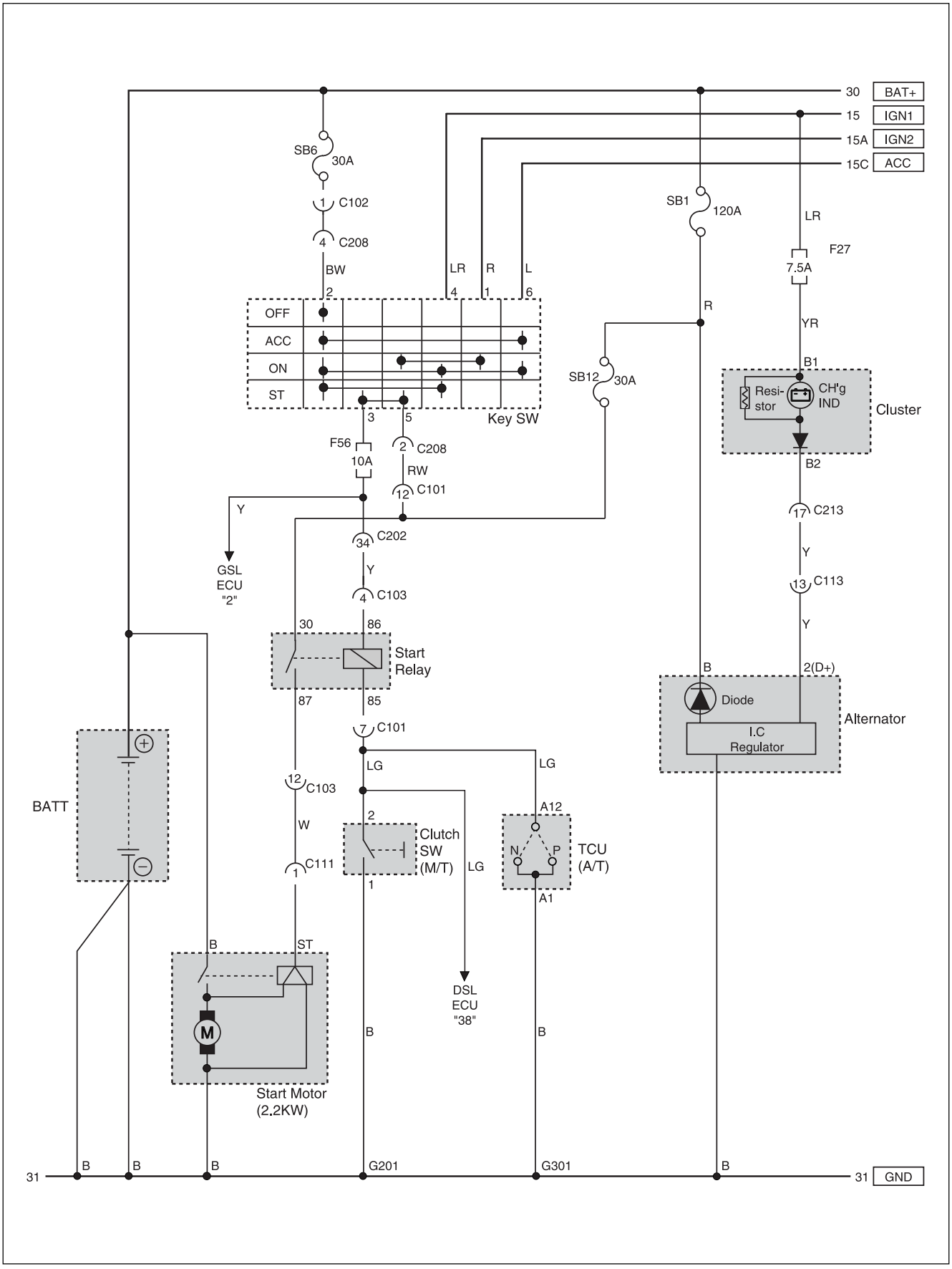
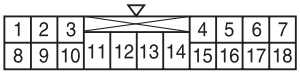
1. STARTING & CHARGING 1461

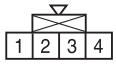


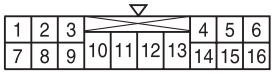
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C111 (1Pin, Gray)	W/H Floor - Starter Motor	Under the Preheating Time Relay	Solenoid
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C208 (4Pin, Colorless)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G301	W/H Floor	Under the Driver Seat	

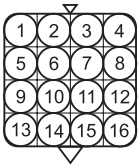
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION


C101
W/H Floor
(Eng Room Fuse & Relay Box)

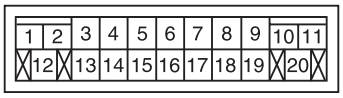

C102
W/H Floor
(Eng Room Fuse & Relay Box)


C103
W/H Floor
(Eng Room Fuse & Relay Box)

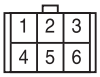

C111
W/H Floor
(Starter)

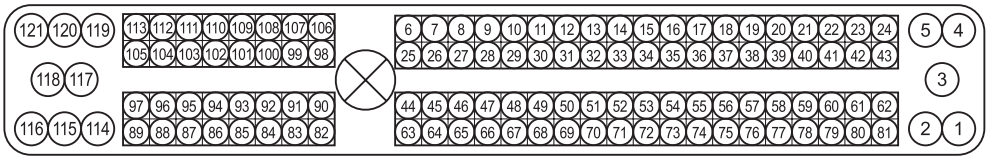

C113
W/H Floor


C208
W/H Floor

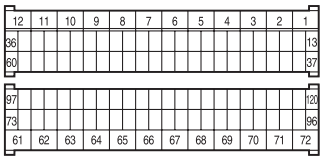

C213
W/H Floor

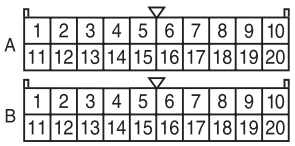

Clutch
SW (M/T)

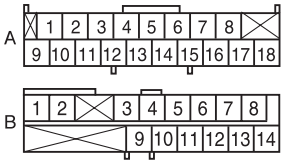

IGN SW


DSL ECU

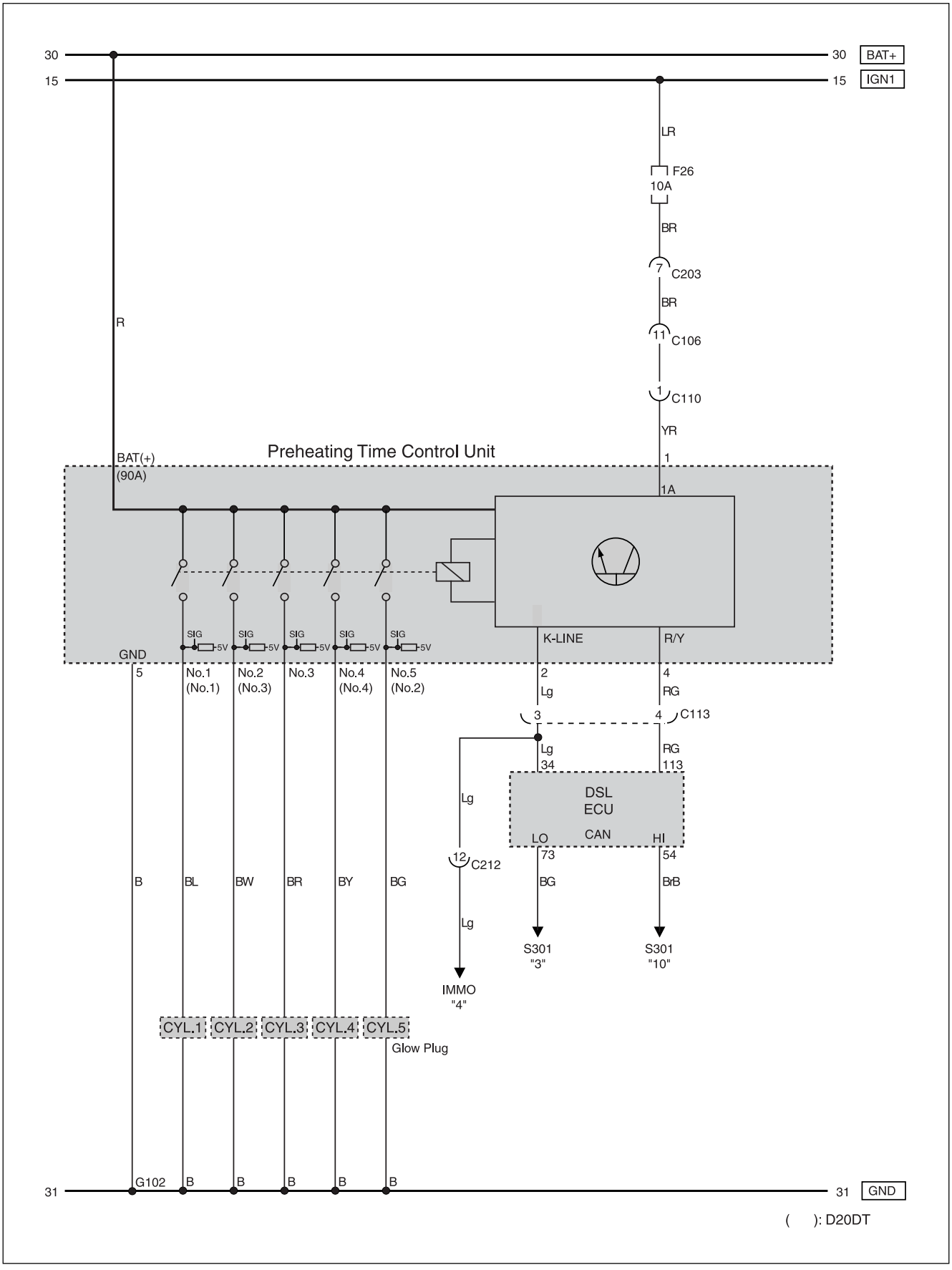

Alternator


ECU (GSL)


Cluster


TCU

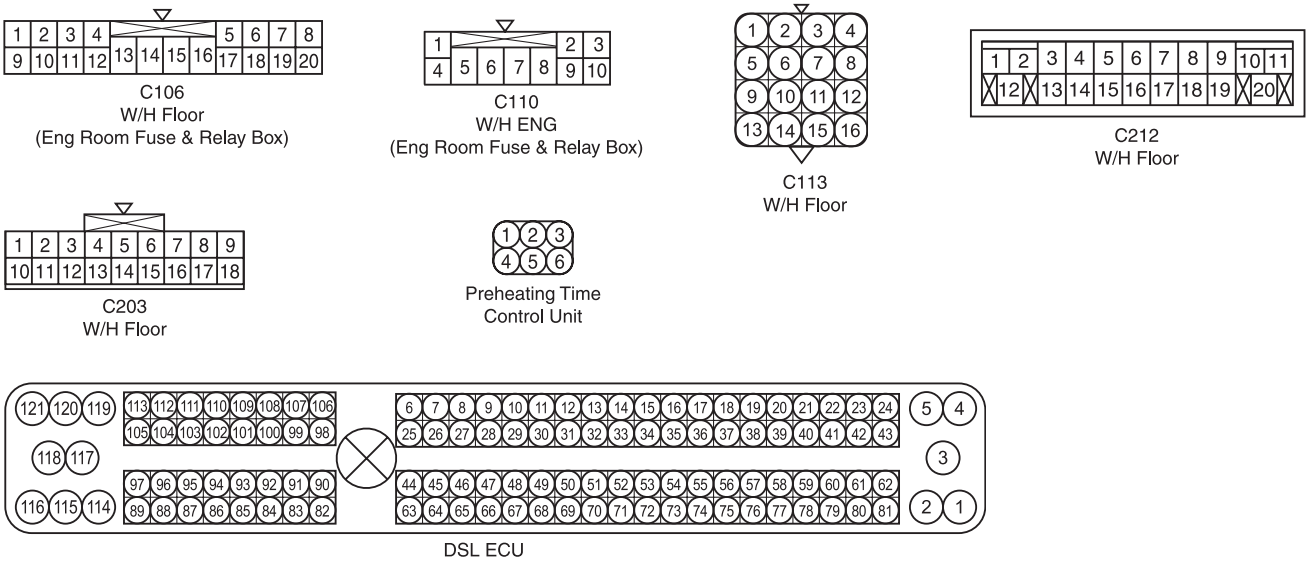
2. PREHEATING CIRCUIT 2820



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G102	W/H Eng Room	Behind LH Head Lamp	
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

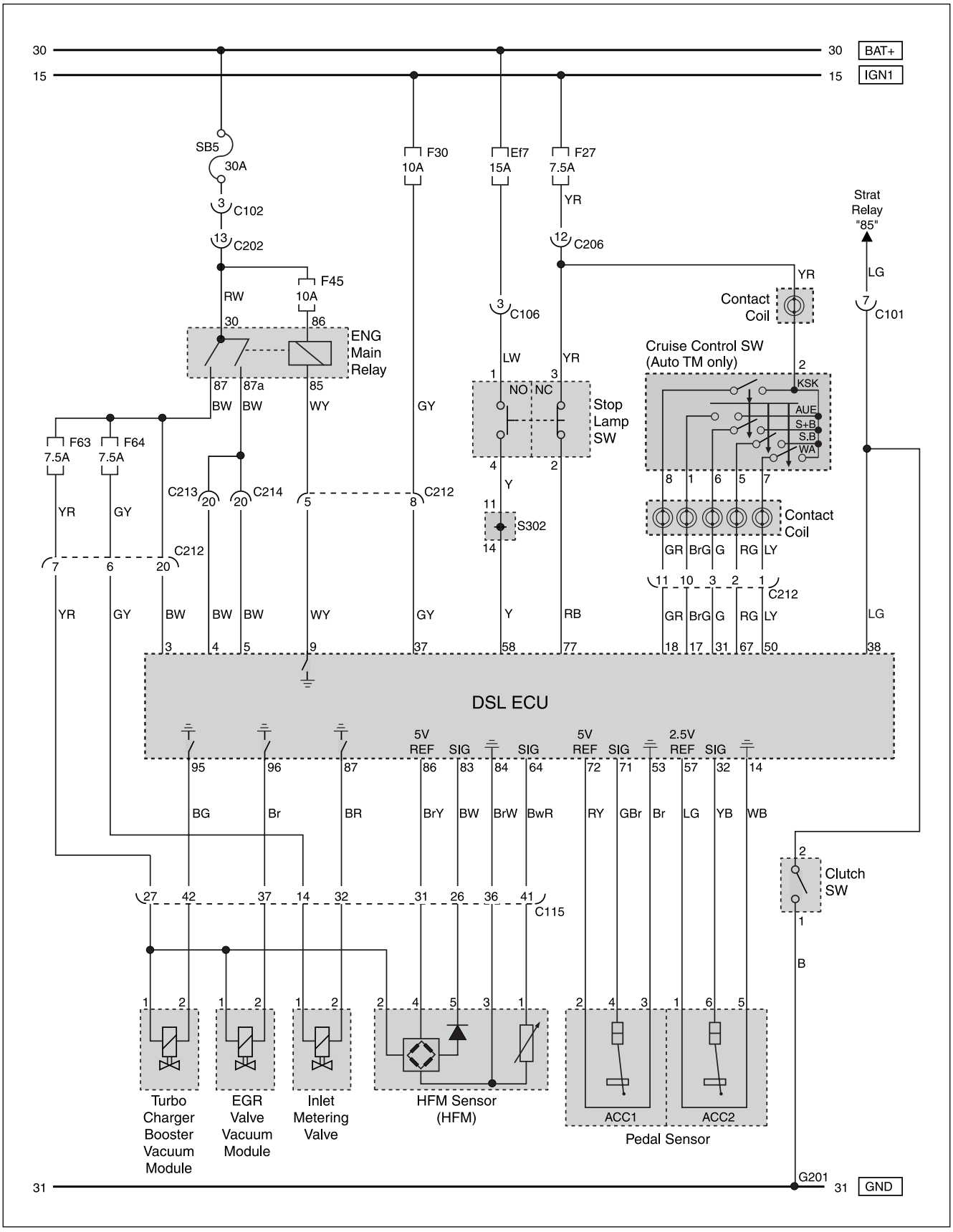
Glow plug is installed on the cylinder head (combustion chamber) in the DSL preheating control unit system. Cold starting performance has improved and exhaust gas during cold starting has reduced.

ECU receives coolant temperature and engine speed to control; after monitoring the engine preheating/after heating and glow plug diagnosis function, the fault contents will be delivered to ECU.

1. Engine preheating/after heating functions
2. Preheating relay activation by ECU controls
   1) Senses engine temperature and controls the preheating/after heating time
   2) Preheating warning light
3. K-LINE for information exchanges between preheating unit and ECU
   1) Transmits preheating unit self-diagnosis results to ECU
   2) Transmits glow plug diagnosis results and operating status to ECU

3. ECU (ENGINE CONTROL UNIT - DSL) 1491

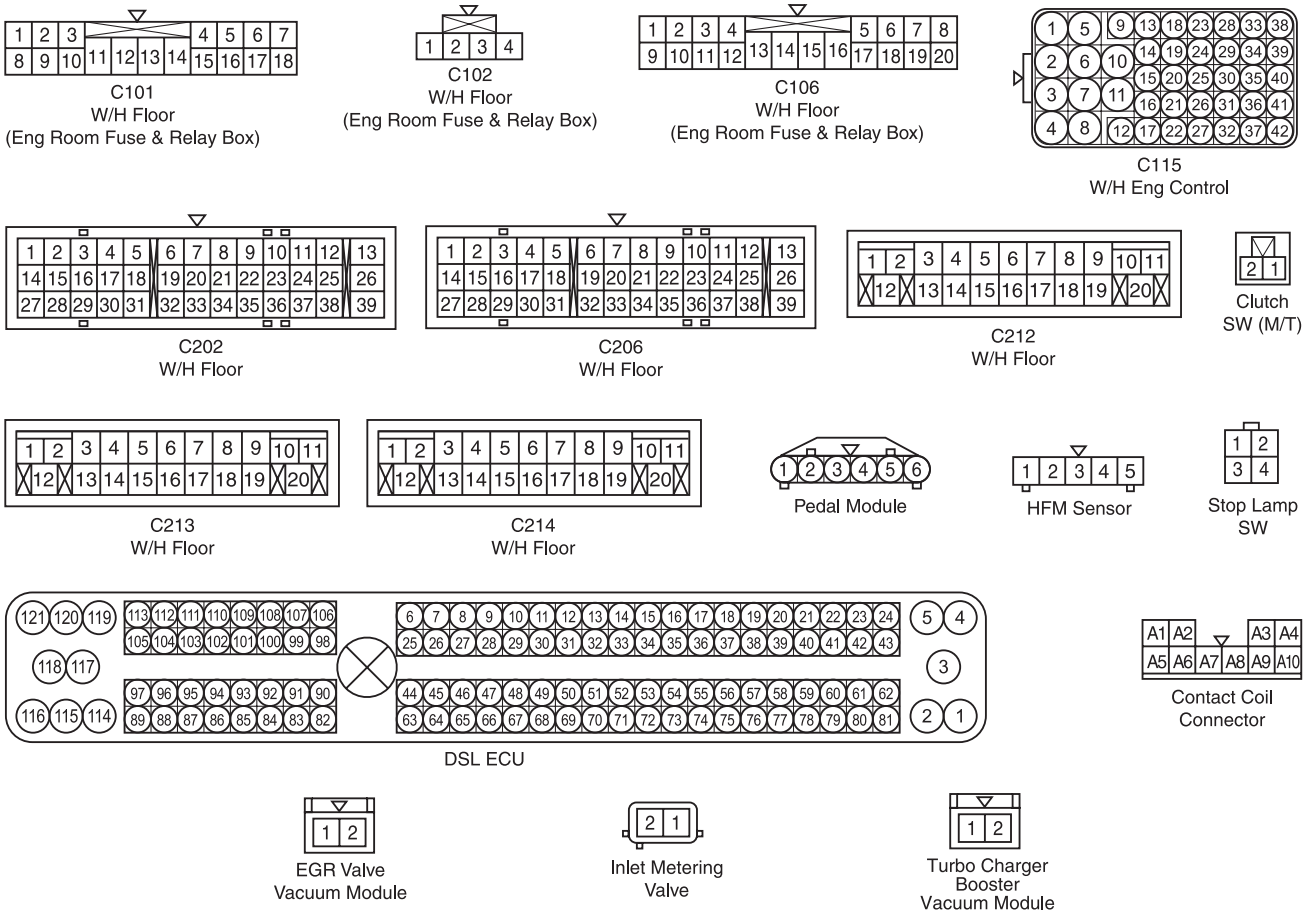
1) ENG MAIN RELAY, PEDAL MODULE, HFM SENSOR, VALVE, CRUISE CONTROL SW



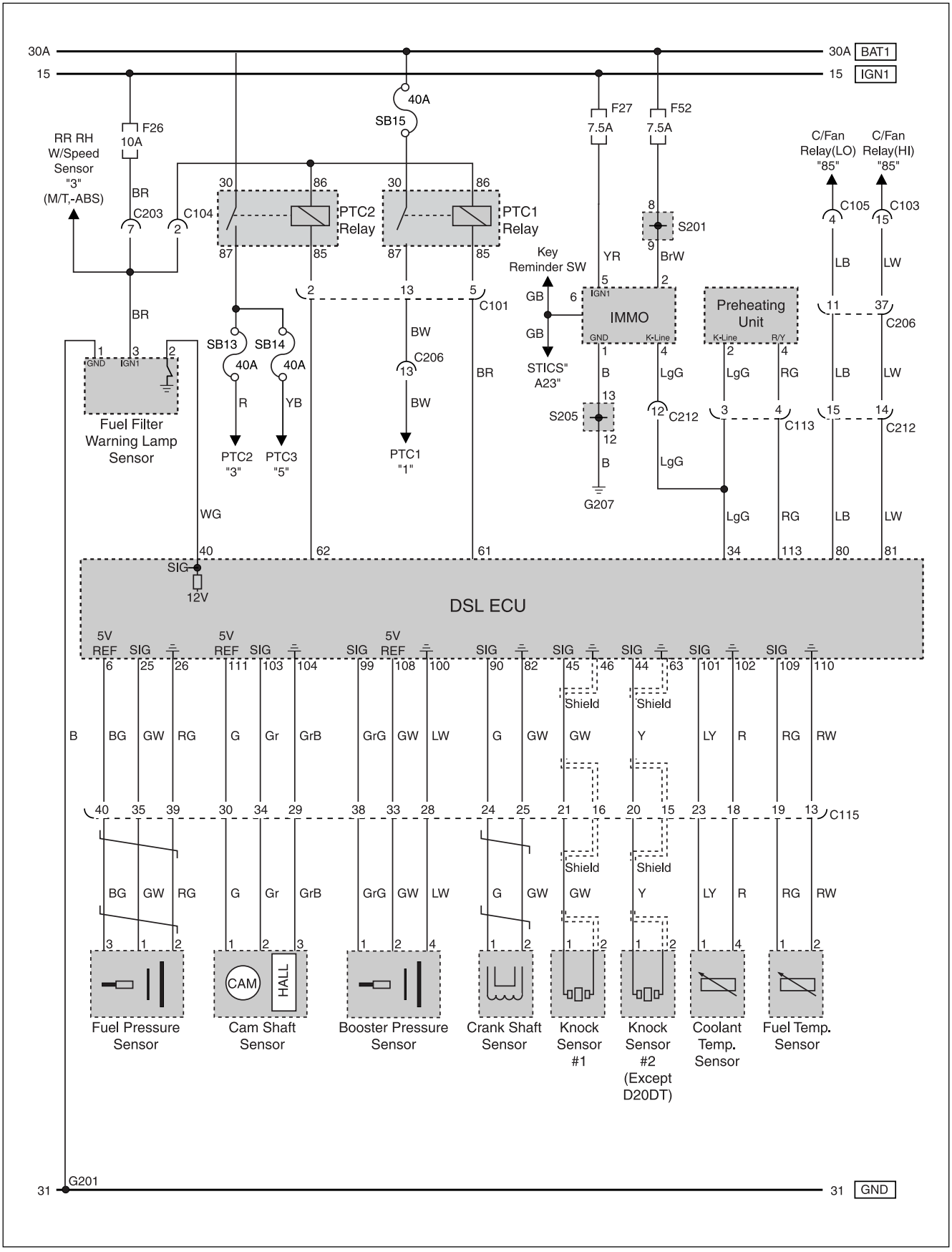
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



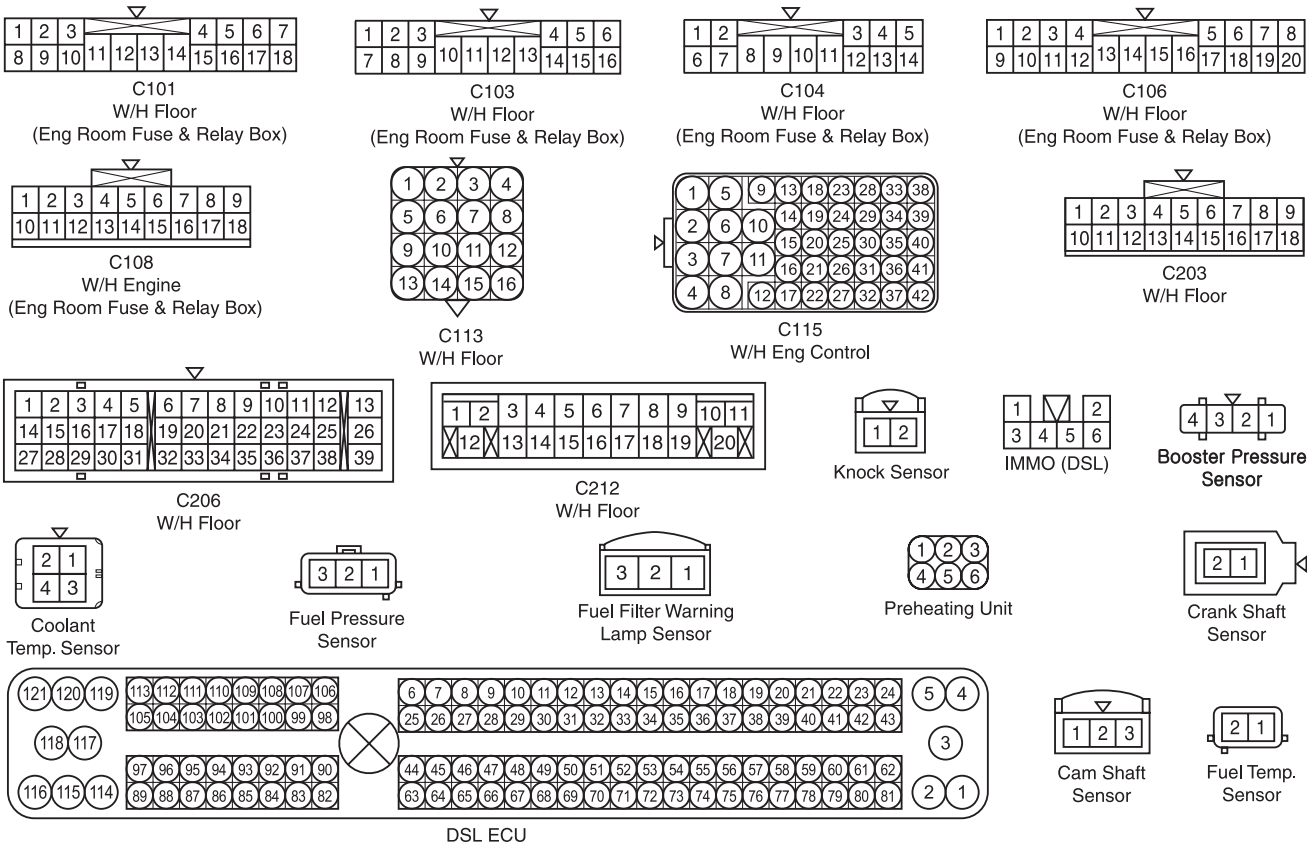
2) FUEL FILTER WARNING LAMP, IMMOBILIZER, SENSOR CIRCUIT (FUEL PRESSURE, CAM SHAFT, BOOSTER PRESSURE, CRANK SHAFT, KNOCK, COOLANT TEMP., FUEL TEMP.)



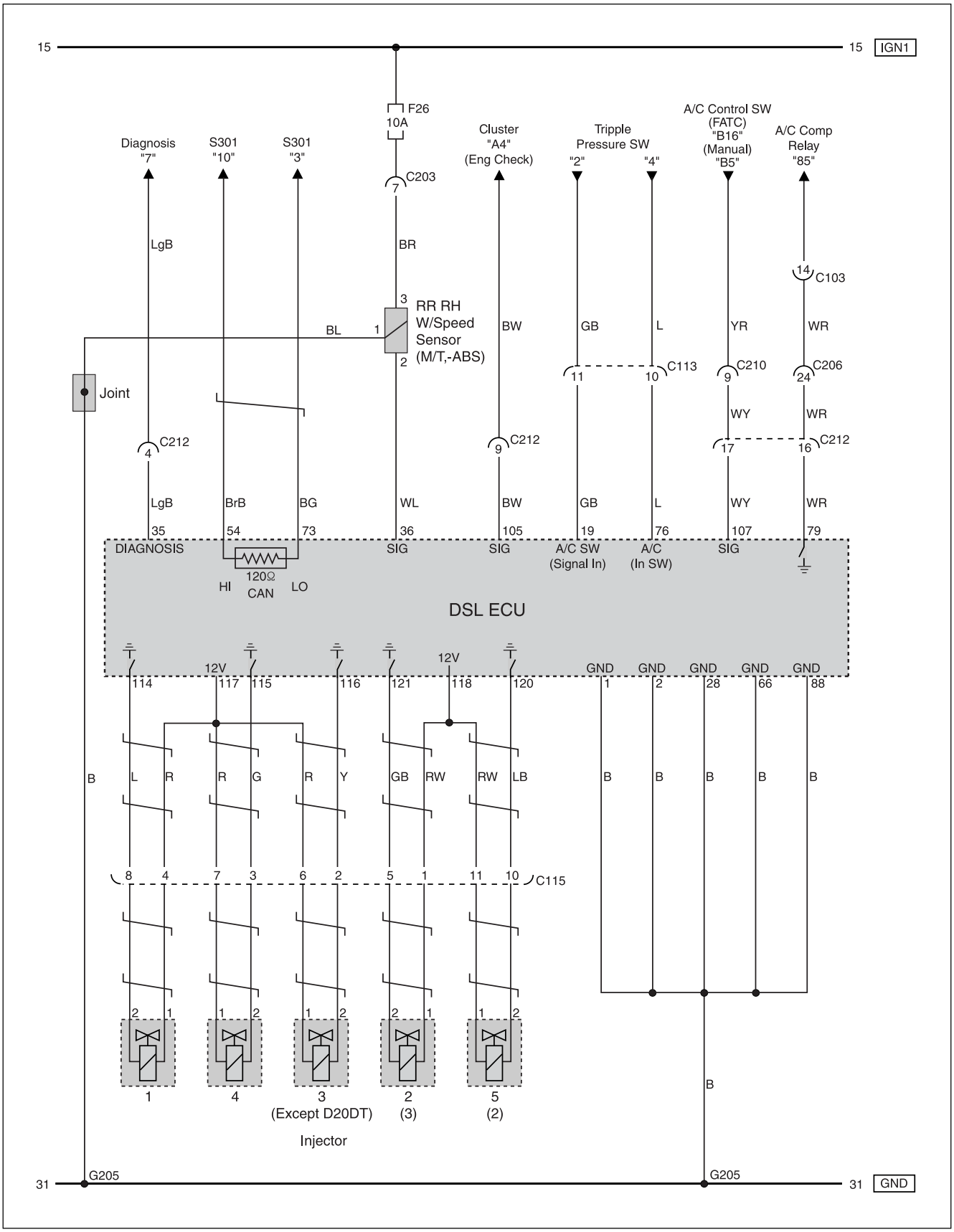
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G103	W/H Eng Room	LH FRT END PNL (LH Head Lamp Side)	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



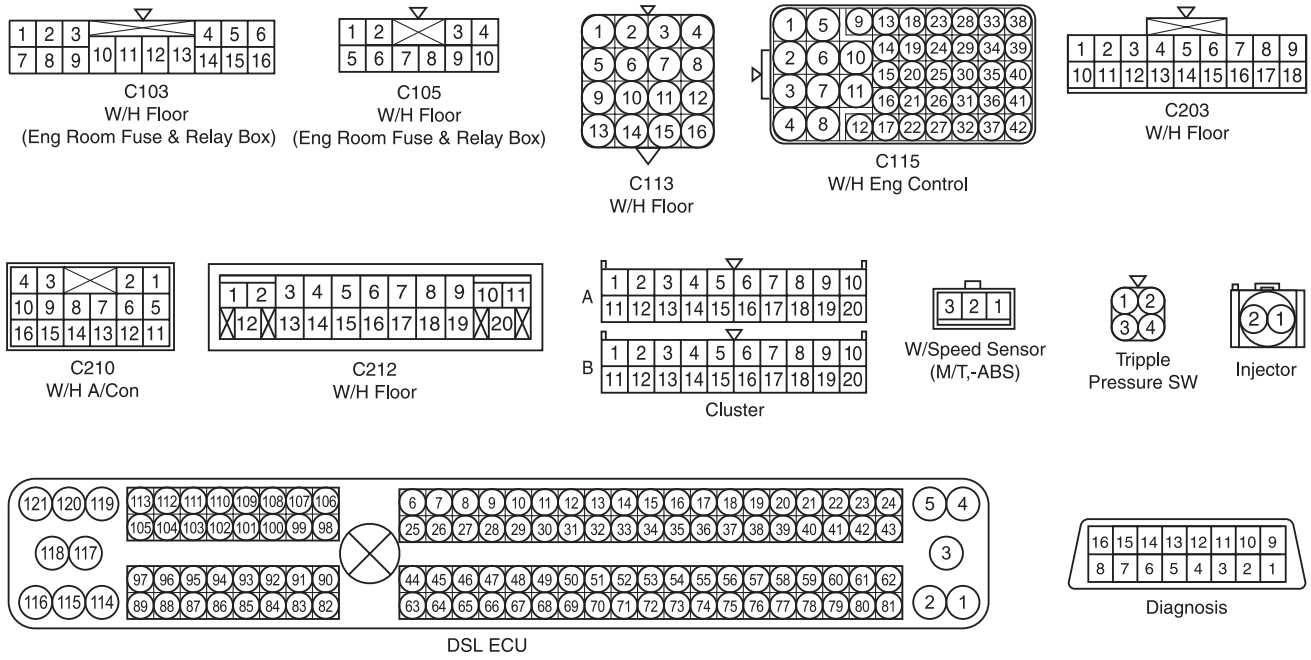
3) INJECTOR, CAN LINE



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	.
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G205	W/H Main	RH Eng ECU	ECU
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

INPUT SIGNAL OF ECU

According to input signals from various sensors, engine ECU calculates driver's demand (position of the acceleratorpedal) and then controls overall operating performance of engine and vehicle on that time. ECU receives signals from sensors through data line and then performs effective engine air-fuel ratio controls based onthose signals.

Engine speed is measured by crankshaft speed (position) sensor and camshaft speed (position) sensor determinesinjection order and ECU detects driver's pedal position (driver's demand) through electrical signal that generated byvariable resistance changes in accelerator pedal sensor.

Air flow (hot film) sensor detects intake air volume and then transmits to ECU. Especially, the engine ECU controls theair-fuel ratio by recognizing instant air volume changes through air flow sensor to pursue low emission gases (EGR valvecontrol). Furthermore, the ECU uses signals from coolant temperature and air temperature sensor, booster pressuresensor and atmospheric pressure sensor as compensation signal to respond to injection start and pilot injection setvalues and to various operations and variables.

CONTROL FUNCTION OF ECU

1. Controls by operating stages:

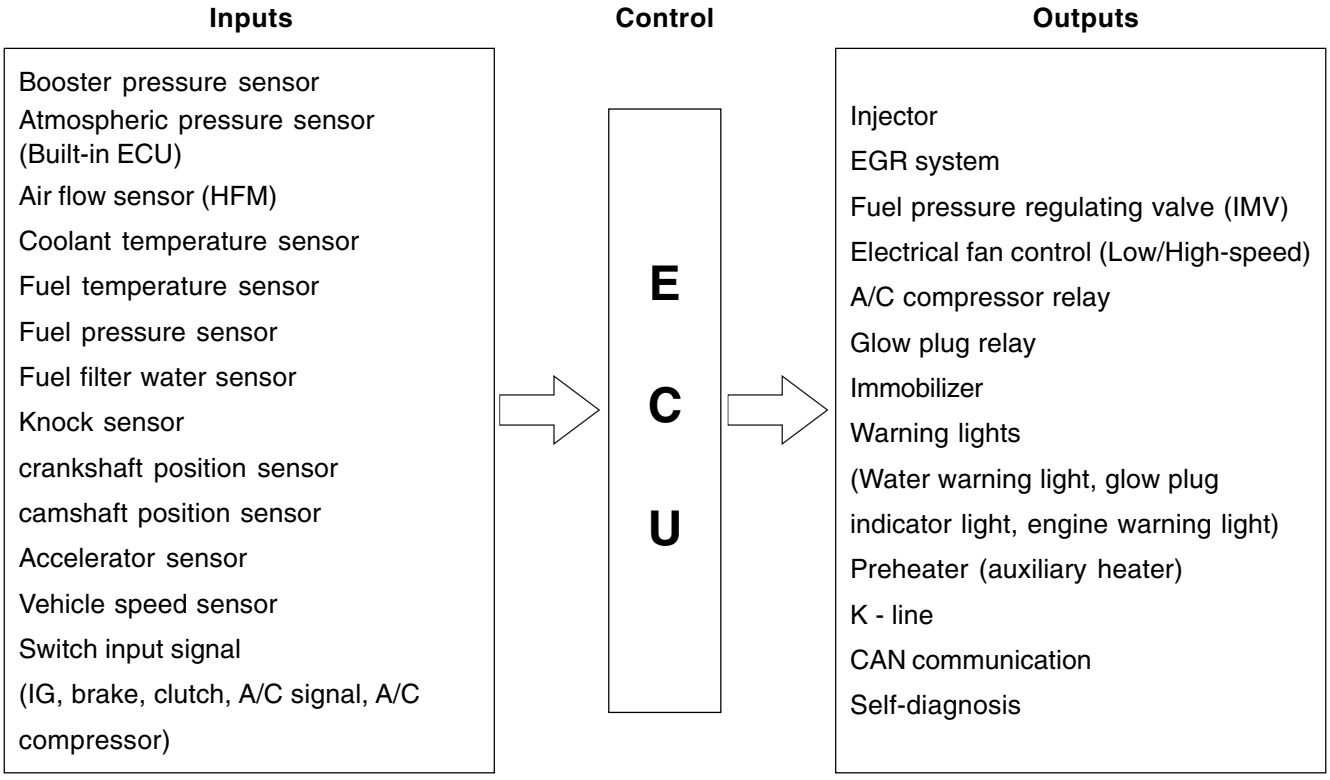
   To make optimum combustion under every operating stage, ECU should calculate proper injection volume ineach stage by considering various factors.
2. Starting injection volume control:

   During initial starting, injecting fuel volume will be calculated by function of temperature and engine crankingspeed.

   Starting injection continues from when the ignition switch is turned to ignition position to till the engine reachesto allowable minimum speed.
3. Driving mode control:

   If the vehicle runs normally, fuel injection volume will be calculated by accelerator pedal travel and engine rpmand the drive map will be used to match the drivers inputs with optimum engine power.

ECU INPUTS·OUTPUTS



STRUCTURE AND FUNCTION OF ECU

ECU receives and analyzes signals from various sensors and then modifies those signals into permissible voltage levels and analyzes to control respective actuators.

ECU microprocessor calculates injection period and injection timing proper for engine piston speed and crankshaft angle based on input data and stored specific map to control the engine power and emission gas.

Output signal of the ECU microprocessor drives pressure control valve to control the rail pressure and activates injector solenoid valve to control the fuel injection period and injection timing; so controls various actuators in response to engine changes. Auxiliary function of ECU has adopted to reduce emission gas, improve fuel economy and enhance safety, comforts and conveniences. For example, there are EGR, booster pressure control, autocruise (export only) and immobilizer and adopted CAN communication to exchange data among electrical systems (automatic T/M and brake system) in the vehicle fluently. And Scanner can be used to diagnose vehicle status and defectives.

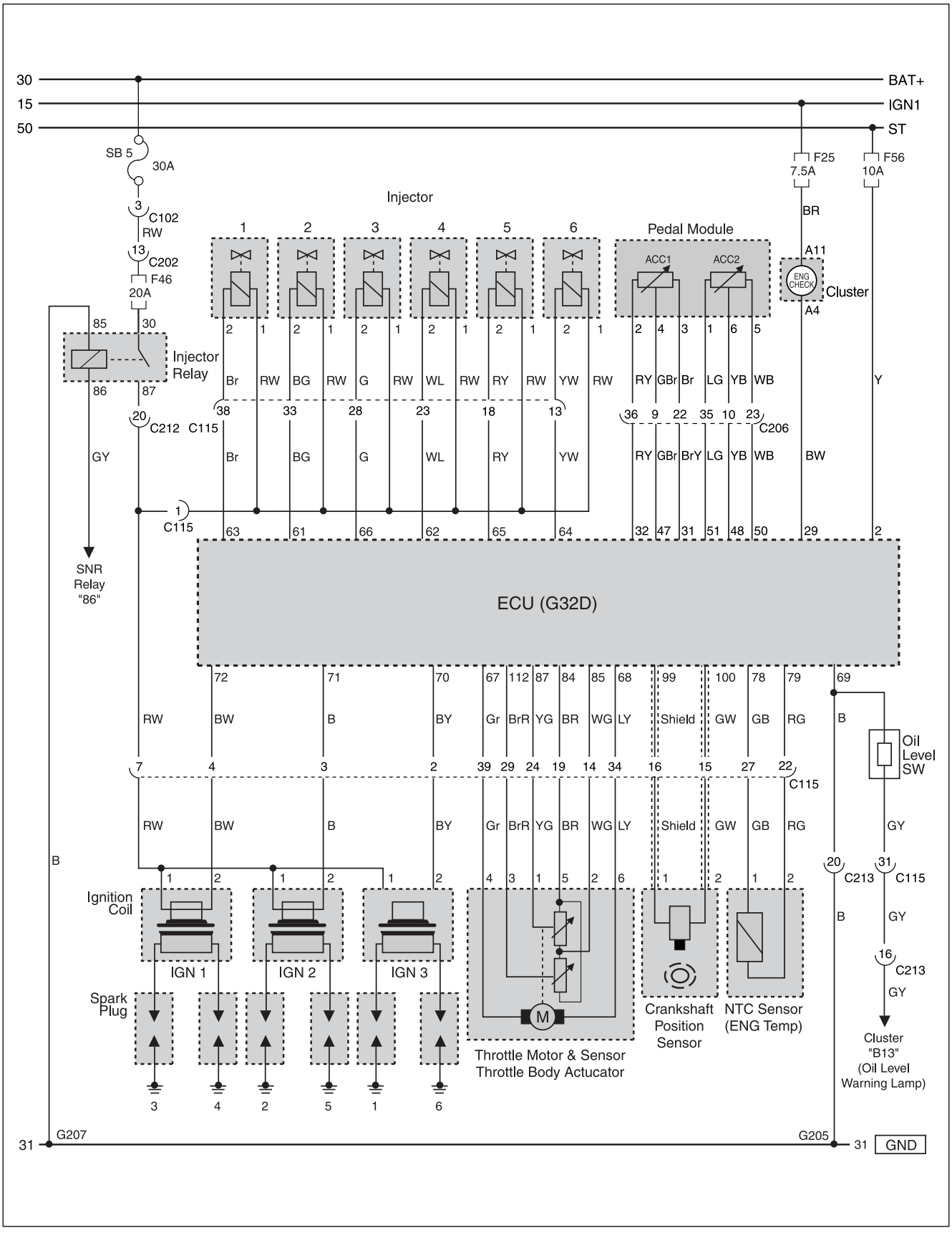
Operating temperature range of ECU is normally -40 ~ +85°C and protected from factors like oil, water and electromagnetism and there should be no mechanical shocks.

To control the fuel volume precisely under repeated injections, high current should be applied instantly so there is injector drive circuit in the ECU to generate necessary current during injector drive stages.

Current control circuit divides current applying time (injection time) into full-in-current-phase and hold-current-phase and then the injectors should work very correctly under every working condition.

4. ECU (ENGINE CONTROL UNIT - GSL G32) 1490

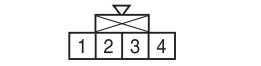
1) IGN COIL, INJECTOR, PEDAL MODULE, THROTTLE SENSOR



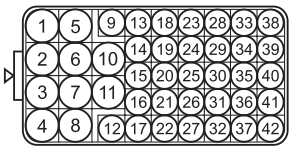
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G205	W/H Main	RH Eng ECU	ECU
G207	W/H Main	Inner the Passengaar Cowl Side PNL	

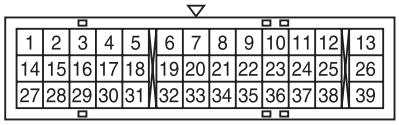
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



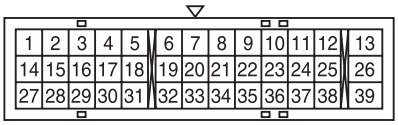
C102
W/H Floor
(Eng Room Fuse & Relay Box)



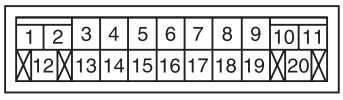
C115
W/H Eng Control



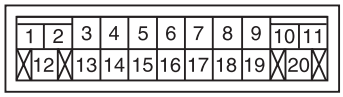
C202
W/H Floor



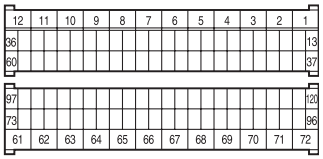
C206
W/H Floor



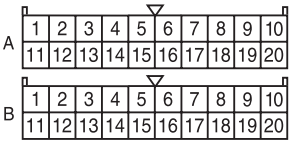
C212
W/H Floor



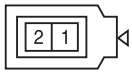
C213
W/H Floor



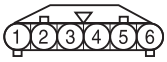
ECU (GSL)



Cluster

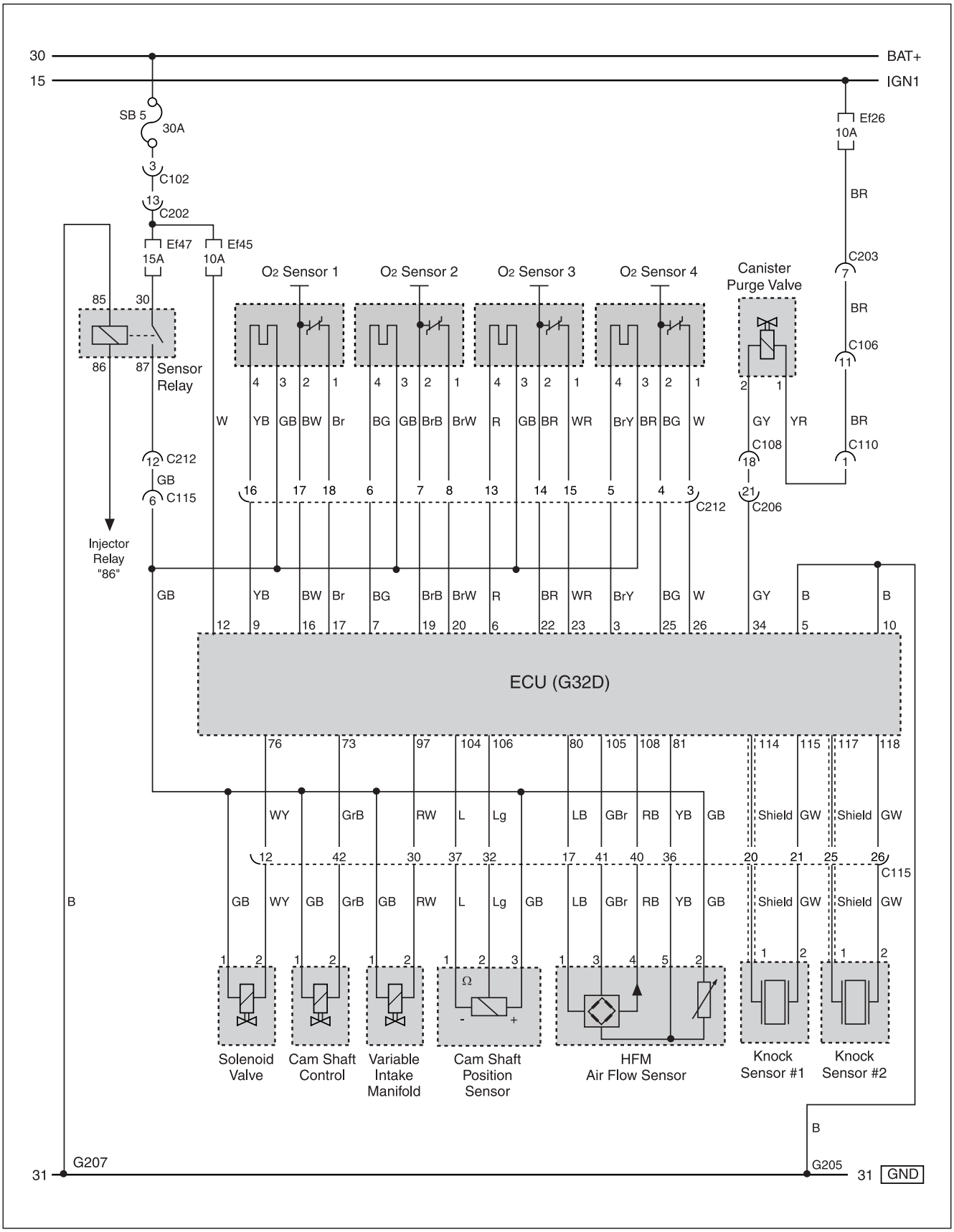


Crank Shaft
Position Sensor



Pedal Module

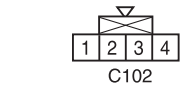
2) O_2 SENSOR, CPS, KNOCK SENSOR, HFM SENSOR, CANISTER PURGE VALVE

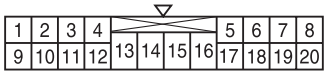


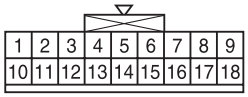
A. CONNECTOR INFORMATION

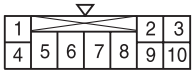
Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G205	W/H Main	RH Eng ECU	ECU
G207	W/H Main	Inner the Passengaar Cowl Side PNL	

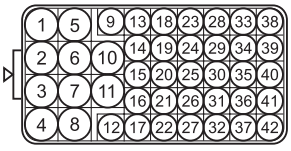
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION

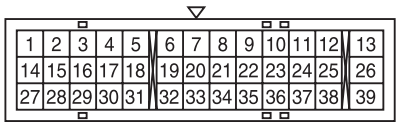

C102
W/H Floor
(Eng Room Fuse & Relay Box)

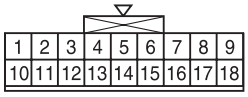

C106
W/H Floor
(Eng Room Fuse & Relay Box)

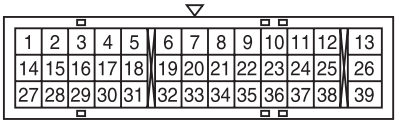

C108
W/H Engine
(Eng Room Fuse & Relay Box)

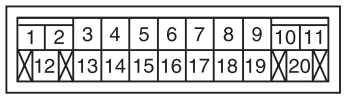

C110
W/H ENG
(Eng Room Fuse & Relay Box)

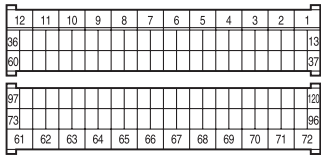

C115
W/H Eng Control


C202
W/H Floor

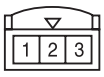

C203
W/H Floor


C206
W/H Floor

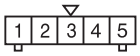

C212
W/H Floor


ECU (GSL)


Knock Sensor

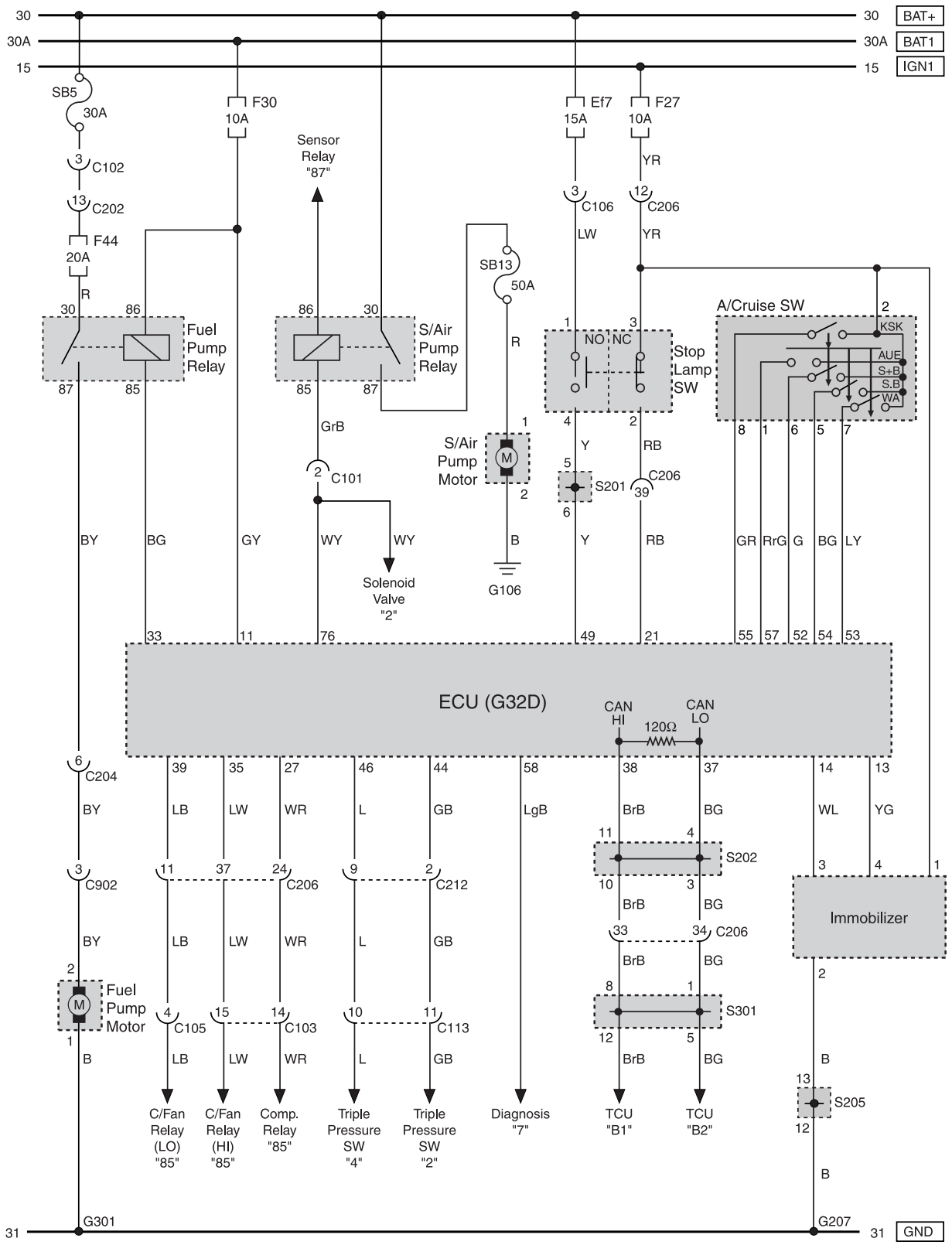

Cam Shaft
Position Sensor


Canister
Purge Valve


HFM Sensor


O2 Sensor
1~4

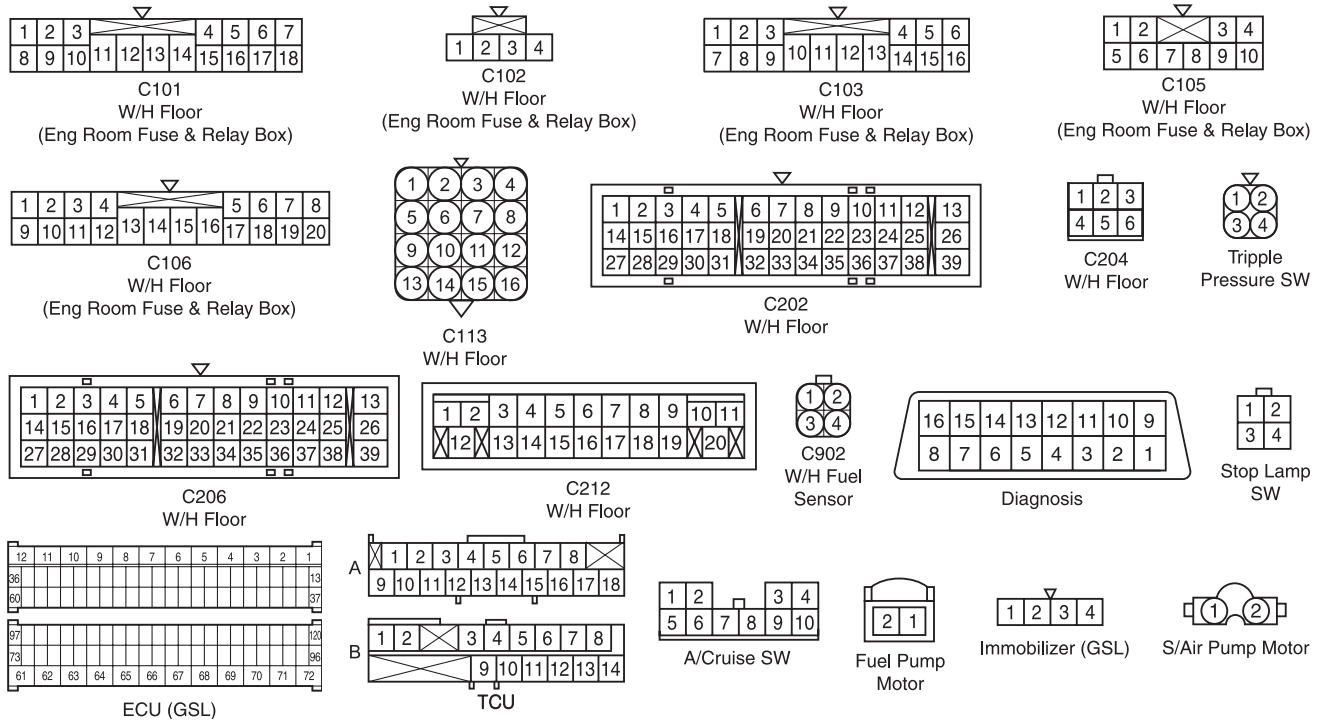
3) S/AIR PUMP, STOP LAMP, CRUISE CONTROL SW, FUEL PUMP, IMMOBILIZER



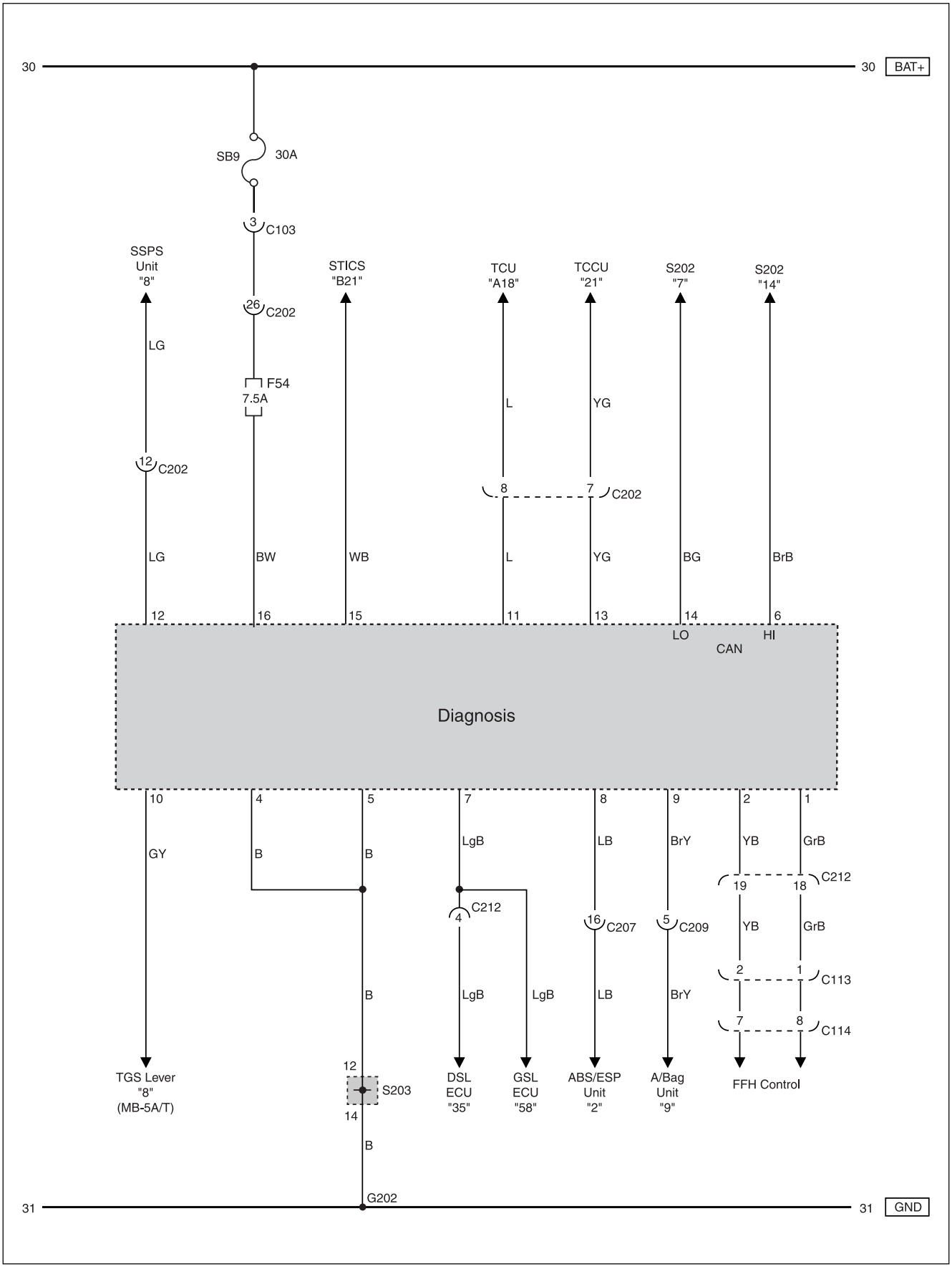
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C204 (6Pin, Colorless)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C902 (4Pin, Black)	W/H Floor - W/H Fuel Sender	Upper the T/M	
G106	W/H Eng Room	RH Fender PNL (Beside C113)	GSL
G207	W/H Main	Inner the Passengaar Cowl Side PNL	
G301	W/H Floor	Under the Driver Seat	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



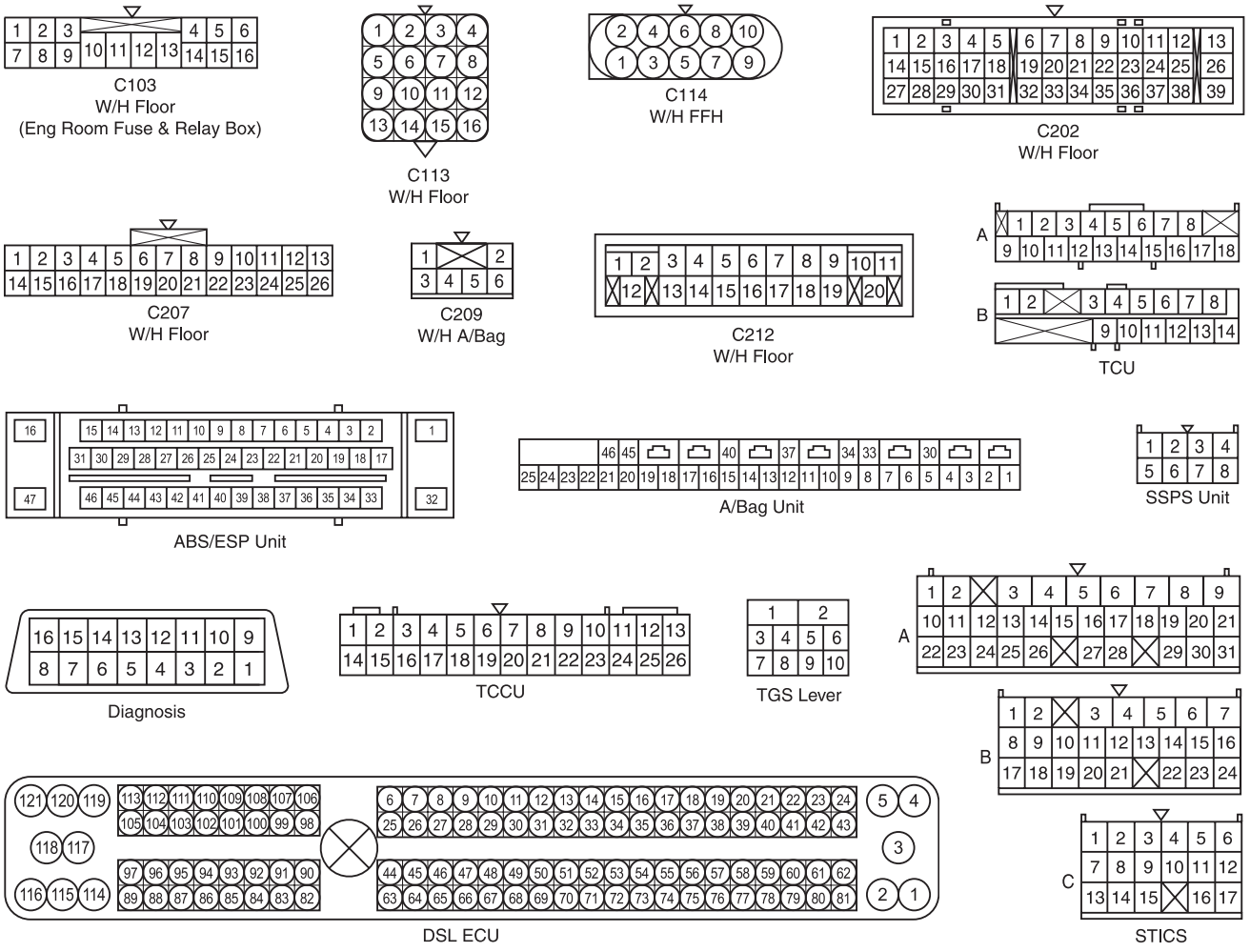
5. DIAGNOSIS CIRCUIT 8210



A. CONNECTOR INFORMATION

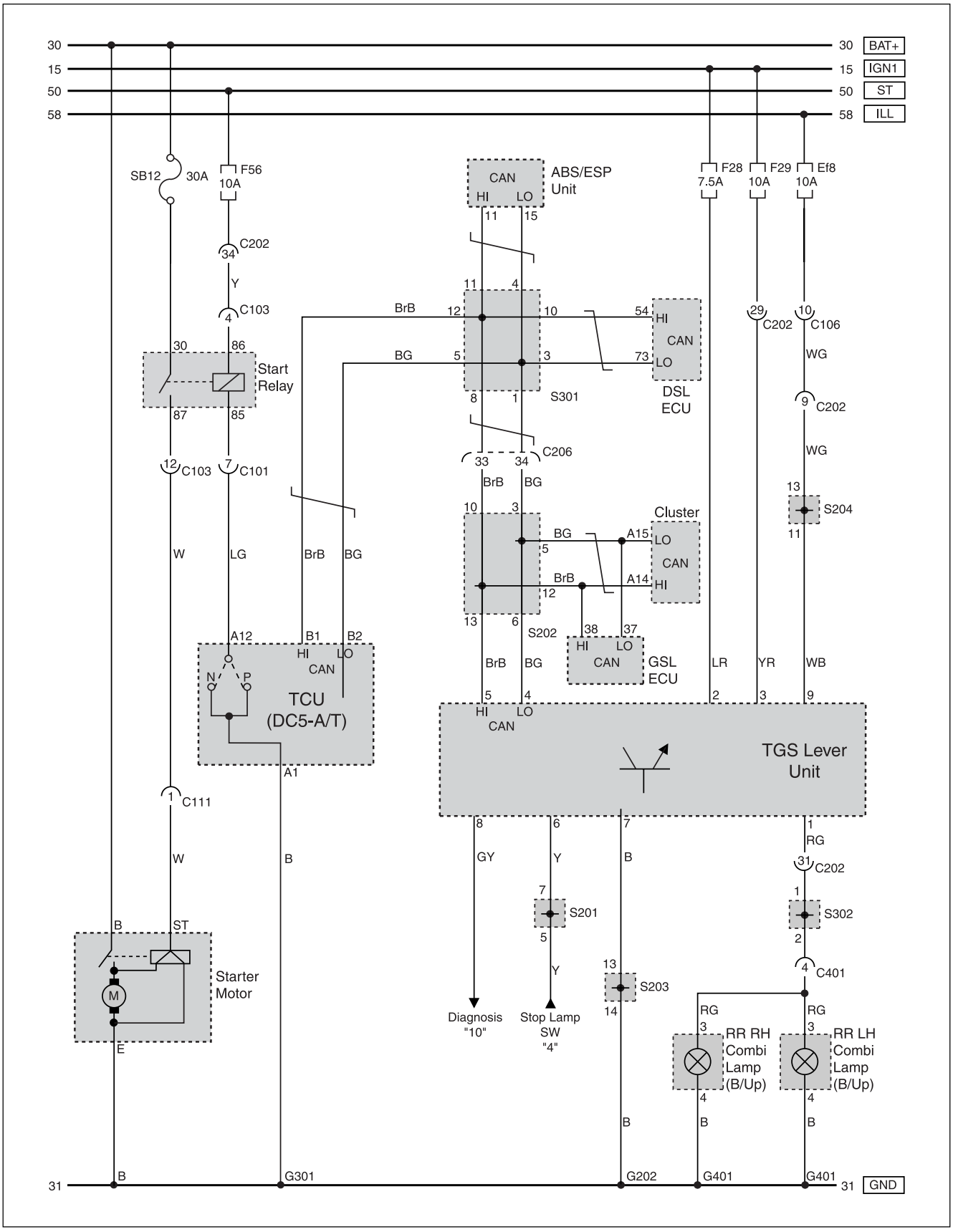
Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C114 (10Pin, Black)	W/H Eng - W/H FFH	Right Eng Room Dash PNL	FFH
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G202	W/H Main	Under the Driver “A” Pillar	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



6. TCU (DC5 - A/T) 3110

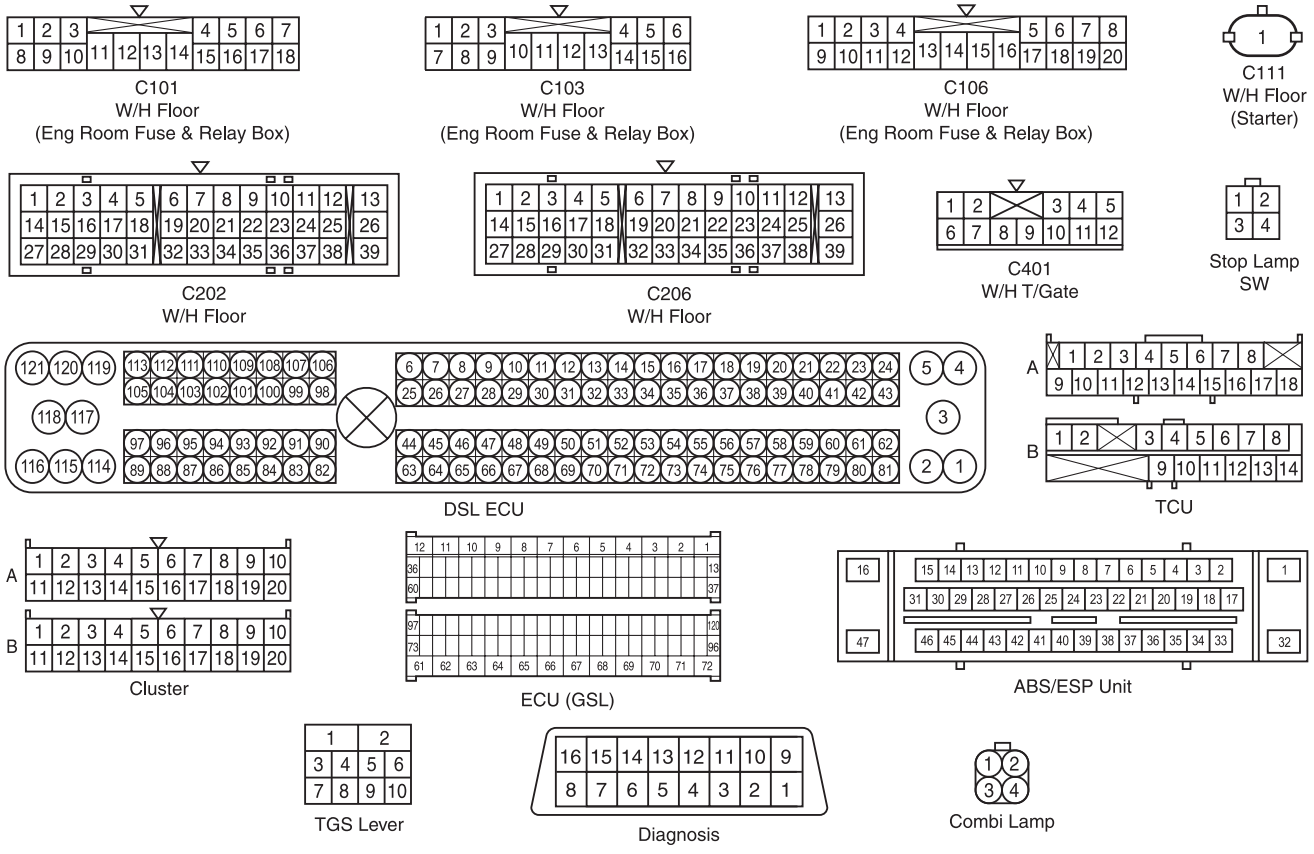
1) START MOTOR, TGS LEVER, CAN LINE



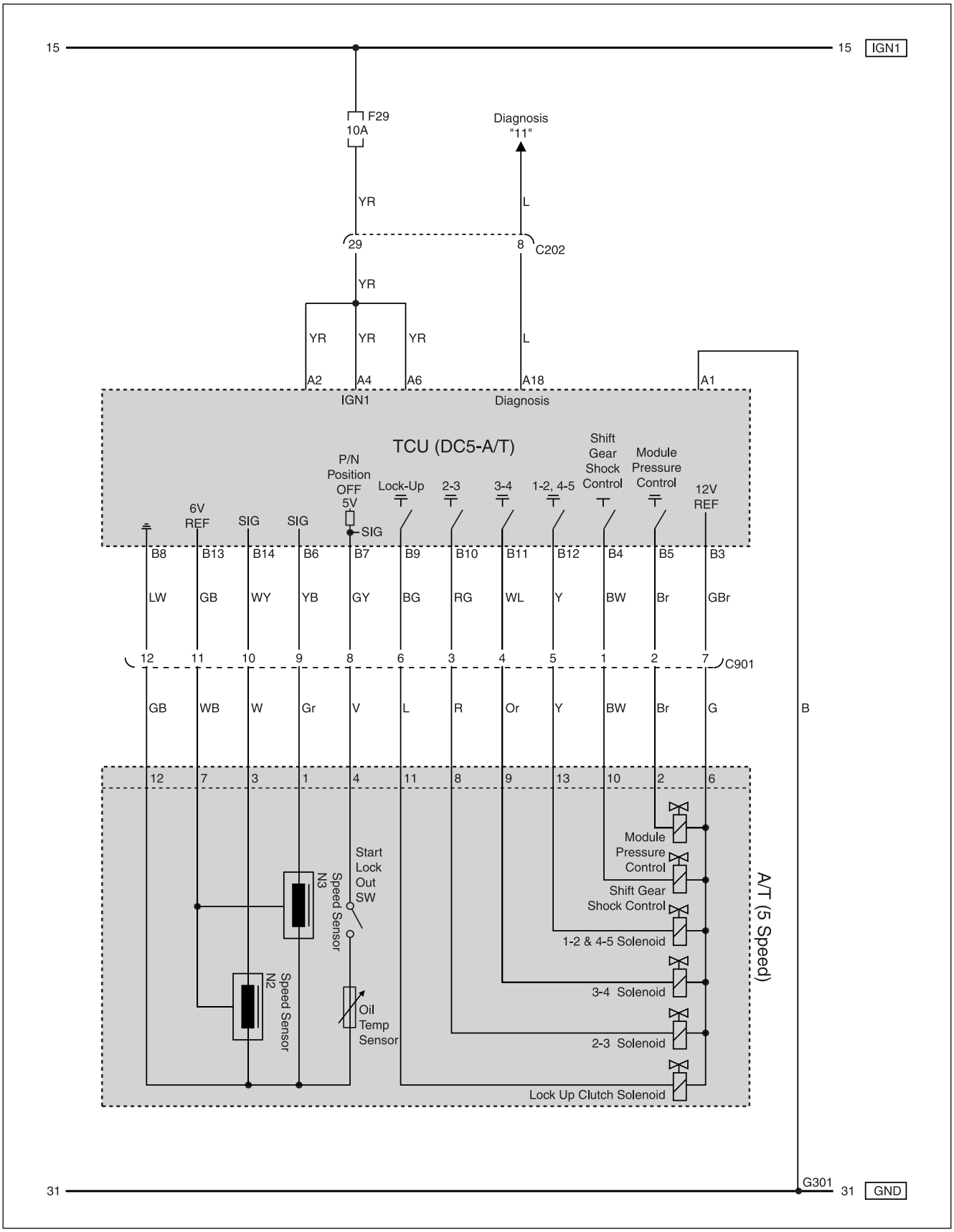
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C111 (1Pin, Gray)	W/H Floor - Starter Motor	Under the Preheating Time Relay	Solenoid
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G202	W/H Main	Under the Driver “A” Pillar	
G301	W/H Floor	Under the Driver Seat	
G401	W/H T/Gate	Center the T/Gate	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



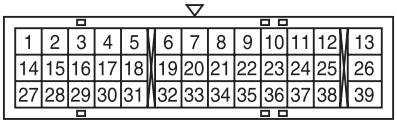
2) SOLENOID, OIL TEMP SENSOR, SPEED SENSOR (N2, N3)



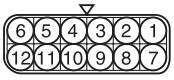
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C901 (12Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	A/T
G301	W/H Floor	Under the Driver Seat	

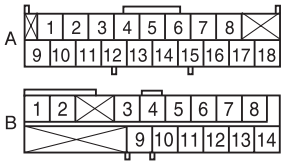
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



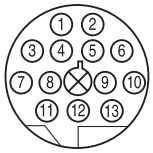
C202
W/H Floor



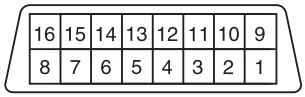
C901
W/H Transmission (A/T)



TCU



Transmission (5AT)



Diagnosis

C. CIRCUIT DESCRIPTION

FUNCTION

TCU controls the gear groups according to the driving conditions. It receives the driving data from many sensors and switches as input signals. It is also connected with ECU, HECU, instrument panel and selector lever control unit.

1. Shifting Method

   Basic shift operation includes up-shift and down-shift for all gear groups. Shift control unit determines driving resistance, accelerator pedal position, vehicle speed and some parameters (road surface condition, up hill and down hill gradients, trailer driving conditions, catalytic converter conditions, driving habits and automatic transmission oil temperature) to select a shift gear.
2. Down Shift

   When engine speed increases excessively, the down shift does not occur.
3. Engine RPM Adjustment

   During shifting, the engine torque is reduced to optimize the shift operation by delaying the ignition time.
4. Lock-Up Clutch Control

   The lockup clutch in torque converter is activated in 3rd, 4th and 5th gear and operates in sequence via PWM solenoid valve.
5. Others

   The transmission is automatically controlled to compensate durability and wear.

   The shift control values such as shifting point, shifting time, pressure during shifting, and lockup clutch control are permanently saved and the diagnosis is partially available.

SELECTOR LEVER CONTROL UNIT

Function

Selector lever control unit functions as follows:

1. Informing the selector lever's position to other units via CAN.
2. Turning on the selector lever indicator while tail lamp is turning on.
3. Turning on the back-up lamp during reverse driving.
4. Operating the parking/reverse lock system.

MODE SWITCH

Function

The mode switch is installed beside the selector lever and it has two modes of "S" mode (Standard Mode) and "W" mode (Winter Mode).

1. "S" mode is used in normal driving (starts off with 1st gear). TCU (Transmission Control Unit) provides pleasant driving by changing the shifting pattern according to the driving habits (downhill gripping: approx. 11 ~ 13.5 %)
2. When "W" mode is selected, the Winter mode indicator in meter cluster comes on, and the vehicle starts off with 2nd gear to achieve smooth starting on the icy or slippery road.

In winter mode, the up shift becomes faster and the down shift becomes slower for improving fuel consumption. The "W" mode is automatically changed to "S" mode in full throttle or kick-down operation. The vehicle can starts off with 2nd reverse gear (gear ratio: 1.92 ~ 1.93) when the "W" mode is selected. It is very useful on icy and slippery road. However, in this case, the "W" switch should be selected before placing the selector lever to "R" position.

Even though "W" mode is selected, the vehicle starts off with 1st gear in following:

When the system recognizes the mode switch operation, the selector lever control unit sends the control signal TCU via CAN communication.

1. When the selector lever is in "1" position.
2. When fully depressing the accelerator pedal or when starting off with kick-down condition.

REVERSE/PARKING (R/P) LOCK SYSTEM

Reverse (R) lock system is a safety system that prevents the selector lever from shifting to "P" or "R" position by activating the solenoid valve when the selector lever unit determines that the vehicle speed exceeds 10 km/h by checking the speed signal from wheel speed sensor via CAN communication.

Parking (P) lock system uses the signals from brake switch other than conventional cable system to shift to other positions. The wiring harness for detecting brake switch operation is connected to selector lever control unit.

STARTER LOCK-OUT CONTACT SWITCH

The starter lock-out contact is installed beside oil temperature sensor and is actuated by a cam rail, which is located on the latching plate.

In the selector lever positions "P" and "N", the permanent magnet is moved away from the reed contact. This opens the reed contact and the transmission control module receives an electrical signal. The transmission control module activates the starter lock-out relay module. This closes the electrical circuit to the starter in selector lever positions "P" and "N" via the starter lock-out relay module. In other words, when the selector lever is in driving positions, the contact is closed and the starter cannot be operated.

OIL TEMPERATURE SENSOR

The oil temperature sensor is installed in hydraulic control unit and is connected in series with the starter lock-out contact.

This means that the temperature signal is transferred to TCU when the starter lock-out contact is closed.

The oil temperature has a considerable effect on the shifting time and therefore the shift quality. By measuring the oil temperature, shift operations can be optimized in all temperature ranges.

SPEED SENSOR

The speed sensors are fixed to the shell of the hydraulic control unit via the contact tabs. A leaf spring, which rests against the valve body, presses the speed sensors against the transmission housing. This ensures a precise distance between speed sensors and impulse rings. speed sensor (n3) detects the speed of the front sun gear and speed sensor (n2) detects the speed of the front planetary carrier. If the speed sensor is defective, the transmission is operated in emergency driving mode. Below table shows the detection of speed sensor.

Gear	N2	N3
1	●	-
2	●	●
3	●	●
4	●	●
5	●	-
R (S mode)	●	-
R (W mode)	●	●

LOCKUP SOLENOID VALVE

This valve activates and releases the lockup clutch by adjusting the current to solenoid valve according to engine throttle opening value and output shaft speed. The lockup clutch operates in 3rd, 4th and 5th gear with steps to reduce shift shocks.

Working Current	1.5 ~ 2.0 A
Operating distance	0.2 mm
Resistance	2.5 ± 0.2 Ω (25°C)
Operating range	3, 4, 5 shift

MODULATING PRESSURE (MP) AND SHIFT PRESSURE (SP) CONTROL SOLENOID VALVE

These valves control the modulating pressure and the shift pressure by applying appropriate electric current to solenoid valves according to driving condition of engine and transmission.

When the electric current from TCU is high/low, the regulated pressure decreases/increases.

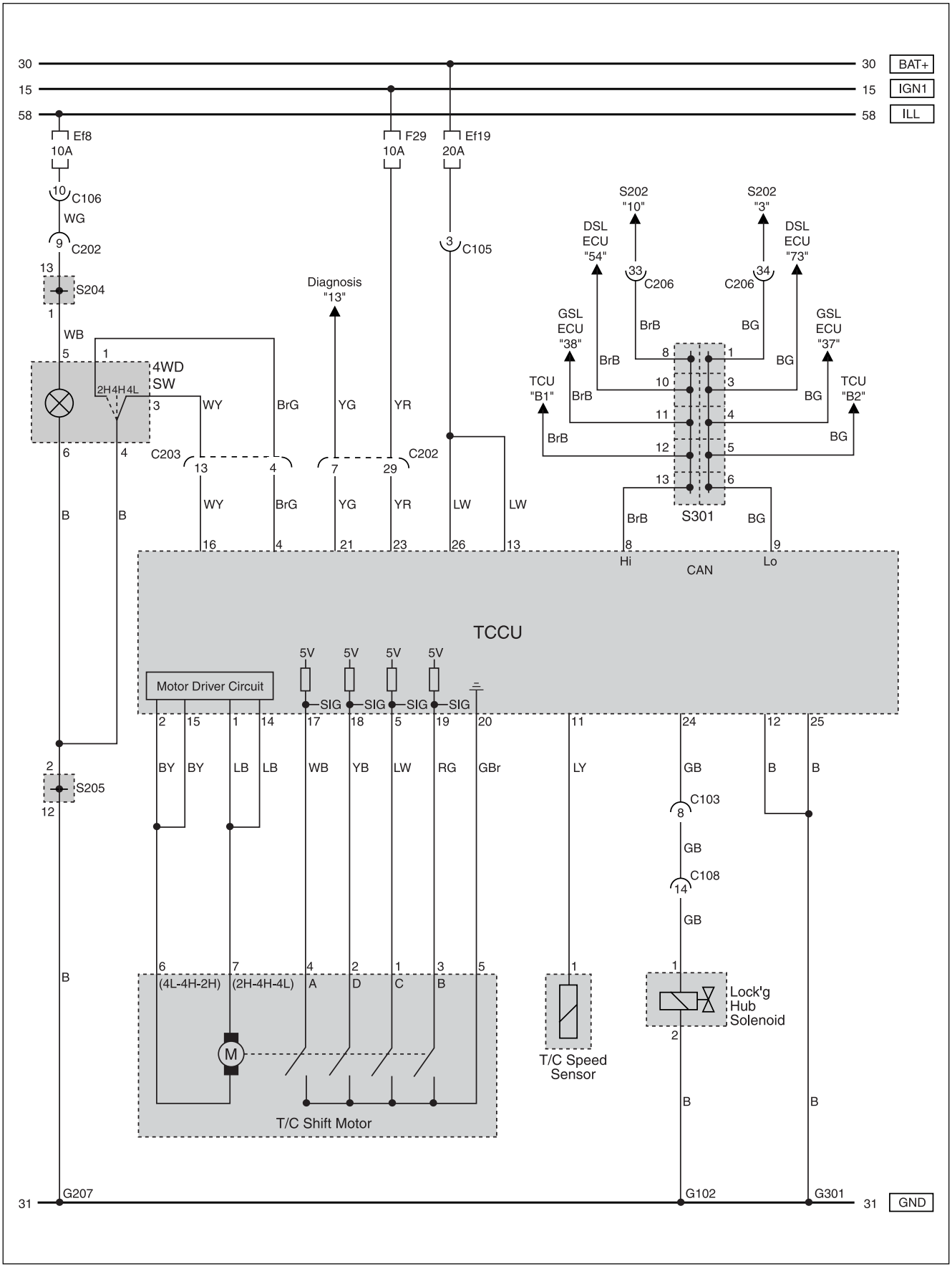
Working Current	0 ~ 1.0 A
Operating distance	0.6 mm
Resistance	5 ± 0.2 Ω (25°C)

CHARACTERISTICS OF UP/DOWNSHIFT SOLENOID VALVE

The solenoid valve remains energized and therefore open until the shift process is completed according to the engine and transmission conditions. If a solenoid valve is energized, it opens and transmits shift valve pressure to the corresponding command valve.

Working Current	1.5 ~ 2.0 A
Operating distance	0.2 mm
Resistance	3.8 ± 0.2 Ω (25°C)

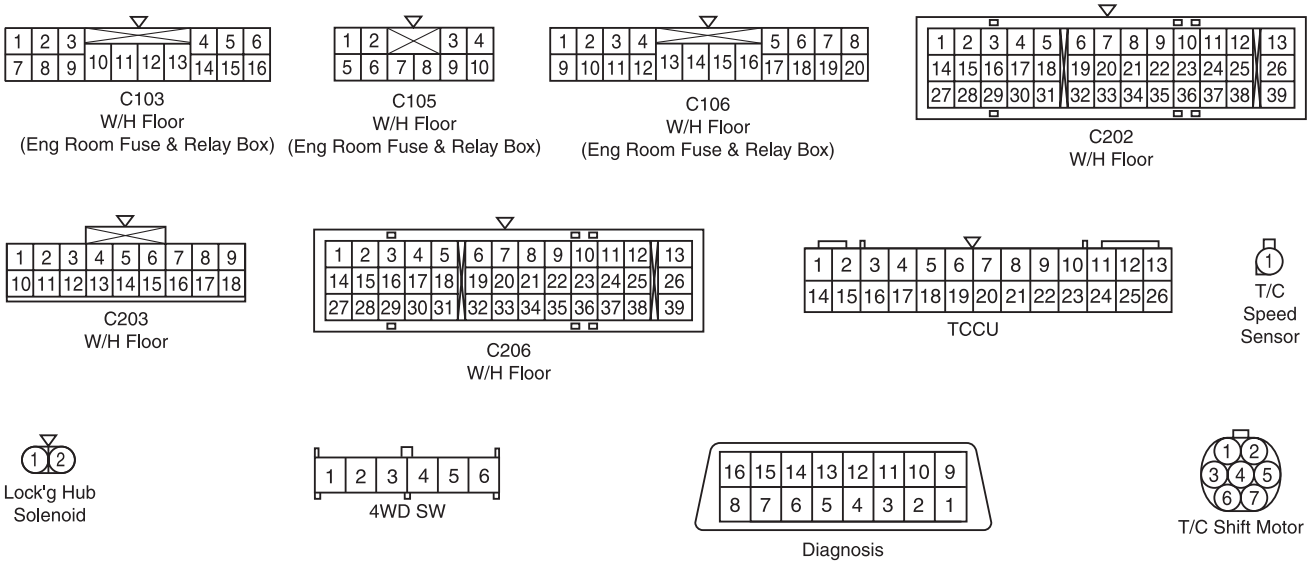
7. TCCU 3410


30
15
58
BAT+
IGN1
ILL
Ef8
10A
F29
10A
Ef19
20A
C106
WG
C202
S204
WB
4WD
SW
2H4H4L
WY
BrG
YG
YR
C203
C202
C105
Diagnosis
"13"
S202
"10"
S202
"3"
DSL
ECU
"54"
DSL
ECU
"73"
C206
C206
GSL
ECU
"38"
GSL
ECU
"37"
BrB
BG
TCU
"B1"
TCU
"B2"
S301
LW
Hi
Lo
CAN
TCCU
5V
Motor Driver Circuit
SIG
BY
LB
WB
YB
LW
RG
GBr
LY
GB
C103
C108
(4L-4H-2H)
(2H-4H-4L)
A
D
C
B
M
T/C Shift Motor
T/C Speed
Sensor
Lock'g
Hub
Solenoid
S205
G207
G102
G301
GND

A. CONNECTOR INFORMATION

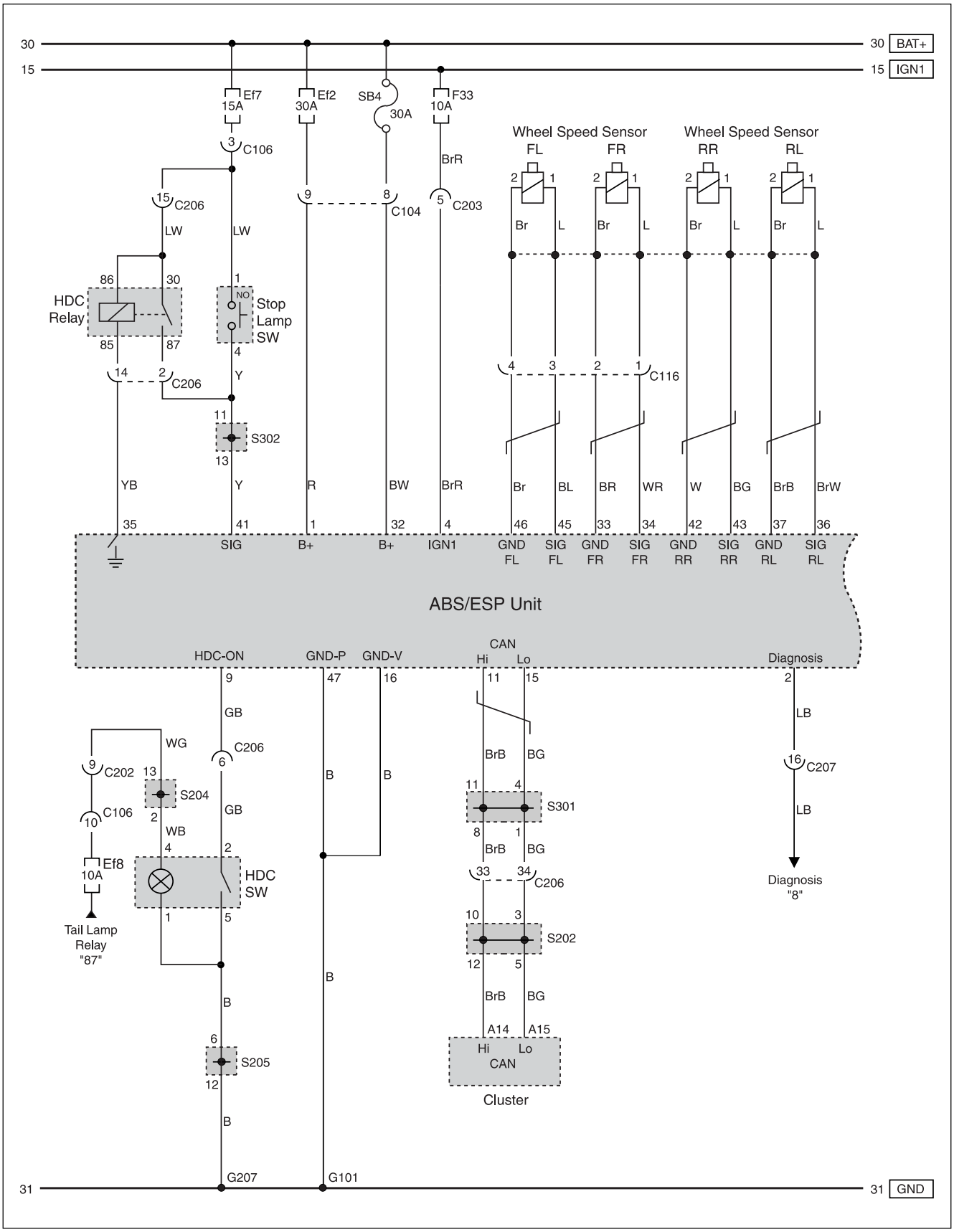
Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G102	W/H Eng Room	Behind LH Head Lamp	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G301	W/H Floor	Under the Driver Seat	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



8. ABS/ESP 4892

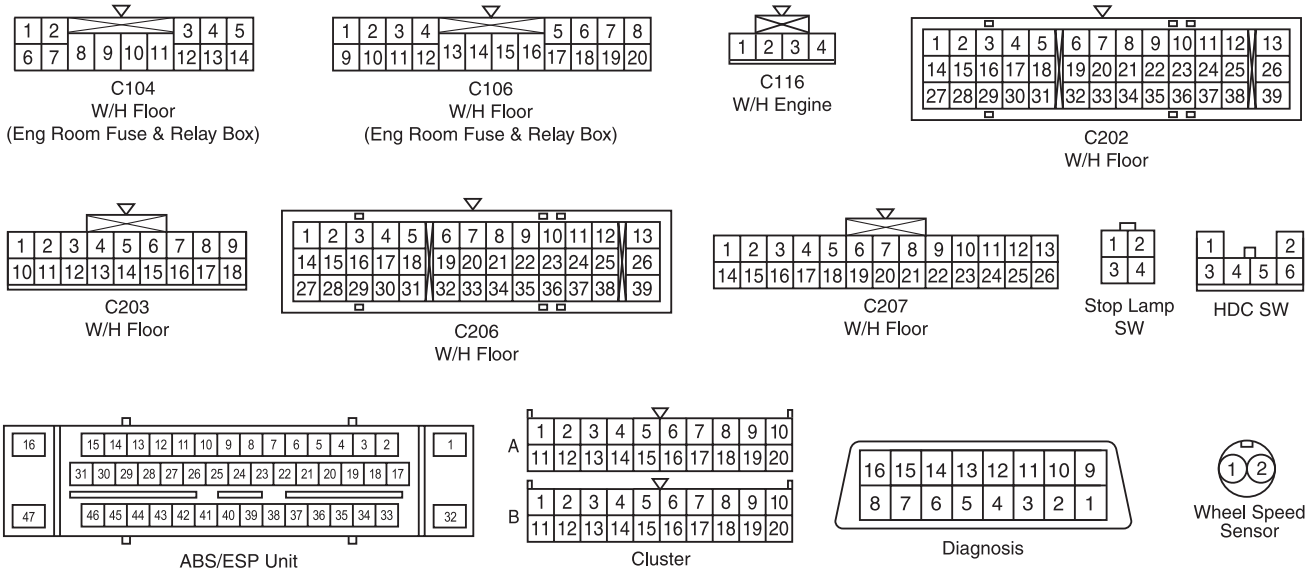
1) W/SPEED SENSOR, STOP LAMP SW, DIAGNOSIS, WARNING LAMP (ABS/ESP), HDC



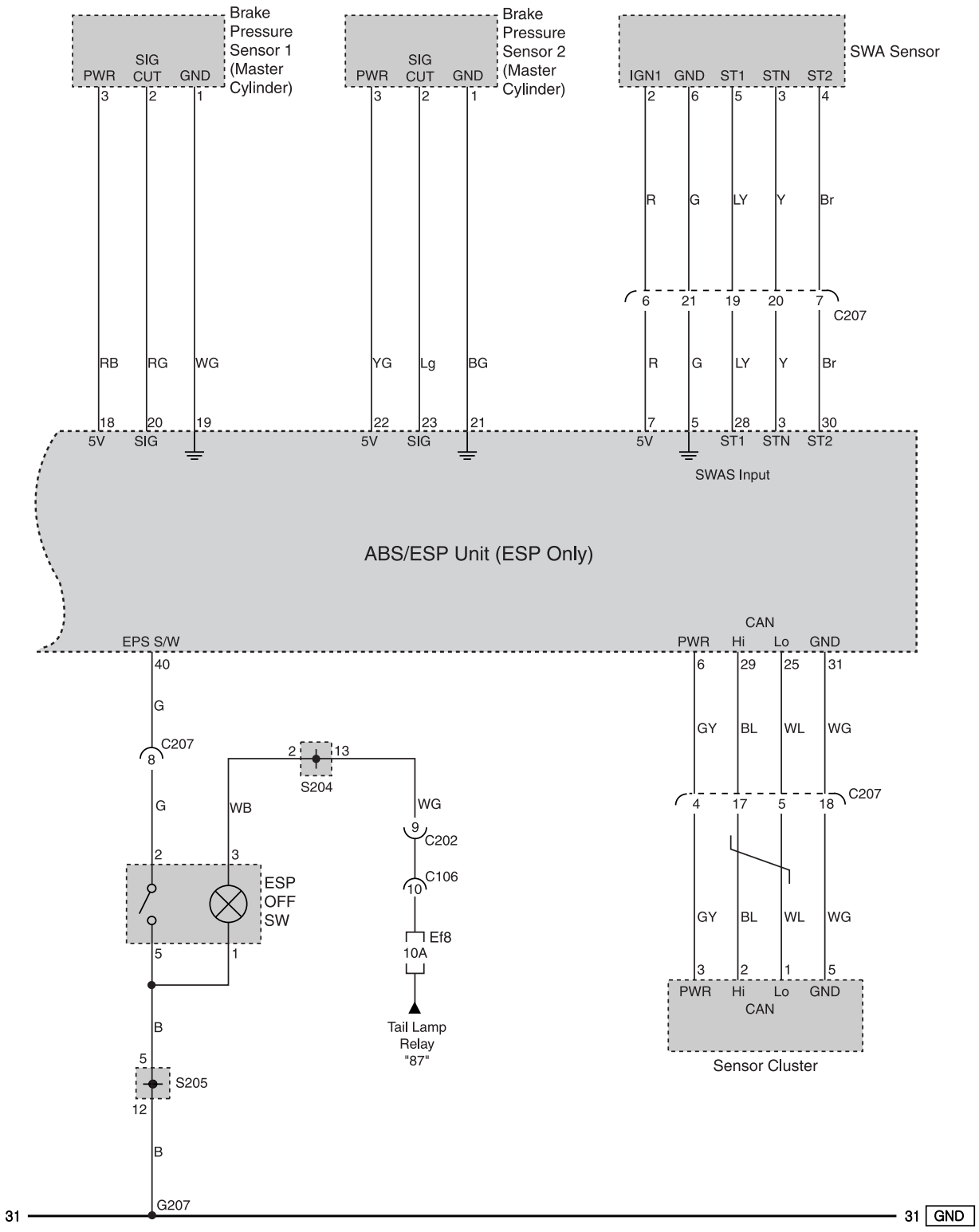
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C116 (4Pin, White)	W/H Eng - W/H Floor	Inside Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G101	W/H Floor	ABS/ESP Modulator	ABS/ESP
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



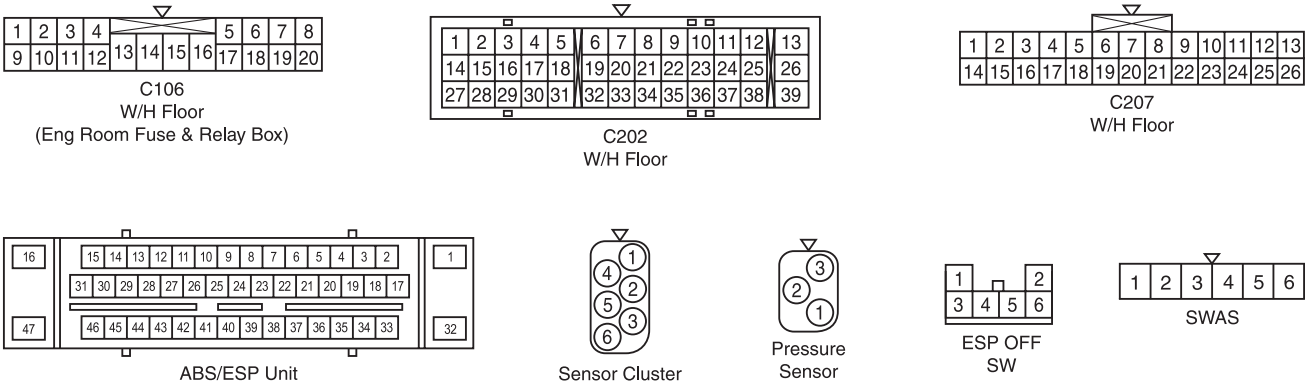
2) PRESSURE SENSOR, S.W.A SENSOR, SENSOR CLUSTER, ESP OFF SW



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

ABS COMPONENTS

Newly introduced ABS has a different shape of integrated hydraulic modulator and HECU (Hydraulic and Electronic Control Unit) compared to existing ABS. And, the wheel speed sensor uses different method to detect wheel speed. The basic function of the ABS that maintains the vehicle stability by controlling the steerability of the vehicle when braking has not been changed.

ACTIVE WHEEL SPEED SENSOR

The speed sensor used in traditional ABS is made of permanent magnet and transmits the output voltage that changes as the wheel rotor rotates to the HECU system. New wheel speed sensor detects the wheel speed through the current value that depends on the resistance that changes according to the magnetic field by using four resisters and supplying the 12 V power supply to the sensor.

Specifications

Item	Specifications	Reference
Supplying voltage	DC 12V	
Air gap	Front: 0.335 ~ 0.945 mm	Cannot measure the air gap
	Rear: 0.309 ~ 0.958 mm	
Output current (vehicle speed: at 2.75 km/h)	7mA (Lo) ~ 14mA (Hi) +20 % / -16 %	
Tightening torque	Front: 19 ~ 25 Nm	7.5 ~ 20 V
	Rear: 6 ~ 10 Nm	

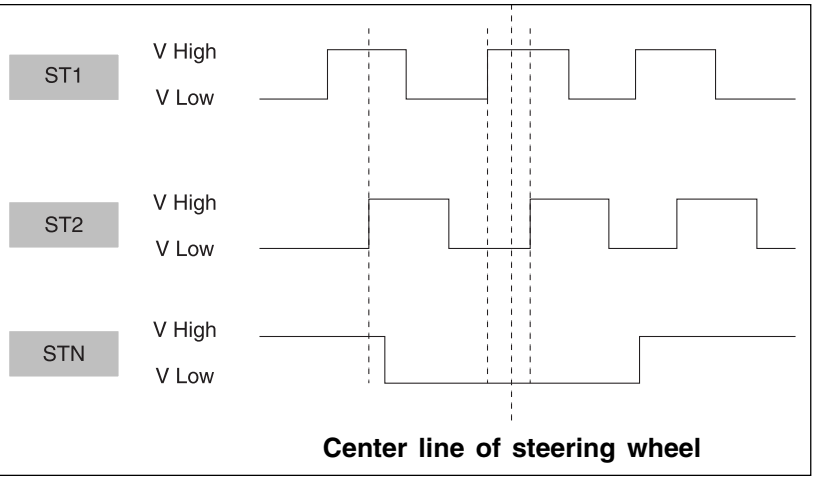
HBA (HYDRAULIC BRAKE ASSIST SYSTEM)

HBA (Hydraulic Brake Assist) system helps in an emergency braking situation when the driver applies the brake fast, but not with sufficient pressure, which leads to dangerously long braking distance. ECU recognizes the attempt at full braking and transmits the signal calling for full brake pressure from the hydraulic booster. An inexperienced, elderly or physically weak driver may suffer from the accident by not fully pressing the brake pedal when hard braking is required under emergency. The HBA System increases the braking force under urgent situations to enhance the inputted braking force from the driver.

SWAS : STEERING WHEEL ANGLE SENSOR

The steering wheel angle sensor is located between clock spring and multifunction switch. This sensor is used for recognition of driver's intends. If the sensor is replaced with new one, it can detect the neutral position after the vehicle is moving over 20 km/h for more than 5 seconds.

Working voltage	9 ~16 V
Number of pulse per revolution	45 Pulses /1rev
Duty	Approx. 50 %
High - V	3.0 ~ 4.1 V
Low - V	1.3 ~ 2.0 V
ST1 and ST2	Detects steering wheel angle and angular velocity as an average value
STN	Detects the center value of steering wheel



HDC (Hill Descent Control) SYSTEM

When the slope level exceeds 10%, the HDC operates until the vehicle reaches the speed condition given in step (4).

1. When the slope level is between 10% and 20% during the HDC operation

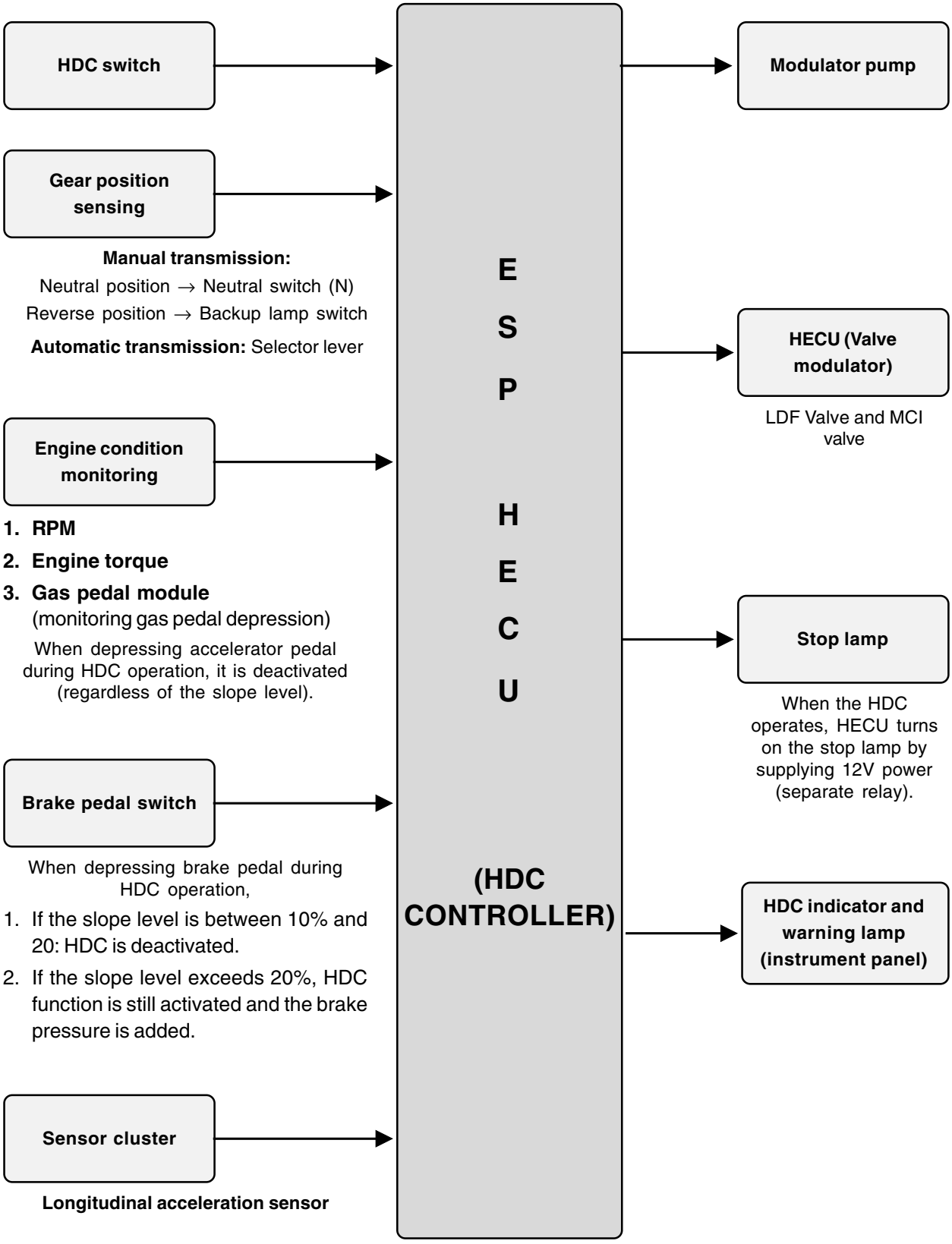
   When depressing the accelerator pedal or brake pedal, HDC system is changed to stand-by mode. When depressing the accelerator pedal again, HDC starts its operation again. Therefore, drivers can control the vehicle speed to a desired level by operating the accelerator pedal.

2. When the slope level exceeds 20% during the HDC operation

   When depressing the accelerator pedal, HDC system is changed to stand-by mode. When depressing the brake pedal, HDC continues its operation and the braking power is increased.

   In this case, HECU sounds an abnormal noise and brake pedal may be very rigid, but this is a normal condition due to HDC operation.

INPUT/OUTPUT SIGNALS FOR HDC OPERATION



OPERATION OF HDC INDICATOR CONTROLLER

This table describes the coming-on and blinking mode of HDC indicator according to the HDC switch operation (ON/OFF).

The HDC indicator on the instrument panel has two modes; green (function lamp) and red (warning lamp). The HDC switch is a push & self return type switch – when you press it once, it starts to operate and when you press it again, it stops the operation.

HDC Operation Mode			HDC Indicator	HDC Warning Lamp
			Green	Red
			HDC	HDC
Initial ignition ON (From hence, this signifies operation mode after the engine starts. Even when HDC switch is ON, if the ignition is OFF, HDC operation stops automatically.)			OFF	ON (goes off after 1.8 seconds)
Not available	HDC switch OFF		OFF	OFF
	HDC system error		OFF	ON
Stand-by	HDC switch ON		ON	OFF
	The HDC switch is turned ON, but HDC system is in stand-by mode because the operating requirements are not met.			
In operation	HDC system is operating.		Blinking (0.5 seconds of interval)	OFF
	The HDC switch is turned ON, and the operating requirements are met. HDC is operating with operating sound.			
System overheat	High brake system temperature (over 350°C)	HDC stand-by mode	OFF	Blinking
		HDC is operating	Alternate blinking of green and red lamp (0.5 seconds of interval)	
	Too high brake system temperature (over 450°C)		OFF	ON
	There is no specific temperature sensor in the system, but a programmed logic inside the HECU predicts the temperature based on the operating numbers and conditions of HDC (HDC cannot be operated).			

ESP (ELECTRONIC STABILITY PROGRAM)

ESP (Electronic Stability Program) recognizes critical driving conditions, such as panic reactions in dangerous situations, and stabilizes the vehicle by wheel-individual braking and engine control intervention with no need for actuating the brake. This system is developed to help the driver avoid the danger of losing the control of the vehicle stability due to under-steering or over-steering during cornering.

SENSOR CLUSTER (YAW RATE SENSOR + LATERAL ACCELERATION SENSOR + LONGITUDINAL ACCELERATION SENSOR)

Descriptions	Specifications
Supplying voltage	Approx. 5 V (4.75 ~ 5.25 V)
Output voltage when stop	Approx. 2.5 V (Ignition switch “ON”)
Output range	0.2 ~ 4.8 V
Operation start speed	-75°/s ~ +75°/s

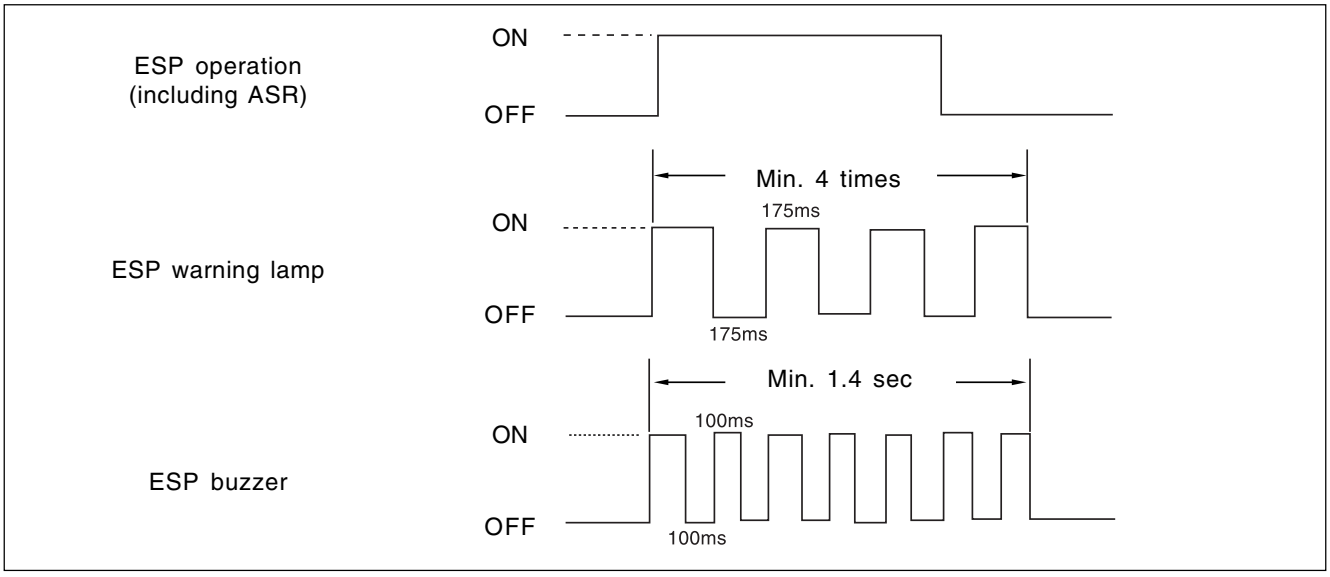
PRESSURE SENSOR

Specificatons

Descriptions	Specifications
Supplying voltage	4.75 ~ 5.25 V
Output range	0.25 ~ 4.75 V
Output voltage when stop	2.5 V

ESP WARNING LAMP BLINKING IN CONTROL

ESP warning lamp blinks when ESP control is activated. If the activation reaches a certain limitation, a beep sounds to warn the driver. The ESP warning lamp goes off when ESP function is deactivated. Even when the ESP is operated for a very short period of time, the ESP warning lamp blinks minimum of 4 times every 175 milliseconds and the buzzer sounds for at least 1.4 seconds with 100 ms interval.



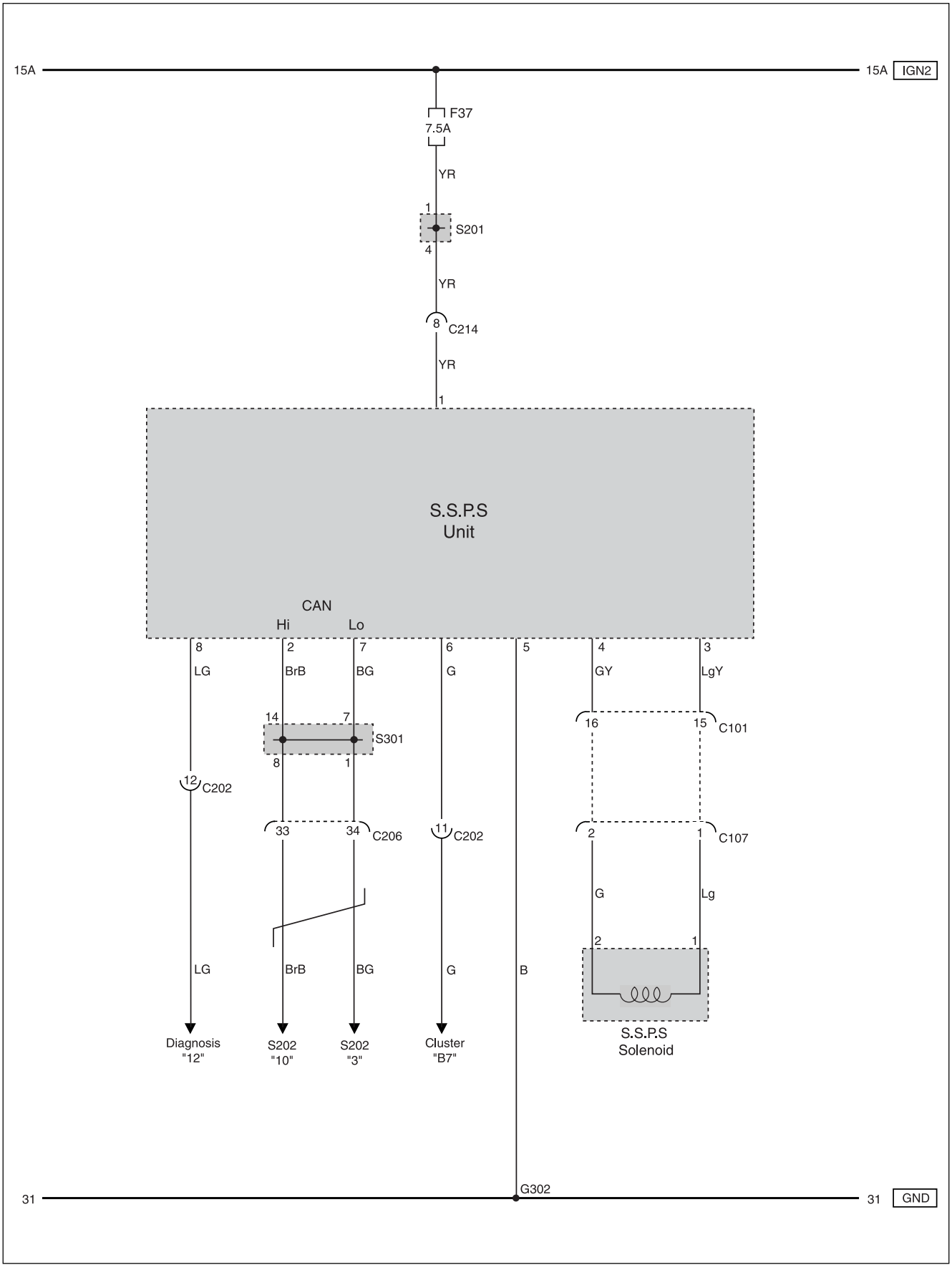
ESP SYSTEM CANCELLATION USING THE ESP OFF SWITCH

When the ESP switch at the center switch panel is pushed (for over approximately 150 ms), the ESP system will be cancelled and the vehicle will be driven regardless of the output values from the corresponding sensors. Then, the ESP warning lamp on the instrument panel comes on.

RESUMING THE ESP SYSTEM BY USING THE ESP OFF SWITCH

The ESP system will be resumed and the ESP warning lamp at the instrument panel goes off when the ESP switch at the center switch panel is pushed (for over approximately 150 ms) while the ESP system is not operating.

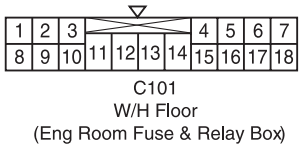
9. S.S.P.S (SPEED SENSITIVE POWER STEERING) 4620



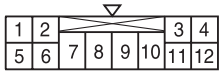
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G302	W/H Floor	Under the Driver Seat	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S301 (14Pin, Black)	W/H Main	Beside Driver Seat W/H Protector	CAN

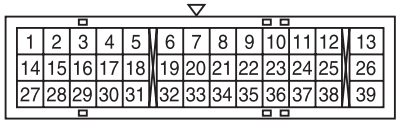
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



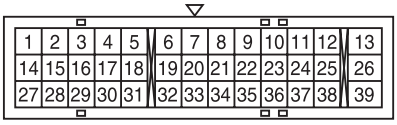
C101
W/H Floor
(Eng Room Fuse & Relay Box)



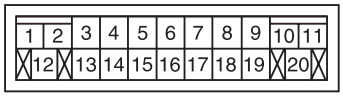
C107
W/H Eng
(Eng Room Fuse & Relay Box)



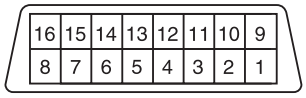
C202
W/H Floor



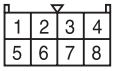
C206
W/H Floor



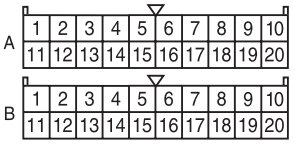
C214
W/H Floor



Diagnosis



SSPS Unit



Cluster

SSPS
Solenoid

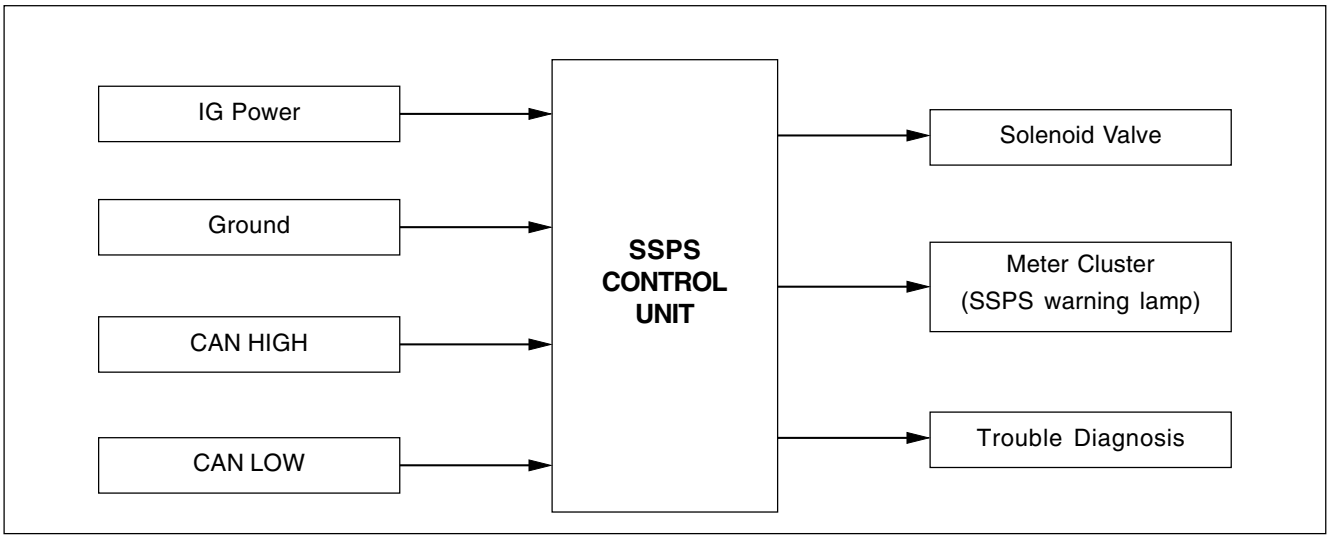
C. CIRCUIT DESCRIPTION

SSPS (SPEED SENSITIVE POWER STEERING)

In the conventional constant power assist steering system, the steerability gets lighter as vehicle speed rises, and this may cause a dangerous situation. Where as having heavy steerability in high speed driving makes it difficult to manipulate the steering wheel when vehicle is in stop. This steering system solves this problem as the steerability is changed according to the vehicle speed, which is called Speed Sensitive Power Steering (SSPS).

SSPS, by providing appropriate steerability to a driver according to the changes of vehicle speed, gives steering stability. The power steering control unit adjusts the hydraulic pressure to reaction plunger by controlling the pressure solenoid valve located in the gear box to optimize the steerability. In other words, the steering wheel gets lighter by adjusting steerability in stop or low speed and provides steering stability by adjusting steering wheel to become heavier in high speed.

INPUT/OUTPUT OF SSPS CONTROL UNIT



SSPS CONFIGURATION

1. PCV (Pressure Control Valve)

   This valve controls the hydraulic pressure supplied to reaction device by moving the spool valve according to the changes of solenoid valve.

2. Reaction device

   This device increases the steerability effect by binding the input shaft with supplied hydraulic pressure from PCV.

3. Solenoid valve

   The SSPS control unit controls the amount of electric current to the solenoid valve according to the vehicle speed. In other words, the solenoid valve controls the hydraulic pressure applied to reaction plunger by changing the valve spool position that is linked with solenoid valve according to the amount of electric current. The changes of hydraulic pressure applied to input shaft according to the pressure changes applied to the reaction plunger provide proper steerability based on the amount of electric current.

   1) Specifications

Description	Specification
Voltage Rating	DC 12 V
Current Rating	1.0 A
Resistance	6.7 ± 1 W

2) Electric Current Check
   - Disconnect the solenoid valve connector (waterproof connector) and install the ammeter between the solenoid valve connector and the wiring harness.

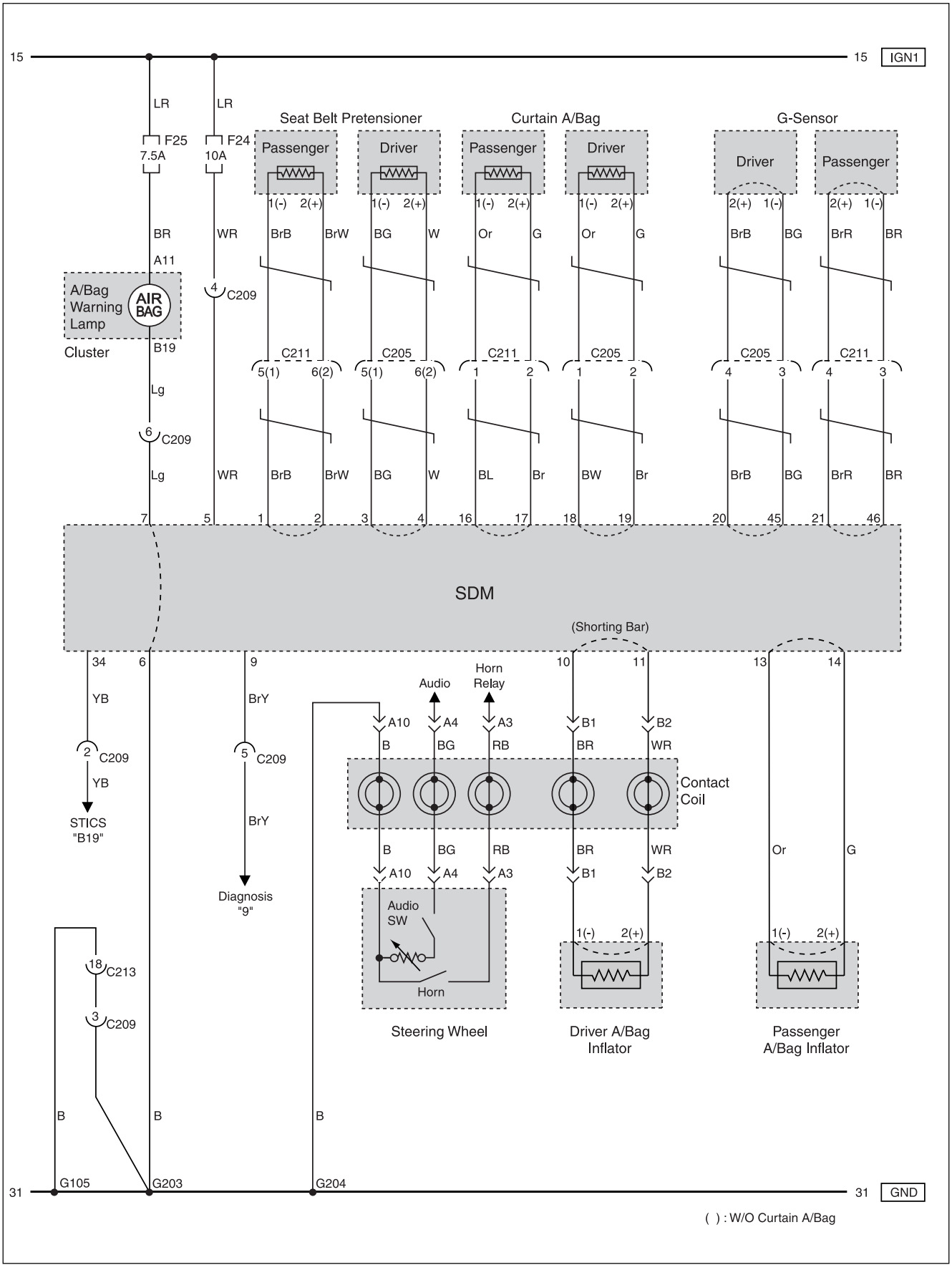
NOTICE
- **Do not ground the solenoid terminal.**

   - When the vehicle speed is at 0 km/h, check whether the electric current for solenoid is in specified range and check that the current is reduced as the vehicle speed increases.

Current	0.9 ~ 1.1 A (vehicle speed at 0 km/h)

4. SSPS Control Unit
   1) To provide proper steerability to a driver, the SSPS control unit controls the solenoid valve by receiving the vehicle speed and the throttle position data via CAN communication.
   2) The SSPS control unit controls the working current for the solenoid valve with PWM type duty ratio of 333 Hz frequency and sets the target current to 1A during 1 second after the ignition is “ON”.
   3) When a trouble occurs in the system, the SSPS control unit generates a trouble code using fail safe function.

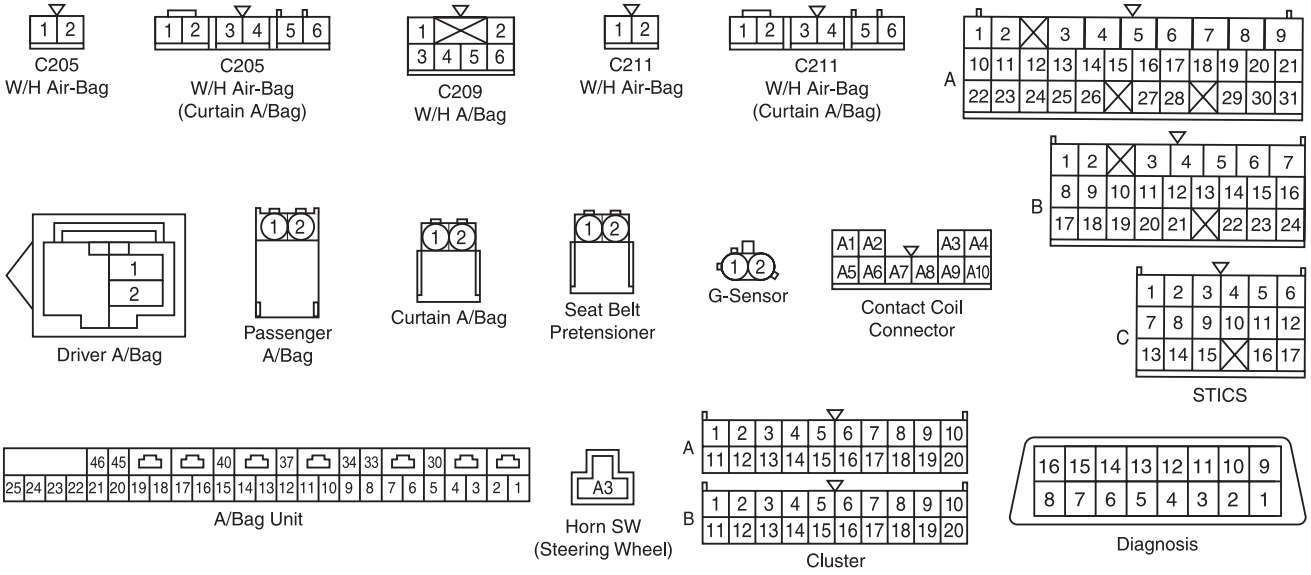
10. AIR-BAG (CURTAIN AIR-BAG) 8810



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C205 (2Pin, Yellow)	W/H Main - W/H A/Bag	Driver Cowl Side C/Holder	
C205 (6Pin, Yellow)	W/H Main - W/H A/Bag	Driver Cowl Side C/Holder	Curtain A/Bag
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C211 (2Pin, Yellow)	W/H Main - W/H A/Bag	Passenger Cowl Side C/Holder	
C211 (6Pin, Yellow)	W/H Main - W/H A/Bag	Passenger Cowl Side C/Holder	Curtain A/Bag
G105	W/H Floor	RH Cowl Side PNL (Beside C114)	A/Bag
G203	W/H Main (W/H A/Bag)	Beside A/Bag Unit	A/Bag
G204	W/H Main	Backside TGS Lever Unit	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

OVERVIEW

The air bag systems for this vehicle are not much different from the previous air bag system installed in KYRON. The curtain air bags are installed at the bottom of the roof trim and they enhance the passenger's safety. The driver's and passenger's curtain air bags individually deploy.

When the front air bags deploy, the seat belt pretensioners retract the seat belts too.

Collision sensors, a kind of impact G (acceleration) sensor, detect the front and longitudinal collisions and determine whether or not the air bags are deployed. The roles of each collision sensor are as below:

1. Front G sensors (inside the air bag unit)
   1) Send signals to the front air bags and the driver's and front passenger's seat belt pretensioners.
      By the signal from this sensor, front air bags (driver's and passenger's air bags) deploy and the seat belt pretensioners of the driver's and passenger's seat belts retract seat belts.
2. Curtain air bag G sensors
   2) These are located inside the left and right B-pillar panel bottoms. When a collision occurs, the air bag at the side of collision deploys accordingly. Please pay attention to that, in the case of the curtain air bag, only the air bag at the side of collision deploys, not both.

NOTICE

- **Please do not connect a tester to any air bag connector or single item to measure the supplied power or resistance. The detonator may explode due to a sudden extra power supplied by the tester.**
- **Before removing or installing any air bag related components, disconnect the negative battery cable.**

DRIVER AND PASSENGER BPT (BELT PRE-TENSIONER)

The belt pretensioner retracts the seat belt to tighten or take up slack in the wearer's belt. When a collision occurs or when brakes are applied, a seat belt with a pretensioner detects the stopping action and tightens the belt before the wearer is propelled forward. This holds the occupant more securely in the seat.

AIR BAG SYSTEM DEPLOY (FIRING LOOP)

According to the collision deceleration rate that each collision G sensor reads, the air bag unit sends out about 2~4 or higher Amp current. This current generates some heat, which fires the detonator in the inflator.

This table shows the basic inner resistance of the air bag related module and the basic instant current necessary for a firing.

Air bag module	Driver/passenger air bag (DAB / PAB)	Belt pretensioner (BPT)	Curtain air bag (CAB)
Resistance (at -30 ~ 85°C)	2 ± 0.3 Ω	2.15 ± 0.35 Ω	2 ± 0.3 Ω
Firing current for 2msec (at -35°C)	1.2 Amps	0.8 Amps	1.0 Amps

AIR BAG DEPLOYMENT SIGNAL OUTPUT (CRASH OUT)

When any air bag deploys, another signal is sent to the sticks to do two basic security operations. One operation is the automatic door unlock function that cancels the automatic door lock mode.

1. Automatic Door Unlock (Crash unlock: unlock when colliding)
   1) When the ignition key is the ON position, the air bag signal is not accepted for the first 7 seconds.
   2) When the ignition key is the ON position and the vehicle speed is 3 km/h or higher, 40 ms after receiving the air bag deployment signal, the sticks sends out the door UNLOCK signal for 5 seconds.
   3) Even though the ignition switch is turned off in the middle of the unlock signal being sent out, the unlock signal continues for the remaining time.
   4) This function cancels when the ignition key is withdrawn.

AIR BAG WARNING LAMP OPERATIONAL CONDITIONS

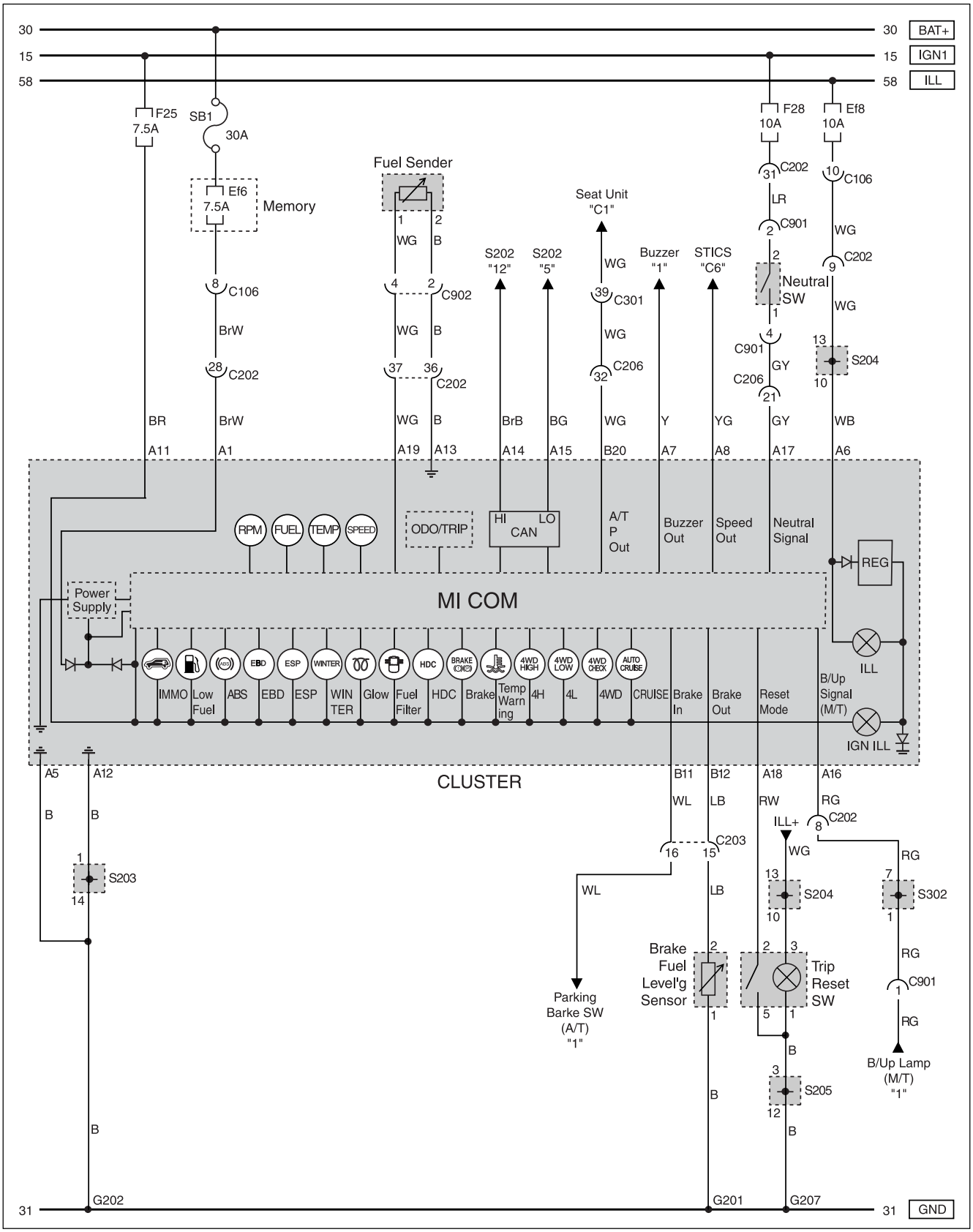
The air bag warning lamp on the instrument panel has a few operational conditions. The following are the conditions:

1. When Turning the Ignition Switch to ON Position
   1) The air bag unit performs a turn-on test when the ignition is turned on. The air bag unit flashes the air bag warning lamp six times by supplying an intermittent ground to the warning lamp circuit. After flashing six times, the air bag warning lamp will turn off if no more malfunctions have been detected.
2. When Turning the Ignition Switch to the ON Position
   1) When the air bag unit detects any malfunctions in its unit

      When it is recorded as a system failure in the air bag unit, the air bag warning lamp on the instrument panel comes on for about 6 seconds and goes off for 1 second. Then the waning lamp stays on.
3. When the Air Bag Unit Receives Any Malfunction Signals from the Other Systems
   1) When, due to an error from outside the system, the intermittent failure signal is received 5 times or less, the air bag warning lamp comes on for about 6 seconds and then, goes off.

11. CLUSTER 8010

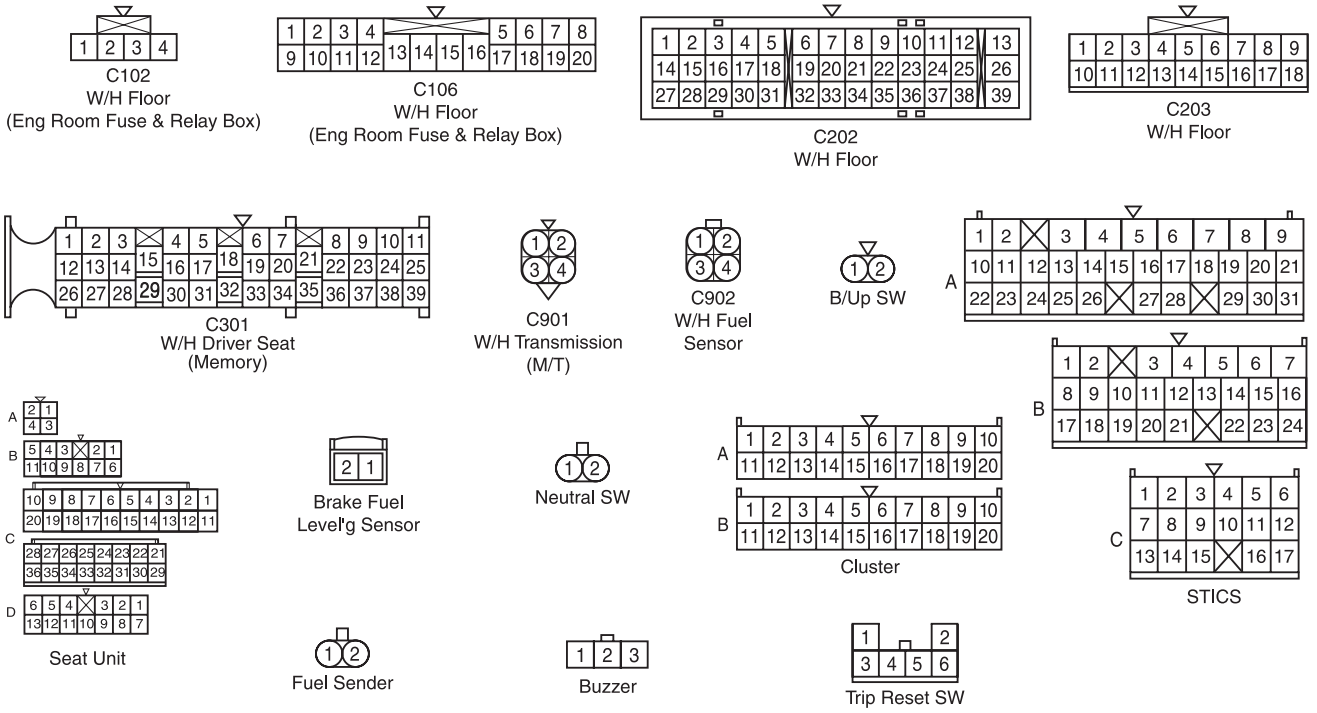
1) GAUGE (SPEED, RPM, FUEL, TEMP), WARNING LAMP (FUEL, FUEL FILTER, ABS/ESP, BRAKE, HDC, 4WD)



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C301 (4Pin, White)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/O Memory
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
C902 (4Pin, Black)	W/H Floor - W/H Fuel Sender	Upper the T/M	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

OVERVIEW

By using the planetary gear sets, two-gears shift type part time transfer case achieves direct connection when selecting 4WD “HIGH” and 2.48 of reduction gear ratio when selecting 4WD “LOW”. The silent chain in transfer case transfers the output power to front wheels.

The simple operation of switches on instrument panel allows to shift between “2H” and “4H” easily while driving (for 4L: stop vehicle first). The warning lamp warns the driver when the system is defective.

The 4WD system integrated in KYRON does not have big difference in comparison to the conventional part time transfer case, but the changes in comparison to the conventional transfer case are as follows:

1. No additional coding is required when replacing TCCU.
2. Delete the devices (tone wheel, wiring etc.) related to the speed sensor in the transfer case.
   This system receives the speed signals from ABS/ESP HECU or instrument panel (for non-ABS vehicle(Note 1)) through the CAN communication.
3. Delete the pin related to the speed sensor from TCCU pins.
4. Change the transfer case wiring connector from No.4 pin to No.1 pin. (Power and ground related to the speed sensor)
5. The new TCCU is available to install on the vehicle with the conventional DI engine part time TCCU.

- Instrument panel(Note 1): In non-ABS vehicle, the vehicle speed sensor is installed on the rear drive axle. The engine ECU sends the speed signal to the instrument panel, and then the instrument panel provides the information to TCCU and other devices.

LOCKING HUB SYSTEM

The transfer case and the TCCU differ from previous models only in the speed sensor related parts. However, the vacuum locking hub operation system works oppositely from previous models and its components also have changed.

The vacuum locking hub that is applied to Kyron uses the IWE (Integrated Wheel End) system, and in this system, the vacuum is generated only within the hub actuator.

It is structured to transmit power to the front section after the actuator hub is engaged following the release of vacuum from the drive shaft end gear and the hub end gear.

TCCU PIN NUMBERS AND DESCRIPTION

T/C: Transfer Case

Pin No.	Function	Input/Output	Description
1	Motor HI - LO	Output	This is a terminal that outputs the input signal to the T/C motor during the 4WD switch operation. When switching the 2WD mode to 4WD mode, the battery power is supplied to “Motor Hi-Lo” and the opposite side is earthed, and vice versa.
2	Motor LO - HI	Output	
3	-	-	-
4	4WD switch	Input	Switch position converting (2H-4H) recognition
5	Position 2	Input	Detecting shift motor position 2 position.
6	-	-	-
7	-	-	-
8	CAN H	Both	These lines are sharing the information among the related units through the CAN communication. The differences from the conventional part time T/C models are that the speed sensing type tone wheel in T/C has been eliminated and the speed signal comes from the ABS/ESP HECU or the instrument panel.
9	CAN L		
10	-	-	-
11	EMC (Electronic magnetic clutch)	Output	Supplying the voltage to clutch coil for all shifting operations • When supplying power: Battery voltage • When no power supplied: Ground power
12	Ground	Input	Provide the ground to TCCU
13	Battery	Input	Battery voltage supplying terminal to operate the system
14	Motor High-Low	Output	Same as No.1, 2 pin
15	Motor Low-High	Output	
16	High-Low switch	Input	Recognition converting switch between 4H and 4L
17	Position 4	Input	Detecting shift motor position 4 position.
18	Position 1	Input	Detecting shift motor position 1 position.
19	Position 3		Detecting shift motor position 3 position.
20	Position return	Input	Providing the ground related to shift motor sensor plate.
21	K-Line	Both	Connected to trouble diagnosis connector
22	-	-	-
23	Ignition power	Input	Power supply terminal when ignition switch is ON
24	Solenoid power supply	Output	Locking hub system applied to KYRON makes difference in related to the conventional part time system and the vacuum supply in operating process.
25	Ground	-	-
26	Battery	-	-

SYSTEM OPERATION

1. 2H → 4H
   1) Change the 4WD switch in instrument panel from 2H to 4H.
   2) This shift is available during driving.
   3) The “4WD HIGH” indicator in meter cluster comes on.
2. 4H → 2H
   1) Change the 4WD switch in instrument panel from 4H to 2H.
   2) This shift is available during driving.
   3) The “4WD HIGH” indicator in meter cluster goes out.
3. 4H → 4L
   1) This function is only available when the speed signal from speed sensor is about to stop (below 2 km/h).
   2) This function is only available when the clutch pedal is depressed (manual transmission) or the selector lever is selected to the “N” position (automatic transmission). (TCCU must recognize the clutch pedal signal or “N” signal.)
   3) Change the 4WD switch in instrument panel from 4H to 4L.
   4) The “4WD LOW” warning lamp in meter cluster flickers during this process, then goes out when the shift is completed.
   5) The “4WD CHECK” warning lamp comes on when the system is defective.

SHIFT MOTOR CONNECTOR

When selecting a position in the 4WD switch (2H, 4H, 4L), TOD control unit exactly changes the motor position to 2H, 4H and 4L by detecting the electric signals from position encoder that monitors motor position.

Pin	Function
1	Position A
2	Position B
3	Position C
4	Position D
5	Position ground
6	Control (4L - 4H -2H)
7	Control (2H - 4H - 4L)

MAGNETIC CLUTCH COIL POWER SUPPLY CONNECTOR

The transfer case integrated in KYRON doesn't have an internal speed sensor and receives the speed signal from ABS/ESP HECU or the instrument panel (Non-ABS vehicle) via CAN communication. Therefore, there are not extra terminals for speed sensor power supply and ground.

Pin	Function
A	Magnetic clutch coil power supply

SELF-DIAGNOSIS TEST

1. TCCU detects the transfer case systems malfunctions and indicates malfunctioning part(s) through flickering of the "4WD CHECK" indicator.

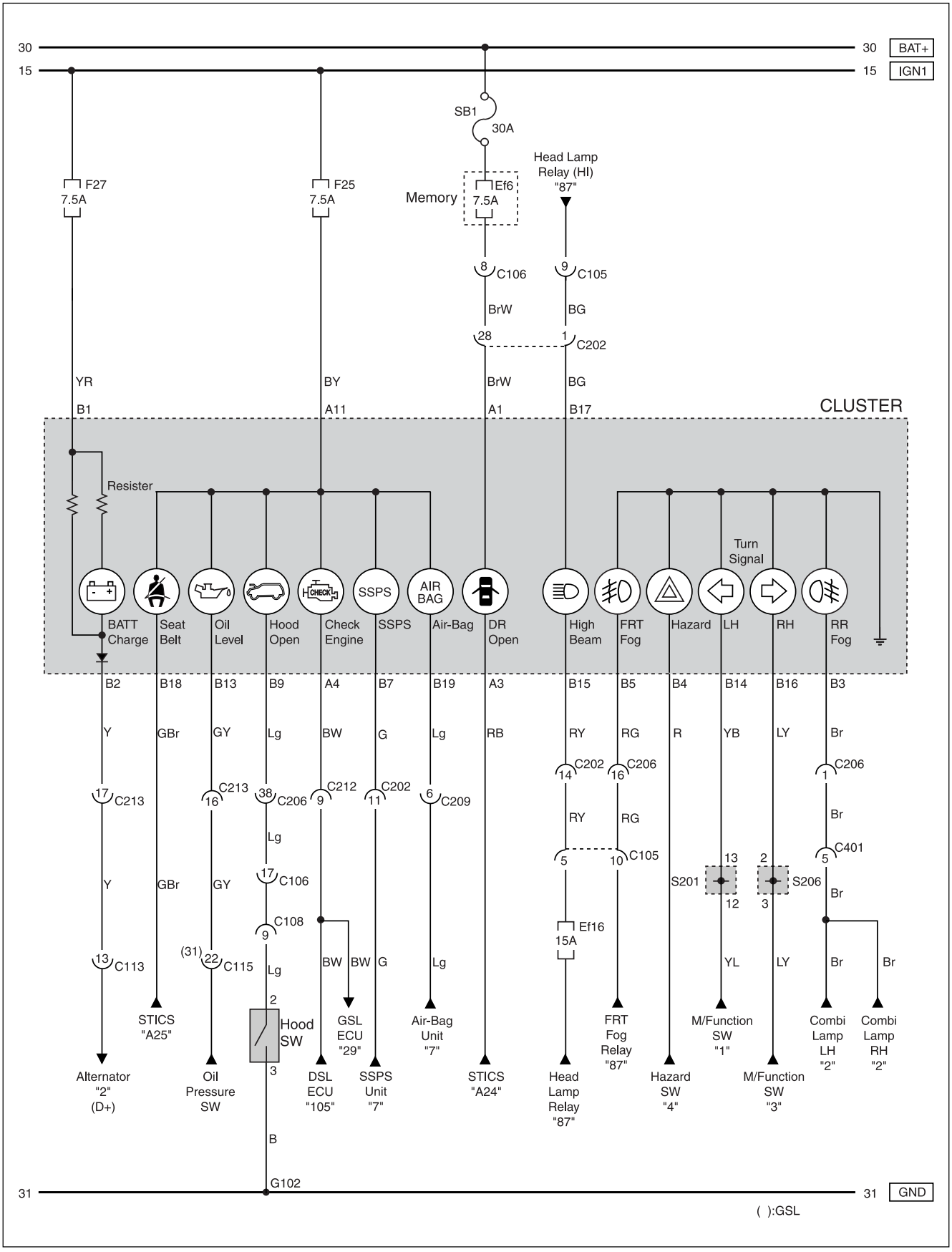
   Connect Scan-I to the diagnostic connector located under the steering wheel.
2. The transfer case system is malfunctioning when:
   1) The "4WD CHECK" indicator remains on after 0.6 second when turning the ignition switch ON.
   2) The "4WD CHECK" indicator continuously comes on during driving.
3. Connect Scan-I to the diagnostic connector and read the defective code with the ignition switch "ON" (refer to Diagnosis Table).
4. After repairing, erase the defective code stored in TCCU.

DIAGNOSTIC TROUBLE CODE

Code	Description	Action
P1806	Detective CAN commuication	- Check communication line. - Replace TCCU if necessary.
P1805	Defective mode switch	- When the mode switch is defective - Check TCCU pin No.4 and 16. - Mode change • 2H (Pin No. 4: Ground) • 4H (No contact: Open) • 4L (Pin No.16: Ground)
P1821	Open or short to ground in magnetic clutch coil circuit	- Voltage at TCCU pin No.11: 11 ~ 15 V - EMC resistance: 2.5 Ω - Check the relevant connectors for contact. - Replace TCCU if necessary.
P1822	Open or short to ground in hub control circuit	- When the hub control circuit is open or short to ground over 0.2 second - Replace TCCU if necessary.
P1841	Open to ground in shift motor circuit	- When TCCU detects the motor failure for 1 second - Check the relevant harnesses for contact. - Replace TCCU if necessary.
P1842	Short to ground in shift motor output circuit	- When TCCU detects the motor failure for 1 second - Check the relevant harnesses for contact. - Replace TCCU if necessary.
P1843	Defective position sensor in motor	- 2H-4H: after 1.5 seconds - 4H-4L: after 3 seconds - Check the relevant harnesses for contact. - Replace TCCU if necessary.
P1844	Stuck in 4L mode	- When no shifting operation from 4L to 4H, even though the shift conditions are satisfied and no error. - Replace TCCU if necessary.

Code	Description	Action
P1850	Defective position encoder	- When the position encoder is defective - Check the relevant harnesses. - Check the relevant connectors for contact. - Check the shift motor.
P1851	Short to ground for position encoder 1	- Short to ground for position encoder 1 in shift motor - Check the relevant harnesses for short. • TCCU pin No.18 - Check the relevant connectors for contact. - Check the shift motor.
P1852	Short to ground for position encoder 2	- Short to ground for position encoder 2 in shift motor - Check the relevant harnesses for short. • TCCU pin No.5 - Check the relevant connectors for contact. - Check the shift motor.
P1853	Short to ground for position encoder 3	- Short to ground for position encoder 2 in shift motor - Check the relevant harnesses for short. • TCCU pin No.19 - Check the relevant connectors for contact. - Check the shift motor.
P1854	Short to ground for position encoder 4	- Short to ground for position encoder 4 in shift motor - Check the relevant harnesses for short. • TCCU pin No.17 - Check the relevant connectors for contact. - Check the shift motor.
P1815	Abnormal CAN neutral signal	- No neutral signal from automatic transmission over 1 second through CAN. - Check CAN communication line. - Check TCU.

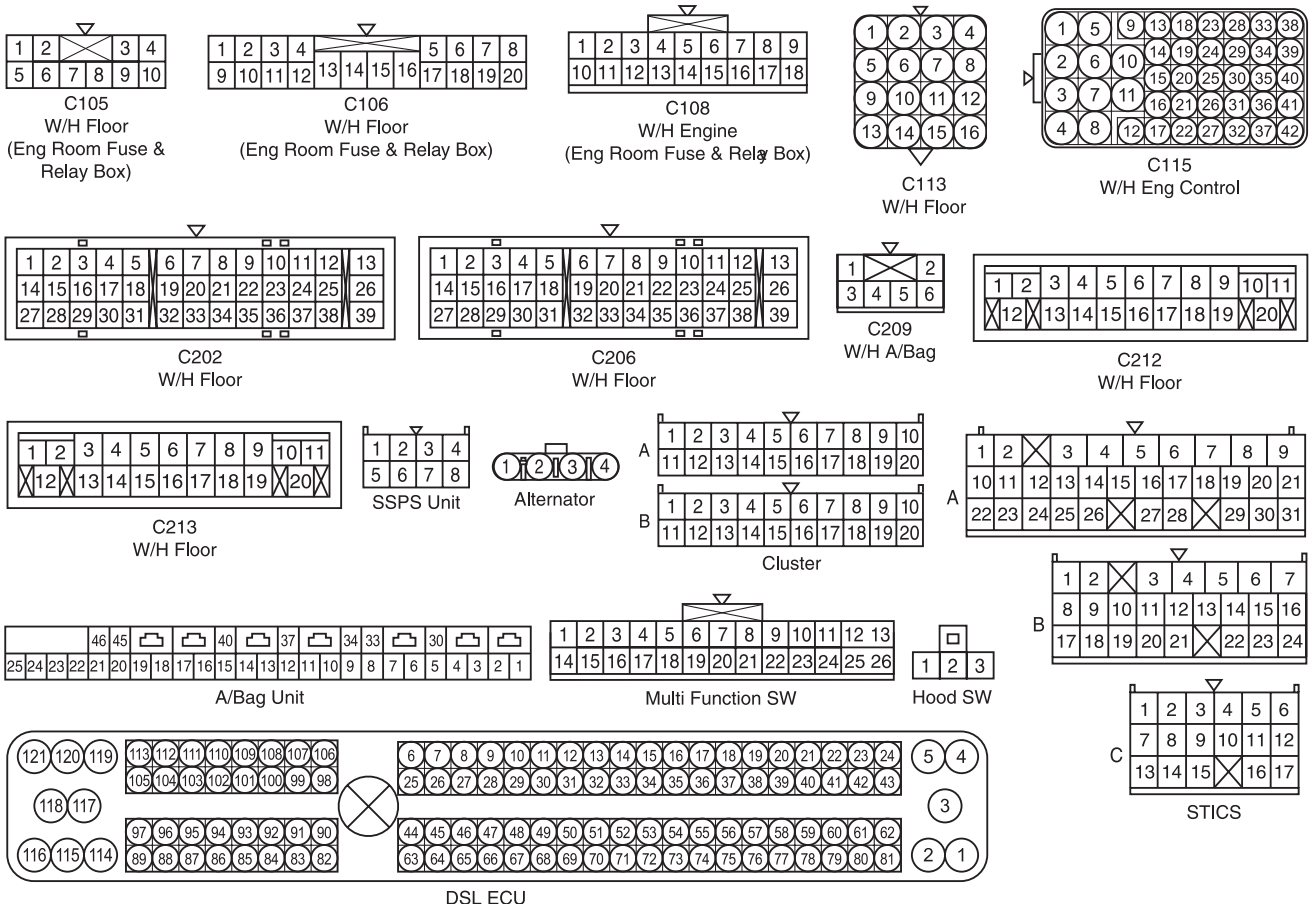
2) WARNING LAMP (BATT CHARGE, OIL, HOOD, DOOR, ENG CHECK, AIR BAG, SSPS, SEAT BELT), TURN SIGNAL, FOG LAMP, HAZARD



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C115 (42Pin, Black)	W/H Floor - W/H Eng Control	Right Eng Room Dash PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G102	W/H Eng Room	Behind LH Head Lamp	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION

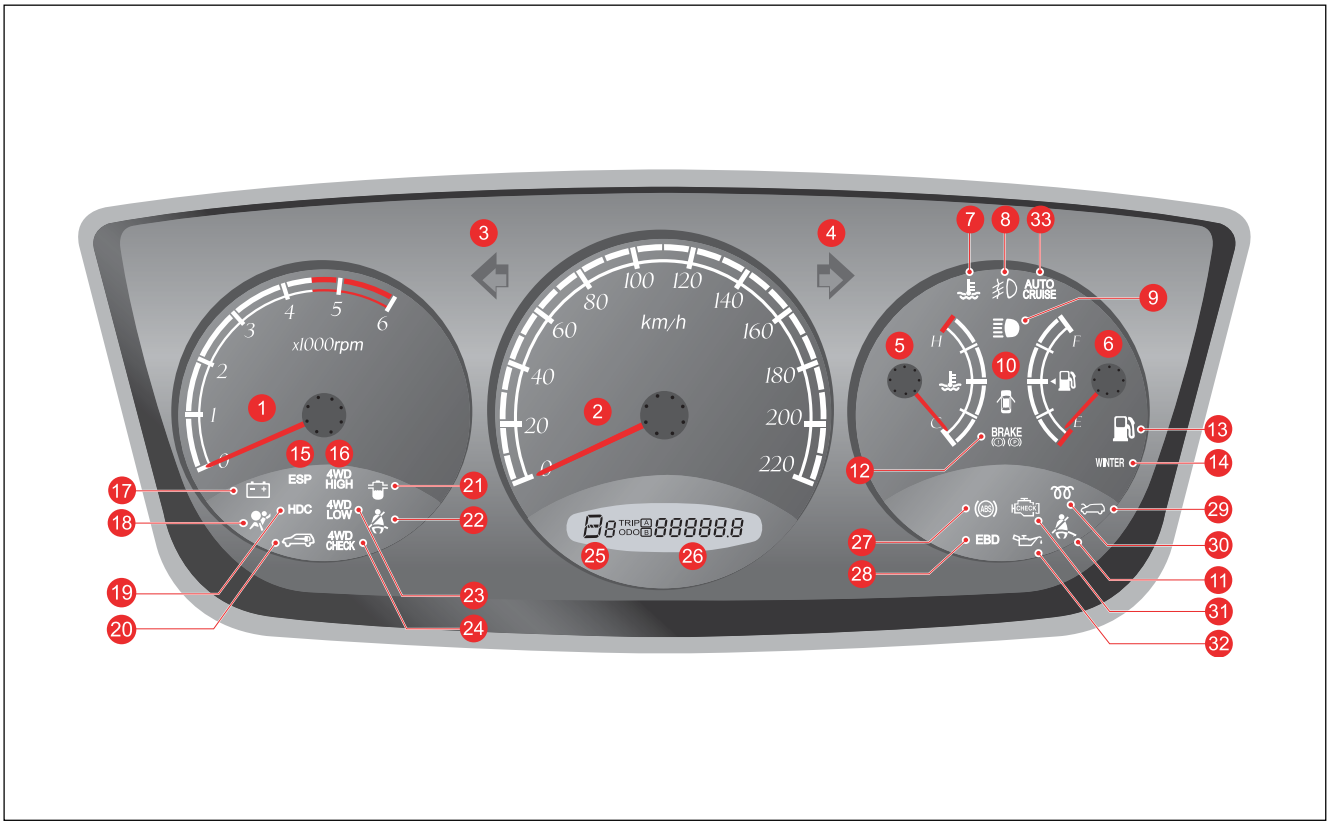


C. CIRCUIT DESCRIPTION

INSTRUMENT CLUSTER

The instrument cluster sends and receives the data through CAN communication.
The HDC warning light and the engine hood open warning light are newly introduced.

1. Descriptions of Indicator Display



1. Tachometer
2. Speedometer
3. Left turn signal indicator
4. Right turn signal indicator
5. Engine coolant temperature gauge
6. Fuel gauge
7. Engine overheat warning light
8. Fog lamp indicator
9. High beam indicator
10. Door ajar warning light
11. Sea belt reminder (passenger's seat)
12. Brake warning light
13. Low fuel level warning light
14. Winter mode indicator
15. ESP warning light
16. 4WD HIGH indicator
17. Battery charge warning light
18. Air bag warning light
19. HDC indicator
20. Immobilizer indicator
21. Water separator warning light
22. Seat belt reminder (driver's seat)
23. 4WD LOW indicator
24. 4WD CHECK warning light
25. Auto shift indicator (for automatic transmission)
26. ODOmeter/ Trip odometer
27. ABS warning light
28. EBD warning light
29. Engine hood open warning light
30. Glow indicator
31. Engine check warning light
32. Engine oil pressure warning light
33. Auto cruise indicator

2. Engine tachometer

The tachometer indicates engine speed in revolutions per minute. Multiply 1,000 to the current number, then it will be the current number of engine revolutions.

Under the normal engine operating temperature, the proper idling speed is 700 ~ 800 rpm. The red zone (danger rpm range) starts from 4,500 rpm.

1) Connect the tachometer for tune-up test and start the engine.
2) Eliminate the hysteresis by tapping the tachometer.
3) Compare the values on the tester and tachometer and replace the tachometer if the tolerance is excessive.

Description	Specification (VIN=13 ± 0.1V, Temperature: 25°C)						
Engine speed (rpm)	750	1000	2000	3000	4000	5000	6000
Tolerance (rpm)	-	+100	+100	+100	+100	+100	-
	-	-100	-100	-100	-100	-100	

3. Speedometer

The speedometer indicates the vehicle speed by calculating the signals from the rear (right 8 LEFT) wheel speed sensor through ABS or ESP unit. In this model, the wheel speed sensor is installed at the right tire area even though the ABS/ESP is not equipped. Its signal is used as a standard vehicle speed that is transmitted to instrument panel, TCU, TCCU, and engine ECU via CAN communication.

1) ABS/ESP (equipped): ABS/ESP ECU (208h), RR, RH wheel speed sensor
2) ABS/ESP (not equipped): ENG ECU (320h), RR, RH wheel speed sensor

If the speedometer pointer vibrates, stands at a certain range or sounds abnormal noise, there could be defectives in speedometer. However, these symptoms also could be appeared when the tire has uneven wear, different tire inflation pressures or different tire specifications.

Perform the speedometer test regarding the tolerance as described. However, it is not similar simple work in field due to lack of measuring conditions such as test equipment and preciseness.

1) Check the allowable tolerance of the speedometer and operations of the trip odometer by using a tester.
2) Check if the speedometer pointer is shaking and the abnormal noise sounds.
3) Eliminate the hysteresis by tapping the speedometer.

Description	(VIN = 13 ± 0.1V, Temperature: 25°C)								
Standard speed (Km/h)	20	40	(60)	80	100	120	140	(160)	(180)
Tolerance (Km/h)	+4	+4	+7	+9	+10.5	+12.5	+14.5	+16	+18
	0	0	+2.5	+3.5	+4	+6	+7.5	+8.5	+10

4. Fuel level gauge

The fuel level gauge displays the resistance value of the float on the fuel sender in the fuel tank through a pointer. Note that this vehicle doesn't have a service hole for checking the fuel sender connector in the fuel tank.

The fuel sender and its connector can be checked and replaced only when the fuel tank is removed. The power supply and resistance value should be measured at the connector in front of the fuel sender (refer to wiring diagram).

When the power supply and output resistance are normal, the float operation by fuel level may be defective; if so, replace the fuel sender.

5. Tolerance and resistance value by indicating angle

	Tolerance and resistance value by indicating angle (VIN = 13.5 ± 0.1 V, temperature: 25°C)						
Scale	Full	Full (Gauge)	(3/4)	1/2	(1/4)	Empty (Gauge)	Empty
Indicating angle (°)	-	105	78.75	52.5	26.25	0	-
Tolerance (°)	-	+4, 0	-	±5	-	0, -4	-
Resistance (Ω)	38	43	67	99.5	150	276.3	283

6. Coolant temperature gauge

The coolant temperature gauge displays the coolant temperature with a pointer. The angle of pointer that changes by coolant temperature is as shown below.

		Tolerance and resistance value by indicating angle		
Indicating angle (°)	0	52.5	102	105
Tolerance	+0°C -4°C	+0°C -4°C	-	+4°C +0°C
Coolant temperature	Less than 40°C	70 ~ 110°C	120°C	Over 125°C

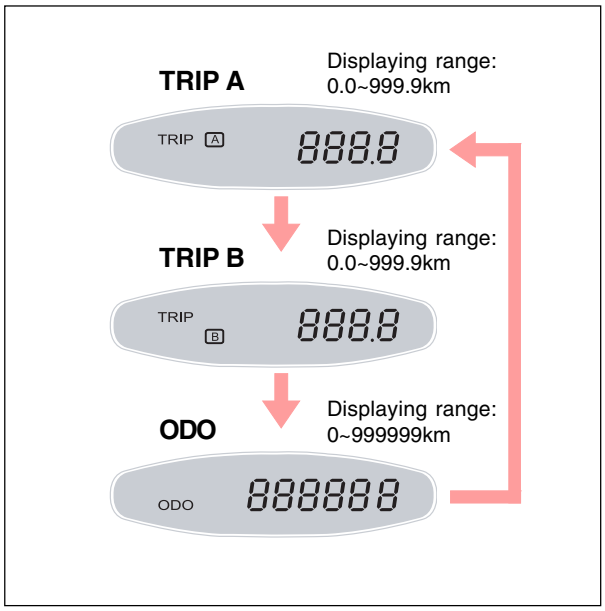
7. Measurement of coolant temperature sensor resistance

Measure the resistance between the terminal and the ground with an ohmmeter and replace if the resistance is out of specified range.

Resistance value by coolant temperature: 20°C - 2449W ± 5 %
50°C - 826W ± 5 %
80°C - 321W ± 5 %
100°C - 12W ± 5 %

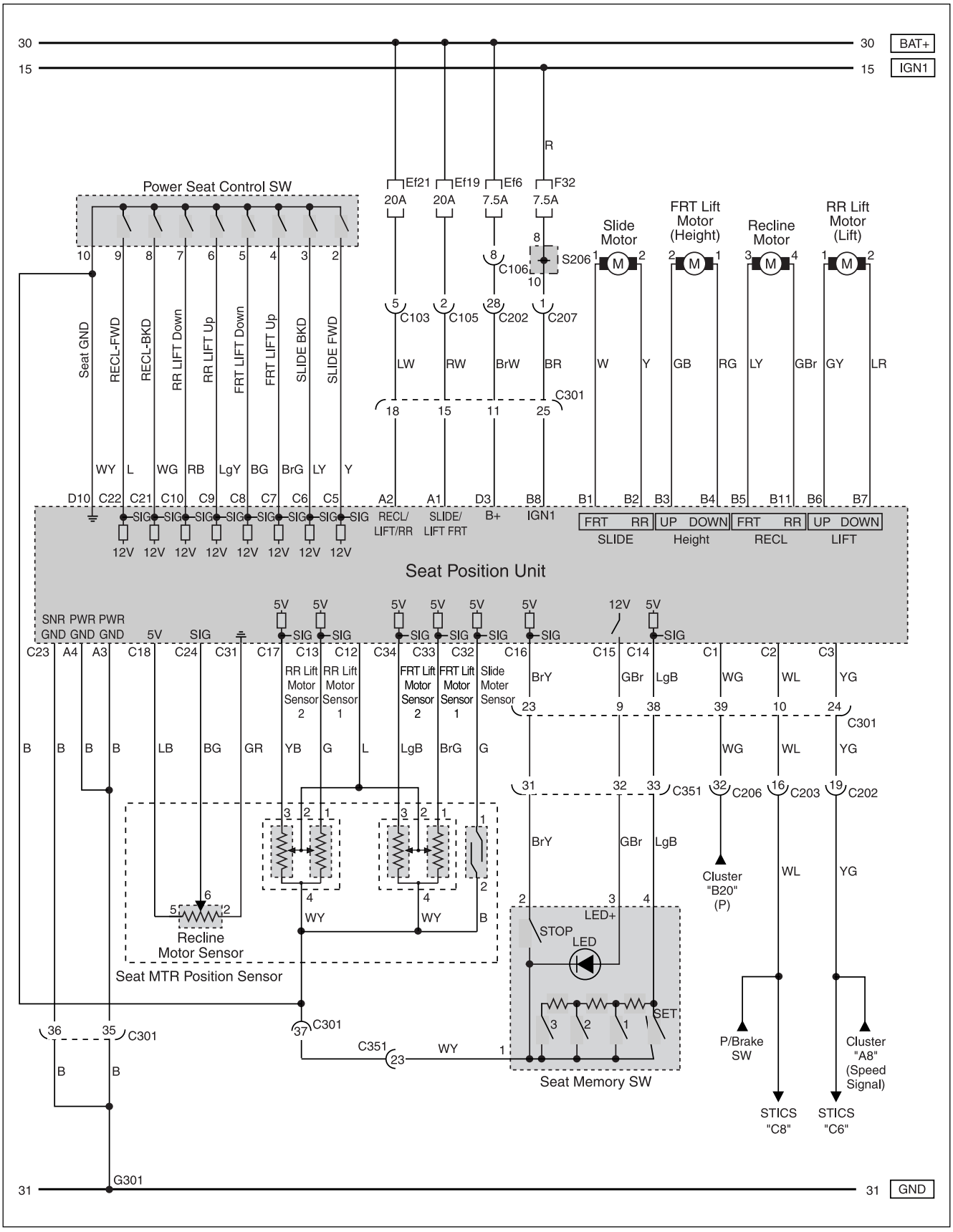
8. ODO meter/TRIP ODO meter

When pressing the TRIP/RESET switch on the center panel, the odometer/trip odometer is converted and the meter resets to 0.0 km in Trip A and Trip B.



12. POWER SEAT - DRIVER (W/ MEMORY) 7410

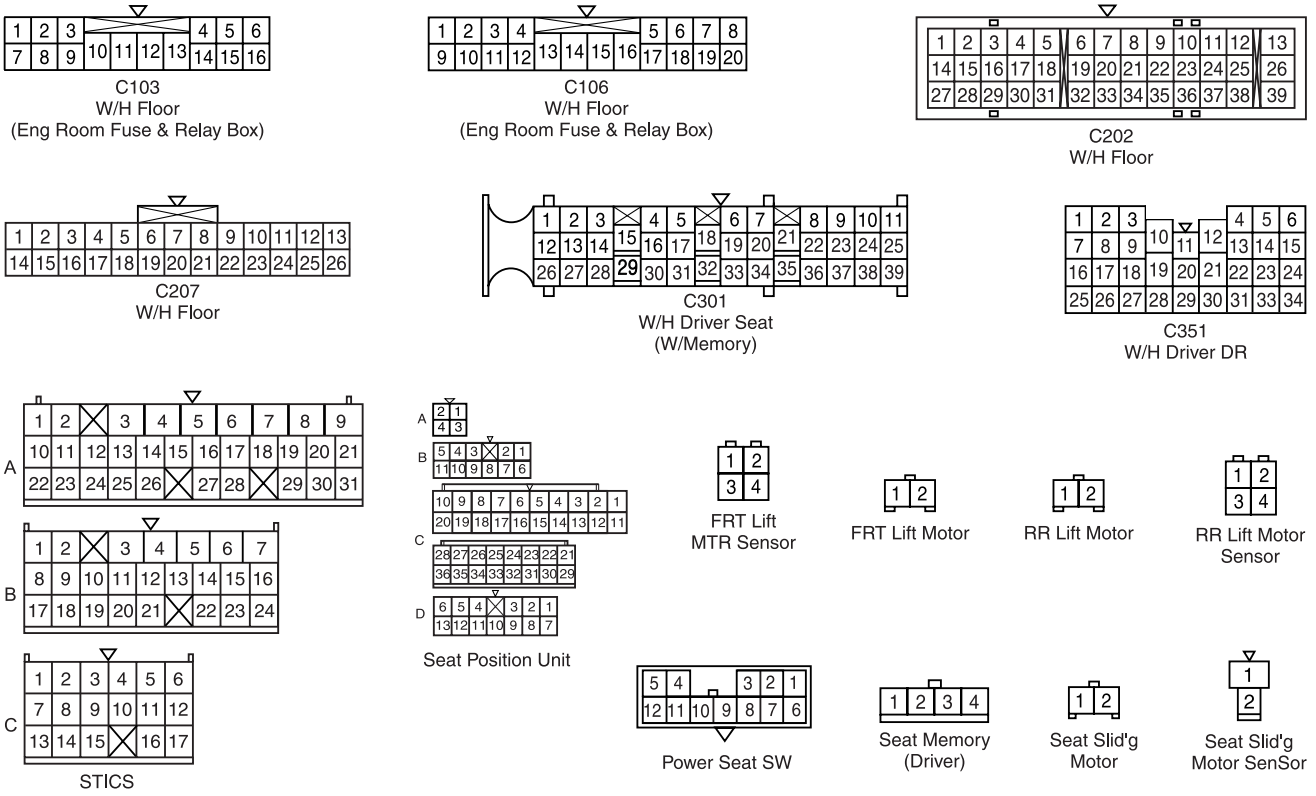
1) DRIVER POWER SEAT & SEAT MEMORY



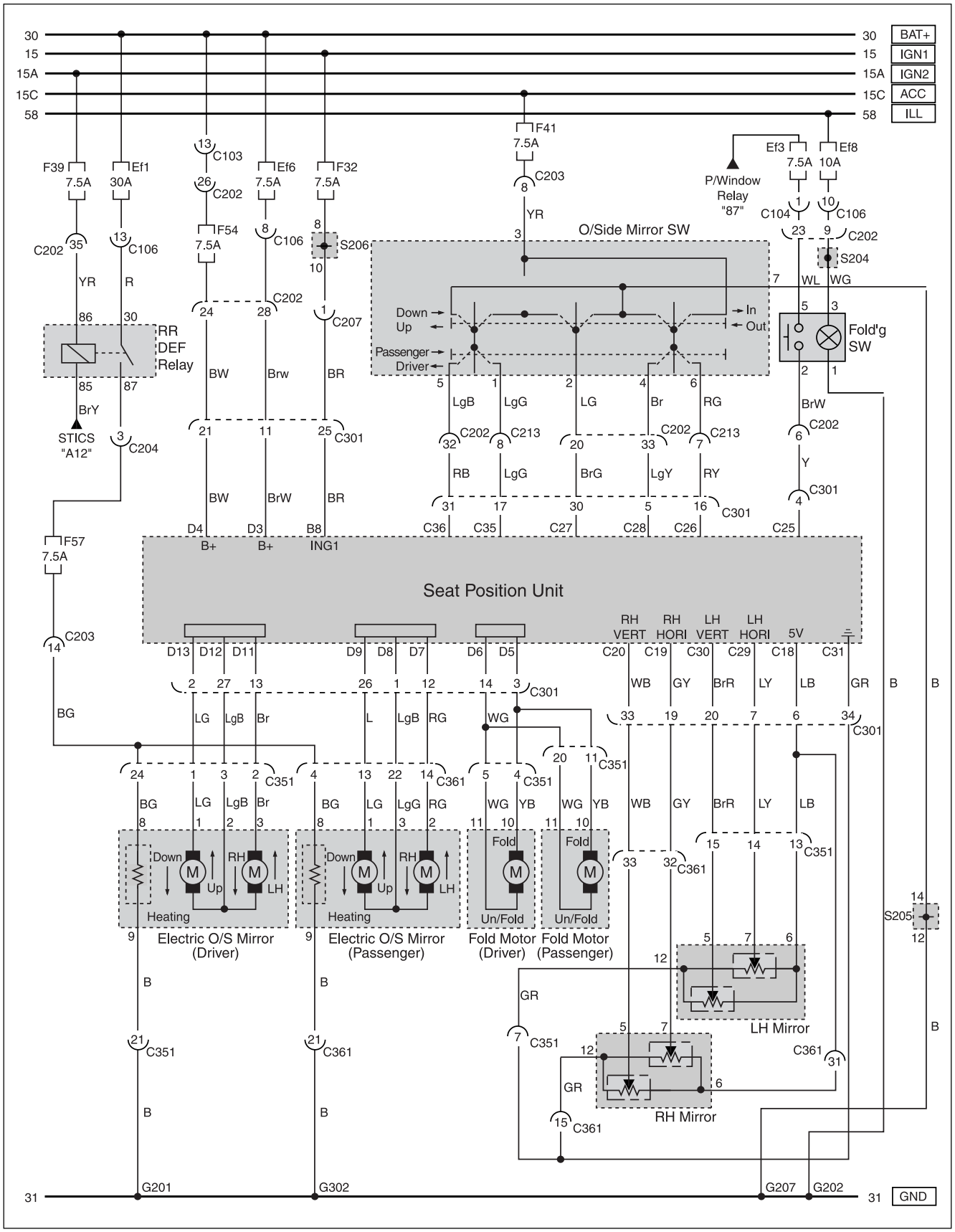
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C301 (39Pin, Black)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/Memory
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
G301	W/H Floor	Under the Driver Seat	
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



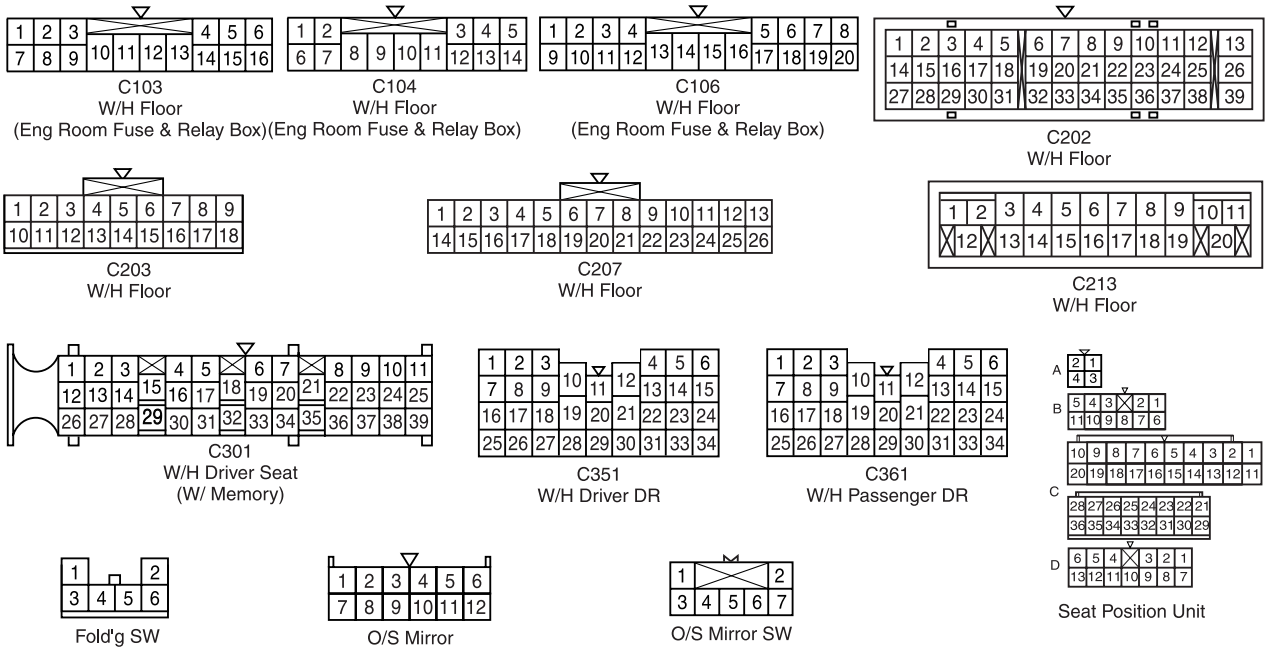
2) ELECTRIC OUTSIDE MIRROR & FOLDING CIRCUIT



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C204 (6Pin, Colorless)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Hoder	
C301 (39Pin, Black)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/Memory
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the LH “A” Pillar	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G302	W/H Floor	Under the Passenger Seat	
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

OVERVIEW

The memory setting of seat position is available availabe for up to 3 different drivers. Each driver can set his/her own driver's seat and outside rearview mirrors positions and they will be stored in the computer. Even if someone have moved your seat and outside rearview mirrors, the memory positions will be recalled automatically by pressing the position button.

OPERATIONS

1. Outside Rearview Mirror Control

2. Seat Position Control

3. Driver's Seat Position Memory Function

The position memory is available for up to three drivers. Each driver can set his/her own driver's seat outside rearview mirrors and interior rearview mirror positions and they will be separately stored in the integrated computer. If somebody has moved the seat, the memory positions can be recalled automatically by pressing the position button.

4. Storing Memory Settings
   1) Position the transmission shift lever to "P" or parking brake with the ignition switch "ON" (for your safety, do not start the engine). Apply the parking brake if the vehicle is equipped with M/T.
   2) Adjust the driver's seat and outside rearview mirrors to the desired positions.
   3) Press the "SET" button. The indicator on the button will come on.
   4) Within 5 seconds, press the buttons (), () or () you want to set. The indicator on the set button blinks 3 times.

5. Operating Memory Settings
   1) Press and hold the desired buttons ( ,  or ) for more than 1.5 seconds.
   2) Driver's seat and outside rearview mirrors start to move. The position memory recall is canceled if moving the vehicle during its operation.
   3) Wait until they stop moving.
   4) When the position memory recall is completed, the buzzer sounds twice. (If failed, the buzzer sounds three times.)

INPUT/OUTPUT OF SPWM UNIT

Seat memory power

Seat sliding, rear lift power

Seat reclining, front lift power

Instrument panel:
gear shift lever at “P” position

In the vehicle equipped with automatic transmission, the position memory recall is not available if the gear shift lever is not in “P” position.

Parking brake operation

In the vehicle equipped with manual transmission, the position memory recall is not available if the parking brake is released.

Vehicle speed signal

If vehicle speed is over 3 km/h, the position memory recall is not available.

Outside rearview mirror folding switch

Outside rearview mirror adjusting switch

Power seat control switch

Seat memory switch

SPWM UNIT

Sliding motor

Cushion front motor

Cushion rear motor

RH outside rearview mirror folding/unfolding motor

LH outside rearview mirror folding/unfolding motor

RH outside mirror Up/ Down adjustment motor

RH outside mirror Left/ Right adjustment motor

LH outside mirror Up/ Down adjustment motor

LH outside mirror Left/ Right adjustment motor

The changes of each motor are always monitored by the sensor in the motor.

CONTROL AND OPERATING CONDITIONS

1. Seat Position Memory
   1) Seat Position Memory Operation
      - To store the seat position and the outside rearview mirror position, press the SET button and, within 5 seconds, press one of position switches. The memory setting is available for up to 3 different drivers.
      - The memory set mode is only available within 5 seconds after pressing the SET button.
      - If any of the following conditions is met, the memory set mode is canceled.
        - No switch inputs within 5 seconds after pressing SET button.
        - When adjusting the seat or outside rearview mirror positions during the memory recall operation.
        - When turning off the ignition switch.
        - When pressing the STOP button
        - When the memory setting is completed.
      - The memory recall is not available when the vehicle speed is over 3 km/h or the gear shift lever is not in “P” position with the parking brake released.
      - The memory set can be unlimitedly renewed.
      - The stored positions are erased when disconnecting the battery cables.
      - The buzzer sounds once if the memory set mode is activated.
      - The buzzer sounds twice if the memory setting/recalling is completed.
      - The buzzer sounds three times if an error is found in the sensor during the memory recall operation.
   2) Seat Memory Recall Operation
      - When pressing the position switch with the ignition switch ON, the seat and outside rearview mirrors move to the memorized positions.
      - When pressing another position switch during previously activated memory recall operation, the newly pressed position switch takes priority and recalls its stored position.
      - The buzzer sounds once if a position switch is pressed.
      - If any of the following conditions is met, the memory recall function is deactivated.
        - When turning off the ignition switch.
        - When the gear shift lever is not in “P” position with the parking brake released.
        - When the parking brake is released (only for the vehicle equipped with manual transmission)
        - When the vehicle speed is over 3 km/h.
        - When pressing the STOP button during the memory recall operation.
        - When adjusting the seat or outside rearview mirrors during the memory recall operation.
      - The seat will not move unless a position switch has a memory setting.

2. Power Seat
   1) Seat Position Control
      - The position sensor senses the changes of motor in the seat.
      - The seat position is stored by the memory order of position switch.
      - The stored seat position is recalled by the recall order of position switch.
      - The manual adjustment of seat positions takes priority over the memory and recall orders.
   2) Motor Drive Control
      - In the case of the automatic control, each motor drive is delayed for 100 msec to prevent the irruptive current from being overlapped. The priorities are as follows.

        Seat sliding → Seatback reclining → Seat cushion height adjusting (front) → Seat cushion height adjusting (rear)
      - Continuous motor driving time

        Seat sliding: 16 seconds, Seatback reclining: 50 seconds, Cushion height adjusting: 6 seconds
      - Reverse control: When reversing the control motor, the motor starts to rotate in the opposite direction 100 msec after the forward driving is completed.
      - The motor doesn’t operate if the difference between the stored position and the current position is out of the specified range.
        - Sliding: 12 edges (6 pulses)
        - Cushion height: 6 edges (3 pulses)
        - Reclining: 100 mV

3) Error Detection
   - After the motor starts to drive, if the position sensor value doesn't change for about 3 seconds during the seat sliding or seatback reclining adjustment and for 1.6 seconds during the seat cushion height adjustment, it is determined that the harness circuit is open or the sensor failure occurred.

* If an error is detected,
The memory recall operation stops. However, the seat can be adjusted by manual switches.
The memory recall operation can be activated after the failure is corrected. This is determined when the system detects the value changes from the position sensor. This is called the Release of automatic control stop.

4) Relay Protection
   Once the relay is turned on, it will not be turned off within 60 ms.

5) Specifications
   - Rated voltage: DC 12 V
   - Operating voltage: DC 9 ~ 16 V
   - Current consumption: Max. 500 mA (not including the load)
   - Operating temperature range: -30 ~ 75°C
   - Reserve temperature range: -40 ~ 85°C
   - Parasitic current: Max. 2 mA

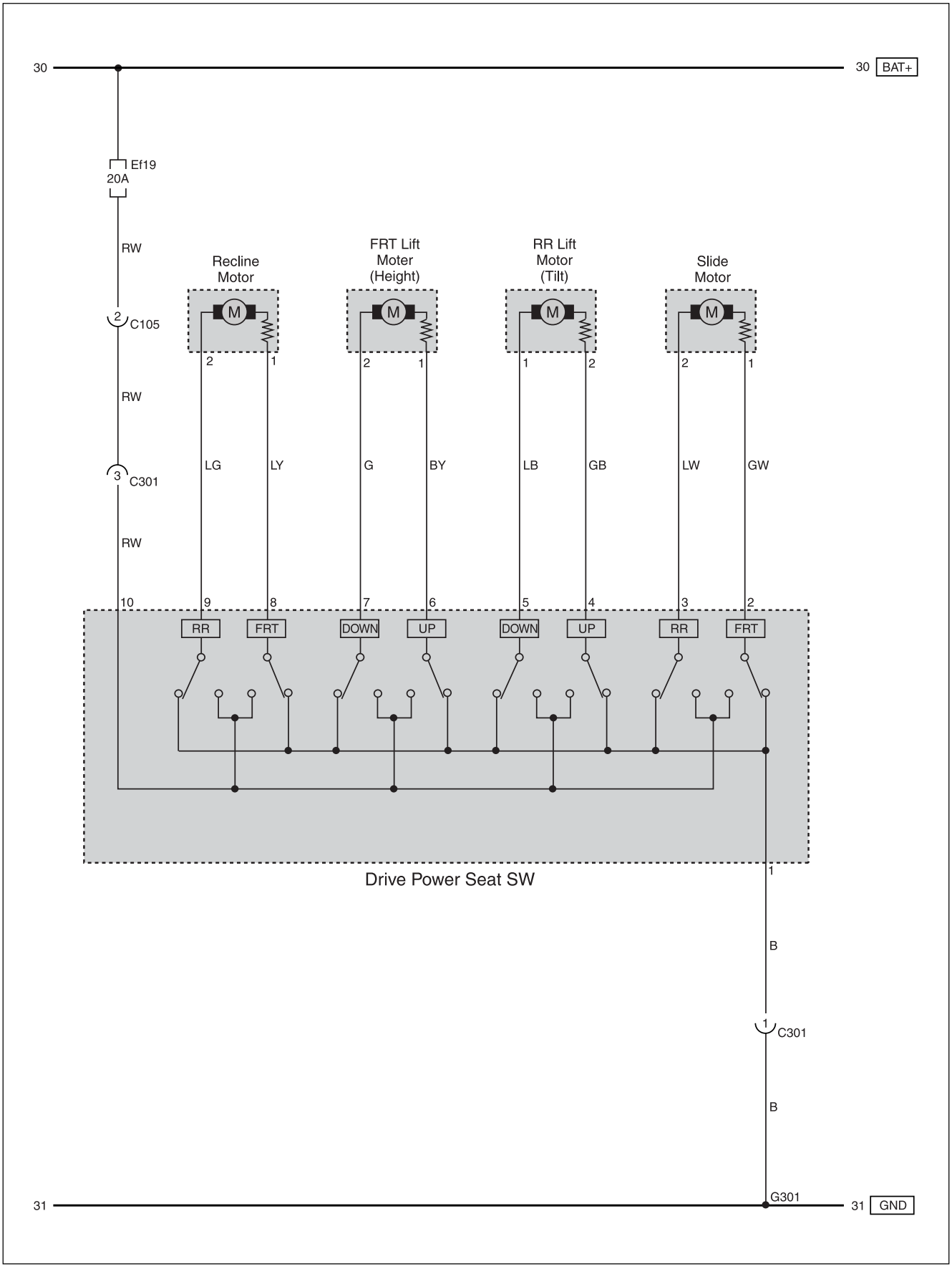
3. Outside Rearview Mirror (OSRVM)
   1) Mirror Position Control
      - The position sensor senses the changes of motors in the mirrors.
      - The mirror position is stored by the memory order of position switch.
      - The mirror position is recalled by the recall order of position switch.
      - The manual adjustment of mirror positions takes priority over the memory and recall orders.
      - Driving sequence: Horizontal → Vertical
      - Control during memory recall: Specifications of the field of vision
        - Horizontal direction: 1.5 ~ 3.7 V - Vertical direction: 1.5 ~ 3.7 V
      - LOCK detection: Timer monitors the motor driving time to detect LOCK condition.
        - Monitoring the memory recall time
          If the memory recall operation cannot be finished within 40 seconds after activating it, the system stop the motor output and terminate the control.

   2) Error Detection
      - Even though the motor runs, if the drive input change (for 5 seconds) from the position sensor doesn't change, it is determined that the harness circuit is open or the motor/sensor failure occurred.
        When an error is detected, any memory set or recall operations are prohibited, but the manual operation is possible.
        When the sensor input changes by a manual operation, this error is cleared.

   3) Specification
      - Rated voltage: DC 12 V
      - Operating voltage: DC 9 ~ 16 V
      - Current consumption: Max. 300 mA (not including the load)
      - Operating temperature range: -30°C ~ 75°C
      - Reserve temperature range: -40 ~ 85°C

4. Folding/Unfolding of Outside Rearview Mirror
   1) Operation Logic
      - When pressing the outside rearview mirror folding switch, the outside rearview mirrors are folded.
      - Normal operation mode
        Mode changes between Folding and Unfolding
      - The outside rearview mirrors can be folded and unfolded within 30 ± 6 seconds even after turning off the ignition switch.
      - To prevent the outside rearview mirrors from stopping during its operation, the mirror operating time is extended 13 seconds when pressing the switch again.

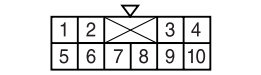
13. POWER SEAT - DRIVER (W/O MEMORY) 7410



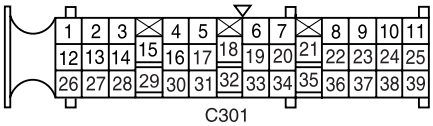
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C301 (4Pin, White)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/O Memory
G301	W/H Floor	Under the Driver Seat	

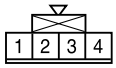
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



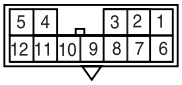
C105
W/H Floor
(Eng Room Fuse & Relay Box)



C301
W/H Driver Seat
(W/ Memory)



C301
W/H Driver Seat
(W/O Memory)



Power Seat SW

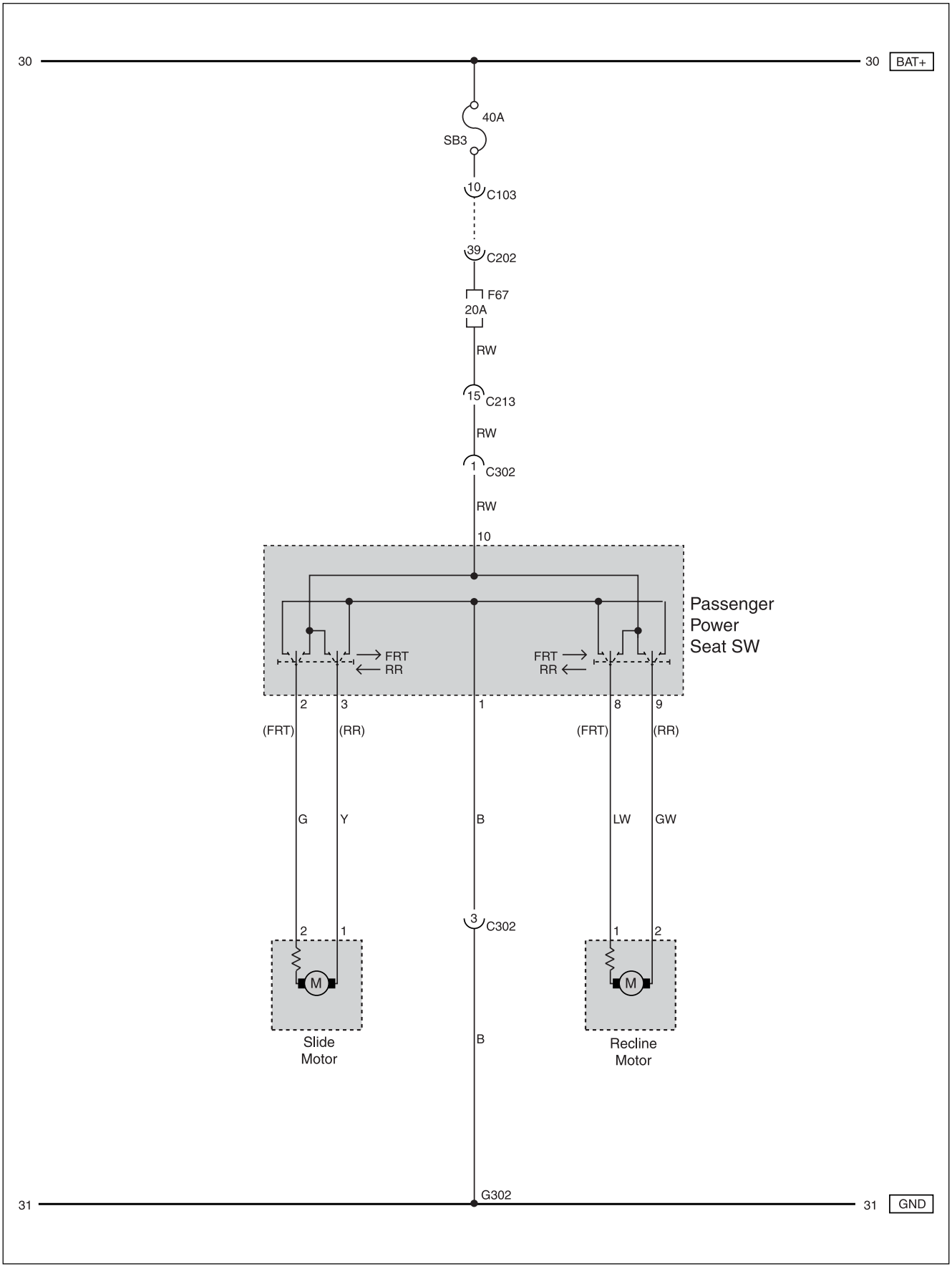
Slide Moter

Recline Motor

FRT Lift Motor

RR Lift Motor

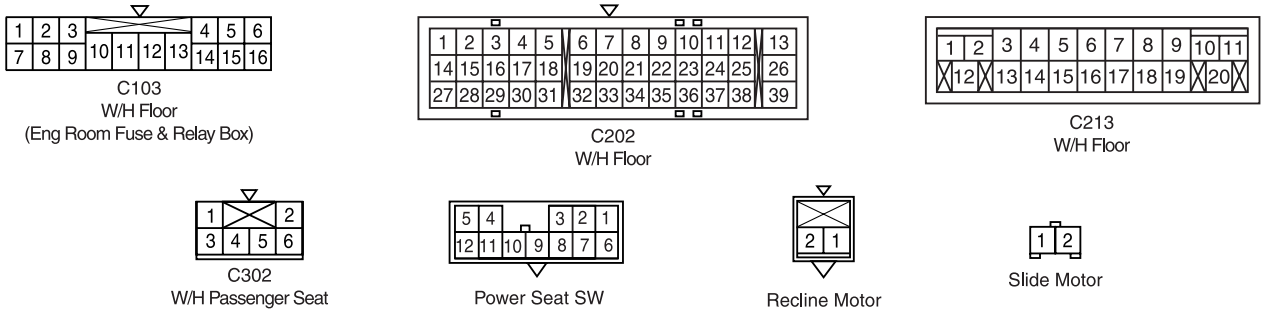
14. POWER SEAT - PASSENGER 7410



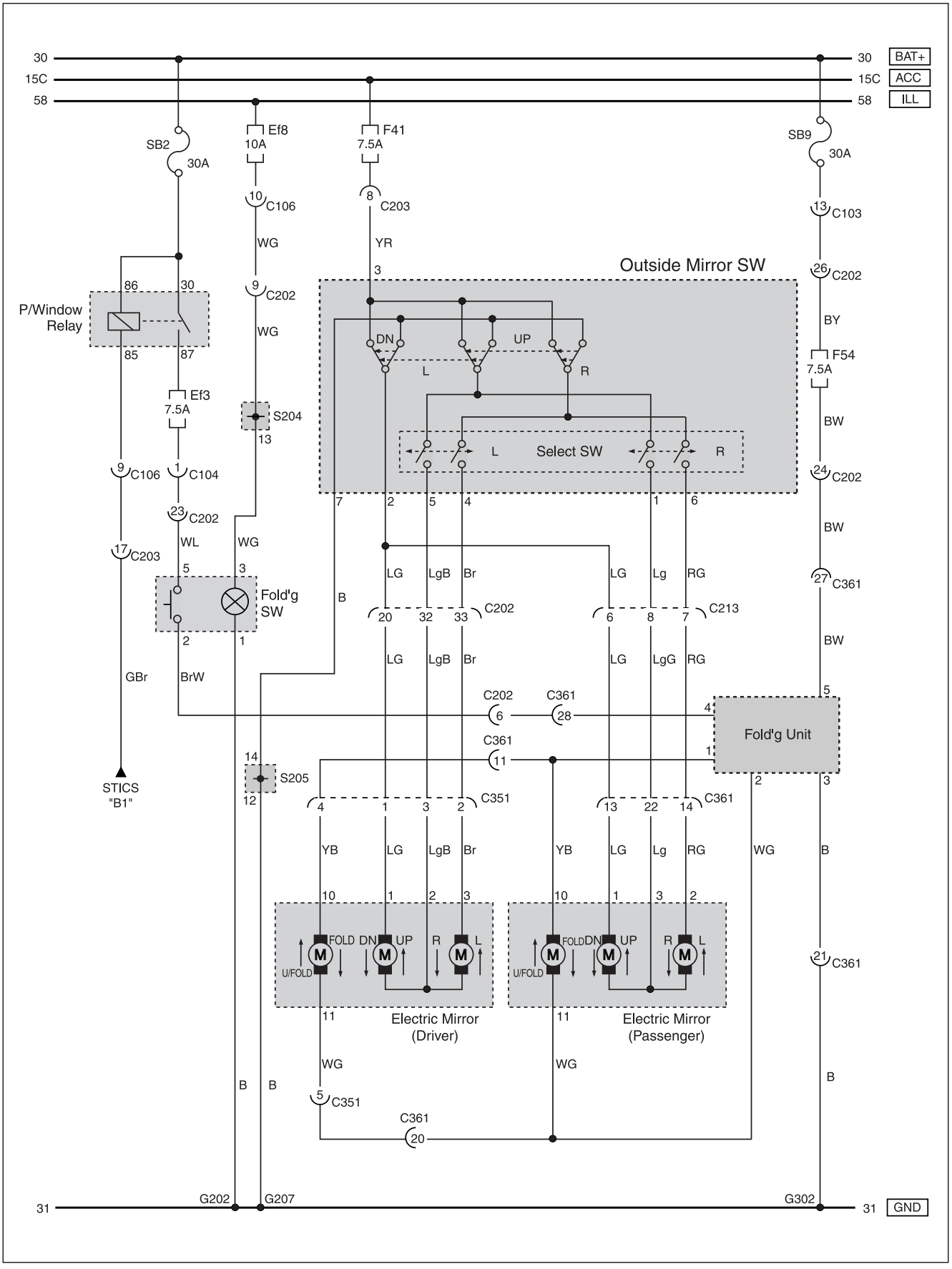
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C302 (6Pin, White)	W/H Floor - W/H Passenger Seat	Under the Passenger Seat	
G302	W/H Floor	Under the Passenger Seat	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



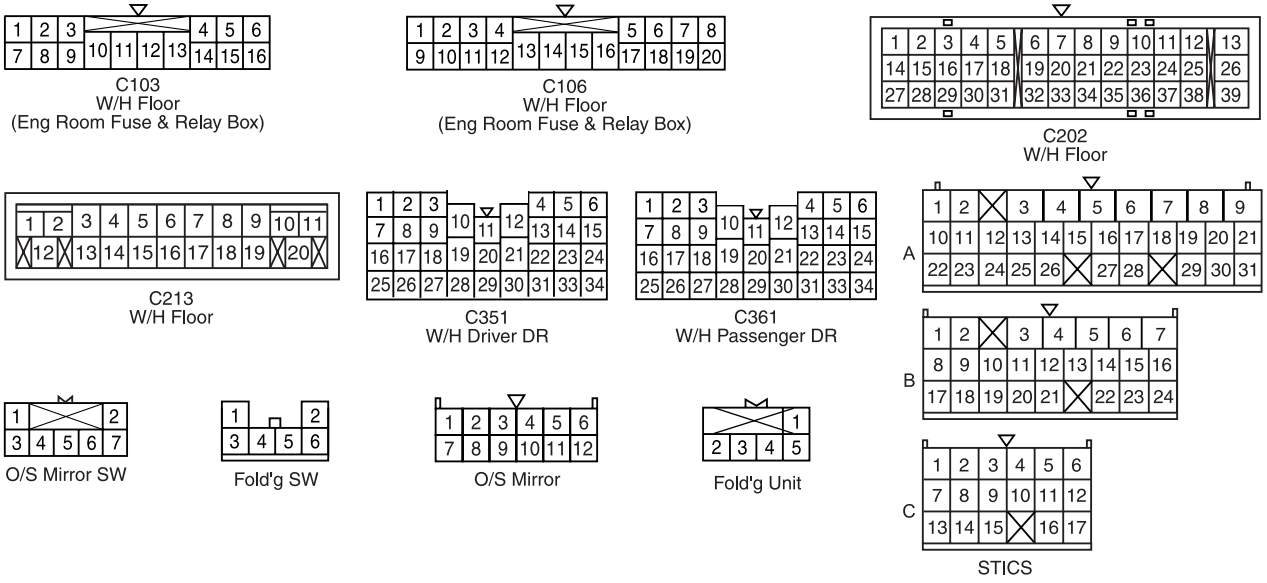
15. ELECTRIC OUTSIDE MIRROR & FOLDING (W/O MEMORY) 8510



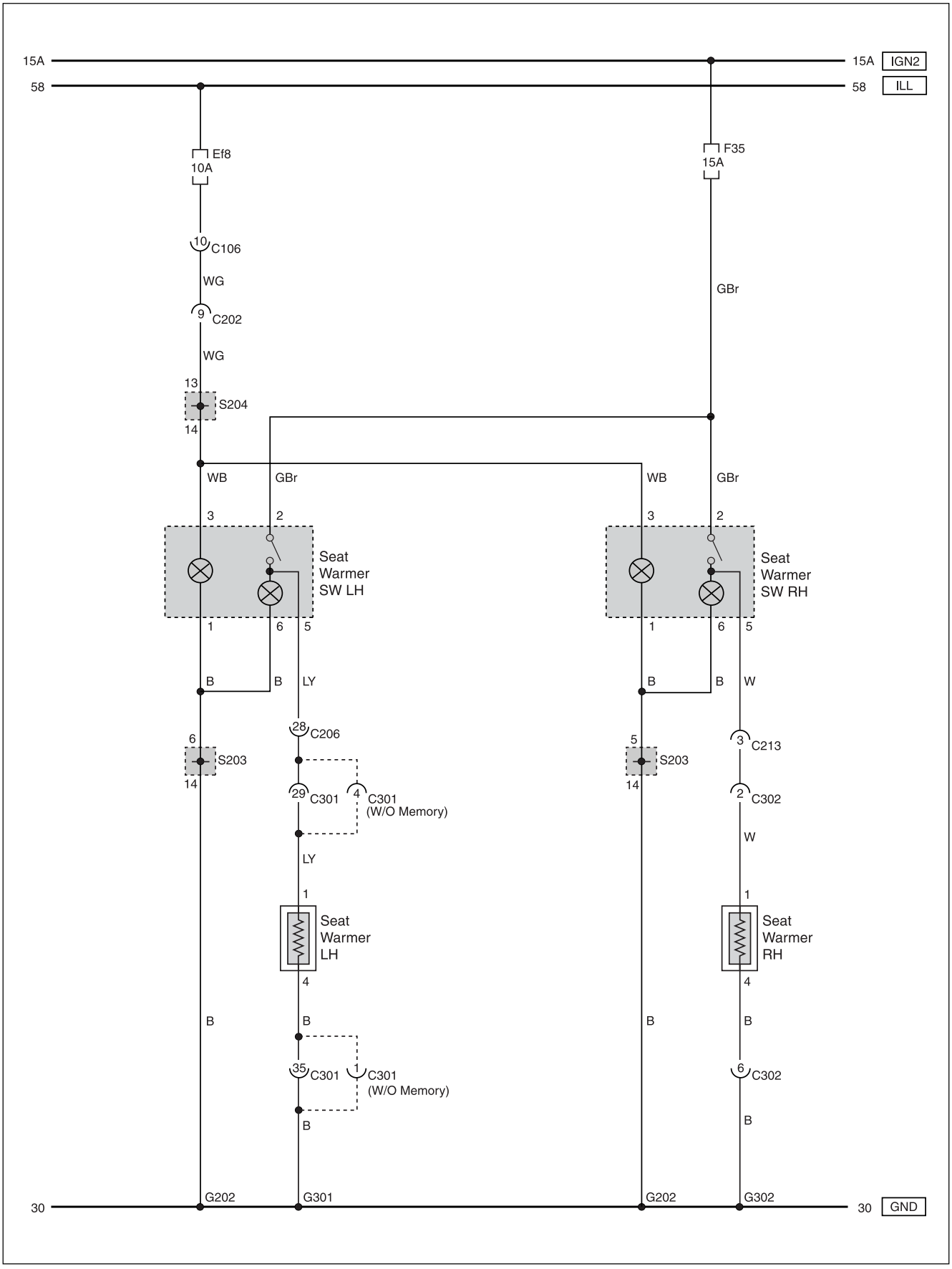
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Hoder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the LH “A” Pillar	
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G302	W/H Floor	Under the Passenger Seat	
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



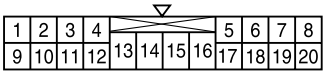
16. SEAT WARMER 8510



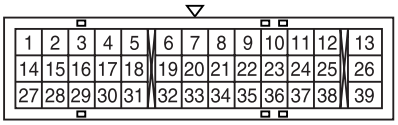
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C301 (39Pin, Black)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/Memory
C301 (4Pin, White)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/O Memory
C302 (6Pin, White)	W/H Floor - W/H Passenger Seat	Under the Passenger Seat	
G202	W/H Main	Under the Driver “A” Pillar	
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

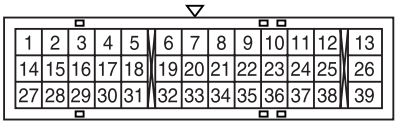
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



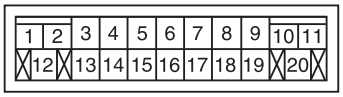
C106
W/H Floor
(Eng Room Fuse & Relay Box)



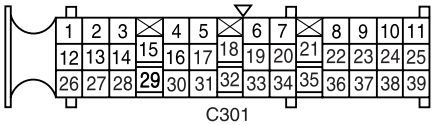
C202
W/H Floor



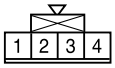
C206
W/H Floor



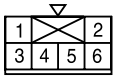
C213
W/H Floor



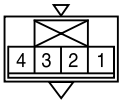
C301
W/H Driver Seat
(W/ Memory)



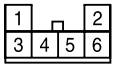
C301
W/H Driver Seat
(W/O Memory)



C302
W/H Passenger



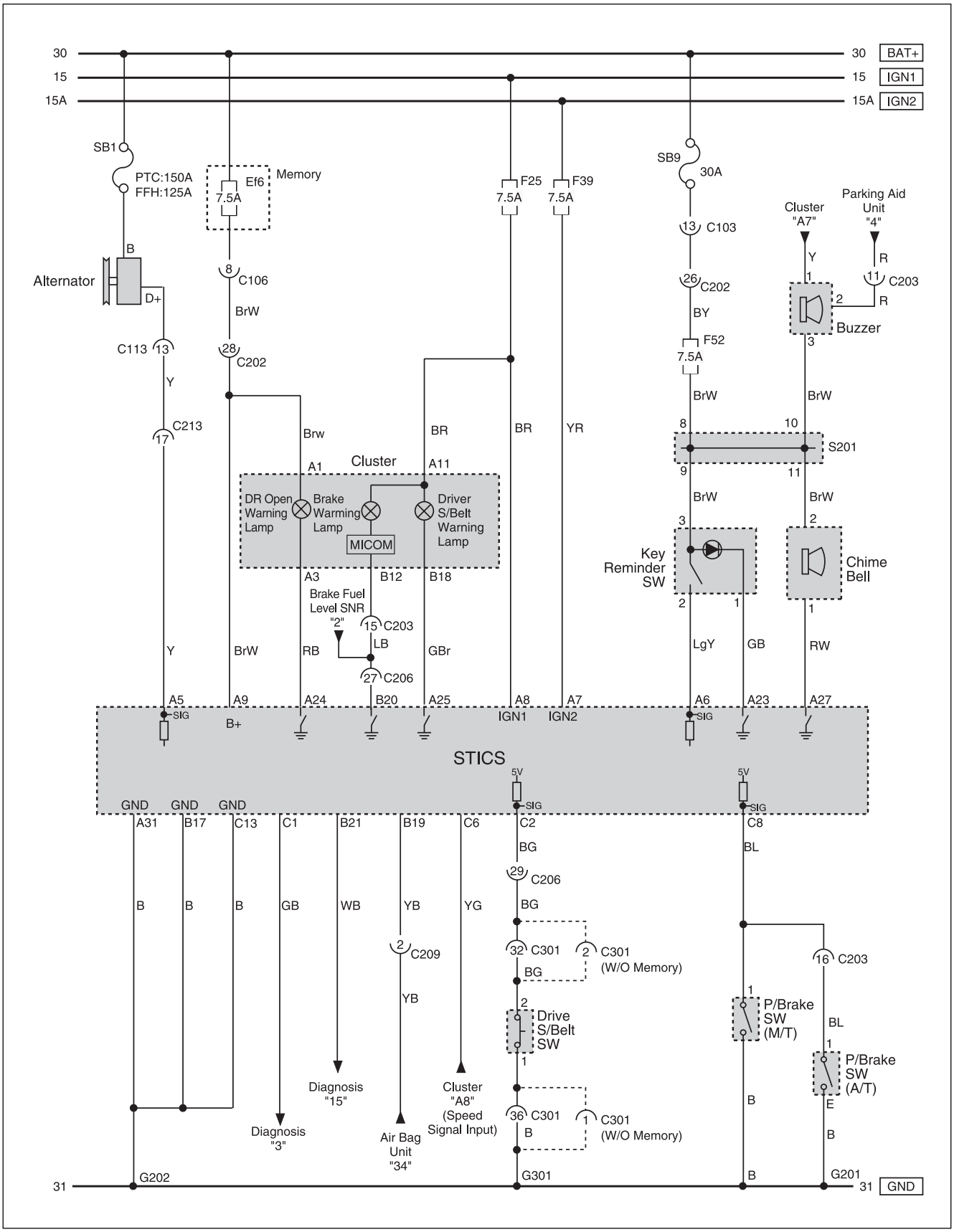
Seat Warmer



Seat Warmer
SW

17. STICS 8710

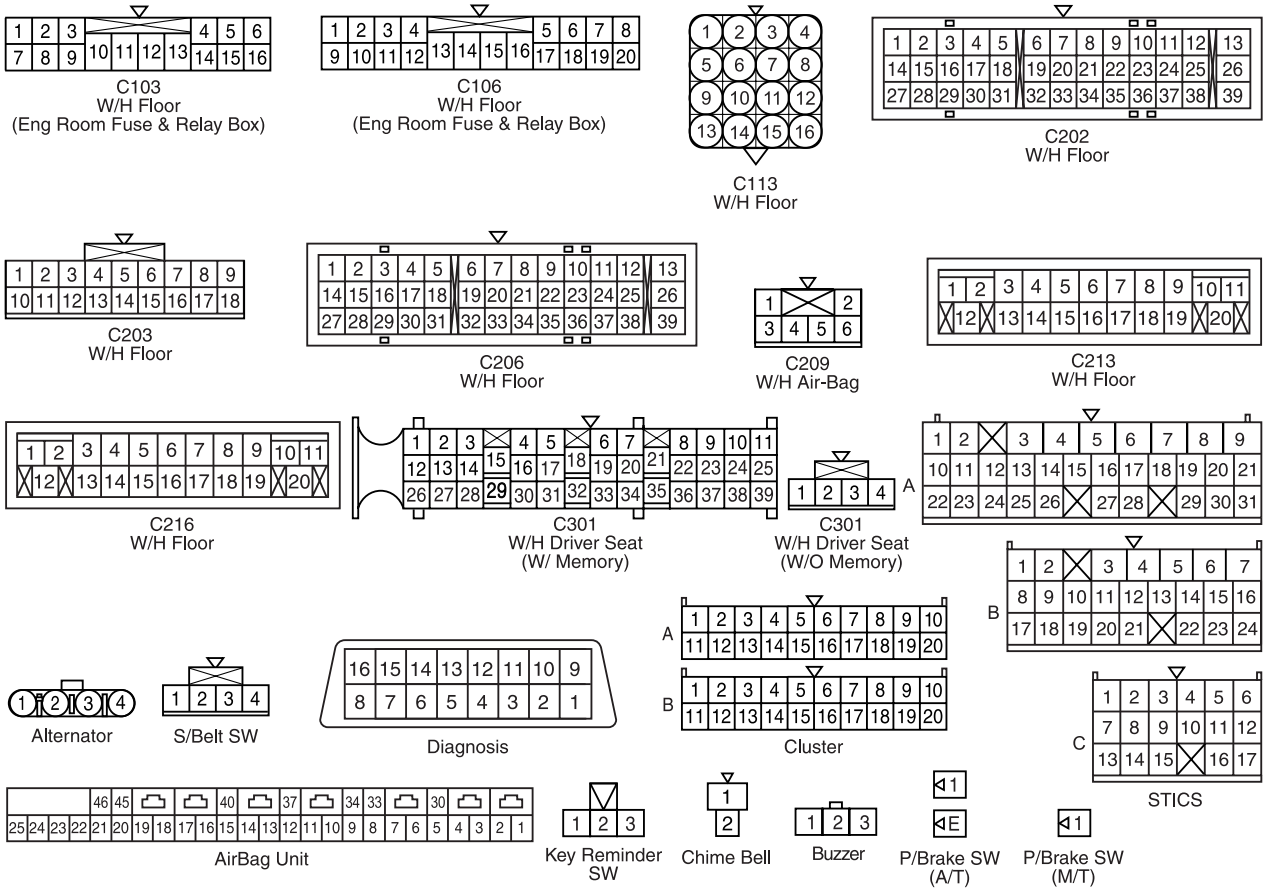
1) POWER/GROUND, CHIME BELL, BUZZER WARNING LAMP (BRAKE, SEAT BELT, DR OPEN)



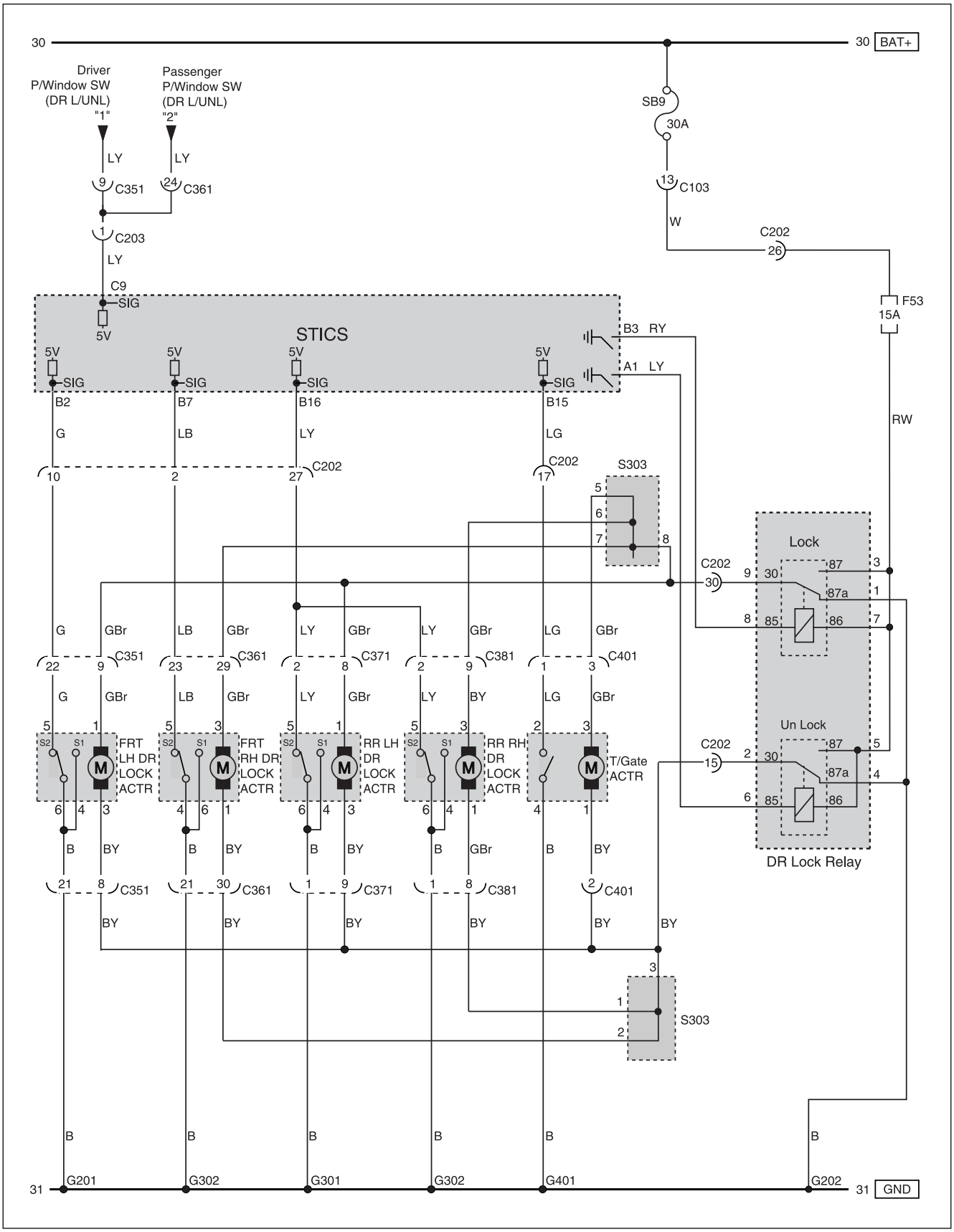
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Main - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C216 (20Pin, Gray)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C301 (39Pin, Black)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/Memory
C301 (4Pin, White)	W/H Floor - W/H Driver Seat	Under the Driver Seat	W/O Memory
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G301	W/H Floor	Under the Driver Seat	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



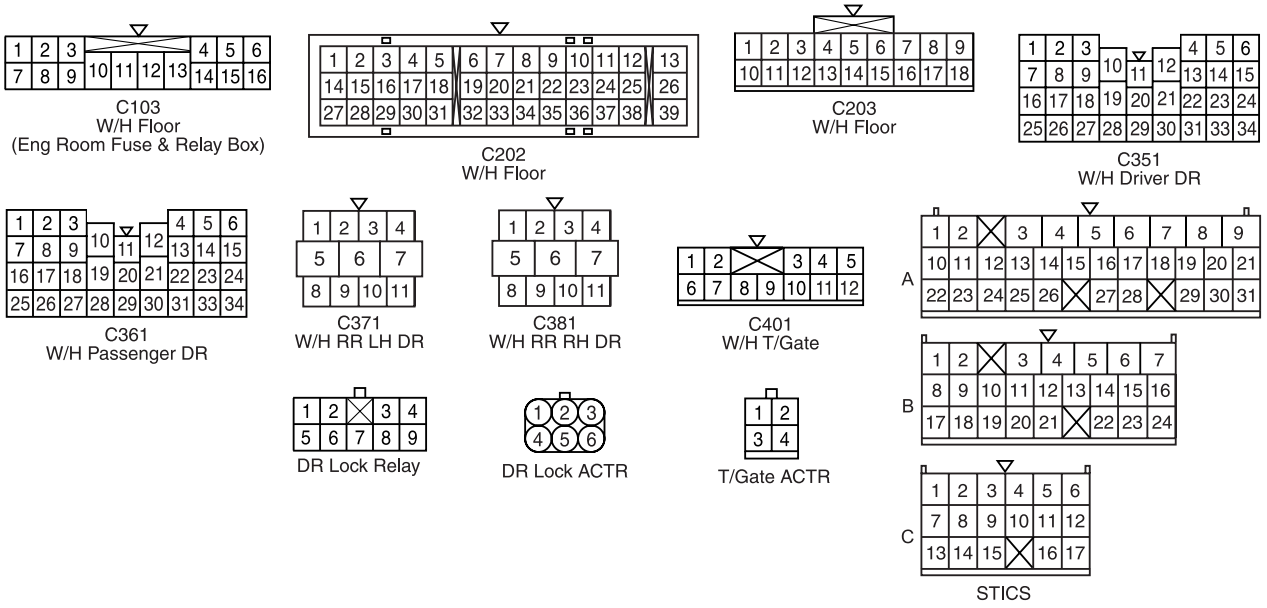
2) CENTRAL DOOR LOCK CIRCUIT



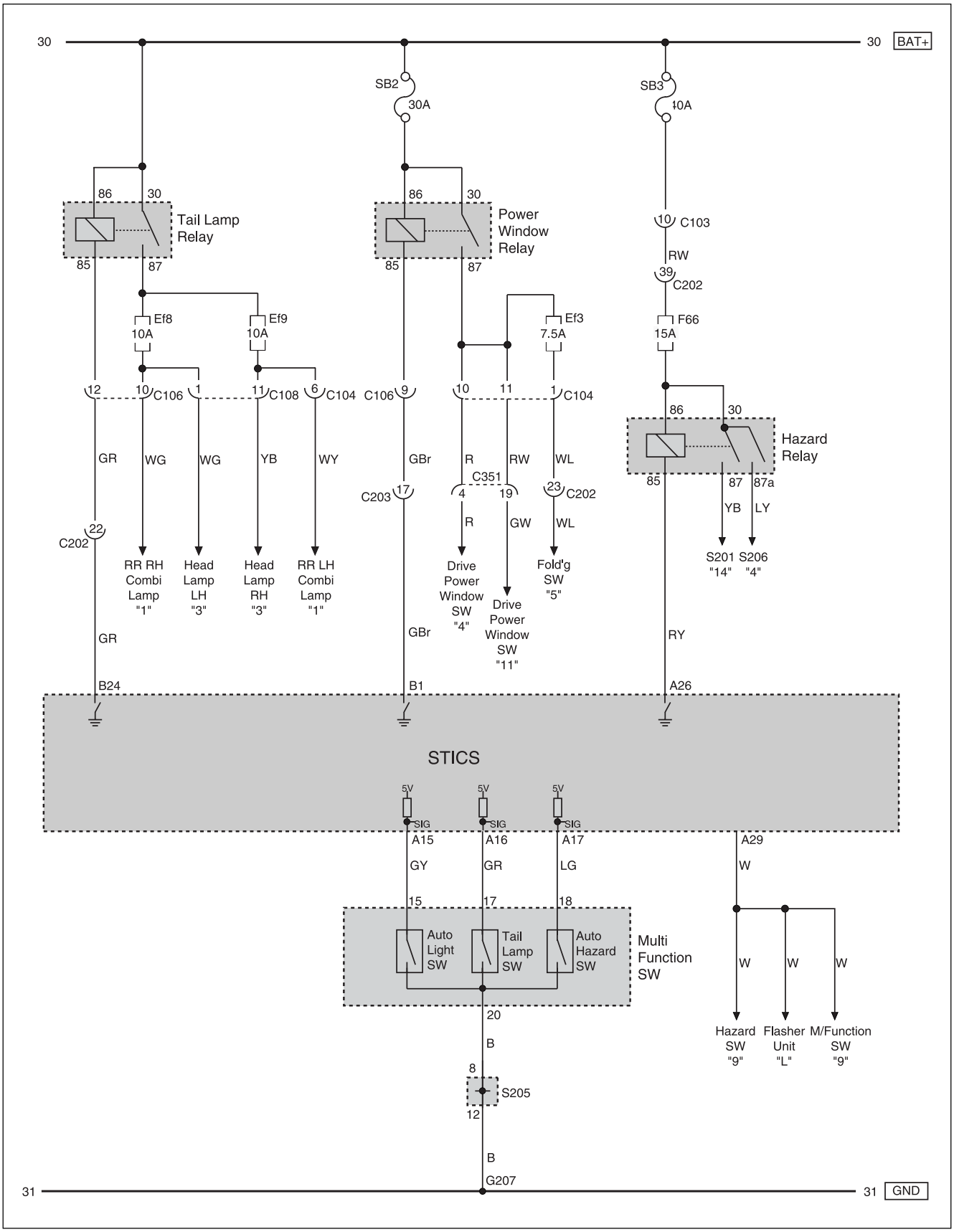
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C371 (11Pin, White)	W/H Floor - W/H RR LH DR	Under the LH “B” Pillar	
C381 (11Pin, White)	W/H Floor - W/H RR RH DR	Under the RH “B” Pillar	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	
G401	W/H T/Gate	Center the T/Gate	
S303 (8Pin, Black)	W/H Floor	Under the Passenger “B” PLR W/H Protector	DR Lock

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



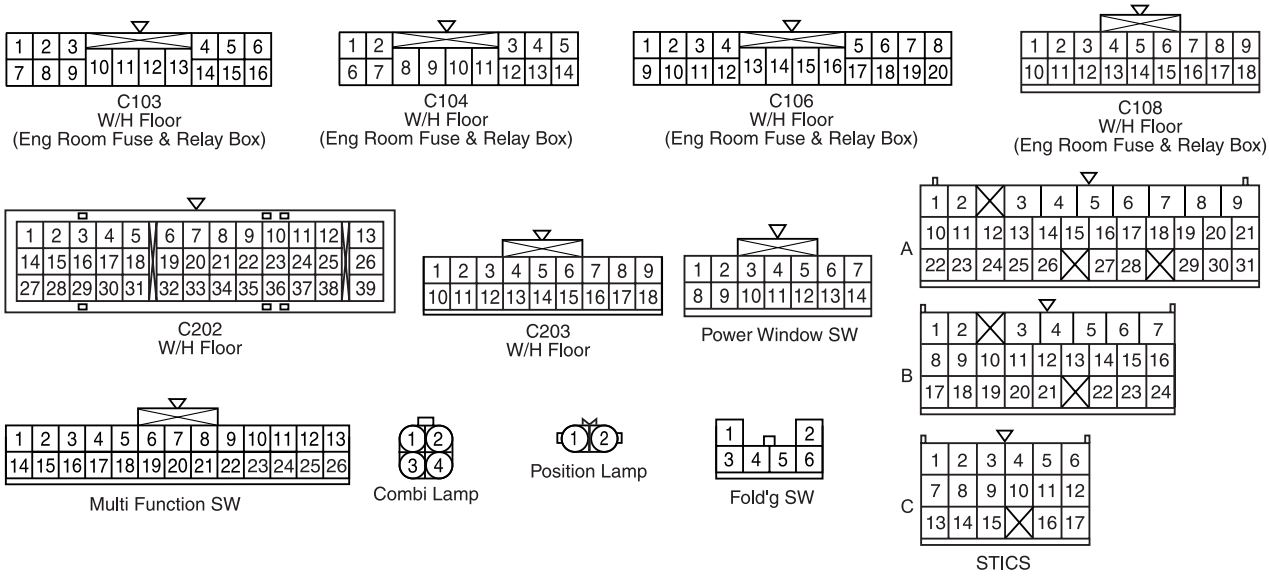
3) TAIL LAMP, HAZARD, POWER WINDOW



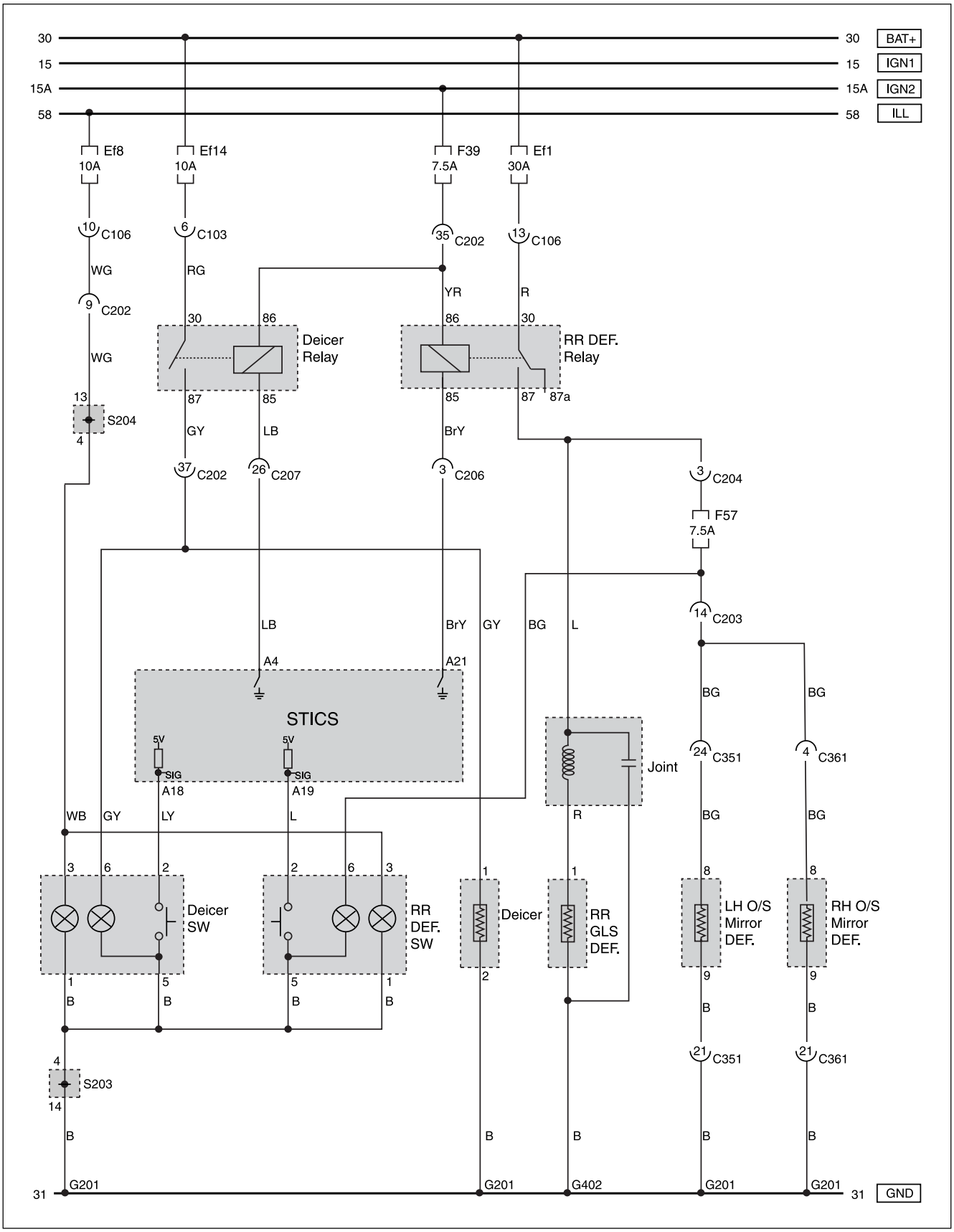
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



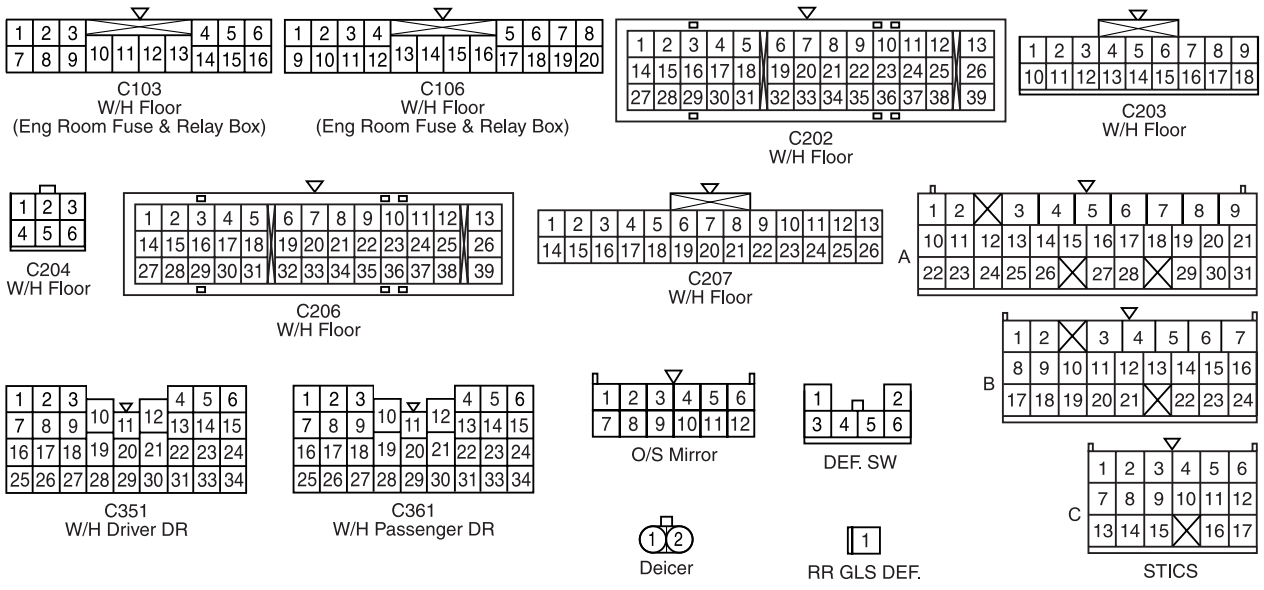
4) DEFOGGER


30
15
15A
58
30 BAT+
15 IGN1
15A IGN2
58 ILL
Ef8 10A
Ef14 10A
F39 7.5A
Ef1 30A
10 C106
6 C103
35 C202
13 C106
WG
RG
YR
R
9 C202
WG
30
86
Deicer Relay
86
30
RR DEF. Relay
13 S204 4
87
85
85
87
87a
GY
LB
BrY
37 C202
26 C207
3 C206
3 C204
F57 7.5A
14 C203
LB
BrY
GY
BG
L
A4
A21
STICS
5V
SIG
A18
5V
SIG
A19
Joint
BG
BG
24 C351
4 C361
WB
GY
LY
L
R
BG
BG
3 6 2
2 6 3
1
1
8
8
Deicer SW
RR DEF. SW
Deicer
RR GLS DEF.
LH O/S Mirror DEF.
RH O/S Mirror DEF.
1 5
5 1
2
9
9
B
B
B
B
B
B
4 S203 14
21 C351
21 C361
B
B
B
B
B
31 G201
G201
G402
G201
G201
31 GND

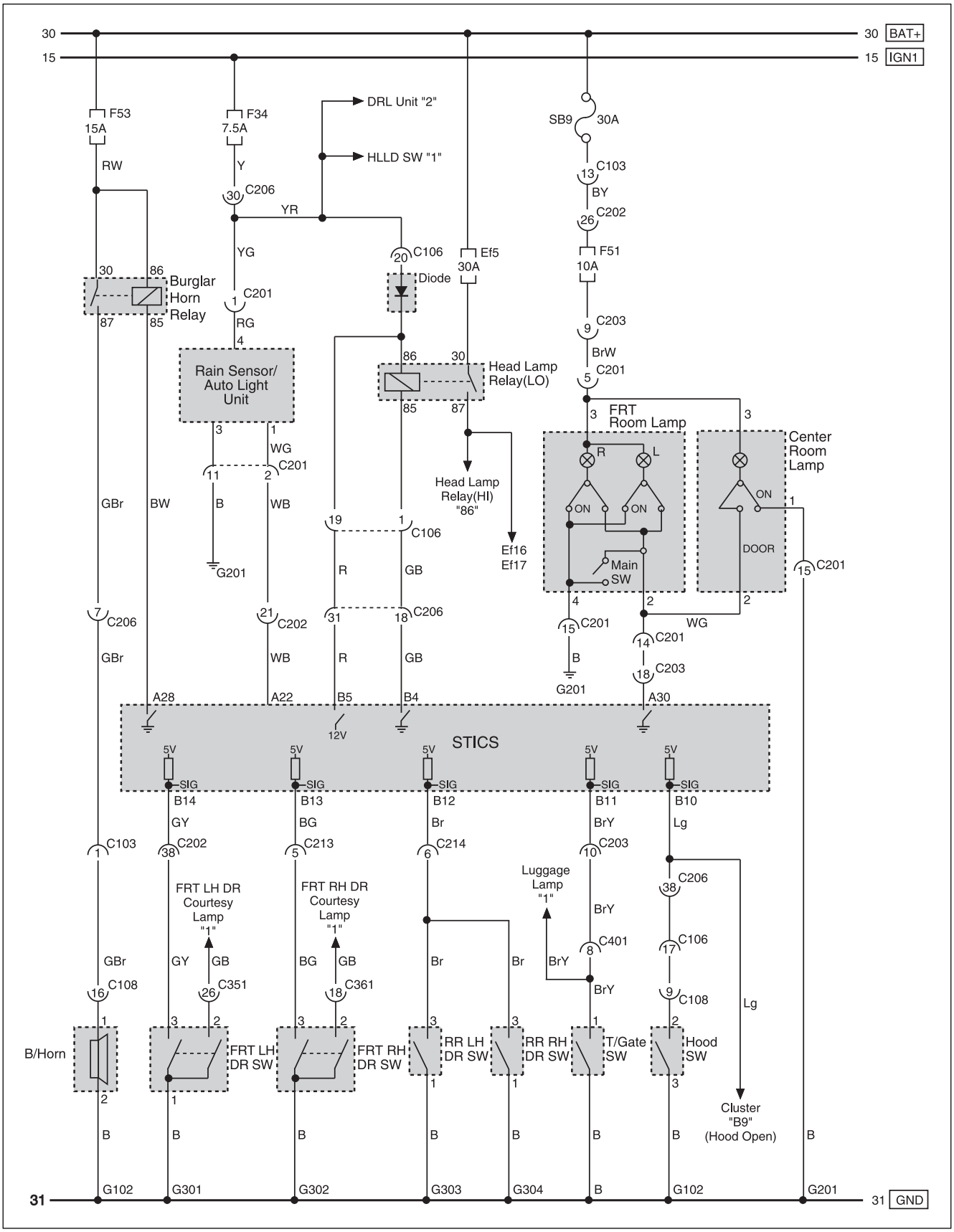
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C204 (6Pin, Colorless)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” Pillar	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G402	W/H Floor	Upper the LH T/Gate	Heater Glass
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



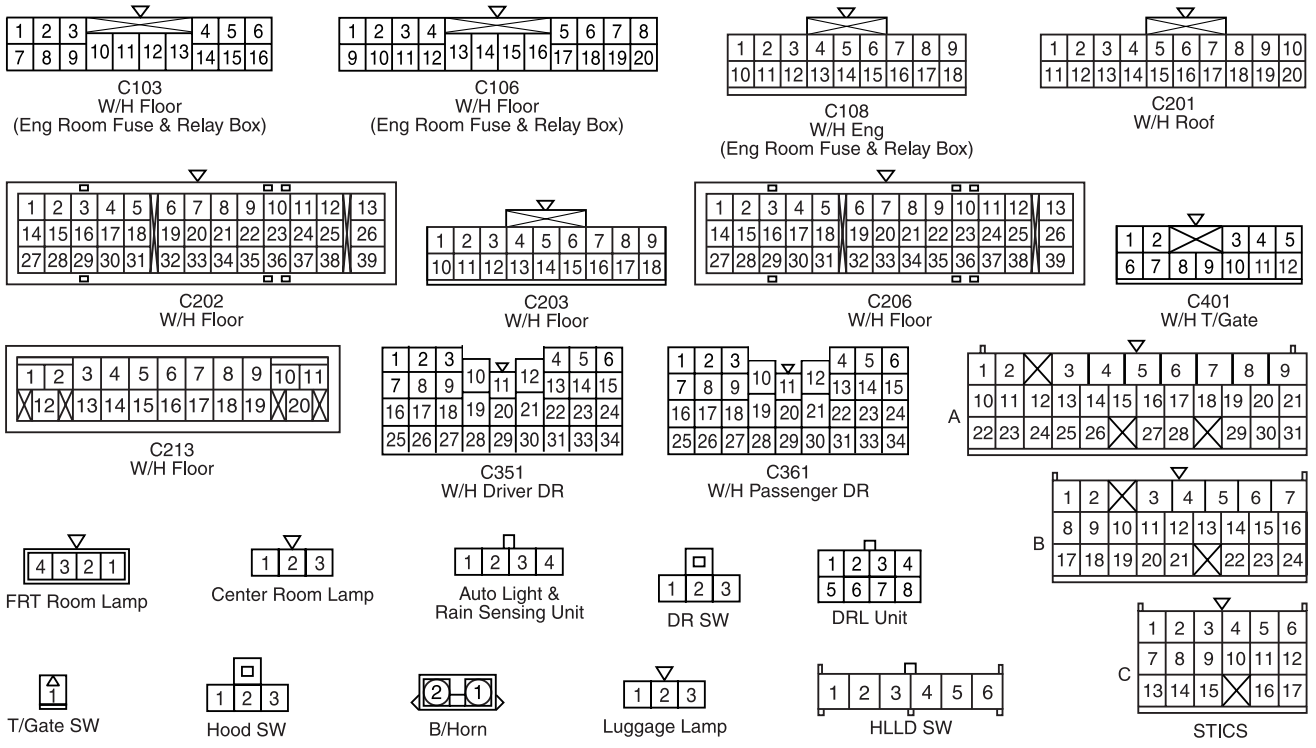
5) PANIC, AUTO LIGHT & RAIN SENSING, ROOM LAMP



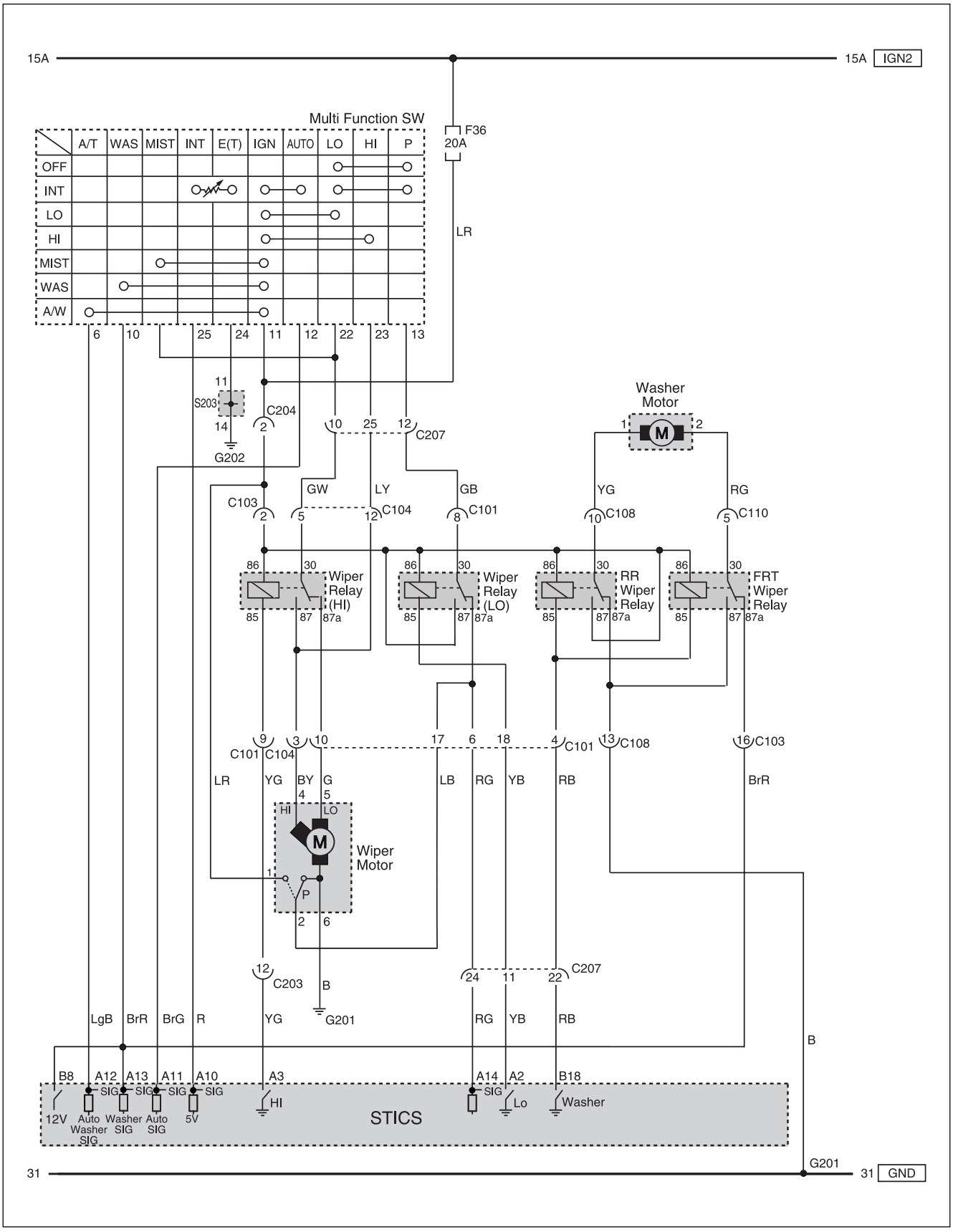
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” Pillar	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G102	W/H Eng Room	Behind LH Head Lamp	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



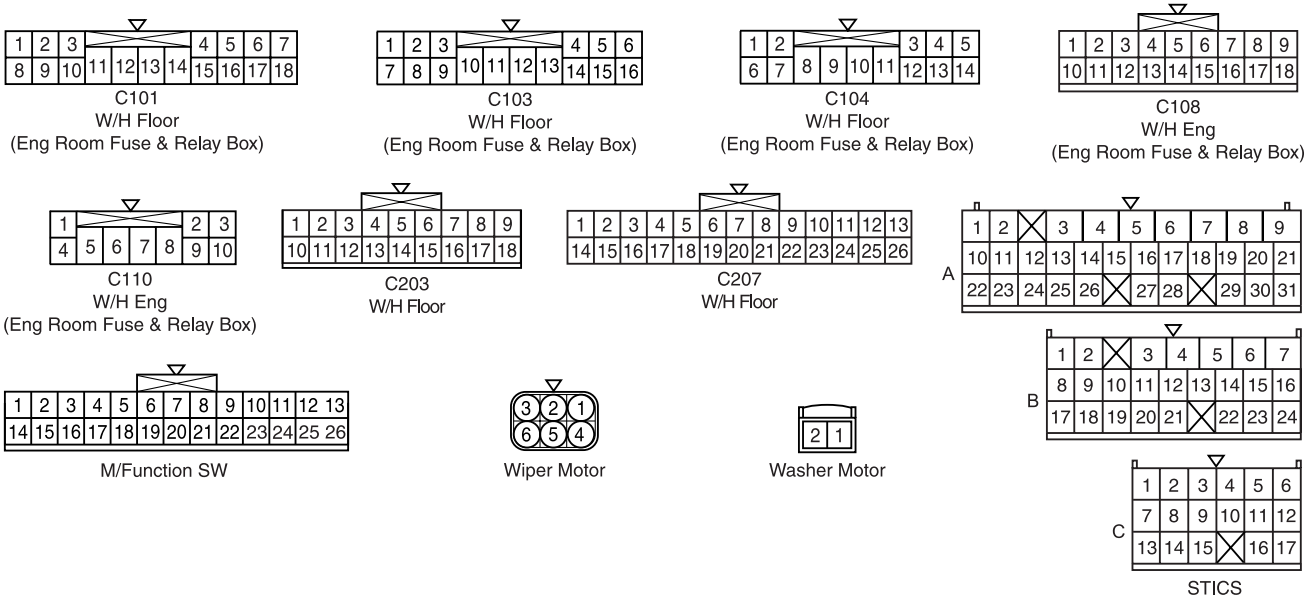
6) FRT WIPER/WASHER & RR WASHER



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

OVERVIEW

The RKSTICS (REKES + STICS (Super Time & Integrated Control System)) communicates with the transmitter (remote controller) and other electronic systems to transmit and receive the data.

The STICS also includes a diagnosis function that can inspect the error for related devices.

SPECIFICATIONS

1. Electrical Performance

1) Electrical Performance

Item	Requirement	Remark
Rated voltage	DC 12.0 V	
Operating voltage	DC 9.0 V ~ 16.0 V	Should operate normally within this range. (9.5V ~ 16.0V only for auto hazard lamp function)
Operating temperature	-30°C ~ +80°C	Should operate normally within this range.
Reserved temperature	-40°C ~ +85°C	
Max. operating humidity	95%	
Resistible voltage	24 V	
Insulating resistance	No heat and fire due to the current leaks.	Confined with PCB, waterproof and coating that requires the insulation.
Parasitic current	below 7.0 mA	When initiating the sleep mode after removing ignition key and locking the doors
Voltage drop	below 1.5 V	Pin no. 72 and 2, 4, 7, 8, 9, 10, 11, 12, 19, 24, 27, 28, 29, 30, 31, 32, 33, 36, 56, 57, 58, 59, 60, 61, 70, 71
	below 1.8 V	Pin no. 72 and 5, 6, 16, 17, 18, 20, 21, 23, 35, 37, 39, 41, 42, 43, 44, 45, 62, 64, 65, 66, 67, 68, 69

2) Characteristics of Radio Wave
   - Transmitting frequency: 447.800 ± 0.0125 MHz
   - Channel width: below 12.5 KHz
   - Frequency bandwidth: below 8.5 KHz
   - Modulation method: FSK (Frequency Shift Keying)
   - Receiving distance: Approx. 10 ~ 15 m (In case there are not obstacles around the system)em)

3) Chattering of Input Signals
   - Vehicle speed input:

     The vehicle speed is the average value of 4 pulses among 6 pulse inputs regardless of the input for 1. 0 second after IGI 1 ON. The time indicated in each function does not include the vehicle speed calculating time.
   - 20 ms target input:

     Wiper motor A/S (parking) terminal
   - 100 ms target input switch

     All switches except wiper motor A/S (parking) terminal

4) Time Tolerance
   - If not indicated, time tolerance will be ± 10%.
     However, if less than 500 ms, time tolerance will be ± 100 ms.
   - The time indicated in each function does not include chattering processing time from switch input changing point.

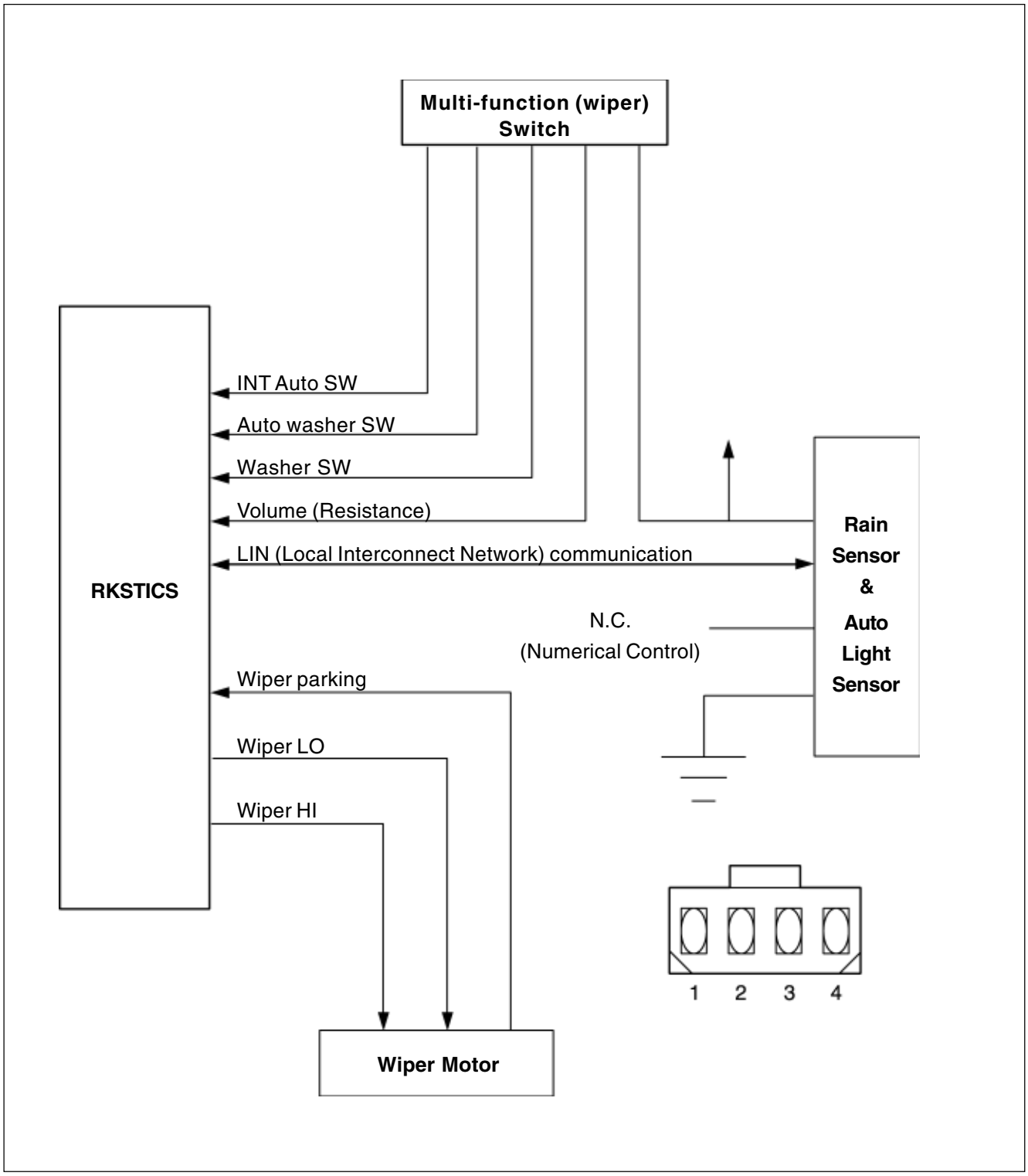
5) Wiper MIST and Front Washer Coupled Wiper
   - The wiper relay is turned on 0.3 seconds after turning “ON” the washer switch for 0.1 ~ 0.59 seconds with the ignition key “ON”, and it is turned off when the parking terminal is turned off.
   - The wiper relay is turned on 0.3 seconds after turning “ON” the washer switch over 0.6 seconds with the ignition key “ON”, and it is turned on three times immediately after turning off the washer switch.
   - When the washer switch is ON for more than 0.6 seconds during the wiper operation by the INT switch, the operation in step (2) is performed. When it is ON for a certain period of time (0.1 to 0.59 seconds), the operation in step (1) is performed.

6) Rear Washer Motor Control
   - When the rear washer switch is turn on with the ignition switch “ON”, the rear washer motor relay output is activated from the time when the rear washer switch is turned on, and it is deactivated when the rear washer switch is turned off.
   - It cannot be activated while the front washer switch or the auto washer and wiper (AFW: Advanced Fast Washer) is in operation.

7) Auto Washer and Wiper Switch (AFW)
   - When the auto washer switch is turned on with the ignition switch “ON” and the INT switch “OFF”, the washer motor output is activated for 1 second. If the system recognizes this output, the wiper relay output is activated during 4 cycles and the washer motor output is activated for 1 second. Then, the wiper relay output is deactivated after 3 cycles.
   - The auto washer switch output is overridden during the washer coupled wiper operation.
   - The auto washer switch input is overridden during the auto washer coupled wiper operation.
   - The auto washer switch input is overridden during the rain sensor coupled wiper or vehicle speed sensitive INT wiper operation.
   - When the auto INT switch input is received during the auto washer operation, the auto washer operation stops and the auto INT operation is activated.

5. Rain Sensor Coupled Wiper and Auto Light Control
   If equipped with RKSTICS rain sensor, it has following operation system.

   1) System layout



6. INT Switch Auto Position Reminder (Power-Up Reminder Wiper)
   1) When turning off and on the auto INT switch, the system drives the wiper motor through LOW relay regardless of communication with rain sensor.
   2) The wiper relay (LOW) is turned on and the wiper motor runs one cycle when changing the wiper switch to “AUTO” position from any other positions (while the ignition key is in the “ON” position).

      When the wiper switch is turned to the “ON” position again from other positions, the system drives the wiper motor through LOW relay one cycle only when the rain sensor detects the “Rain Detected” signal.

7. Washer Coupled Wiper in Rain Sensing Mode
   1) The washer coupled wiper is operated when receiving the washer switch input with the ignition switch “ON” and the auto INT switch “ON” in the rain sensing mode. At this moment, the communication with the rain sensor is overridden. However, the washer switch input is overridden during the continuous operation.
   2) The operation data is sent to the rain sensor even during the washer coupled wiper’s operation.

8. Rain Sensing Sensitivity Control
   1) The wiper LOW relay is turned on and the wiper motor runs one cycle when the volume sensitivity is increased (while the ignition key is in the “ON” position, the wiper switch is in the “ON” position, and the wiper motor is in “Parked” position). However, the wiper motor can be operated only when the rain sensor detects the “Rain Detected” signal.

   * If the volume sensitivity is changed more than 2 stages within 2 seconds, the wiper motor runs only one cycle.

9. Wiper Operation When the Wiper Parking Terminal Is Grounded
   1) The wiper system continuously outputs the parking signal of current sensitivity when the parking terminal is grounded (while the ignition key is in “ON” position and the wiper switch is in “ON” position).

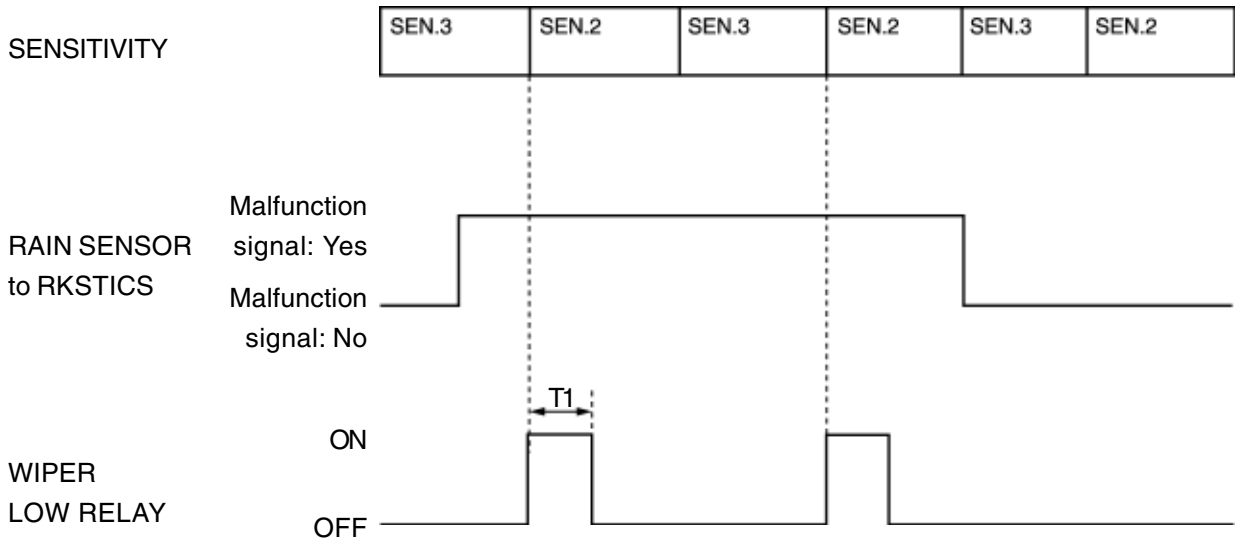
   * The wiper motor runs only when the rain sensor requires.

   2) When the parking terminal is fixed to IGN (HIGH), the wiper system outputs the operating signal of current sensitivity for 2 seconds, then continuously outputs the parking signal of current sensitivity.

   * The wiper motor runs only when the rain sensor requires.

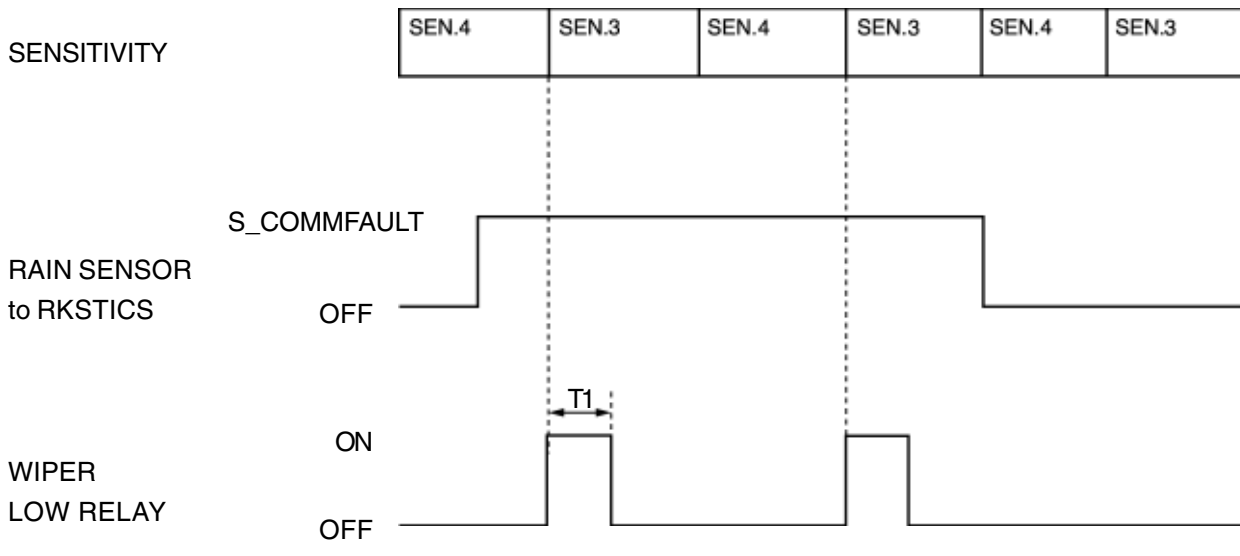
10. Defective Rain Sensor

1) The wiper relay (LOW) is turned on and the wiper motor runs one cycle when the wiper sensitivity is changed to 2 from 3 during receiving the malfunction signal from the rain sensor (while the ignition key is in “ON” position and the wiper switch is in “ON” position).



T1: 1 cycle

2) The wiper relay (LOW) is turned on and the wiper motor runs one cycle when the wiper sensitivity is changed to 3 from 4 during receiving the malfunction signal from the rain sensor (while the ignition key is in “ON” position and the wiper switch is in “ON” position).



T1: 1 cycle

11. Trouble Shooting

Symptom 1. The wiper does not operate one cycle when turning the multifunction wiper switch to the "AUTO" from the "OFF" position or starting the engine while the wiper switch is in the "AUTO" position.

1) When starting the engine with the multifunction wiper switch in the "AUTO" position, the wiper operates one cycle to remind a driver that the wiper switch is in the "AUTO" position.
2) When the wiper switch is turned to "AUTO" from "OFF", the wiper operates one cycle. It always operates one cycle for the initial operation, however, the wiper does not operate afterwards to prevent the wiper blade wear if not raining when turning the wiper switch to "AUTO" from "OFF". However, the wiper operates **up to 5 minutes** after rain stops. If this function does not occur, check No. 8 pin. If the pin is normal, check the wiper relay related terminals in the ICM box.

Symptom 2. It rains but the system does not work in the "AUTO" position.

1) Check whether the multifunction wiper switch is in the "AUTO" position.
2) Check the power to the sensor. Check the conditions of the pin 3 (Ground) and the pin 4 (IGN).
3) Check the wiper relay for defective.

Symptom 3. The wiper operates 3 or 4 times at high speed abruptly.

Check whether the variable resistance knob on the multifunction wiper switch is set in "FAST". The "FAST" is the highest stage of the sensitivity and very sensitive to small amount of rain drops. Therefore, change the knob to the low sensitivity.

Symptom 4. The wiper operates continuously even on the dry glass.

1) Check the wiper blade for wear. If the wiper blade cannot wipe the glass uniformly and clearly, this problem could be occurred. In this case, replace the wiper blade with a new one.
2) Check whether the variable resistance knob on the multifunction wiper switch is set in "FAST". The "FAST" is the highest stage of the ensitivity and very sensitive to small amount of rain drops. Therefore, change the knob to the low sensitivity.

Symptom 5. The wiper does not operate at high speed even in heavy rain.

Check if the wiper operates at high speed when grounding pin 1 and pin 2.

Symptom 6. The wiper responses are too fast or slow.

Check whether the variable resistance knob on the wiper switch is set in "FAST" or "SLOW".

Notify that the customer can select the sensitivity by selecting the variable resistance value. And, select a proper stage.

12. Auto Light Control
    1) The tail lamps and headlamps can be controlled with the communication with the rain sensor only when the auto light switch is in the “AUTO” position with the ignition switch “ON”.
    2) Rain detected headlamp: If it rains heavy which requires the highest INT speed, the headlamps are turned on automatically.
    3) Night detected wiping: When the auto light control turns on the headlamps and the rain sensor detects the rain, the wiper sensitivity is automatically increased by one level. (i.e. the AUTO wiper switch is at the 3rd level, but the wiper operates at the 4th level.)

13. Speed Sensitive INT (Intermittent) Wiper

    For RKSTICS without the rain sensor, perform the following operation:

    1) Controls the wiper intermittent operation by the values from the vehicle speed and the volume.
       - Calculates and converts the Intermittent interval automatically by using the INT VOLUME when the ignition switch is in the “ON” position and the INT switch is in the “ON” position.
       - The wipers are operated in vehicle speed sensitive mode when turning the INT switch to the “ON” position with the engine running or starting the engine with the INT switch positioned to “ON”.
       - Intermittent interval (at 0 km/h): 3 ± 0.5 ~ 19 ± 2 seconds
    2) Vehicle speed calculation

       [Input the vehicle speed]

       It is calculated by the numbers of input pulses for one second.

$$1\ [\text{PULSE/SEC}] = \frac{60\ [\text{km/h}]\ \text{X}\ 60\ [\text{sec}]}{637\ \text{X}\ 4\ \text{PULSE}} \fallingdotseq 1.41\ [\text{km/h}]$$

    3) VOLUME calculation

       The pause time of the vehicle speed sensitive INT wiper is calculated by the INT volume (input voltage). Each level has the hysteresis.
    4) Pause time calculation
       - Pause time: the duration that wipers are stopped at parking position
       - Elapsed time: the duration after the wiper motor started to operate from parking position
       - The pause time is calculated by the vehicle speed and the VOLUME.
         - If the pause time is below 1.0 second, the wipers operate without pause.
         - If the pause time is over 1.5 seconds, the wipers operate intermittently.

14. Ignition Key Reminder Warning (The ignition key reminder warning has priority over the "TAILLAMP ON WARNING".)
    1) The chime buzzer output in the ICM box continues when opening the driver’s door while the ignition key is inserted the into ignition switch.
    2) When removing the ignition key or closing the driver’s door during chime buzzer output, the output turns off.
    3) This function is not available when the ignition switch is “ON”.

15. Ignition Key Reminder
    1) The system outputs “UNLOCK” for 5 seconds after the driver’s door is opened and the door lock switch is changed to “LOCK” (while the ignition key is in ignition switch).
    2) The system outputs “UNLOCK” for 5 seconds (T2) when the door lock switch is changed to “LOCK” from “UNLOCK” and the driver’s door is closed within 0.5 seconds (while the ignition key is in the ignition switch).
    3) If the UNLOCK conditions are met, the UNLOCK output should be unconditionally activated. However, if the ignition key is removed after the door lock switch is changed from UNLOCK to LOCK, the UNLOCK output is not activated.

16. All Door Lock Prevention Function when a Door is Opened
    1) All doors, except the tailgate and hood, output “UNLOCK” for 5 seconds when the “LOCK” signal is inputted (while the ignition key is removed and one of doors is opened).
    2) When the door is closed during the unlock output for 5 seconds, the unlock output stops.
    3) When the ignition key is inserted during the output, the output continues for approx. 5 seconds.
    4) If the ignition switch is in the “ON” position or the ignition switch is removed, the above steps are performed. If the key is in the key cylinder, the ignition key reminder function is activated.
    5) This function does not work if the vehicle speed is over 10 km/h.

17. Mark Lamp Left on Warning
    1) The chime buzzer in the ICM box sounds with the interval of 0.8 second when opening the driver’s door while the tail lamp is turned on and the ignition key is removed.
    2) The chime/buzzer output stops when turning off the tail lamp and closing the driver’s door.
    3) The system outputs “UNLOCK” for 5 seconds when the driver’s and passenger’s door lock switch is locked (while the tail lamp is turned on and the driver’s door is open).
    4) This function is not available when the ignition key is in the “ON” position.

18. Door Ajar Warning
    1) The warning light in indicator display comes on when opening any of the driver’s door, the passenger’s door, the rear doors or the tailgate while the vehicle speed is below 10 km/h.
    2) The warning light goes off when closing the door under step 1.
    3) The warning light blinks when the vehicle speed is over 10 km/h while the warning light is turned on.
    4) The warning light blinks when a door is open while the vehicle speed is over 10 km/h.
    5) The warning light goes off when closing the door under step 3.
    6) The warning light comes on when the vehicle speed is below 10 km/h under step 3.

19. Seat Belt Warning
    1) The seat belt warning light comes on and the chime buzzer in the ICM box sounds for 6 seconds when turning the ignition key to “ON” from “OFF”.

       If the seat belt is fastened before turning the ignition key to the the “ON” position, the warning light in the indicator display blinks, however, the chime buzzer does not sound.
    2) The seat belt warning light goes off and the chime buzzer in the ICM box stops when turning the ignition switch to the “OFF” position.
    3) The chime buzzer stops and the seat belt warning light stays on for the specified duration when fastening the seat belt during the warning operation.
    4) The seat belt warning light comes on and the chime buzzer sounds for 6 seconds again when unfastening the seat belt during fastening operation while the ignition key is the “ON” position.

20. Parking Brake Warning
    1) The parking brake warning light comes on for approx. 4 seconds when turning the ignition key from the “OFF” to the “ON” position regardless of the vehicle speed and the parking brake switch position. After this 4 seconds, the warning lamp comes on, goes off or blinks according to the vehicle speed and the parking brake switch position.
    2) The warning light comes on when the parking brake switch is turned on while the vehicle speed is below 10 km/h.
    3) The warning light goes off when turning off the parking brake switch under step 2.
    4) The warning light blinks and the chime buzzer in the ICM box sounds for 2.85 seconds and stops for 1. 5 seconds when the vehicle speed is over 10 km/h for more than 2 seconds while the parking brake switch is turned on.
    5) The warning light goes off and the chime buzzer stops when turning off the parking brake switch under step 4.
    6) The warning light comes on and the chime buzzer stops when the vehicle speed goes down below 10 km/h under step 4.
    7) This function is not available when the ignition key is turned to the “OFF” position.

21. Center/Luggage Room Lamp Control
    1) The overhead console lamp (front room lamp) and the center room lamp come on when opening the door while the center/luggage room lamp switch is at the coupled operating position and the key reminder switch is “OFF”.
    2) When the door (Driver’s/Passenger’s/Rear) is opened, the front and center room lamps come on and automatically go off after 30 seconds.
    3) The room lamp stays on for 2 seconds and then decays through 3 seconds when closing the driver’s door, passenger’s door or rear doors.
    4) The decaying operation must have greater than 32 steps per one second.
    5) The room lamp output should stop immediately after turning on the ignition key during the decaying operation.
    6) The front room lamp and the center room lamp come on for 30 seconds when receiving the unlock signal from the remote control key while the door is closed.
    7) The front room lamp and center room lamp output period is extended by 30 seconds when receiving the unlock signal from the remote control key again during output. (The lamp stays on when unlocked by the remote control key.)
    8) When a door is opened during its extended period, the lamp stays on. If closed, operates as in step 2.
    9) The room lamp output stops immediately after receiving the lock signal from driver’s door, passenger’s door and rear doors lock switch while the driver’s door, passenger's door and rear doors are closed.
    10) The luggage room lamp comes on when opening the tailgate while the tailgate coupled luggage room lamp switch is pressed.

22. Battery Saver (Tail Lamp Auto Cut)
    1) The tail lamp is turned on or off according to the operations of the tail lamp switch.
    2) The tail lamp relay is turned off (auto cut) when opening and closing the driver's door after removing the ignition key without turning off the tail lamp.
    3) The tail lamp relay is turned on when inserting the ignition key into the ignition switch.
    4) The tail lamp relay is turned off (auto cut) when opening and closing the driver's door while the ignition key is removed and the tail lamp is turned on.

23. Front Defogger Timer
    1) The front defogger output is “ON” when turning “ON” the front defogger switch while the ignition switch is “ON” (with engine running).
    2) The output stops when turning on the defogger switch again during its operation.
    3) The output is “ON” only for 6 minutes when turning “ON” the front defogger switch within 10 minutes after completion of output for 12 minutes. This can be done only once.
    4) The output is “OFF” when the ignition switch is “OFF”.

24. Ignition Key Hole Illumination
    1) The ignition key hole illumination comes on when opening the driver’s door or passenger's door while the ignition key is removed.
    2) The ignition key hole illumination stays on for 10 seconds when closing the door after step 1.
    3) The output stops when the ignition key is turned to the “ON” position.
    4) The output stops when receiving the lock signal from the remote control key (under armed mode).

25. Rear Defogger Timer
    1) The rear defogger output is “ON” when turning “ON” the rear defogger switch while the IGN 2 switch is “ON” (with engine running).
    2) The output is “OFF” when turning “ON” the rear defogger switch again during output.
    3) The output is “ON” only for 6 minutes when turning “ON” the rear defogger switch within 10 minutes after completion of output for 12 minutes. This can be done only once.
    4) The output is “OFF” when the IGN 2 switch is “OFF”.

26. Headlamp Control
    1) When the system receives the remote control key after receiving the LOCK signal (theft deterrent mode) with the ignition switch “OFF”, it supplies the power to the headlamp relay to turn on the headlamp (turned off after 20 seconds).
    2) The output is “OFF” when receiving the “LOCK” signal from the remote control key while outputting the headlamp relay.

       However, other signals other than “LOCK” are overridden.
    3) The output is “OFF” when inserting the ignition key and turning it to the “ON” position while outputting the headlamp relay.

27. Door Lock/Unlock Control by Door Lock Switch
    1) The door lock system outputs “LOCK” for 0.5 seconds when positioning the driver's or passenger’s door lock switch to the lock position.
    2) The door lock system outputs “UNLOCK” for 0.5 seconds when positioning the driver's or passenger's door lock switch to the unlock position.
    3) “LOCK” or “UNLOCK” by the door lock switch is ignored when outputting the “LOCK” or “UNLOCK” by other functions.
    4) All door lock signals are “UNLOCK” for 0.5 seconds just for once when receiving the “LOCK” signal within 0.5 seconds after closing the driver’s or passenger's door while the ignition key is removed.

28. Door Lock/Unlock by Central Door Lock Switch
    1) The door lock system outputs “LOCK/UNLOCK” for 0.5 seconds when operating the central door lock switch.

       (However, if the door lock switch (front doors) is at LOCK position, the system outputs UNLOCK signal, and vice versa.)
    2) The “LOCK” or “UNLOCK” inputs from the central door lock switch in armed mode are ignored.

29. Door Lock/Unlock by Remote Control Key
    1) The door lock relay output is “ON” for 0.5 seconds when receiving the remote control lock signal.
    2) The door unlock relay output is “ON” for 0.5 seconds when receiving the remote control unlock signal.

30. Auto Door Lock
    1) The door lock system outputs “LOCK” when the vehicle speed maintains over 50 km/h.

       However, it doesn't output “LOCK” when all doors are locked or failed.
    2) If any of doors is unlocked after outputting “LOCK” in step 1, outputs “LOCK” up to 5 times (except step 1) at the interval of one second.
    3) If any of doors is unlocked after 5 times of "LOCK" outputs, the door is regarded as “FAIL”.
    4) If the door that was regarded as fail changes (UNLOCK to LOCK) to unlock, only one “LOCK” output will be done.
    5) If any door is regarded as FAIL, the auto door lock function does not work (if it is occurred when the vehicle speed is over 50 km/h, the auto door lock output does not occur even if the vehicle speed falls below 50 km/h and accelerates again to over 50 km/h.). Nonetheless, the central door lock function works properly.
    6) When the system receives “UNLOCK” signal from a door switch, it outputs “LOCK” signals 5 times. If additional “LOCK” signal from another door switch is detected during the period, the system outputs five “LOCK” signals 5 times for the door.
    7) The door lock system outputs “UNLOCK” automatically if the “LOCK” output conditions are established by this function or the key is cycled (IGN1=OFF) (even when there is no “LOCK” output while the vehicle speed maintains over 50 km/h under lock condition).

       (If the LOCK condition is established with the ignition switch ON, the system outputs UNLOCK signal unconditionally when turning the ignition switch to OFF position.)

       However, when the ignition key is turned to “OFF” position, the lock output conditions will be cancelled.
    8) The “FAIL” condition of the door will be erased when the ignition key is turned to “OFF” position.

31. Description of Burglar Alarm Function

1) Armed mode activation requirements
   - The “LOCK” output is “ON” when receiving the “LOCK” signal from transmitter while the ignition key is removed and all doors are closed. The armed mode is activated when the door lock switch is locked (theft deterrent horn output: once, hazard relay output: twice).
   - The theft deterrent horn and hazard relay outputs are “ON” when receiving the “LOCK” signal from the remote control key again in armed mode (theft deterrent horn output: once, hazard relay output: twice).
   - When receiving “LOCK” signal from the remote control key while any of doors is not closed, only the “LOCK” output can be done and then activates the armed ready mode (without theft deterrent horn and hazard warning flasher). At this moment, if the ignition key is in the ignition switch, the door unlock switch is turned “ON” or the door lock switch is unlocked, it cancels the armed mode and activates the normal mode.
   - When the door is not opened or the ignition key is not inserted into ignition switch for 30 seconds after receiving “UNLOCK” signal, it outputs “LOCK” and then activates armed mode (RELOCK operation). Also, at this moment, the system outputs hazard warning flasher twice.
   - The armed mode will not be activated except above conditions.

     Ex) The armed mode will not be activated when the door is locked by the ignition key.
2) Armed mode cancellation requirements
   - Unlocking by remote control key or engine starting.
3) Warning operation requirements
   - When opening the door in armed mode
   - When unlocking the door lock switch in armed mode by other than the remote control key
   - When closing and then opening the door after completion of warning (27 seconds)
4) Warning operation
   - The theft deterrent horn and hazard warning flasher output is “ON” for 27 seconds with the interval of 1 second.
5) Warning cancellation requirements
   - Cancels warning by using any signal from the remote control key (LOCK, UNLOCK, PANIC) during warning operation.
   - Cancels warning after 27 seconds (remaining period) while the ignition key is turned to “ON” position.
   - If the ignition switch is turned to ON position when the warning is activated in armed mode, the warning is canceled immediately and the warning buzzer stops after 27 seconds (remaining time).
6) Operation when warning is cancelled
   - The theft deterrent horn and hazard warning flasher outputs are “OFF”.
7) Operations when removing and installing the battery

Installed / Removed	Normal	Armed	Warning	Remark
Normal Armed	○			
Armed Ready	○			
Armed		○		
Warning			○	
Warning Completion	○	○	○	
RELOCK Ready	○			

If the system is in armed mode while installing a battery, the horn sounds and the emergency warning lamp blinks (Same operations with warning in armed mode).

RELOCK Operation

It the door is not opened or the ignition key is not inserted into the key cylinder within 30 seconds after unlocking the door with remote control key, the system outputs “LOCK” signal and activates the armed mode.

32. Auto Door Unlock (Crash Unlock)
    1) The air bag collision signal input cannot be accepted within 7 seconds after turning the ignition key to "ON" position.
    2) After this period, the door lock system outputs "UNLOCK" for all doors for 5 seconds from 0.4 seconds after receiving the air bag collision signal.
    3) Even though the key is turned to "OFF" position during the output of "UNLOCK", the output continues on for remaining period.
    4) The function is erased when turning "off" the IGN switch.

33. Time Lag Power Window Control
    1) The power window relay output is "ON" when turning on the ignition switch.
    2) The power window relay output is "ON" for 30 seconds when turning off the ignition switch. The power window relay output is "OFF" when opening the driver's door or the passenger's door.
    3) The power window relay is turned "OFF" when receiving the remote control key lock signal (armed mode) during its extended operation period of 30 seconds.

35. Specifications of Remote Control Key

When any of switches on remote control key is pressed, the integrated CPU in remote control key sends the coded control message to the CPU in receiver to control the vehicle.

Switch Functions on Remote Control Key

Function		Switch Operation
Function	Door lock	Briefly press the switch briefly
	Door unlock	Press and hold the door switch
	PANIC	Briefly press the panic/escort button
	ESCORT	Press and hold the panic/escort button

36. Receiver
    1) Operating requirements
       IGN Key = OUT (removed)
    2) Code registration requirement
       Codes can be registered only through SCAN-100.
    3) Transmitter Code Registration
       - Up to two transmitter codes can be registered.
       - The received code cannot be output during the registration.
       - Both single REKES and dual REKES must be encoded through the SCAN-I.

37. Remote Door Lock
    1) All doors are locked when briefly pressing the door LOCK switch on remote control key (less than 0.5 seconds).
    2) The system outputs LOCK signal immediately after receiving the door lock message from the remote control key. The system activates the theft deterrent mode when all doors are locked while they are fully closed (the hazard warning lamps blink twice.).

38. Door Unlock
    1) The door unlock operates when pressing the door switch on the remote control key for longer than 0.5 seconds.
    2) The door unlock relay is "ON" for 0.5 seconds when receiving the door unlock message from the remote control key.
    3) The hazard warning lamps blink once only when all the doors unlocked.

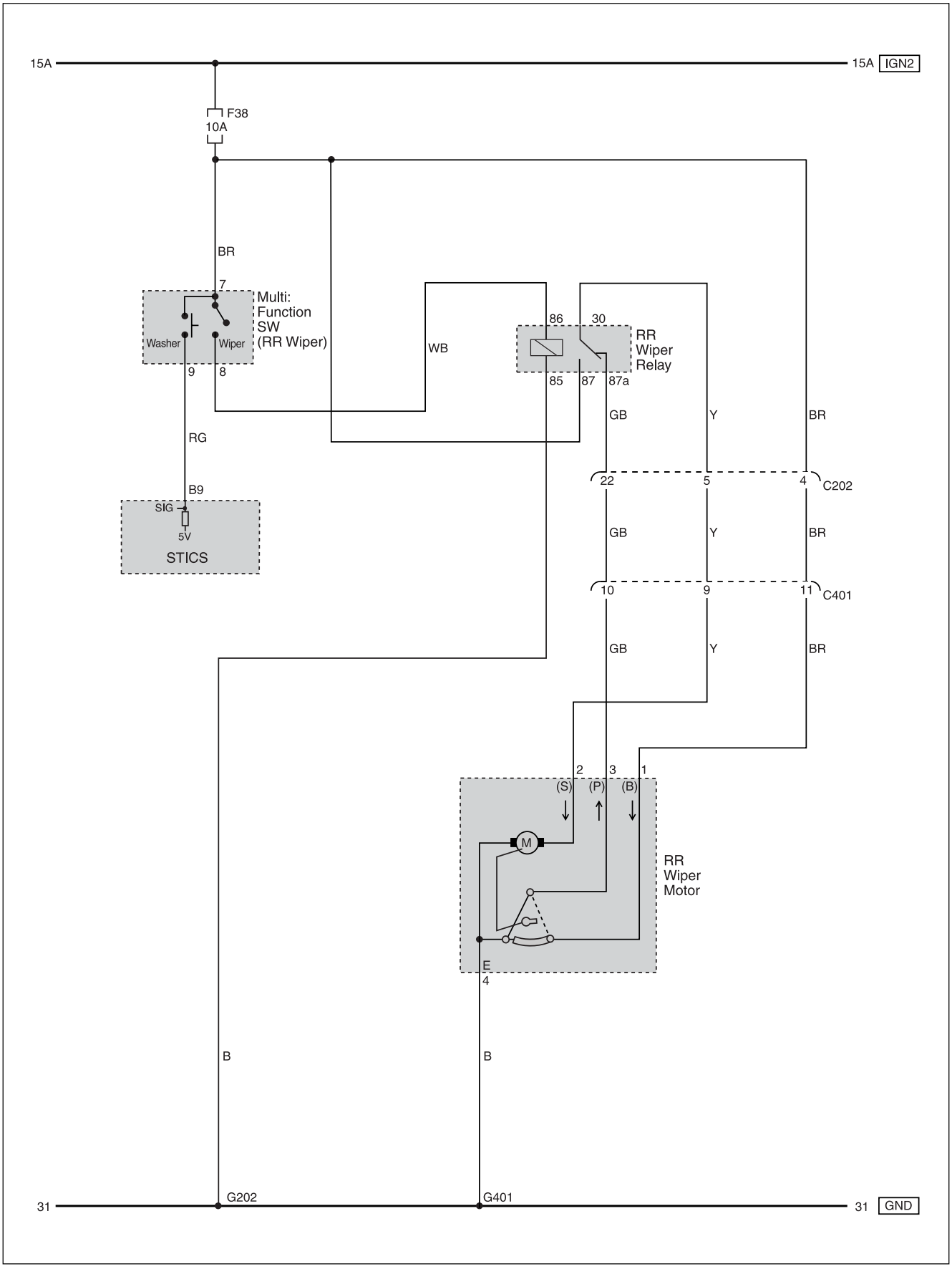
39. PANIC
    1) This function operates when pressing the PANIC switch on the remote control key for less than 0.5 seconds.
    2) The horn sounds for 27 seconds when receiving the PANIC message from the remote control key.

40. Auto Door Lock
    1) It the door is not opened within 30 seconds after unlocking the door with remote control key, the system outputs “LOCK” signal and activates the armed mode (Relock function).

DIAGNOSIS TROUBLE CODE AND HELP TIPS

Fault Code	Malfunction	Descriptions
01	DR Door Lock Knob	Driver's door lock knob is not operated when locking/unlocking doors.
02	PS Door Lock Knob	Passenger's door lock knob is not operated when locking/unlocking doors.
03	RR Door Lock Knob	Rear door lock knob is not operated when locking/unlocking doors.
04	T/Gate Lock Knob	Tailgate lock knob is not operated when locking/unlocking doors.
05	Door Lock Output	All door lock knob are not moved to lock position even when the door lock relay is activated.
06	Door Unlock Output	All door lock knob are not moved to unlock position even when the door unlock relay is activated.
07	C/DR Lock Output	Doors are locked by central door lock switch while the engine is running.
08	DR Lock Output	Doors are locked by driver's door lock switch while the engine is running.
09	PS Lock Output	Doors are locked by passenger's door lock switch while the engine is running.
10	Auto Door Lock Output	Door lock knob is not moved to lock position when the system outputs auto door lock signal while the ignition switch is in ON position and the vehicle speed is over 50 km/h.
11	Auto Door Unlock Output	Door lock knob is not moved to unlock position after receiving the output from collision sensor.
12	Wiper Output	The WIPER P-POS signal is not detected when the wiper relay is activated.
13	Speed Signal	The vehicle speed over 3 km/h is detected at the speed signal area while the ignition switch is in ON position and the alternator signal is "D" LOW.
14	INT Wiper Volume	The circuit is open (over 4.5 V) when changing the INT volume in the speed sensitive INT wiper (saved as history error).
15	Speed Sensor	The vehicle speed over 200 km/h is detected (saved as history error).
16	A/BAG Collision Sensor Input	A signal is sent to the collision sensor input area while the ignition switch is in OFF position (saved as history error unconditionally).
17	A/BAG Collision Sensor Output	The RKSTICS outputs UNLOCK signal after receiving collision sensor input while the ignition switch is in ON position (saved as history error).
18	A/BAG Collision Monitor	The STICS outputs the Door Unlock signal due to the collision sensor and the feedback value is in proper range (saved as history error).
19	Door Ajar Warning IND	The door warning indicator blinks when the vehicle speed is over 10 km/h (saved as history error).
20	Parking Brake IND	The parking brake indicator blinks when the vehicle speed is over 10 km/h (saved as history error).
21	Auto Washer Out	The auto washer output is not sent to the front washer (saved as history error).
22	Washer Relay	The front washer switch receives the input signal for more than 10 seconds (saved as history error).
23	Remocon Voltage Check	The voltage from remote control key is saved as history error.
24	SBR S/BELT SW (Only EU)	When the seat belt switch circuit is OPEN (HIGH) in KEY OUT & ARMED MODE, the system recognizes it as FAIL and saves it as History error (Normal Close (GND)).
25	SBR Sensor (Only EU)	When the sensor value is recognized in KEY OUT & ARMED MODE, the system saves it as History error.
26	SBR Connection (Only EU)	When the seat belt switch circuit maintains OPEN (HIGH) in KEY OUT & ARMED MODE while the vehicle speed is over 50 km/h, the system saves it as History error.

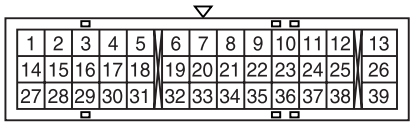
18. RR WIPER CIRCUIT 7830



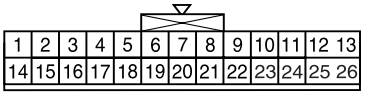
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G202	W/H Main	Under the Driver “A” Pillar	
G401	W/H T/Gate	Center the T/Gate	

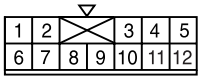
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



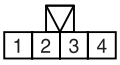
C202
W/H Floor



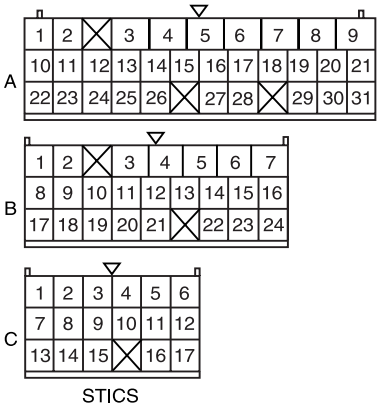
M/Function SW



C401
W/H T/Gate

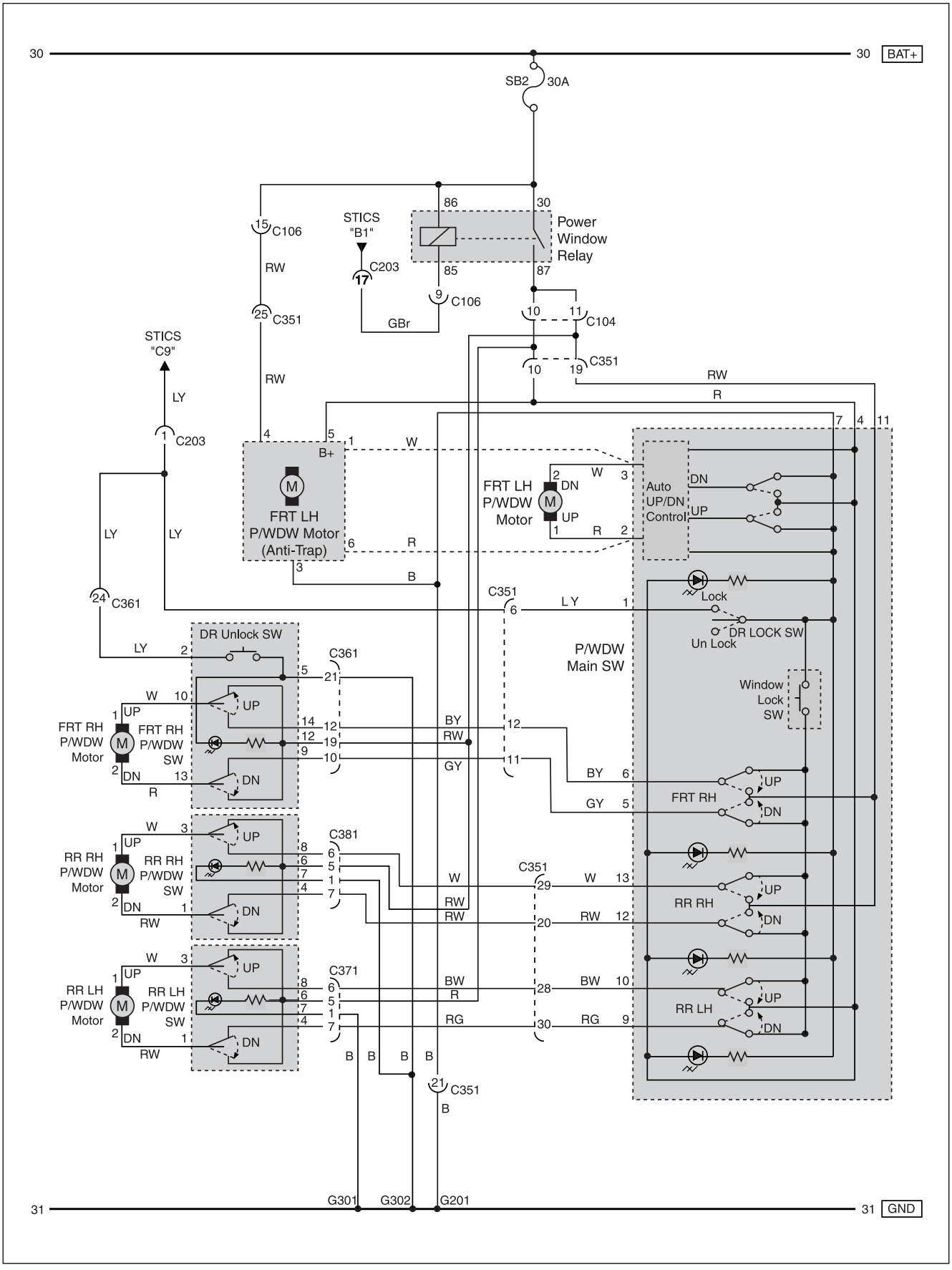


RR Wiper Motor



STICS

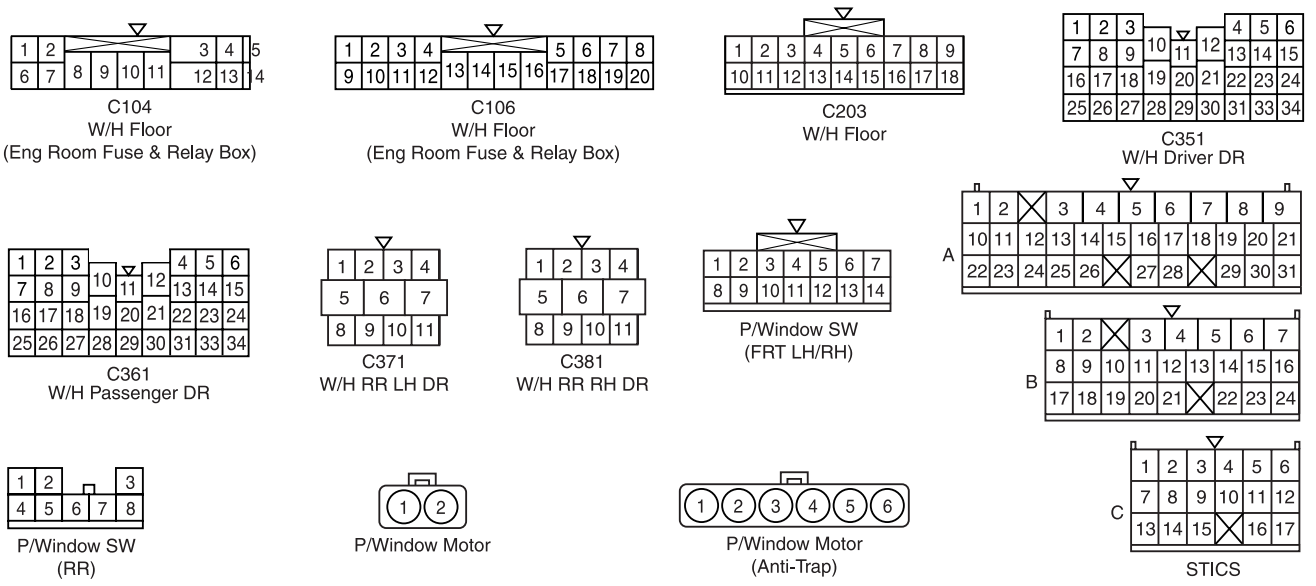
19. POWER WINDOW CIRCUIT 8510



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” Pillar	
C371 (11Pin, White)	W/H Floor - W/H RR LH DR	Under the LH “B” Pillar	
C381 (11Pin, White)	W/H Floor - W/H RR RH DR	Under the RH “B” Pillar	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION

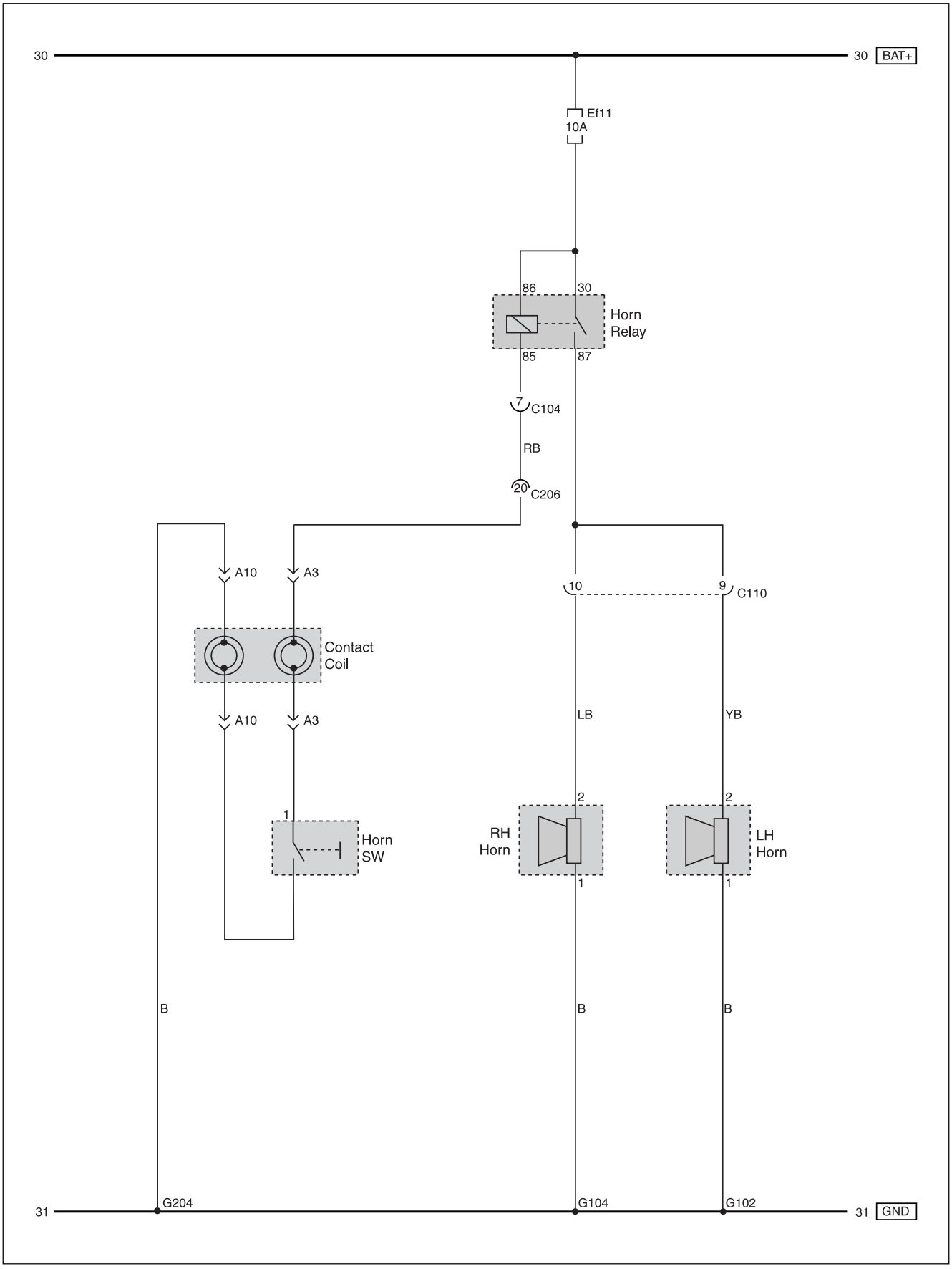


C. CIRCUIT DESCRIPTION

TIME LAG POWER WINDOW CONTROL

1. The power window is turned off when turning the ignition key to “ON” position.
2. The power window relay is turned “ON” for 30 seconds (T1) when turning the ignition key to “OFF” position. However, the power window relay stays on for 30 seconds (T2) when the ignition key is turned to “OFF” position while the door is opened.
3. The power window relay is turned “ON” again for 30 seconds (T2) just for once when opening the door during its extended operation period of 30 seconds (T1).
4. The power window relay is turned “OFF” when closing the door during its extended operation period of 30 seconds (T2).

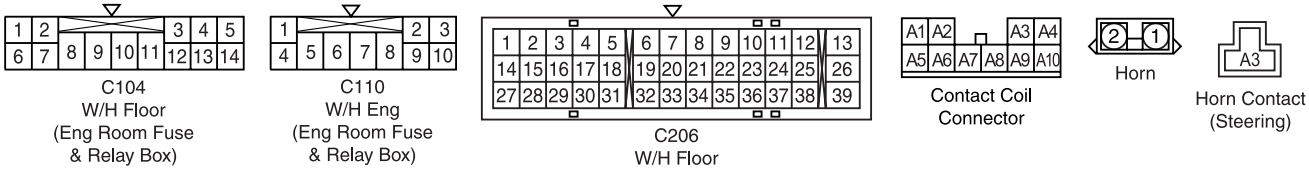
20. HORN 8610


30
30 BAT+
Ef11
10A
86
30
Horn
Relay
85
87
7
C104
RB
20
C206
A10
A3
10
9
C110
Contact
Coil
A10
A3
LB
YB
1
Horn
SW
2
RH
Horn
1
2
LH
Horn
1
B
B
B
31
G204
G104
G102
31
GND

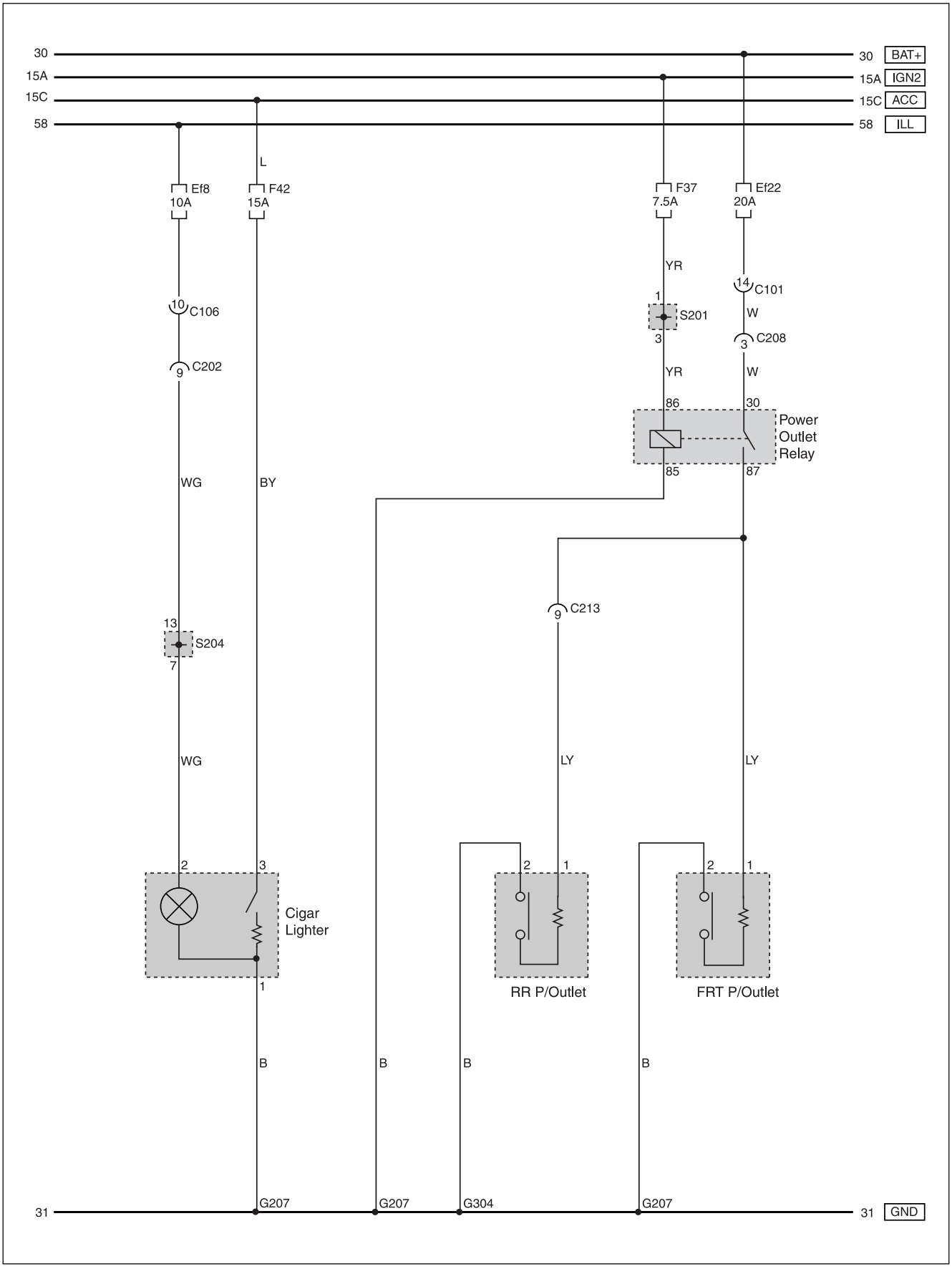
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G102	W/H Eng Room	Behind LH Head Lamp	
G104	W/H Eng Room	Behind RH Head Lamp	
G204	W/H Main	Backside TGS Lever Unit	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



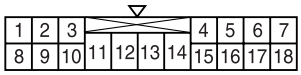
21. CIGAR LIGHTER & POWER OUTLET CIRCUIT 7632



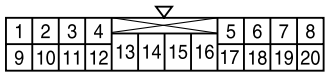
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C208 (4Pin, Colorless)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

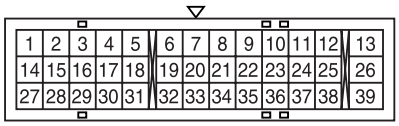
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C101
W/H Floor
(Eng Room Fuse & Relay Box)

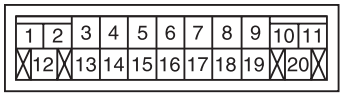


C106
W/H Floor
(Eng Room Fuse & Relay Box)



C202
W/H Floor

C208
W/H Floor

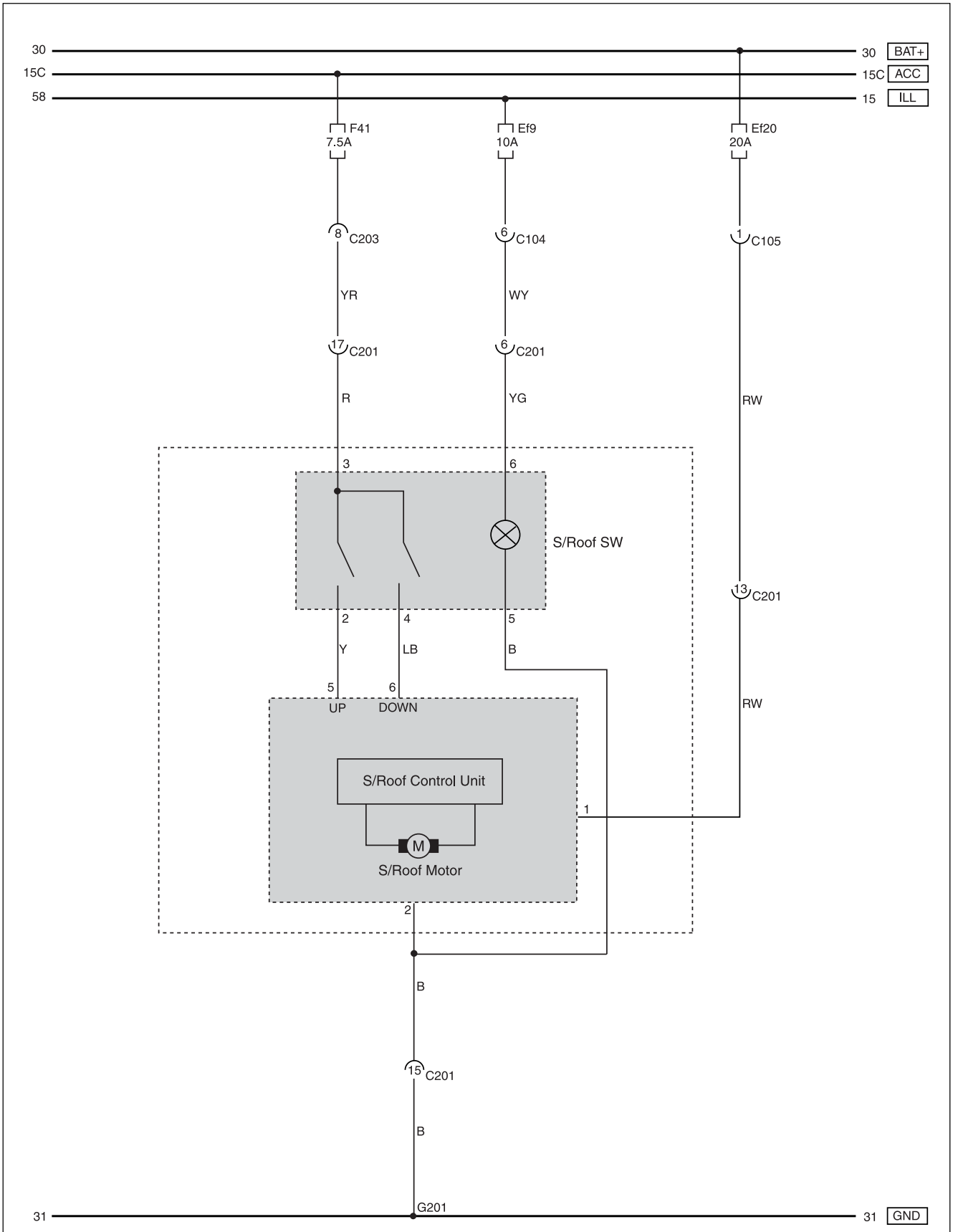


C213
W/H Floor

Cigar Lighter

Power Outlet

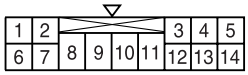
22. SUN ROOF CIRCUIT 7340



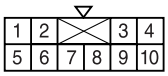
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder

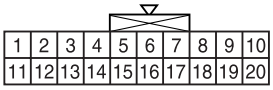
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



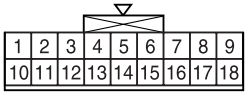
C104
W/H Floor
(Eng Room Fuse &
Relay Box)



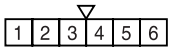
C105
W/H Floor
(Eng Room Fuse &
Relay Box)



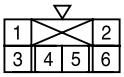
C201
W/H Roof



C203
W/H Floor



S/Roof SW



S/Roof Control Unit
(S/Roof Motor)

C. CIRCUIT DESCRIPTION

OPERATION AND FUNCTION

1. Sunroof Sliding Operation
   1) Open
      - To fully open the sunroof, briefly rotate the sunroof switch clockwise (OPEN direction) with the sunroof closed. To partially open the sunroof, rotate and hold the sunroof switch until it reaches at the desired position.
   2) Close
      - To fully close the sunroof, briefly rotate the sunroof switch counterclockwise (CLOSE direction) with the sunroof open. To partially close the sunroof, rotate and hold the sunroof switch until it reaches at the desired position.

2. Sunroof Tilting Operation
   1) Tilt-up
      - To tilt-up the sunroof, rotate the sunroof switch counterclockwise (CLOSE direction) with the sunroof fully closed.
   2) Tilt-down
      - To tilt-down the sunroof, rotate the sunroof switch clockwise (OPEN direction) with the sunroof tilted-up.

3. Anti-trap Function

   To prevent any body parts from being trapped by the sliding sunroof, an Anti-Trap function automatically opens the sunroof when an object is trapped. However, if the force against the sunroof is less than the specified value, the Anti-Trap function doesn't operate.

RESETTING OF SUNROOF CONTROL UNIT

1. To prevent any parts damage and personal injury, the sunroof setting is canceled
   1) When the battery voltage is disconnected, the fuse is blown, or the abrupt voltage drop occurs due to old battery while operating the sunroof.
   2) When an undesired cancellation occurs due to mistake by a technician.
   3) When parts damage, shorted circuit, or electric leakage occurs.
   4) When keeping the sunroof switch at "OPEN" position.

2. Symptoms when the sunroof setting is canceled
   1) The one-touch operation cannot be activated.
   2) The sunroof is tilted even after completion of closing operation when closing it.
   3) The sunroof opening and tilting level is significantly low.
   4) The sunroof does not operate properly when operating the sunroof switch.

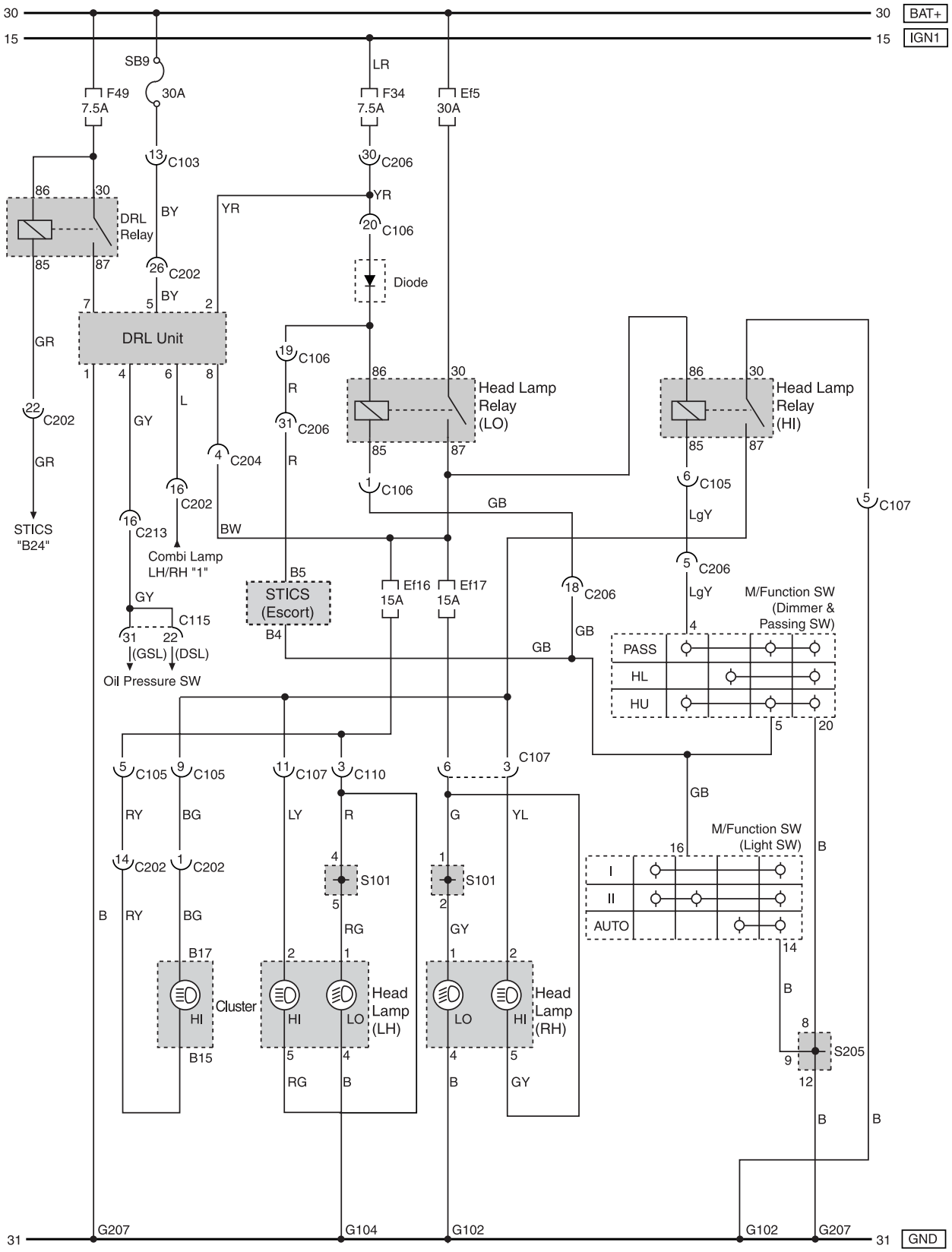
3. [0] point reset of sunroof
   1) Close the sunroof with the sunroof switch and keep the position for approx. 10 seconds. If the [0] point setting is successfully completed, the sunroof should be properly opened from this position.
   2) Check if the sunroof is fully closed. Tilt the sunroof with the sunroof switch and keep it at the position for 10 seconds ([0] point setting).
   3) Close the sunroof with the sunroof switch.

4. Checking after reset
   1) If the sunroof does not operate properly, check the power supply system.
   2) If the sunroof does not operate or operates only during the switch operation even the power supply system is in normal conditions, check if the ground circuit of switch is securely tightened and reset the sunroof system again.

TROUBLE DIAGNOSIS

Symptom	Cause	Action
Leakage	Clogged or bent drain hose	Check and correct drain hose condition.
	Gap and clearance between panel and glass	Readjust glass location.
Wind nosie	Gap and clearance between panel and glass	Readjust glass location.
Improper operations	Malfunction of wire, fuse and ground	Check and replace/repair.
	Malfunction of relay, motor and unit	Replace it.
	Damged side cover by dislocation of sun shade	Reinstall sun shade and side cover. (Replace damaged parts.)
	Foreign material in rail	Remove foreign material.
Malfunction	Caught side cover by dislocation of sun shade	Reinstall sun shade and side cover. (Replace damaged parts.)
	Improper operation of anti-trap function	Check interference of body and wind deflector. (Relieve spring tension)
	Improper operation of motor	Replace it.
Operation noise	Caught side cover by dislocation of sun shade	Reinstall sun shade and side cover. (Replace damaged parts.)
	Interference between drain hose and vehicle body	Install sponge to drain hose.
	Interference between vehicle body and roof panel	Apply sealant between vehicle body and roof panel.
	Gap and clearance between roof panel and glass	Readjust glass location.

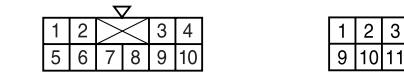
23. HEAD LAMP & DRL (DAY TIME RUNNING LIGHT) UNIT CIRCUIT 8310



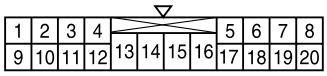
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
G102	W/H Eng Room	Behind LH Head Lamp	
G104	W/H Eng Room	Behind RH Head Lamp	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S101 (6Pin, Black)	W/H Eng	Inside the Eng Room Fuse & Relay Box	Head Lamp
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

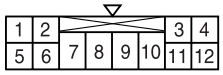
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



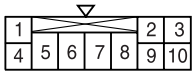
C105
W/H Floor
(Eng Room Fuse Relay Box)



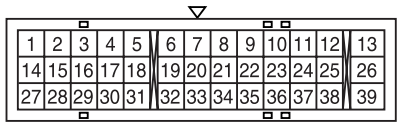
C106
W/H Floor
(Eng Room Fuse Relay Box)



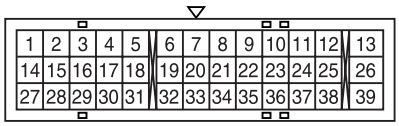
C107
W/H Eng
(Eng Room Fuse Relay Box)



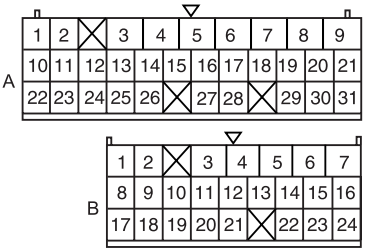
C110
W/H Eng
(Eng Room Fuse Relay Box)

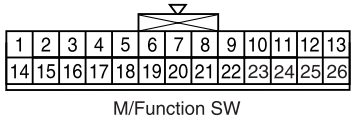


C202
W/H Floor

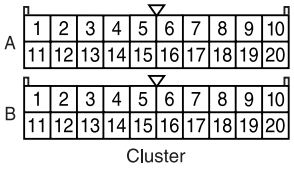


C206
W/H Floor



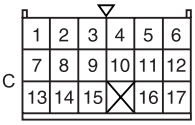


M/Function SW



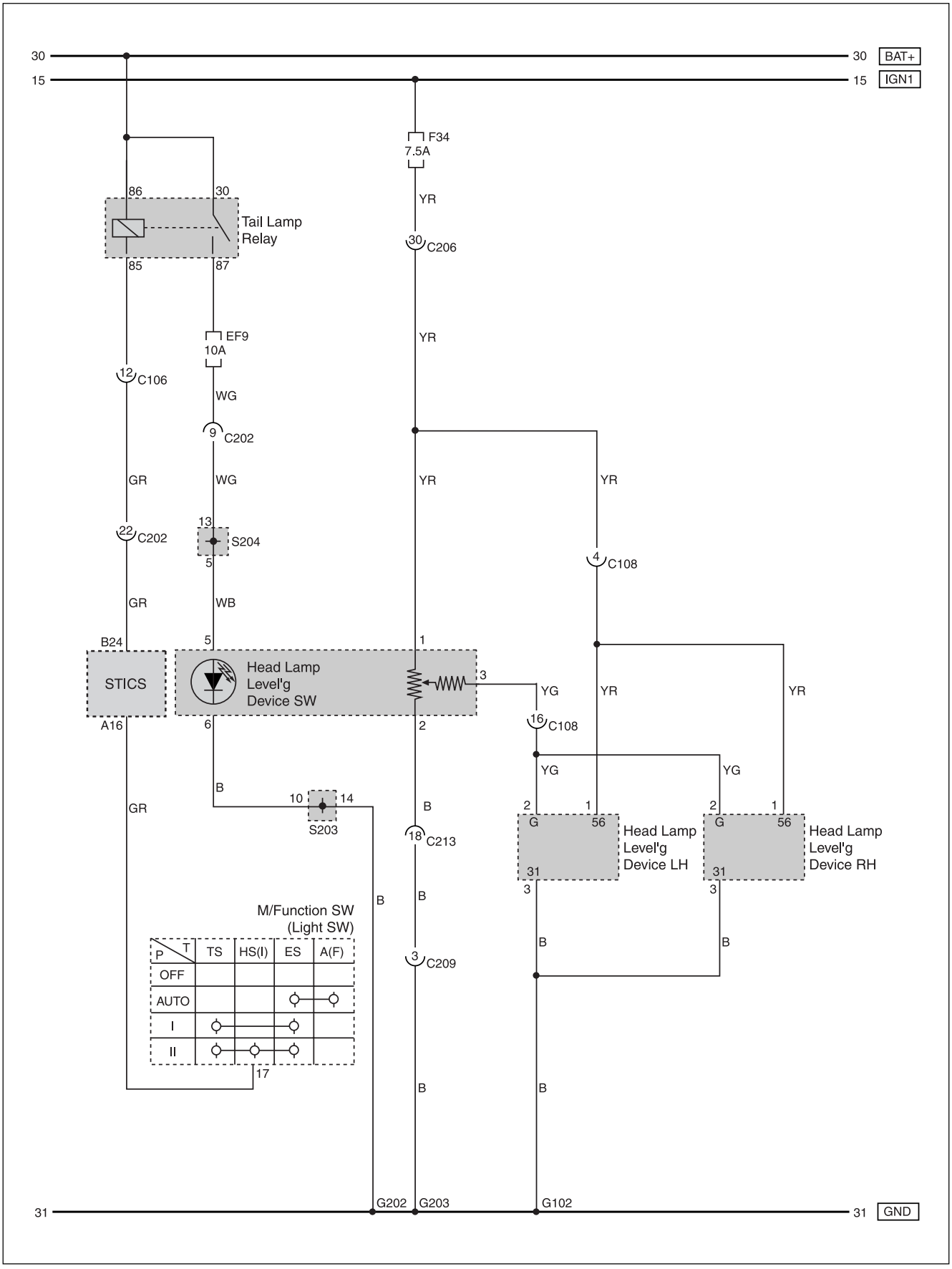
Cluster

Head Lamp
(LH/RH)



STICS

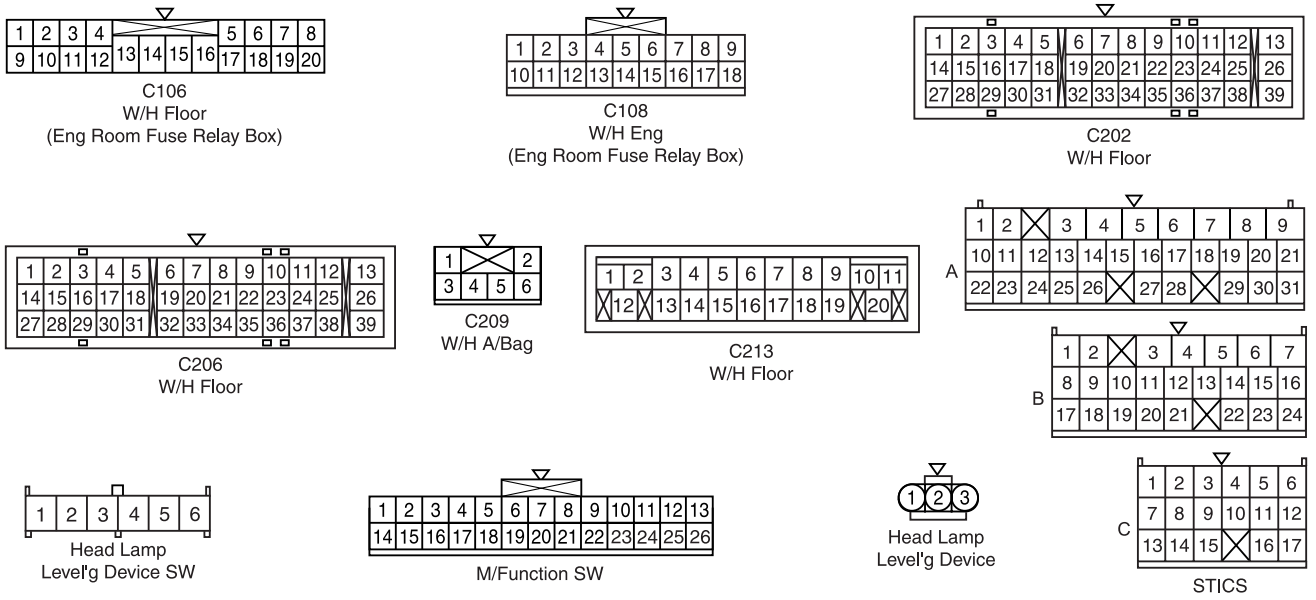
24. HLLD (HEAD LAMP LEVEL'G DEVICE) CIRCUIT 8510



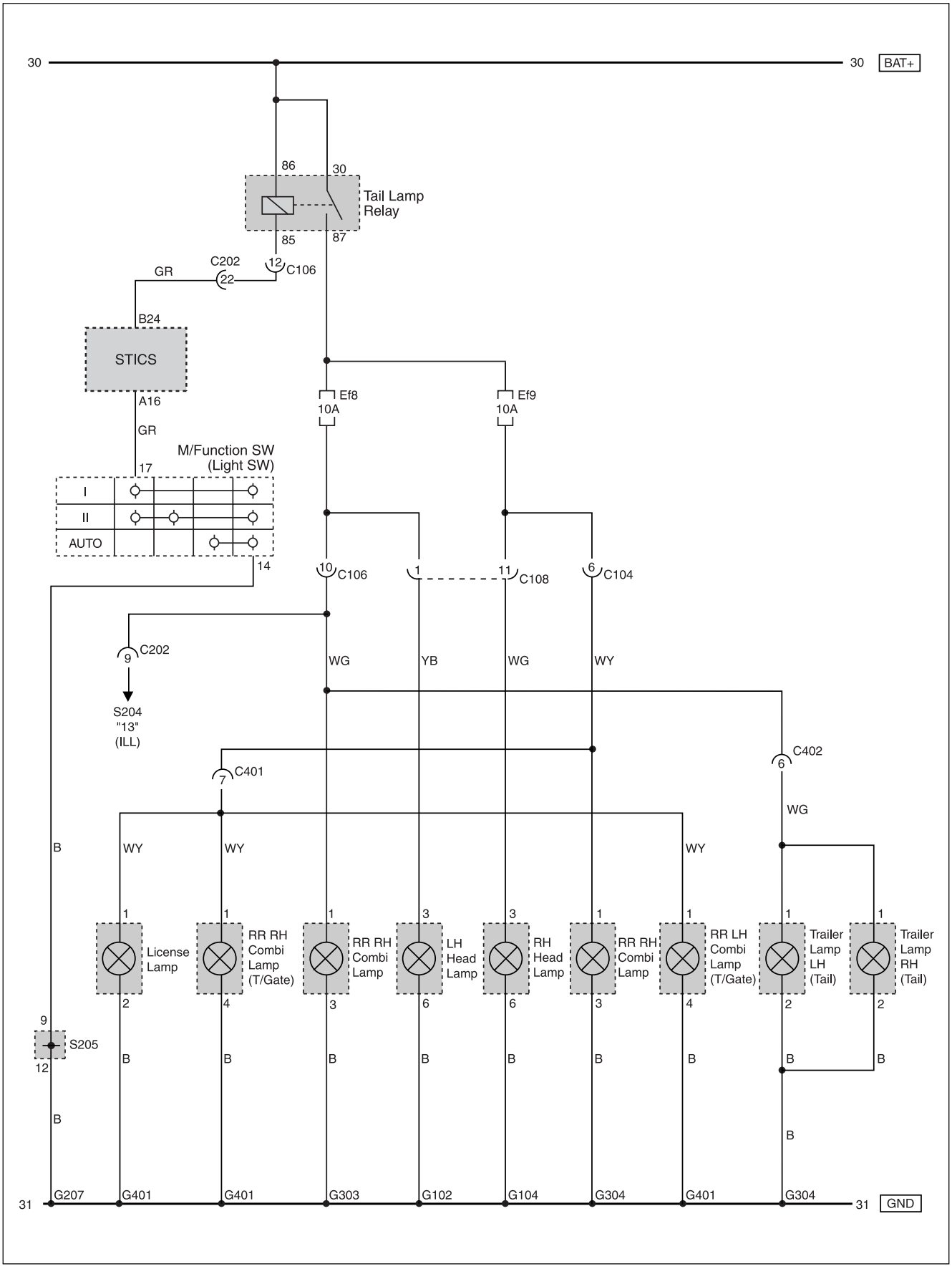
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C209 (6Pin, White)	W/H Main - W/H A/Bag	Upper the Driver Legroom	A/Bag
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Hoder	
G102	W/H Eng Room	Behind LH Head Lamp	
G202	W/H Main	Under the Driver “A” Pillar	
G203	W/H Main (W/H A/Bag)	Beside A/Bag Unit	A/Bag
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



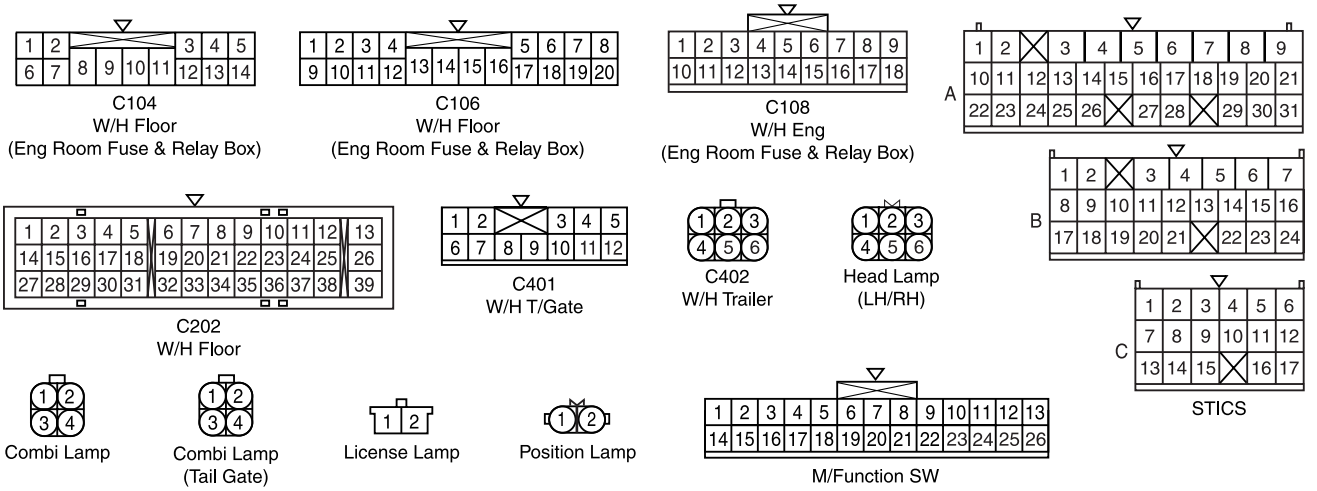
25. TAIL LAMP CIRCUIT 8320



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
C402 (6Pin, Black)	W/H Floor - W/H Trailer	Under RH Bumper	
G102	W/H Eng Room	Behind LH Head Lamp	
G104	W/H Eng Room	Behind RH Head Lamp	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	
G401	W/H T/Gate	Center the T/Gate	
S204 (14Pin, Black)	W/H Main	RH Protector of the Drvier Legroom	ILL
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

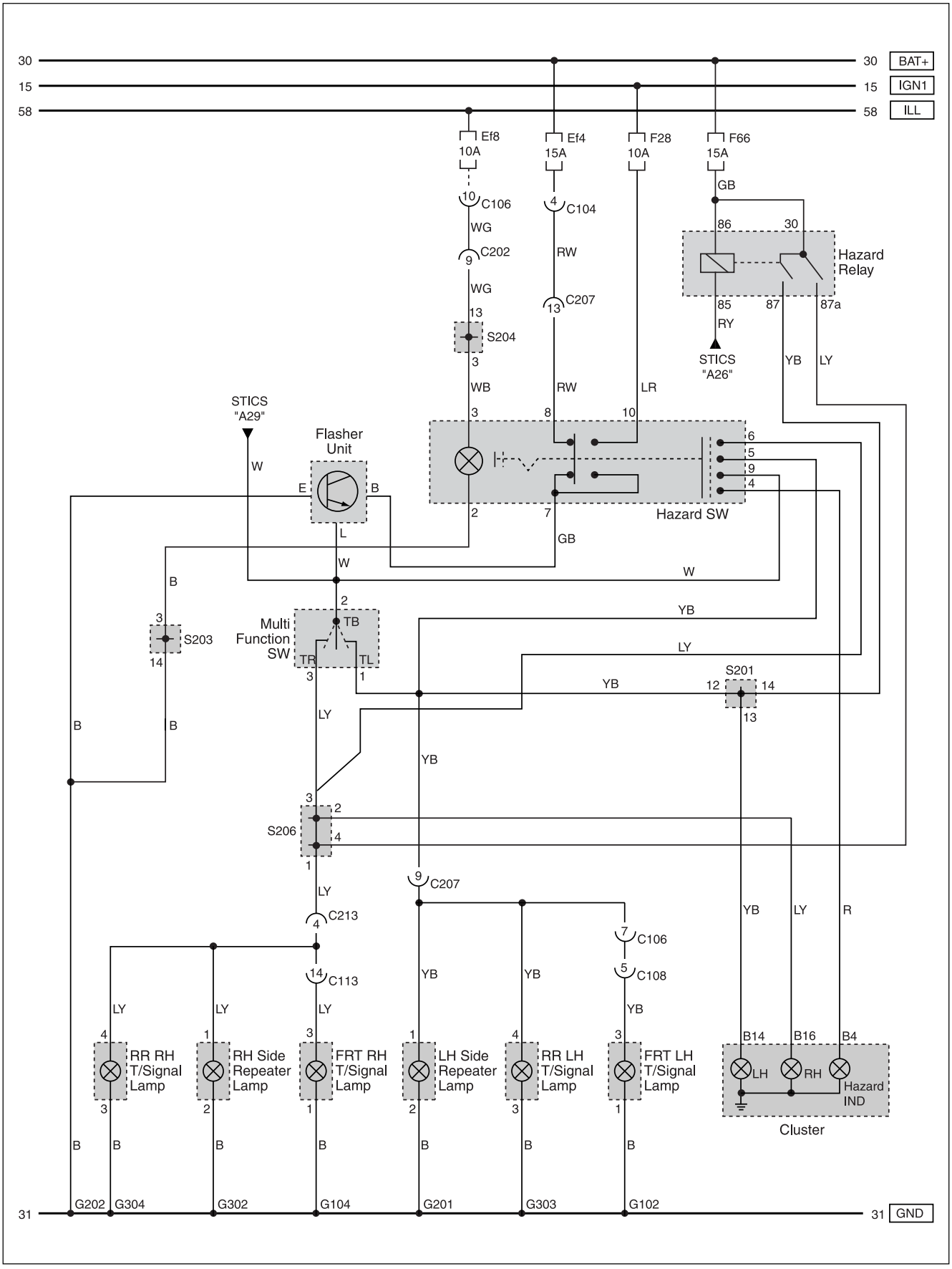
MARK LAMP LEFT ON WARNING

1. The chime buzzer in the ICM box sounds with the interval of 0.8 second when opening the driver's door while the tail lamp is turned on and the ignition key is removed.
2. The buzzer output stops when turning off the tail lamp and closing the driver's door.
3. The system outputs "UNLOCK" for 5 seconds when the driver's and passenger's door lock switch is locked (while the tail lamp is turned on and the driver's door is opened).
4. This function is not available when the ignition key is in "ON" position.

BATTERY SAVER (TAIL LAMP AUTO CUT)

1. The tail lamp is turn on or off according to the operations of the multifunction tail lamp switch.
2. The tail lamp relay is turned off (auto cut) when opening and closing the driver's door after removing the ignition key without turning off the tail lamp.
3. Tail lamp relay is turned on when inserting the ignition key into ignition switch again after step 2 operation.
4. The tail lamp relay is turned off (auto cut) when opening and closing the driver's door while the ignition key is removed and the tail lamp is turned on.

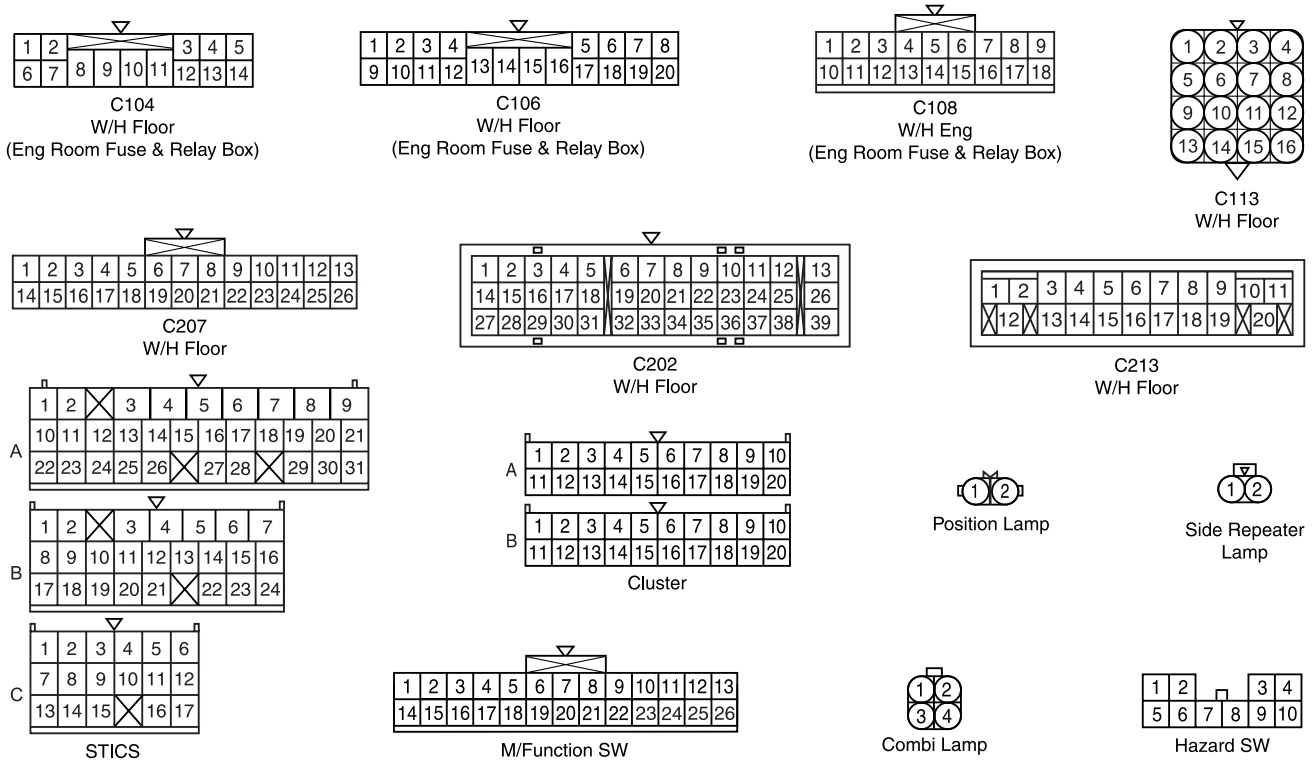
26. TURN SIGNAL & HAZARD LAMP CIRCUIT 8410



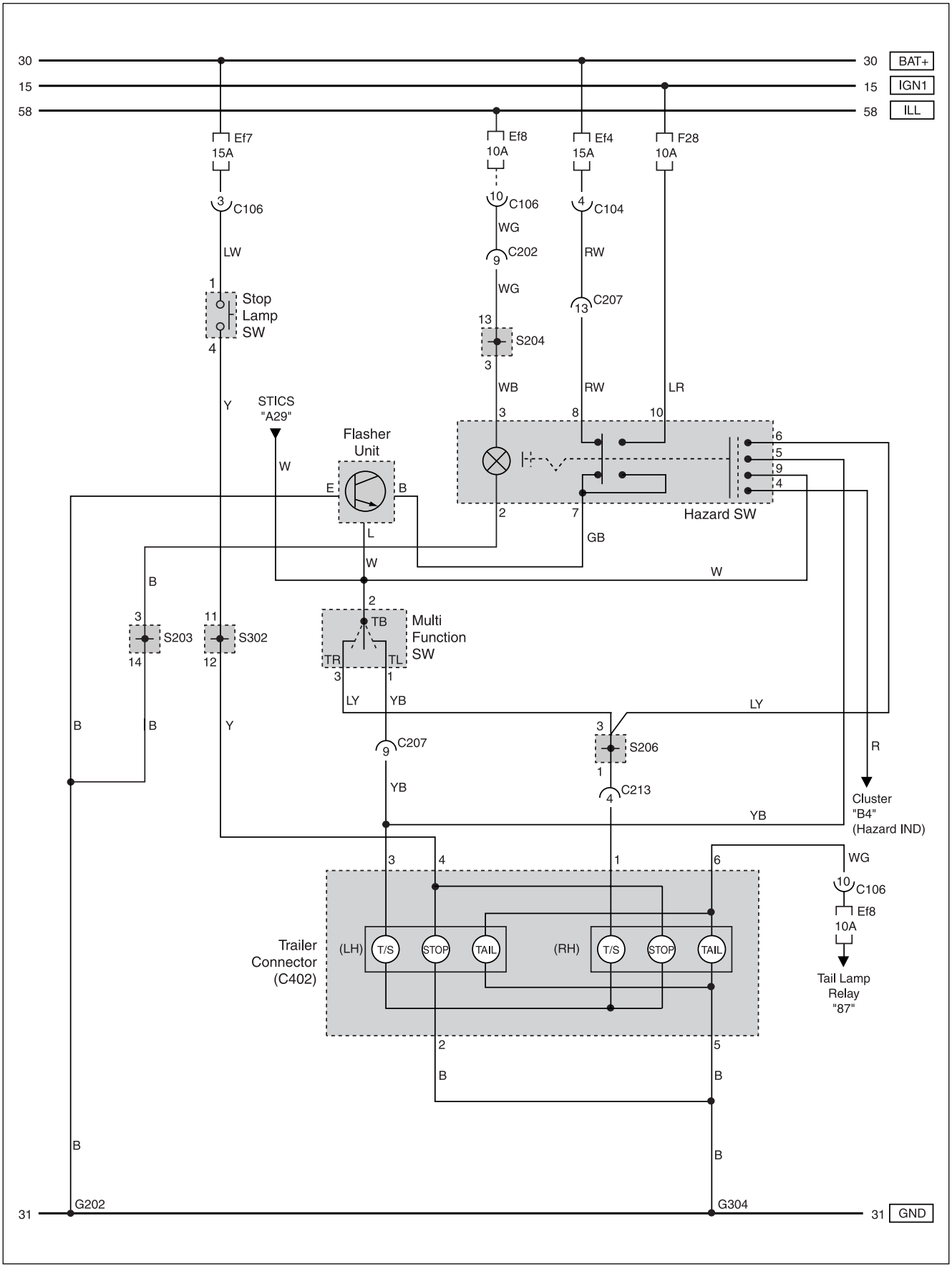
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G102	W/H Eng Room	Behind LH Head Lamp	
G104	W/H Eng Room	Behind RH Head Lamp	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G202	W/H Main	Under the Driver “A” Pillar	
G302	W/H Floor	Under the Passenger Seat	
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Drvier Legroom	ILL
S206 (14Pin, Black)	W/H Main	Upper the PTC Protector	IGN1, T/Signal

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



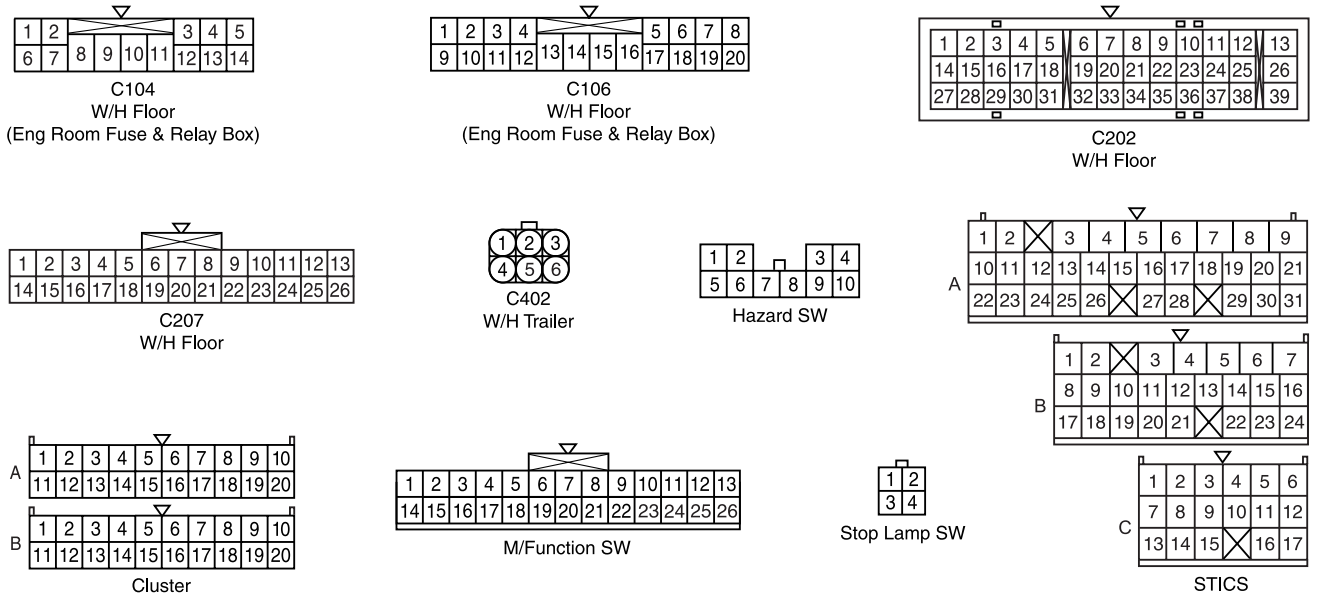
27. TRAILER LAMP CIRCUIT 8210



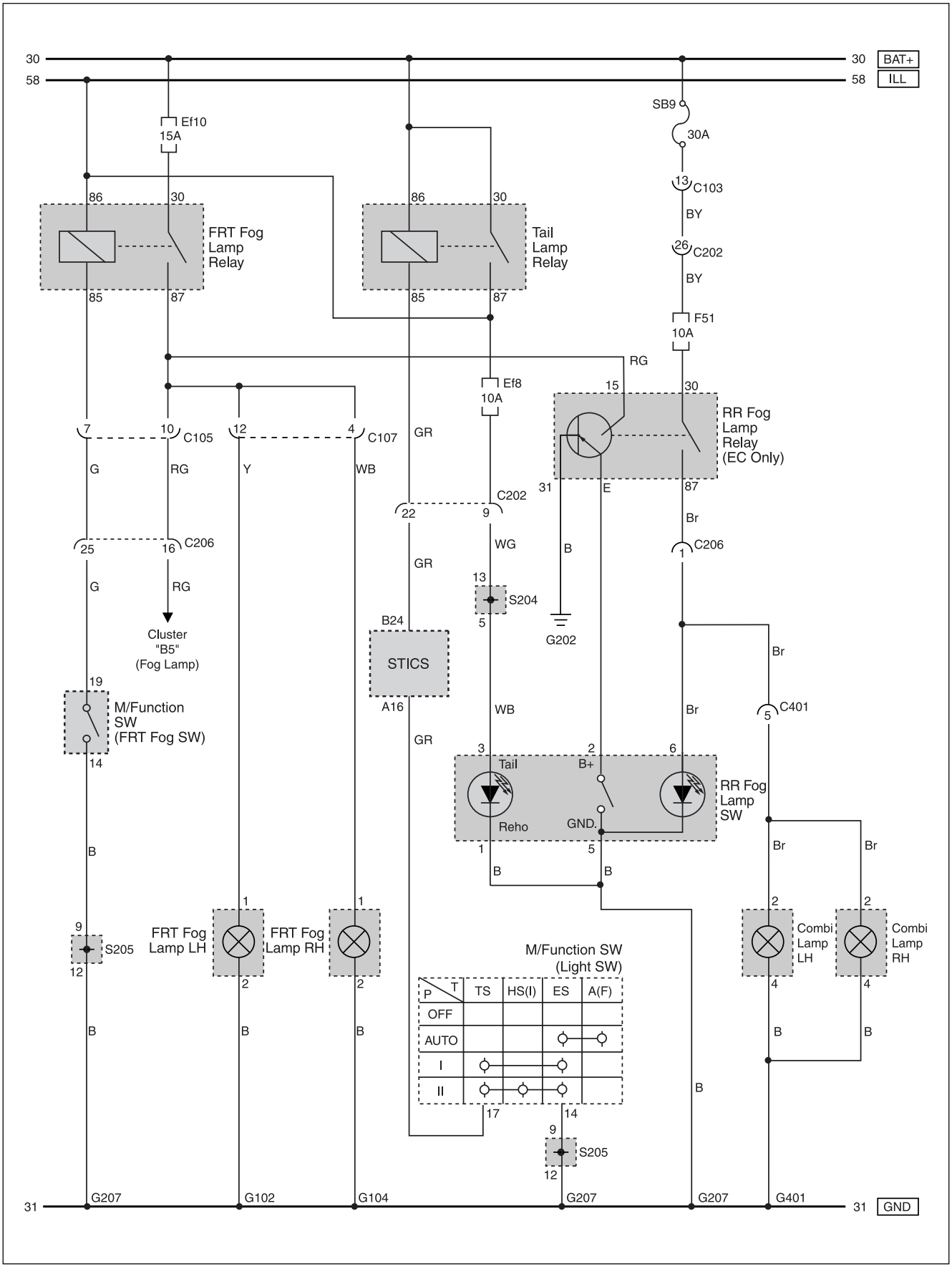
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C207 (26Pin, White)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C402 (6Pin, Black)	W/H Floor - W/H Trailer	Under RH Bumper	
G202	W/H Main	Under the Driver “A” Pillar	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Drvier Legroom	ILL
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



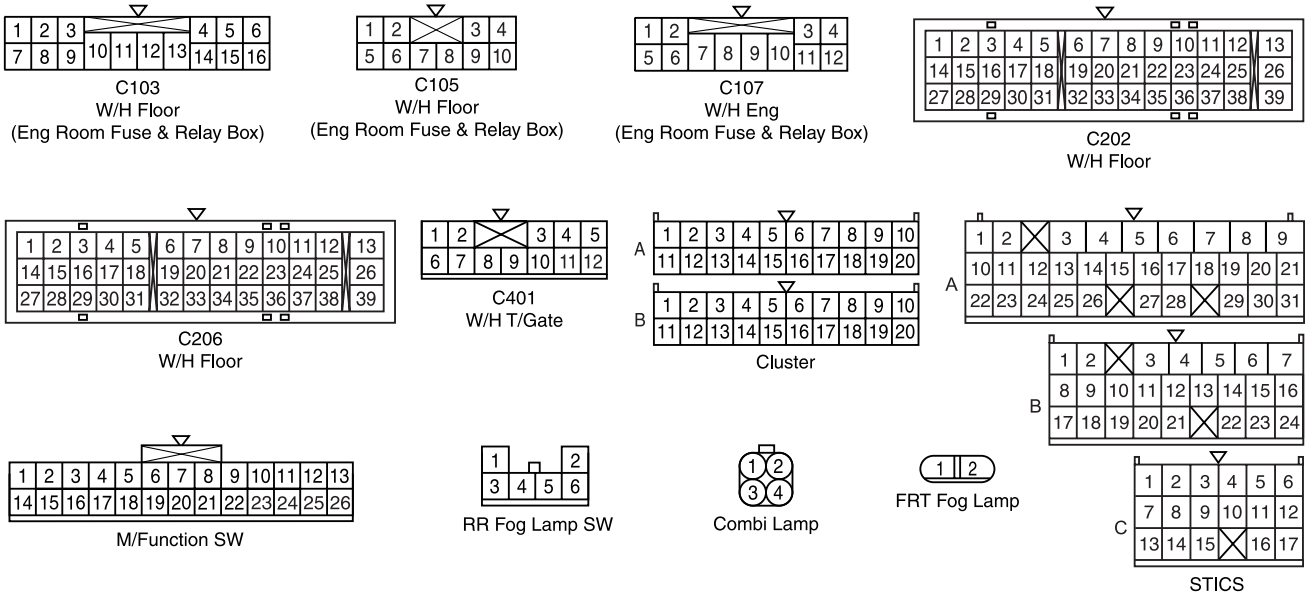
28. FOG LAMP CIRCUIT 8310



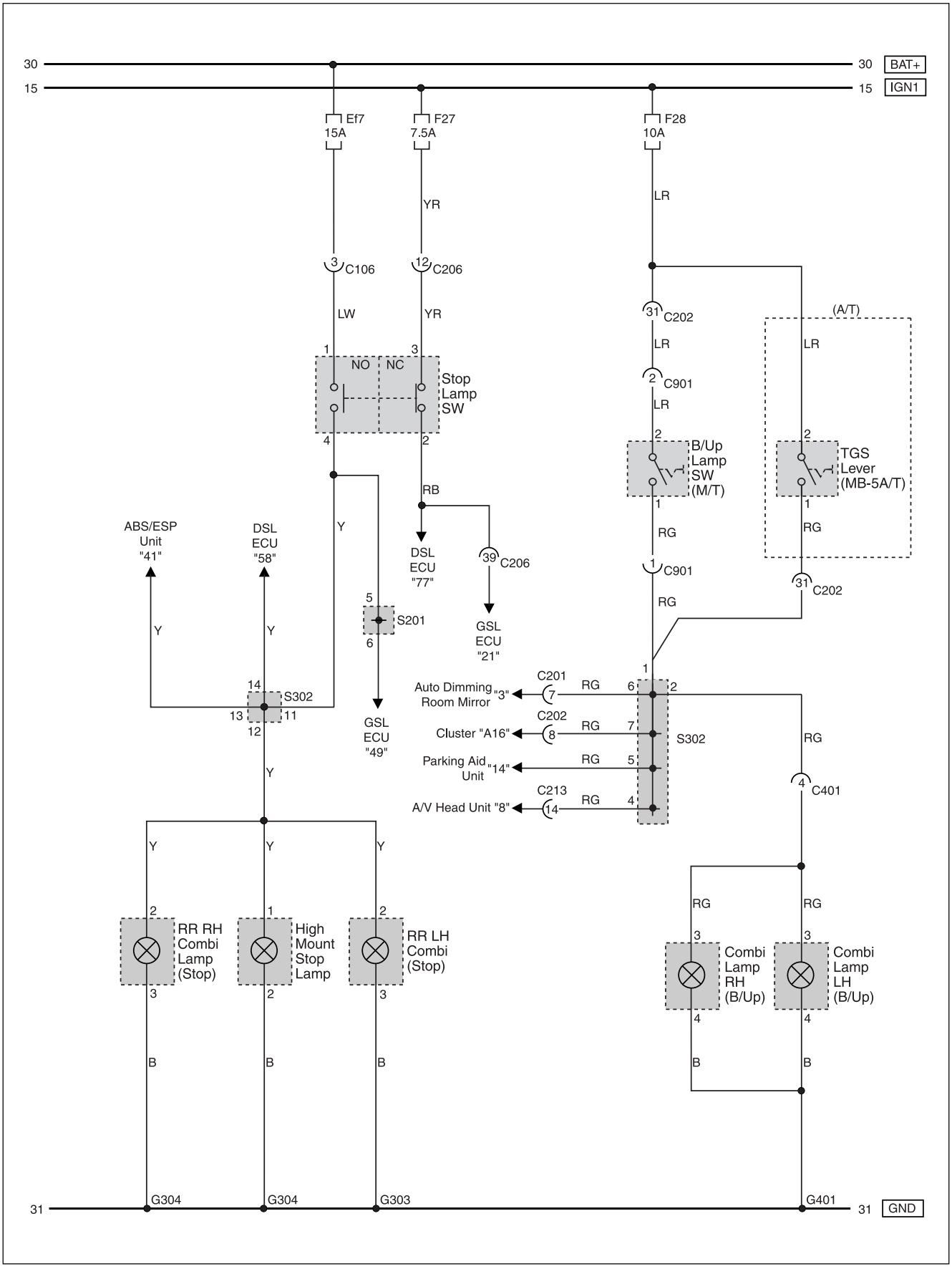
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G102	W/H Eng Room	Behind LH Head Lamp	
G104	W/H Eng Room	Behind RH Head Lamp	
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G401	W/H T/Gate	Center the T/Gate	
S204 (14Pin, Black)	W/H Main	RH Protector of the Drvier Legroom	ILL
S205 (14Pin, Black)	W/H Main	Upper the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



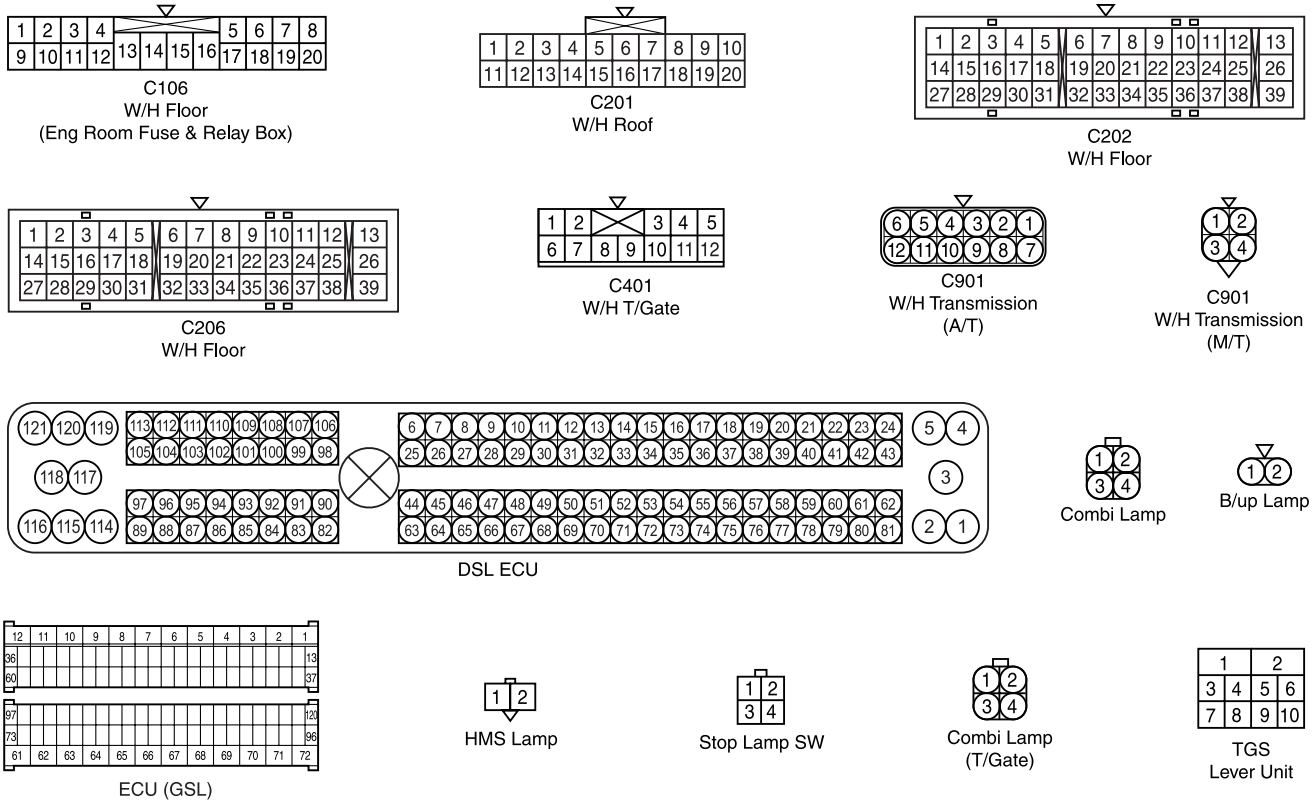
29. STOP & BACK-UP LAMP CIRCUIT 4810



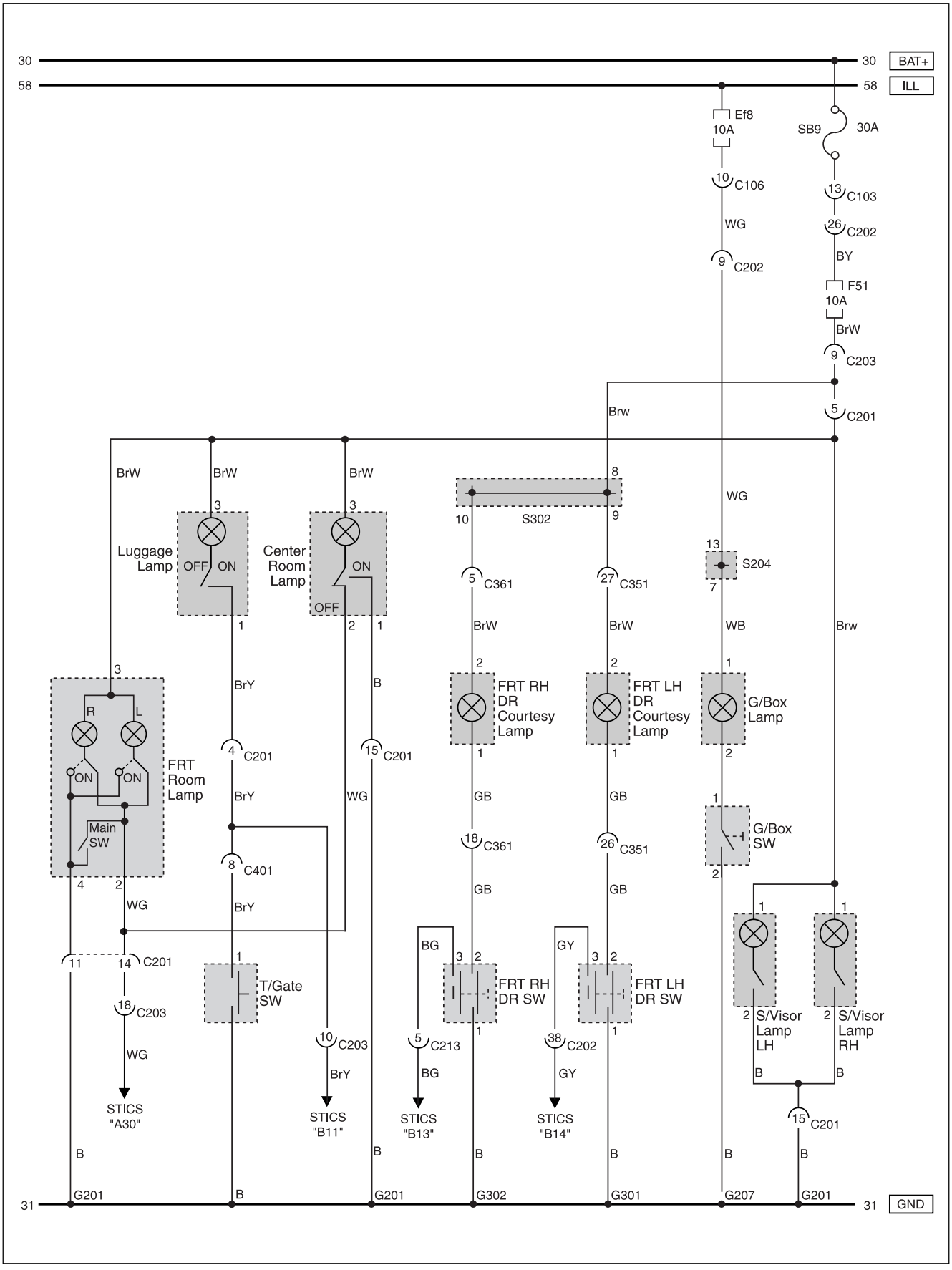
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
C901 (12Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	A/T
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
G304	W/H Floor	Passenger QTR PNL (Under the QTR Glass)	
G401	W/H T/Gate	Center the T/Gate	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S202 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	CAN

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



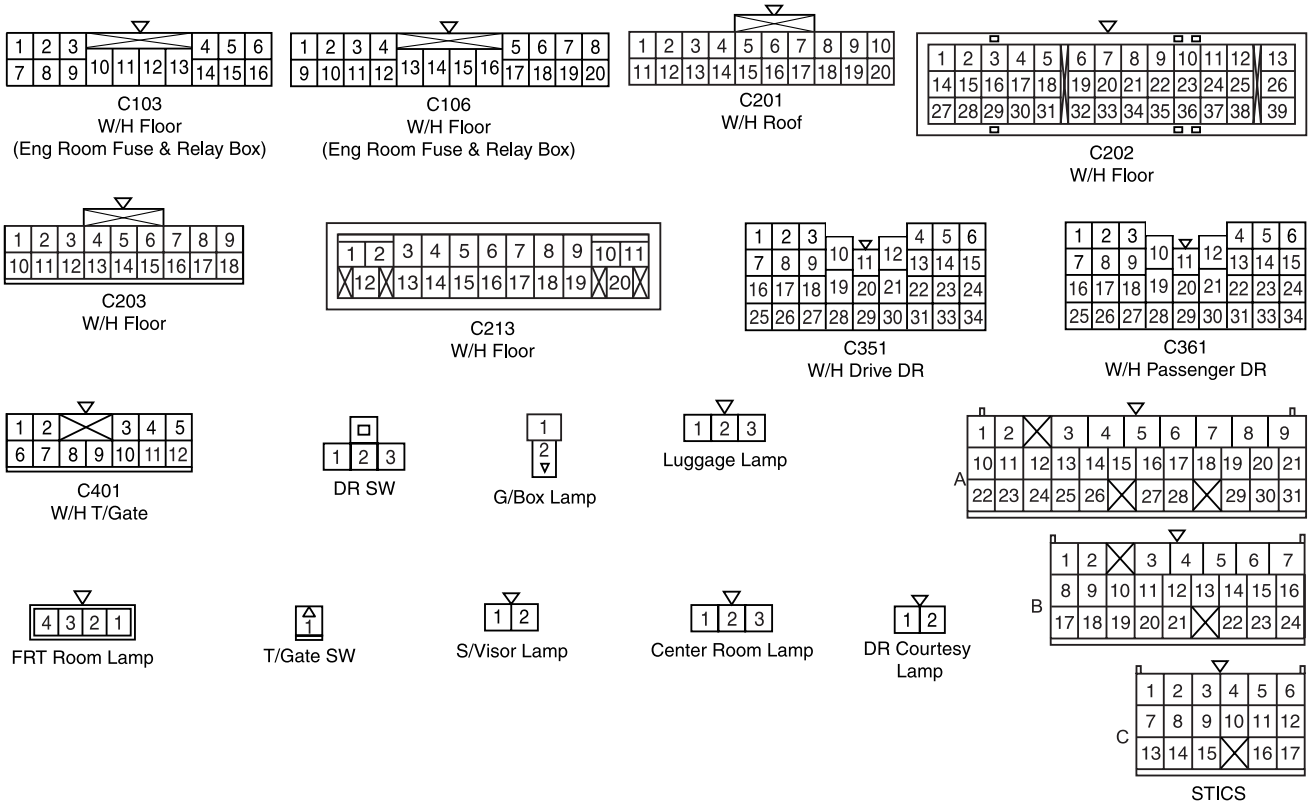
30. INTERIOR LAMP CIRCUIT 7770



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” PIllar	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
G207	W/H Main	Inner the Passenger Cowl Side PNL	
G301	W/H Floor	Under the Driver Seat	
G302	W/H Floor	Under the Passenger Seat	
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

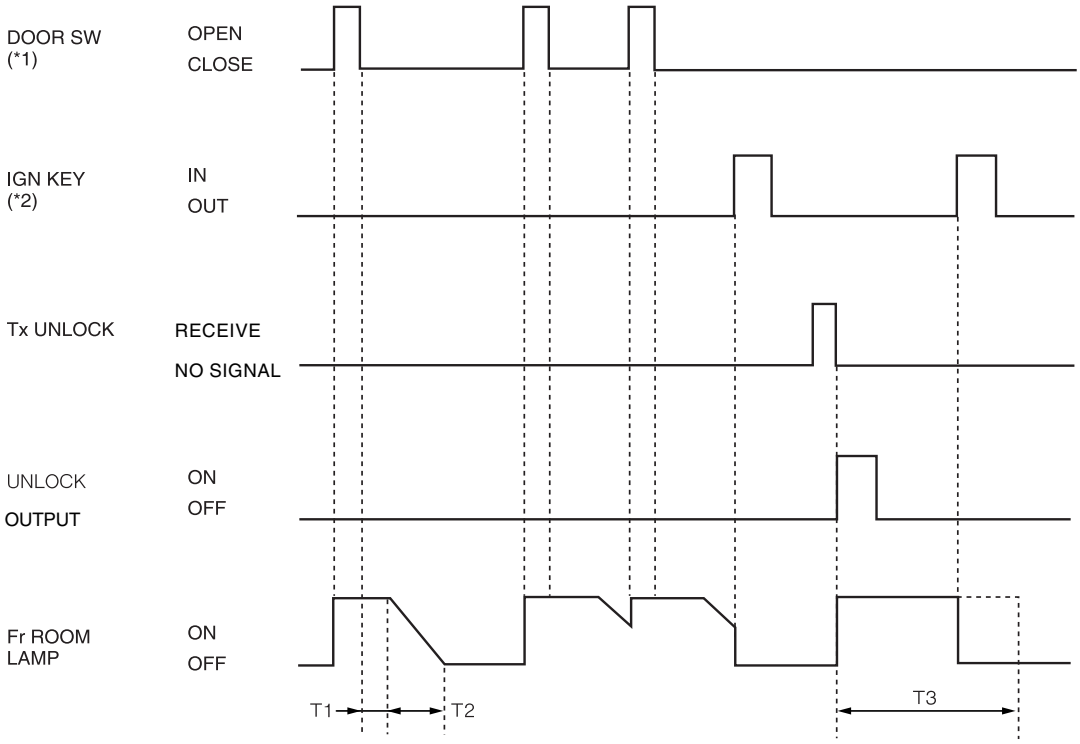
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



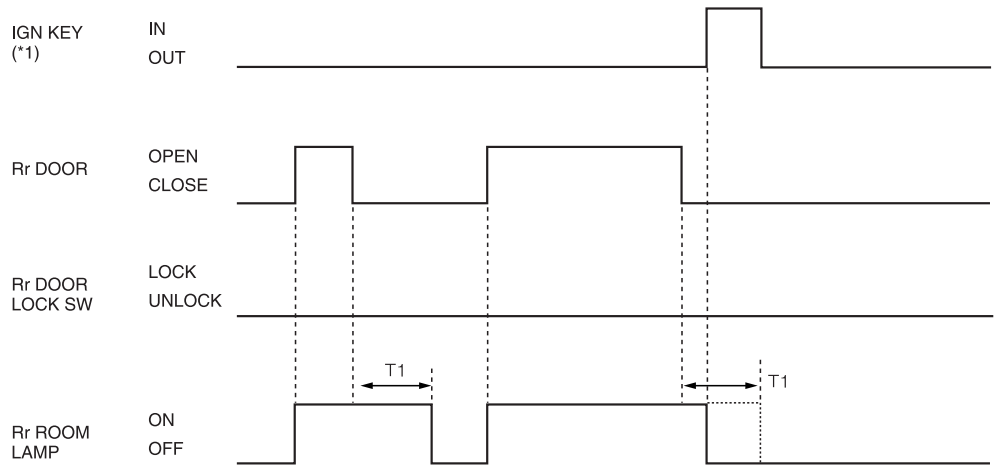
C. CIRCUIT DESCRIPTION

ROOM LAMP CONTROL

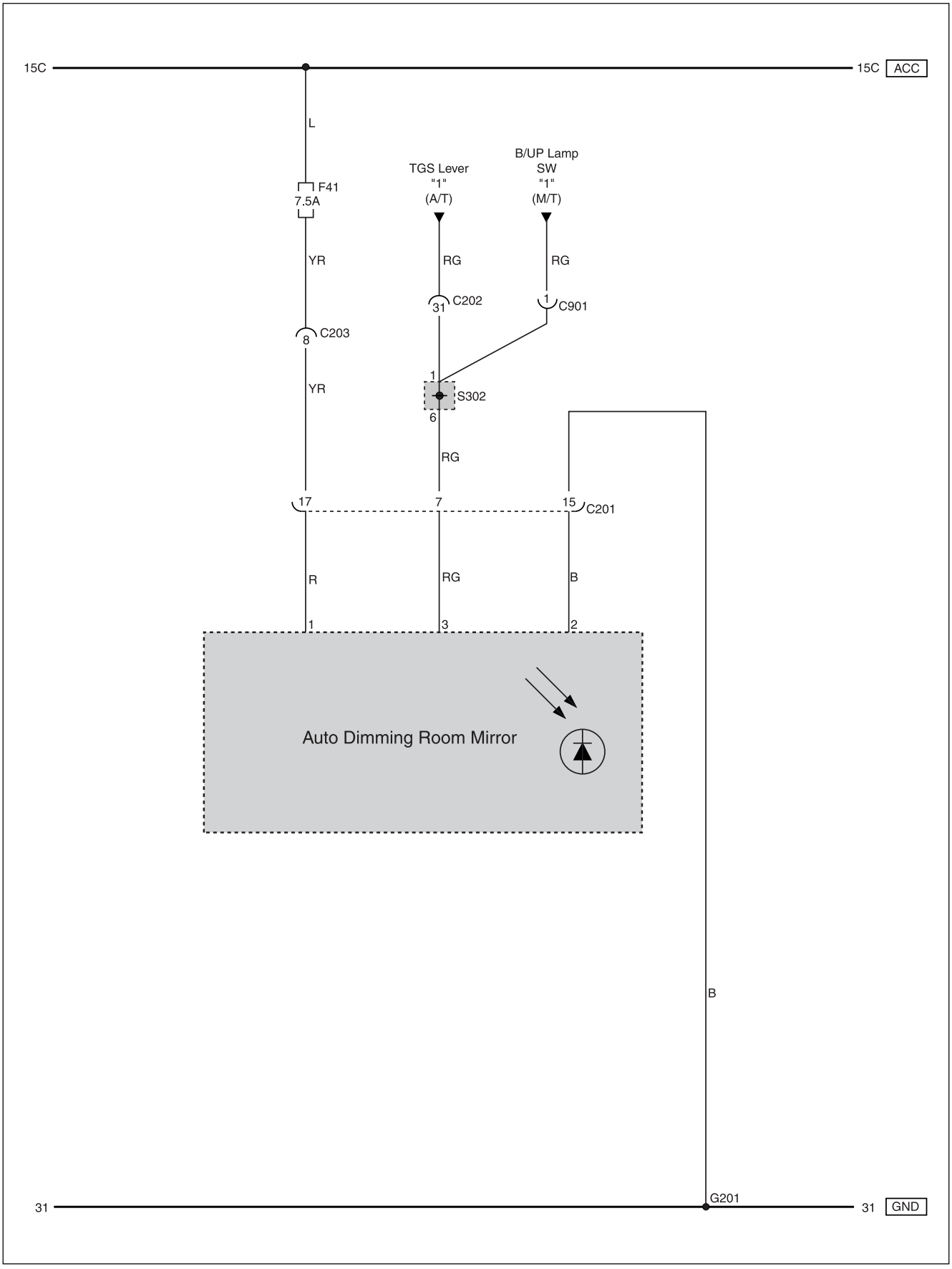
1. Front Room Lamp
   1) The front room lamp comes on when opening the driver's door or passenger's door while the front room lamp switch is at door coupled position and the key reminder switch is turned off.
   2) The room lamp stays on for 2 seconds (T1) and then decays through 3 seconds (T2) when closing the driver's door or passenger's door.
   3) The room lamp output should stop immediately after turning on the ignition key during decaying operation.
   4) The front room lamp comes on for 30 seconds (T3) when receiving the unlock signal from the remote control key while the door is closed.
   5) The front room lamp output period is extended by 30 seconds (T3) when receiving the unlock signal from the remote control key again during output.
   6) When a door is opened during its extended period, the lamp stays on. If closed, operates as in step 2.
   7) The room lamp output stops immediately after receiving the lock signal from driver's door and passenger's door lock switch while the driver's door and passenger's door are closed.



2. Rear room lamp
   1) The rear room lamp comes on when opening the rear door while the door coupled rear room lamp switch is pressed (except for luggage room lamp).
   2) The rear room lamp extends its lighting period by 5 seconds when closing the rear door.
   3) The room lamp output stops immediately after turning the ignition key to “ON” position during the extended period.
   4) The room lamp output stops immediately after receiving the lock signal from the rear door lock switch or the remote control key while the rear door is closed.



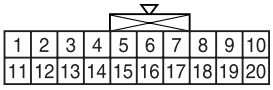
31. AUTO DIMMING ROOM MIRROR CIRCUIT 7770



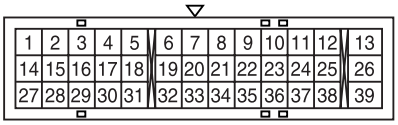
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C901 (12Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	A/T
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

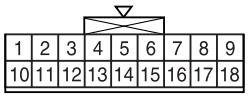
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



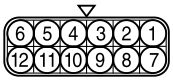
C201
W/H Roof



C202
W/H Floor



C203
W/H Floor

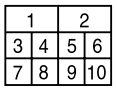


C901
W/H Transmission
(A/T)

C901
W/H Transmission
(M/T)

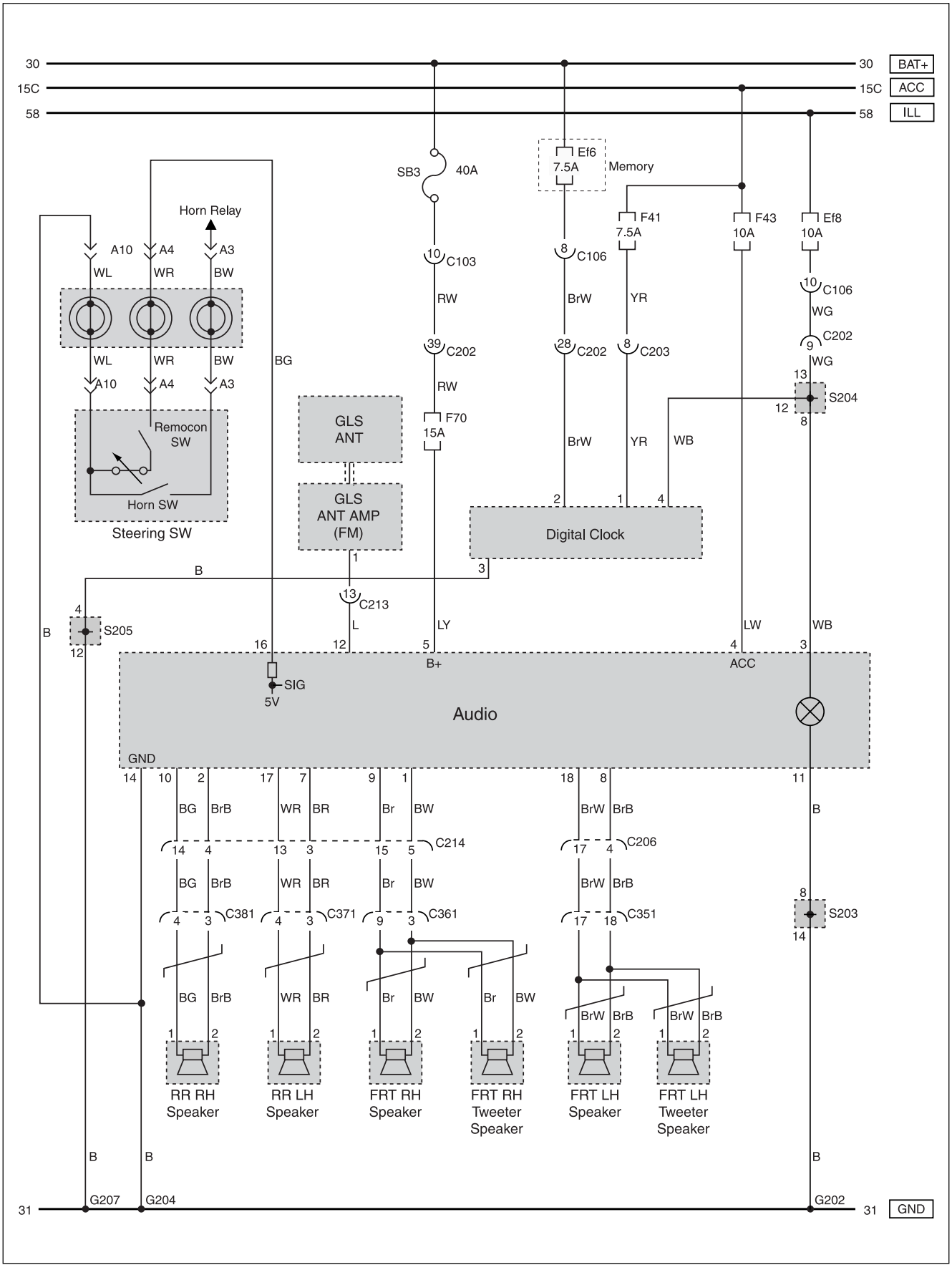
Auto Dimming
Room Mirror

B/UP Lamp SW (M/T)



TGS
Lever Unit

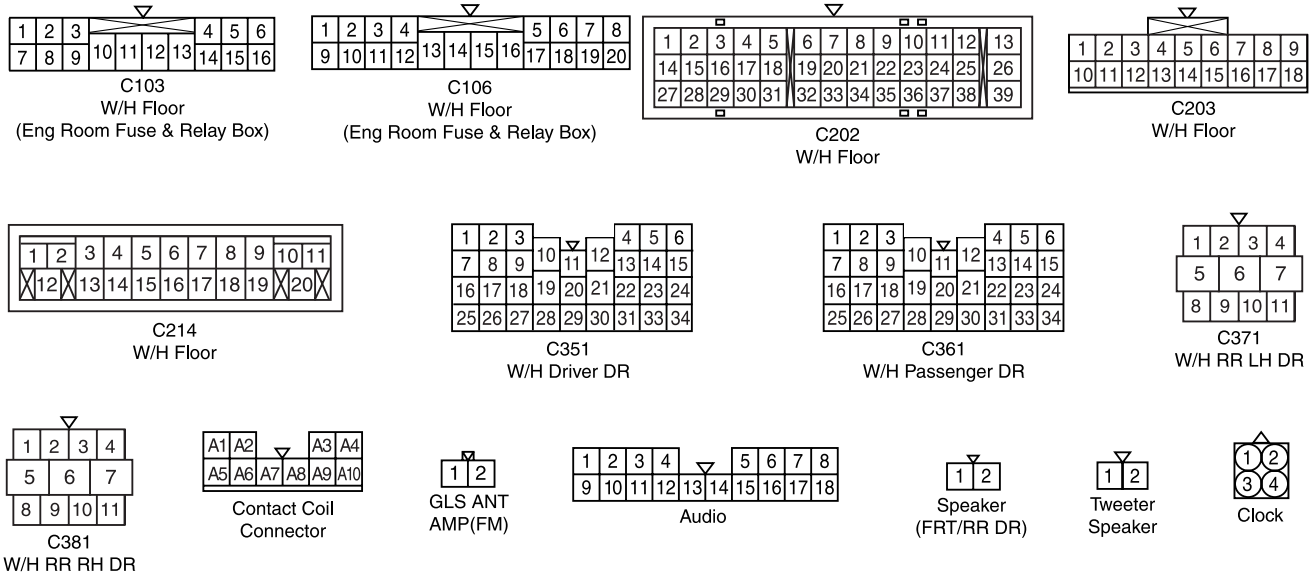
32. AUDIO & CLOCK CIRCUIT 8910



A. CONNECTOR INFORMATION

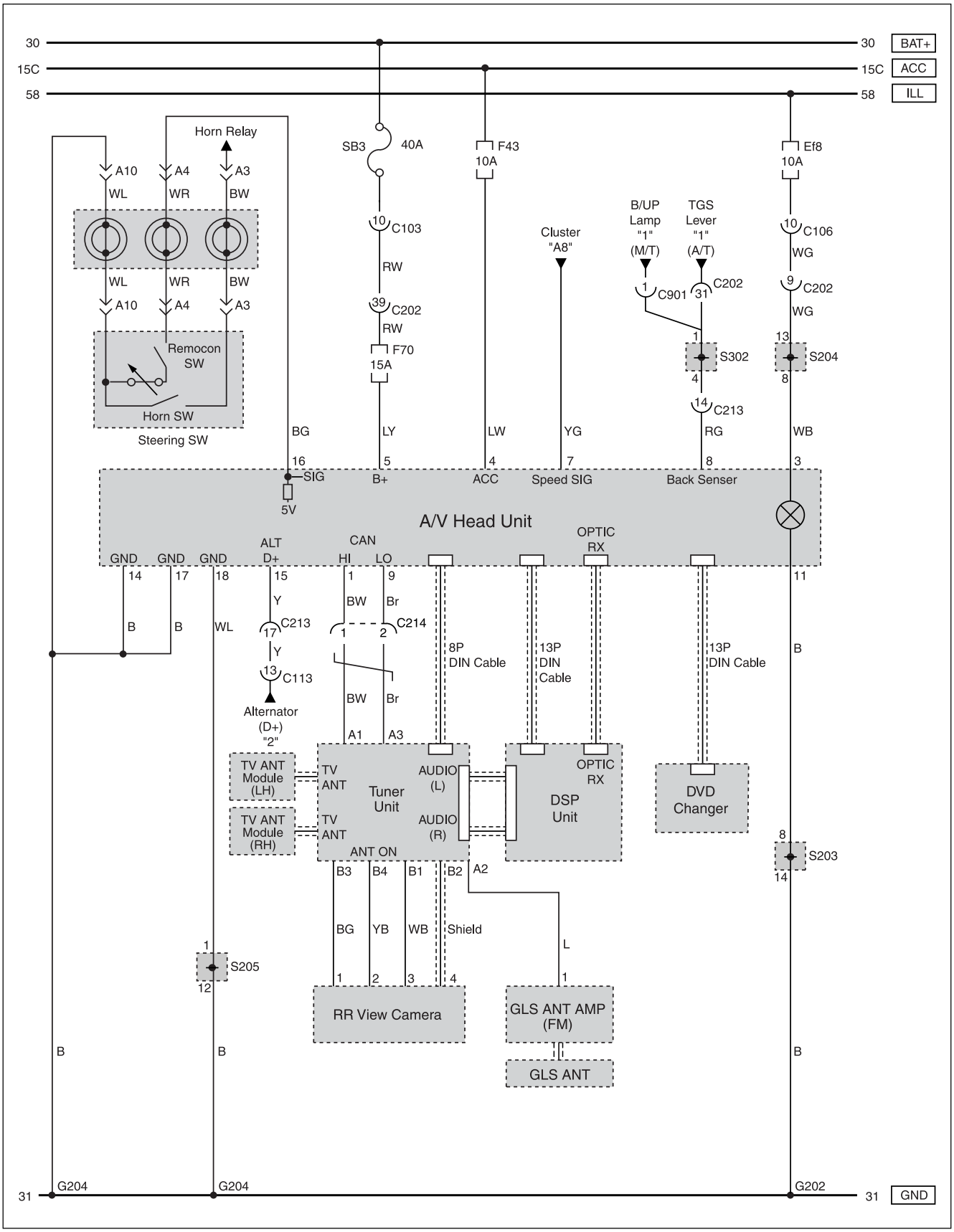
Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” PIllar	
C371 (11Pin, White)	W/H Floor - W/H RR LH DR	Under the LH “B” Pillar	
C381 (11Pin, White)	W/H Floor - W/H RR RH DR	Under the RH “B” Pillar	
G202	W/H Main	Under the Driver “A” Pillar	
G204	W/H Main	Backside TGS Lever Unit	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S205 (14Pin, Black)	W/H Main	Under the PTC Protector	GND

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



33. A/V SYSTEM 8930

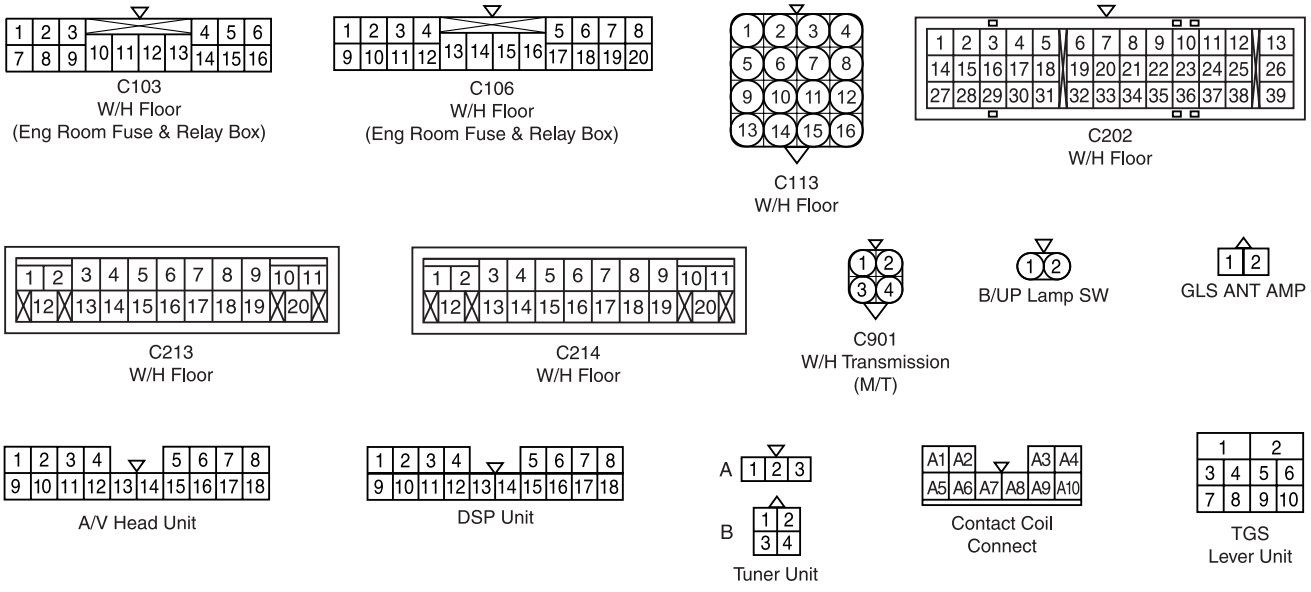
1) A/V HEAD UNIT, TUNER UNIT, DSP UNIT, DVD CHANGER, GLS ANT AMP



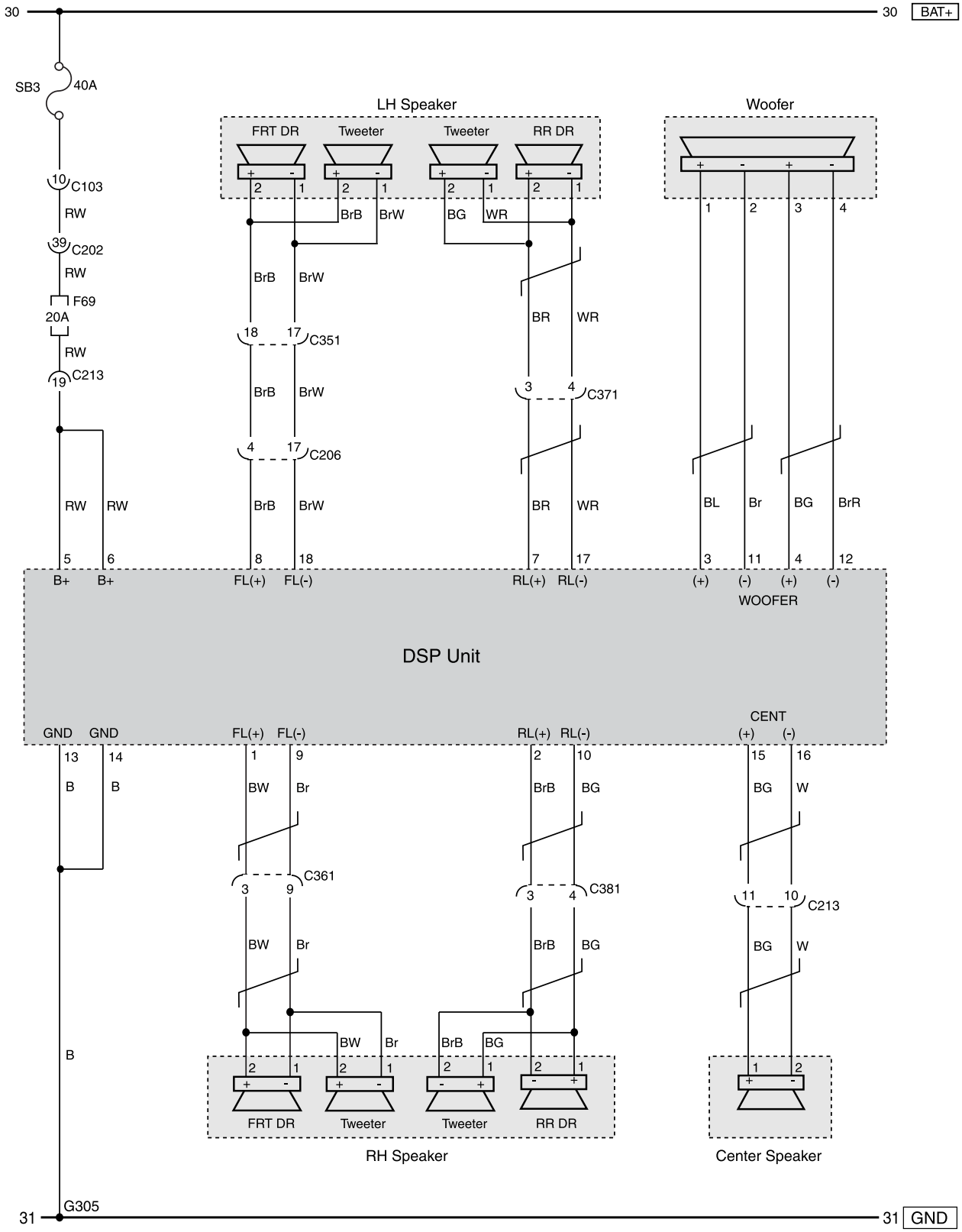
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
G202	W/H Main	Under the Driver “A” Pillar	
G204	W/H Main	Backside TGS Lever Unit	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL
S205 (14Pin, Black)	W/H Main	Under the PTC Protector	GND
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



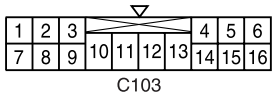
2) DSP UNIT, SPEAKER



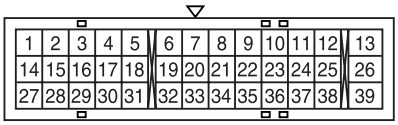
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C351 (33Pin, White)	W/H Floor - W/H Driver DR	Under the LH “A” Pillar	
C361 (33Pin, White)	W/H Floor - W/H Passenger DR	Under the RH “A” Pillar	
C371 (11Pin, White)	W/H Floor - W/H RR LH DR	Under the LH “B” Pillar	
C381 (11Pin, White)	W/H Floor - W/H RR RH DR	Under the RH “B” Pillar	
G305	W/H Floor	Passenger QTR PNL	Audio

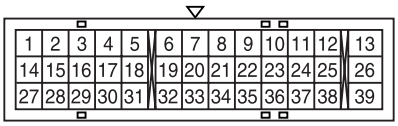
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



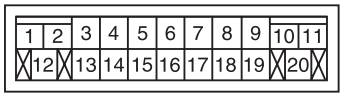
C103
W/H Floor
(Eng Room Fuse & Relay Box)



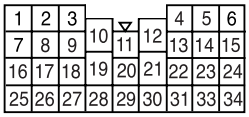
C202
W/H Floor



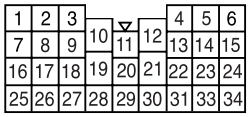
C206
W/H Floor



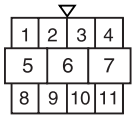
C203
W/H Floor



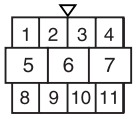
C351
W/H Driver DR



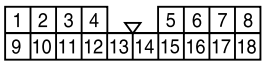
C361
W/H Passenger DR



C371
W/H RR LH DR



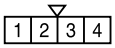
C381
W/H RR RH DR



DSP Unit

Speaker
(FRT/RR DR)

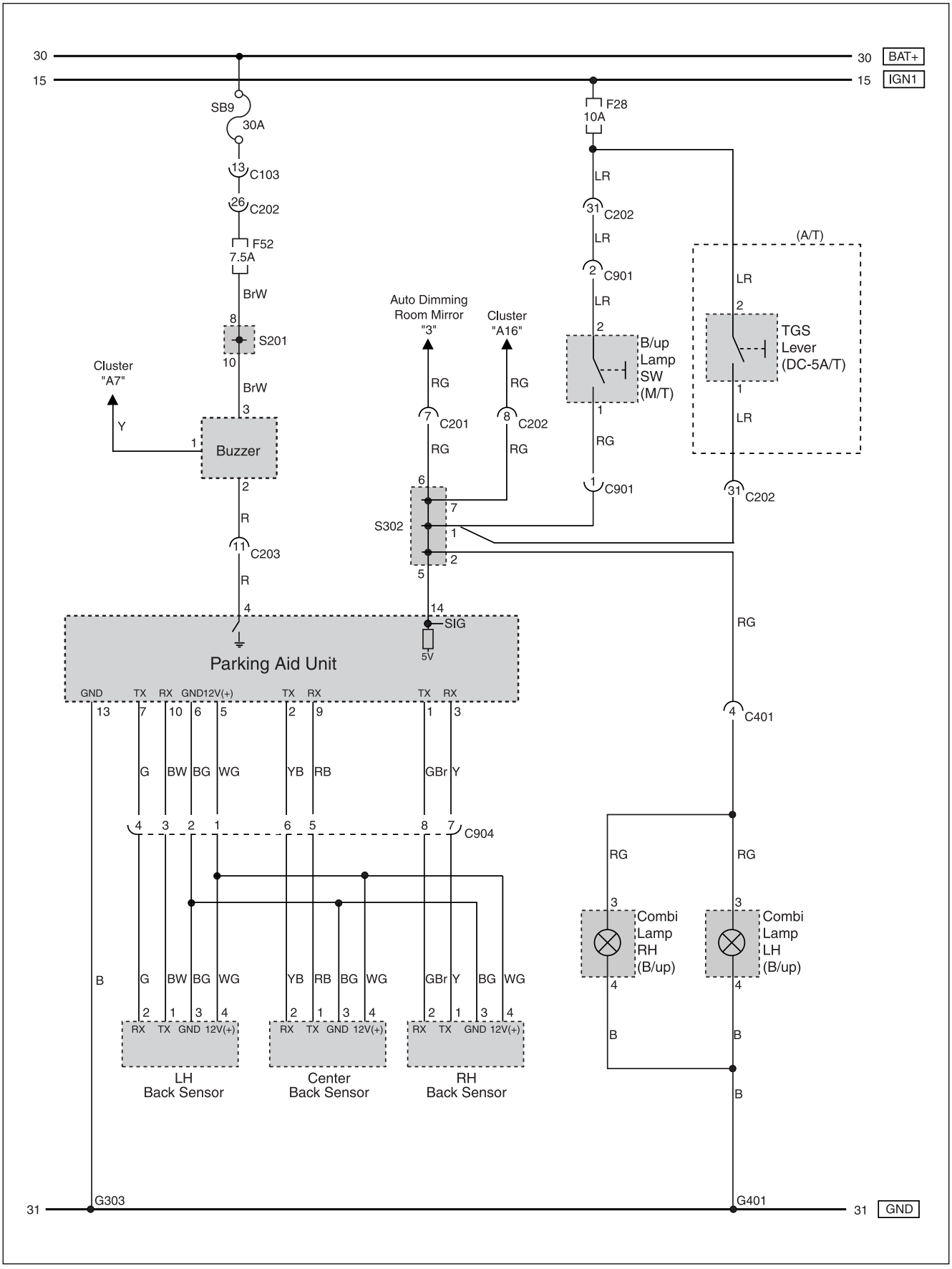
Tweeter Speaker



Woofer

Center Speaker

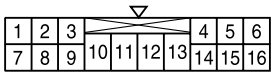
34. PARKING AID CIRCUIT 8790



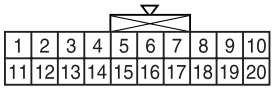
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C201 (20Pin, White)	W/H Floor - W/H Roof	Inside Driver Cowl Side PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C401 (12Pin, Black)	W/H Floor - W/H T/Gate	Upper the RH T/Gate	
C901 (4Pin, Black)	W/H Floor - W/H T/M	Upper the T/M	M/T
C904 (8Pin, Black)	W/H Floor - W/H PAS	Under LH Bumper	
G303	W/H Floor	Driver QTR PNL (Under the QTR Glass)	
G401	W/H T/Gate	Center the T/Gate	
S302 (14Pin, Black)	W/H Main	Beside RR LH Seat W/H Protector	

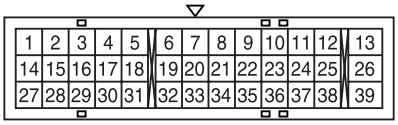
B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



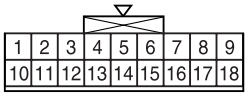
C103
W/H Floor
(Eng Room Fuse & Relay Box)



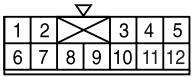
C201
W/H Floor



C202
W/H Floor

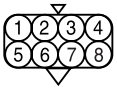


C203
W/H Floor

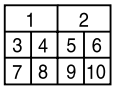


C401
W/H T/Gate

C901
W/H Transmission(M/T)



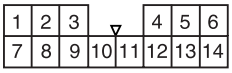
C904
W/H Parking Aid



TGS
Lever Unit

B/up Lamp SW(M/T)

Buzzer



Parking Aid Unit

Back Sensor

Combi Lamp(T/Gate)

C. CIRCUIT DESCRIPTION

COMPONENT SPECIFICATIONS

The parking aid system emits the supersonic wave signals from the sensors on the rear bumper with a specific interval and detects the reflected signals from obstacles while the gear selector lever is in “R” position.

The number of displaying bars is decreased and the alarm interval becomes faster as the obstacle approaches. This supplementary system is to secure the safety distance for parking.

Descriptions		Value	Descriptions		Value
Rated voltage		DC 12 V	Operating temperature		-30℃ ~ +80℃
Operating voltage		DC 9 V ~ 16 V	Storage temperature		-40℃ ~ +85℃
Current consumption	Unit	Below 100 mA	Relative humidity		95%RH max
	Sensor	Below 20 mA (each)	Weight	Unit	160g ± 10g max
Sensor insulating resistance		Over 5 MΩ		Sensor	70g ± 10g max

1. Parking aid unit

Detecting type: Super sonic wave

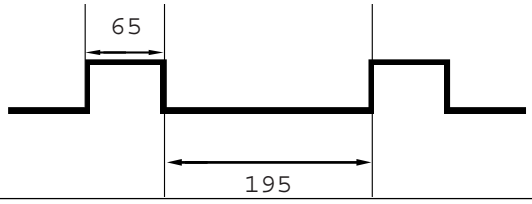
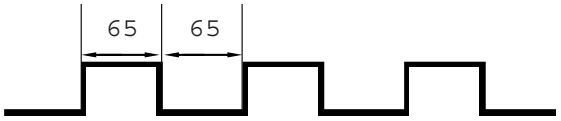
Detecting distance: 25 ~ 120 cm (distance between sensor and obstacle)

2. Parking aid sensor
   1) Type: Piezo ceramic element
   2) Frequency: 40 KHz ± 2 KHz
   3) Detecting range (13.5 V)
   * Horizontal: Min. 20° at 110 ± 5 cm Min. 100° at 50 ± 5 cm
   * Vertical: Min. 20° at 110 ± 5 cm Min. 60° at 50 ± 5 cm

ALARM INTERVAL

Alarm interval and display changes according to the distance as below:

While reversing, if obstacles are within stage 1, the warning beep sounds with long intervals. If within stage 2, the warning beep sounds with short intervals and if within stage 3, the warning beep sounds continuously.

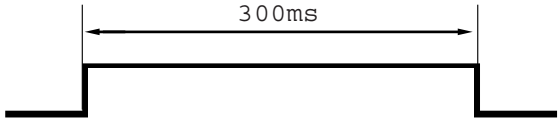
Stage	L, C, R sensor	Interval (msec)	Remark
1	81 ~ 120 cm		“Beep ———”
2	51 ~ 80 cm		“Beep —, Beep —, Beep —”
3	25 ~ 50 cm		“Beep ———”

TROUBLESHOOTING OF SENSOR

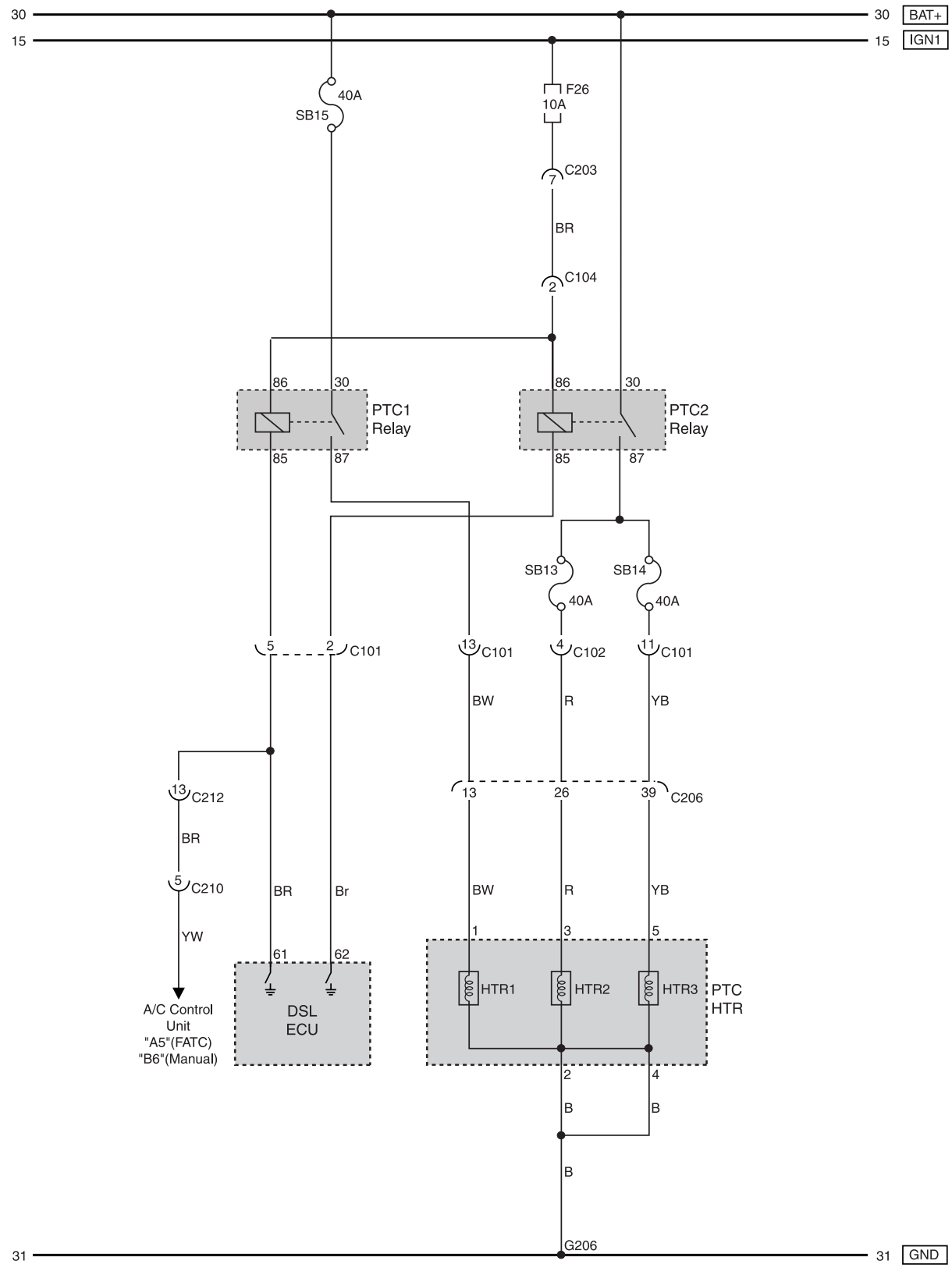
When the power is applied (gear selector lever is in “R” position), the sensor will be diagnosed once. If found any failure due to open circuit to sensor or communication error, warning buzzer sounds for 3 seconds and the data on failed sensor transmits to the instrument panel to light up the corresponding LED. If normal, the warning buzzer sounds only for 65 ms.

1. Whenever the power is applied, the diagnosis mode is initiated.
2. Sensor failure conditions (conditions for warning beep due to failure)
   1) Sensor failure conditions (conditions for warning beep due to failure)
   2) Open in sending circuit
   3) Open in receiving circuit
   4) Open in power circuit (+, -)

*** WARNING BEEPS**

When failed		
When normal		

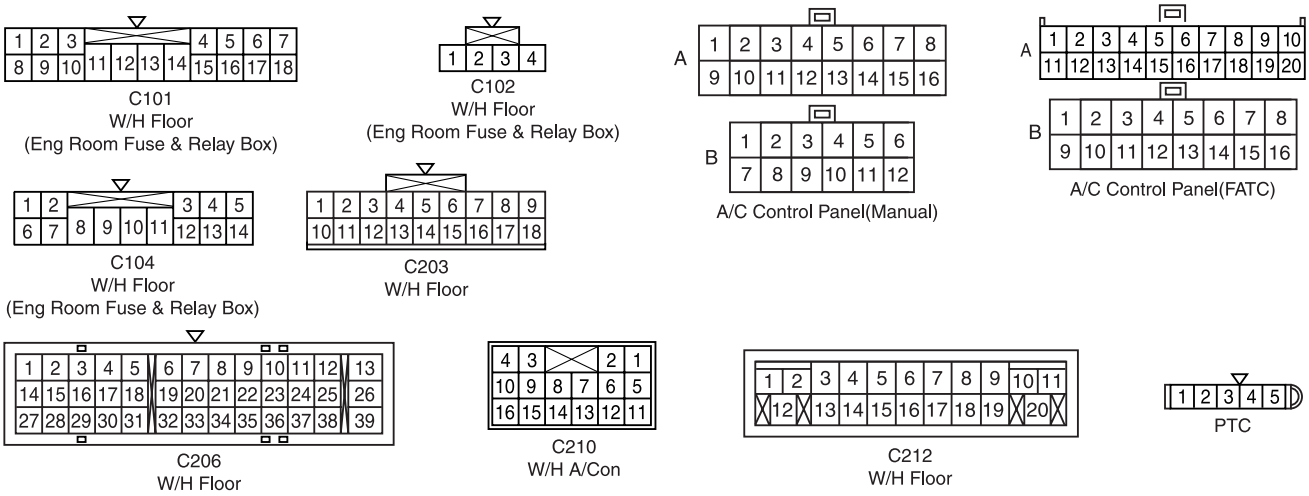
35. PTC (POSITIVE TEMPERATURE COEFFICIENT) HEATER 6810



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C101 (18Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C102 (4Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C104 (14Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C203 (18Pin, White)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G206	W/H Main	LH Eng ECU	PTC

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

PTC (POSITIVE TEMPERATURE COEFFICIENT) SYSTEM

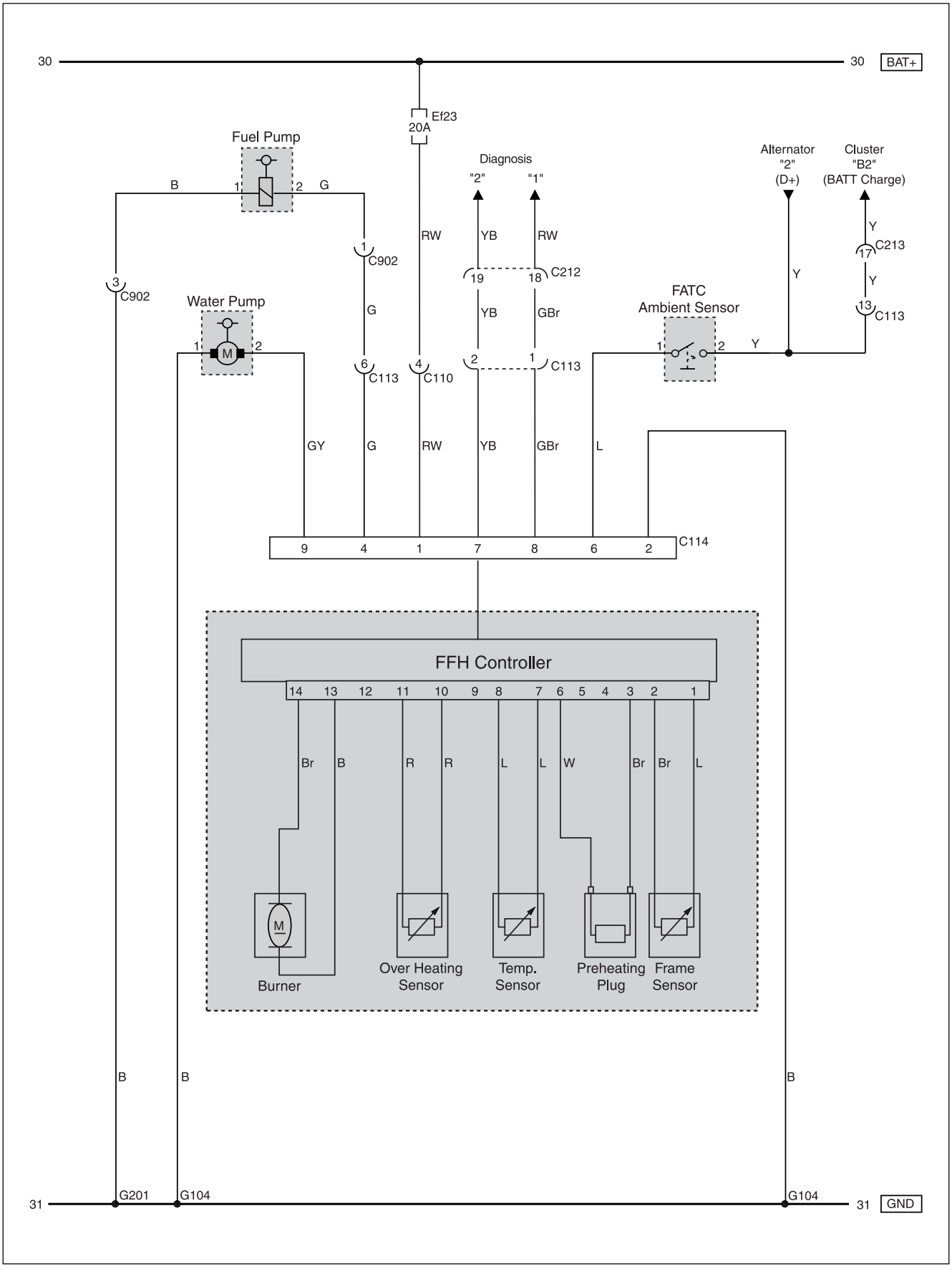
The supplementary electrical heater is installed in DSL engine equipped vehicle as a basic equipment. The PTC system is operated according to two temperature values measured at the coolant temperature sensor and HFM sensor. This device is mounted in the heater air outlet and increase the temperature of air to the passenger room. Because PTC system is heated by electrical power, high capacity alternator is required. (Alternator of 12 V 75 A/90 A has changed to 12 V 140A)

PTC OPERATING (ON) CONDITION

The operating condition of PTC is controlled by two step. Generally, ECU control the power relay for PTC depending on the coolant temperature and ambient temperature sensor.

1. 1st step (Initial PTC operating condition)
   1) When coolant temperature < 15°C, PTC is operating (ON).
   2) When coolant temperature ≥ 15°C, tow conditions decribed below must be satisfied.
2. 2nd step (Coolant temperature: 15°C)
   1) When coolant temperature 65°C ≤ and ambient temperature ≤ 10°C PTC operates (ON)
   2) When coolant temperature 65 ~ 60°C and ambient temperature -10°C ~ 0°C PTC operates (ON)
   3) When coolant temperature ≤ 60°C and ambient temperature ≤ 0°C ~ 5°C, PTC operates (ON)
3. PTC "OFF" Condition
   1) Airconditioner blower switch OFF
   2) Ambient temperature sensor error (wiring short or open)
   3) When engine craking
   4) Battery voltage is lower than 11V
   5) When preheating the engine (Glow indicator "ON")

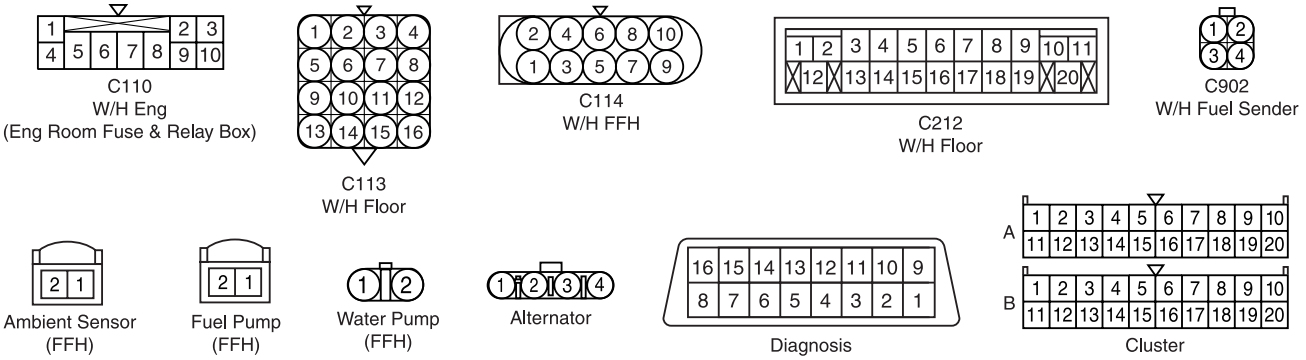
36. FFH (FUEL FIRED HEATER) 6910



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C110 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C114 (10Pin, Black)	W/H Eng - W/H FFH	Right Eng Room Dash PNL	FFH
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C213 (20Pin, Red)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C902 (4Pin, Black)	W/H Floor - W/H Fuel Sender	Upper the T/M	
G104	W/H Eng Room	Behind RH Head Lamp	
G201	W/H Floor	Under the Driver Cowl Side PNL	Under C/Holder

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

FFH (FUEL FIRED HEATER) SYSTEM

The system is to increase the coolant temperature quickly by firing diesel fuel in the burner that is installed in engine cooling system when in winter time the ambient temperature and engine coolant temperature is low. (Option)

FFH System consists of independent fuel lines, fuel pump, coolant circuit, coolant ciculation pump, electrical glow plug and exhaust system by driver's intention because FFH system is automatically.

Operated according to the coolant temperature and the ambient temperature.

FFH system operates up to more than 2 minutes to burn the residual fuel inside the system when driver stop the engine during its operation. Therefore, a certain period of FFH operation after stopping the engine is not a malfunction.

CONTROL AND SAFETY MODE

Heater operations and safety mode

* If the fuel pump

1. If the fuel pump fails to ignite within 90 seconds after fuel pumping starts, the start procedure is repeated as described. If after a further 90 seconds fuel pumping the fuel pump still fails to ignite, the heater is switched off in fault mode.

   The controller is locked after a certain number of failed starts.
2. If the flame does out by itself during operation, firstly a new start is activated. If the fuel pump fails to ignite within 90 seconds after fuel pumping has started again, the heater is switched off.
3. If the heater is overheated (lack of water, poorly vented cooling circuit), the overheating sensor triggers, the fuel supply is interrupted and the heater is switched off.
4. The heater is switched off if the lower or upper voltage limit is reached.
5. The fuel pump does not start when the glow plug is defect or electrical lead to the dosing pump is interrupted.
6. The fan motor speed is monitored continuously.

   If the fan motor does not start up, is blocked or if the speed falls below 40% of the nominal speed, the heater is switched off in fault mode after 60 seconds.
7. It is possible to diagnose the system by connecting the diagnostic device to controller. For details, refer to the "Diagnosis Procedures" section.

[Emergency shutdown]

If an emergency shutdown -EMERGENCY OFF- is necessary during operation, proceed as follows;

- Pull the fuse (Ef6: 20A) out.
- Disconnect the heater from the battery.

DTC (DIAGNOSIS TROUBLE CODE)

Trouble Code	Trouble Description	Remedies
0	No faults	• Measure battery voltage (must be < 15.9V)
10	Shutdown for overvoltage	• Check alternator • Check alternator over voltage
11	Shutdown for undervoltage	• Measure battery voltage (must be > 10.2V under load) • Check alternator • Check lead
12	Overheating (software threshold)	Temperature at overheating sensor >125°C • Check cooling system: • Check the temperature sensor and overheating sensor, replace if necessary
14	Overheating (difference evaluation)	Difference in temperature values between surface sensor and control overheating sensor is too large. (Prerequisite for this trouble code display is that the heater is in operation and the water temperature at the overheating sensor has reached min. 80°C) • Check cooling system • Check the temperature sensor and overheating sensor, replace if necessary
15	Overheating (operating block)	The controller is locked. • Delete the fault memory to release the controller • Check cooling system • Check the temperature sensor and overheating sensor, replace if necessary
16	Difference evaluation 2	If the surface sensor has a far higher temperature value than the control overheating sensor, then the system proceeds with a fault shutdown.
17	Overheating (hardware, device)	Temperature at control overheating sensor > 125°C • Check cooling system • Check the temperature sensor and overheating sensor,replace if necessary
20	Glow plug interruption	• Check cable harness for this component for damage and through current and replace component if necessary • Check plug-in connection, replace component if necessary
21	Overload, short-circuit or ground contact, glow plug output	• Check cable harness for this component for damage, replace component if necessary
22	Glow plug output defect	• Check cable harness for this component for damage, replace component if necessary
25	Comunication line short	• Check the line

Trouble Code	Trouble Description	Remedies
30	Speed of combustion fan motor outside tolerable range	Fan wheel or combustion air fan motor blocked (frozen, contaminated, stiff, cable harness scrapes on shaft end, …) • Eliminate blockage • Measure speed of combustion air fan motor: - dismantle combustion air fan - check with 8.2 V + 0.2 V, to do so, unclip the cable 0.75^2 black from chamber 13 of the 14-pin connector and the cable 0.75^2 brown from chamber 14. Apply marking (white paint) to the fan wheel and measure speed with contactless speed meter. If the measured speed is outside a range of 8,800 rpm to 10,400 rpm, then replace the combustion fan. If the measured speed is within a range of 8800 rpm to 10400 rpm, then replace the controller.
31	Burner motor interruption	• Check cable harness for this component for damage and through current • Check plug-in connection, replace component if necessary
32	Overload, short-circuit or ground contact, burner motor	• Fan wheel or combustion air fan motor blocked (contaminated, stiff) • Check cable harness of this component for damage, if necessary replace component
34	Burner motor output defect	• Check whether the lead to this component has a short-circuit to GND, if not, check component for ground contact, if necessary replace controller
47	Overload, short-circuit or ground contact, fuel pump	• Check cable harness to the external component for damage and through current and replace external component if necessary
48	Fuel pump interruption	• Check cable harness to the external component for damage and through current • Check plug-in connection, replace external component if necessary
49	Fuel pump output defect	• Check whether lead to this component has short-circuit to +Ub, if not, check component for ground contact, replace controller if necessary
50	Operating block because too many start attempts in vain (10 start attempts, also one start repeat for every start attempt)	Too many start attempts, the controller is locked • Delete the fault memory to release the controller • Check fuel quantity and fuel supply
51	Time exceeded for cold blowing	• During start (no flame formed yet), the flame sensor reports temperature value too high for too long • Check exhaust and combustion air • Check flame sensor

Trouble Code	Trouble Description	Remedies
52	Safety time exceeded	• Check exhaust and combustion air system • Check fuel quantity and fuel supply • Clean or replace sieve used in fitting of fuel pump
53 54 56	Flame aborted from “power” stage Flame aborted from “large” stage Flame aborted from “small” stage	**Warning** ***In the case of flame aborted in “power”, “large” and “small” stage and with still tolerable start attempts, the heater proceeds with a new start or with subsequent start repeat. If the new start or start repeat is successful, the trouble code display goes off.*** Fault(because no more start attempt allowed) • Check exhaust and combustion air system • Check fuel quantity and fuel supply • Check flame sensor - see trouble code 64 and 65
60	Control overheating sensor interruption	• Check cable harness to this component for damage and through current • Check plug-in connection • Check sensor resistance value, replace component if necessary
61	Short circuit or ground contact control overheating sensor	• Check cable harness to this component for damage • Check sensor resistance value, replace external component if necessary
64	Flame sensor interruption	• Check cable harness to this component for damage and through current • Check plug-in connection • Check sensor resistance value, replace component if necessary
65	Short circuit flame sensor	• Check cable harness to this component for damage • Check sensor resistance value, replace external component if necessary
71	Surface sensor interruption	• Check cable harness to this component for damage and through current • Check plug-in connection • Check sensor resistance value, replace component if necessary
72	Short circuit surface sensor	• Check cable harness to this component for damage • Check sensor resistance value, replace external component if necessary
74	Overheating hardware defect, operating block	• Replace controller
87	Internal temperature sensor short-circuit	• Replace controller
88	Internal temperature sensor interruption	• Replace controller
89	CAN error	• Check CAN interface
90	Watch dog reset	• Replace controller

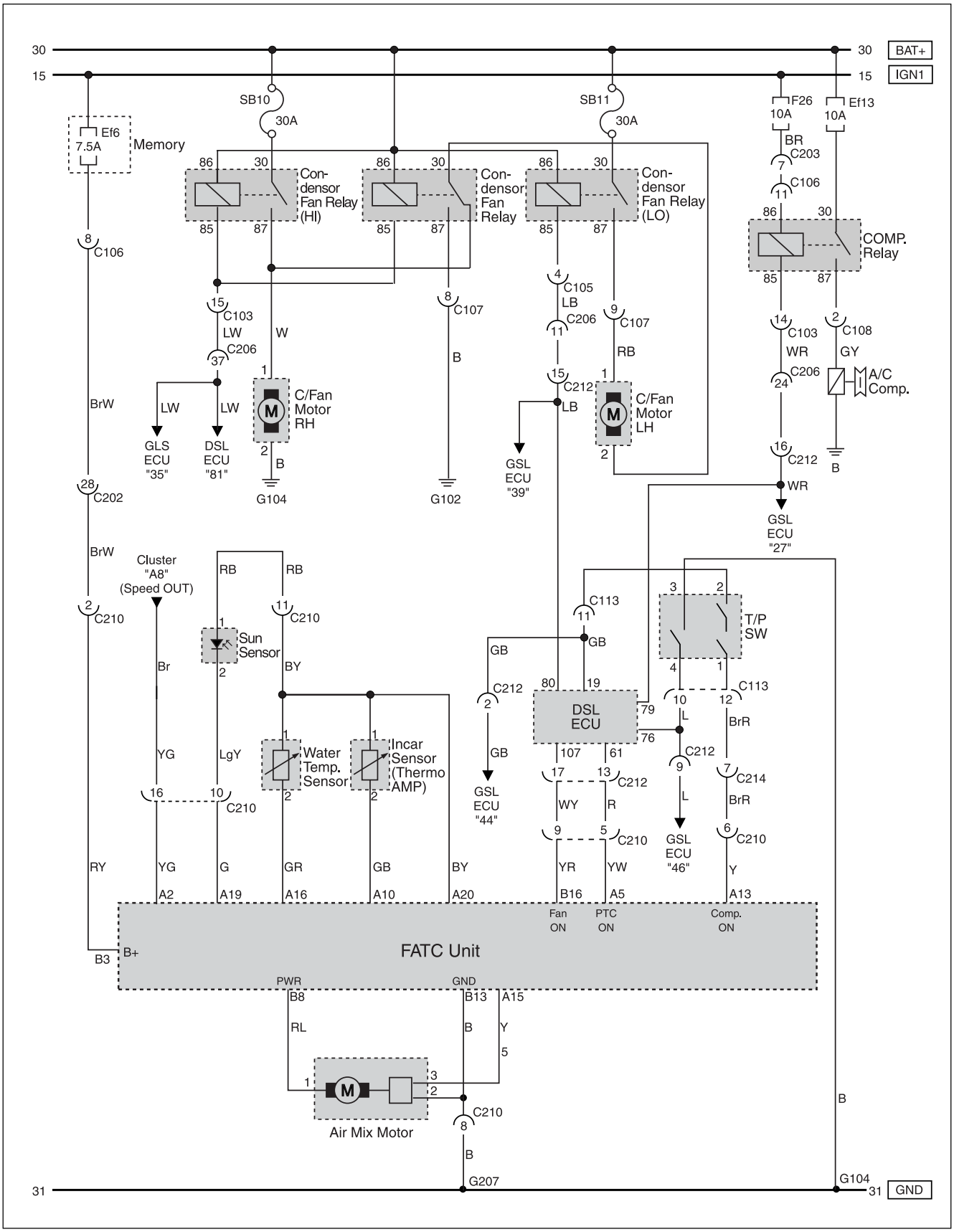
Trouble Code	Trouble Description	Remedies
91	Too many resets	• Replace controller
92	ROM error	• Replace controller
93	RAM error	• Replace controller
94	Transistor fault occurs too frequently - operation block	• Remedy short-circuit of the component to +Ub to GND, replace controller if necessary
95	Software stack overflow	• Replace controller
96	No valid process, operation lock	• Replace controller
97	Resonator/quartz faulty, wrong processor cycle	• Replace controller
98	Main relay faulty	• Replace controller
99	EEPROM error	• Replace controller

GENERAL TROUBLE CAUSES AND REMEDIES

Condition	Causes	Remedies
Low coolant level	Coolant leakage	Change the radiatior
	Leakage in coolant auxiliary tank	Change the coolant auxiliary tank
	Leakage in heater core	Change heater core
	Leakage in joint junction of coolant hose	Check the condition of hose and changing clamp
	Leakage in defective coolant hose	Change the hose
	Leakage in water pump gasket	Change the gasket
	Leakage in water pump sealing	Change the water pump
	Leakage in water inlet cap	Change the water inlet cap gasket
	Leakagein thermostat housing	Change the thermostat sealing
	Insufficient tightening torque of cylinder head bolt	Fasten the bolt to specified torque
	Damaged cylinder head gasket	Change the head gasket
Abnormally high coolant temperature	The coolant leakage (Check the coolant level)	Add coolant
	excessive anti-freezer	Check the density coolant (Anti-freezer)
	Bad coolant hose condition	Check the bent area of hose or change if needed
	Defective themostat	Change thermostat
	Defective water pump	Change water pump
	Defective radiator	Change radiator
	Defective coolant auxiliary tank or tank cap	Change coolant auxiliary tank or tank cap
	Crack in cylinder head or in cylinder block	Change cylinder head or cylinder block
	Clogged water flow in cylinder head or block	Clean the coolant flow line
	Clogged water flow in radiator core	Clean the radiator core
	Defective cooling fan	Change or check the cooling fan
	Defective temp.sensor, wiring, and lamp cluster	Chaange the sensor and related area
Abnormally loow coolant temperature	Defective thermostat	Change the thermostat
	Defective cooling fan	Change or check the cooling fan
	Defective tem.sensor, wiring, and lamp cluster	Change the sensor and related area

37. FATC (FULL AUTO TEMP. CONTROL) CIRCUIT 6810

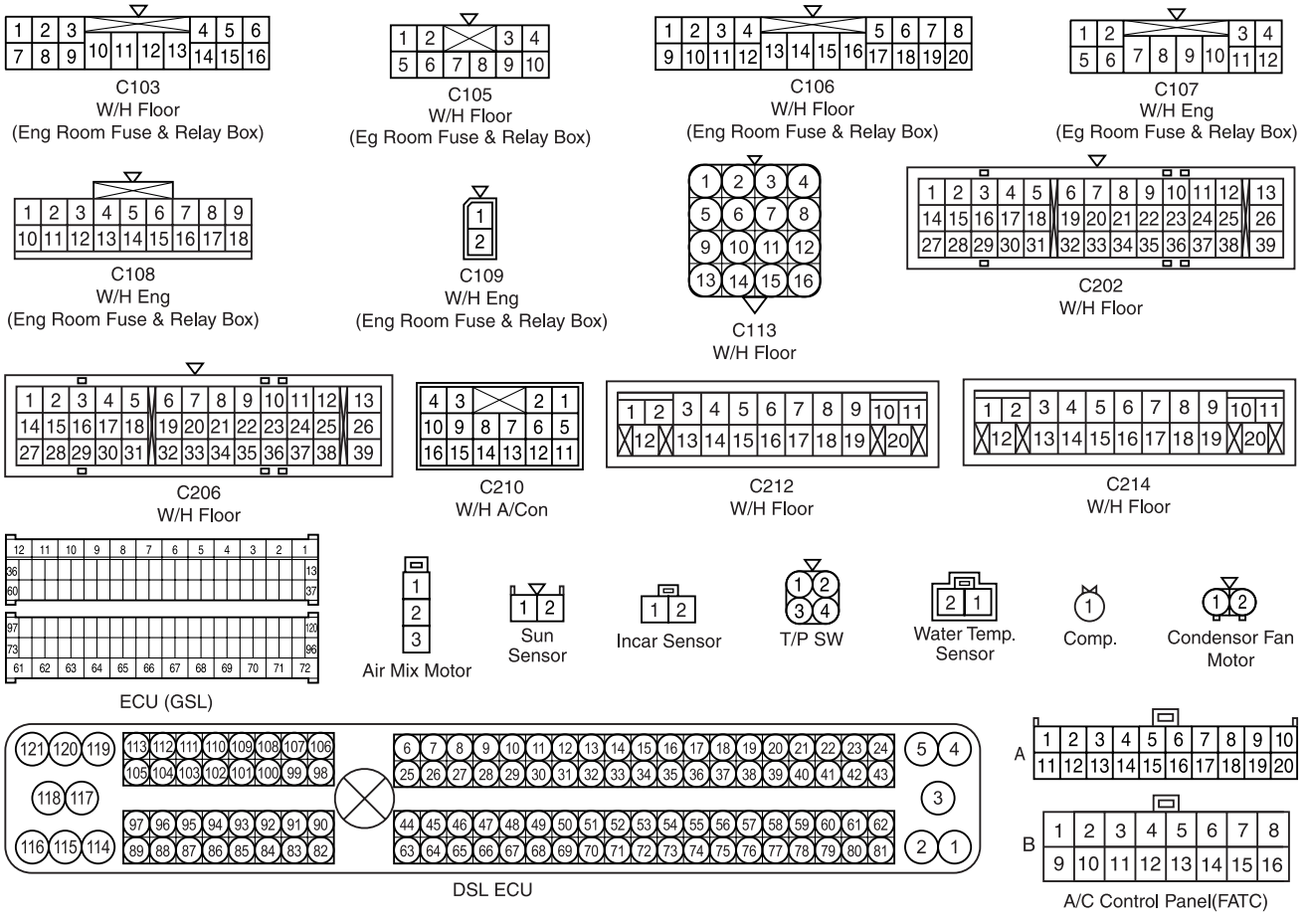
1) CONDENSOR FAN, AIR MIX MOTOR, SUN SENSOR, WATER TEMP SENSOR



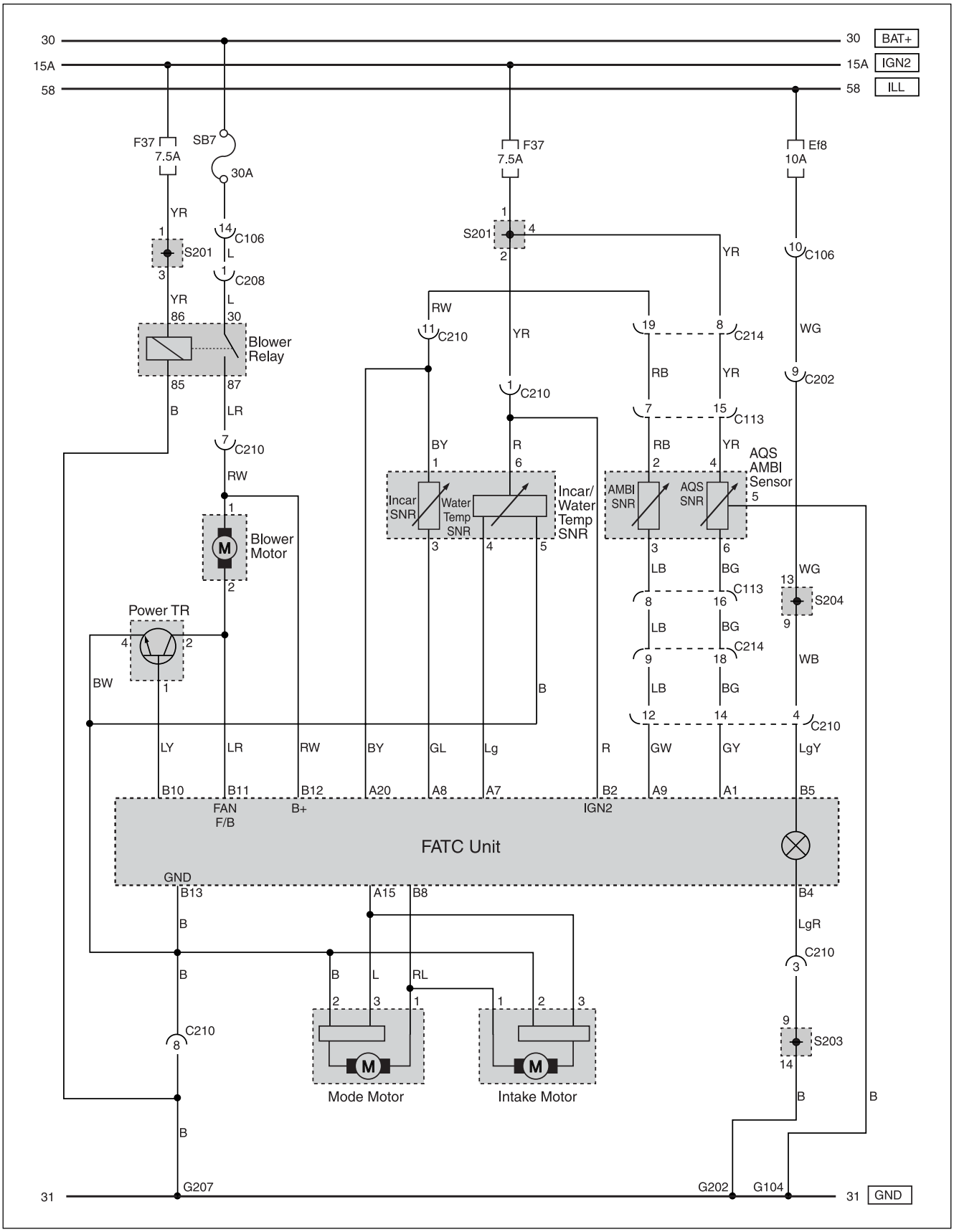
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C109 (2Pin, Black)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Drvier Legroom	C/Holder
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G102	W/H Eng Room	Behind LH Head Lamp	
G103	W/H Eng Room	LH FRT END PNL (LH Head Lamp Side)	
G104	W/H Eng Room	Behind RH Head Lamp	
G207	W/H Main	Inner the Passenger Cowl Side PNL	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



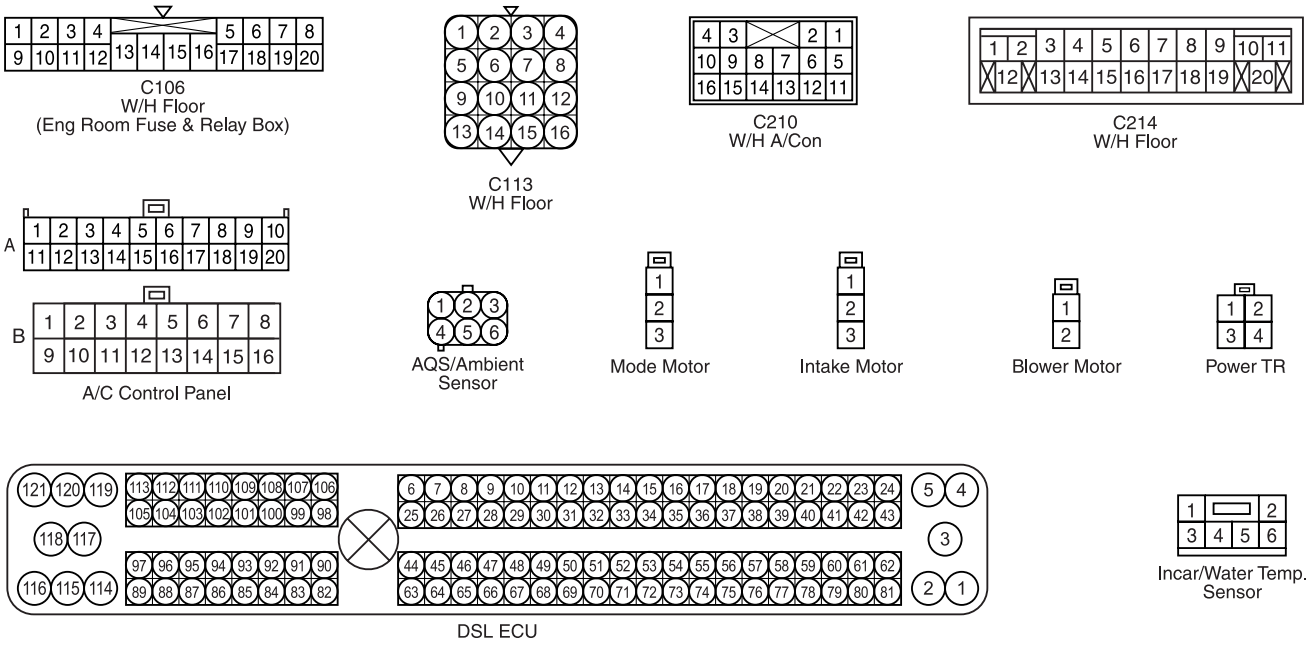
2) BLOWER, ACTUATOR (MODE, INTAKE), AQS SENSOR



A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G104	W/H Eng Room	Behind RH Head Lamp	
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



C. CIRCUIT DESCRIPTION

THE V5 FULL AUTOMATIC TEMPERATURE CONTROL (FATC) SYSTEM

The full automatic temperature control (FATC) uses the integrated control panel as the driver's interface to the system. The FATC receives driver's input signal and various input signal from sensors and controls the actuators to maintain driver's desired room temperature.

SELF DIAGNOSIS (ONLY FOR FATC AIR CONDITIONER)

Self Diagnosis Code

The FATC controller has self diagnosis function that can diagnose the system by itself. Before checking each component, be sure to check the default code by using self diagnosis function.

Code	Malfunction	Remark	Code	Malfunction	Remark
0	Normal	1	8	-	-
1	Defective interior temperature sensor	25	9	Defective AQS	-
2	Defective ambient temperature sensor	25	10	Defective humidity sensor	-
3	Defective duct sensor	-	11	-	-
4	Defective air mix door motor	-	12	Defective intake door	-
5	Defective sun sensor	-	13	-	-
6	Defective power transistor	-	14	-	-
7	Defective blower high relay	-	15	-	-

Self diagnosis

1. Set the temperature to 26℃ with the temperature control switch (AUTO), and press the OFF switch 3 times within 3 seconds after temperature setting while the AUTO switch is pressed.
2. The Micro computer integrated in controller displays the defect codes in turns on the VFD after performing self diagnosis. Below figure shows the defect code caused by disconnecting the interior temperature sensor/humidity temperature sensor connector.
3. After displaying defect code, operates again in AUTO mode.

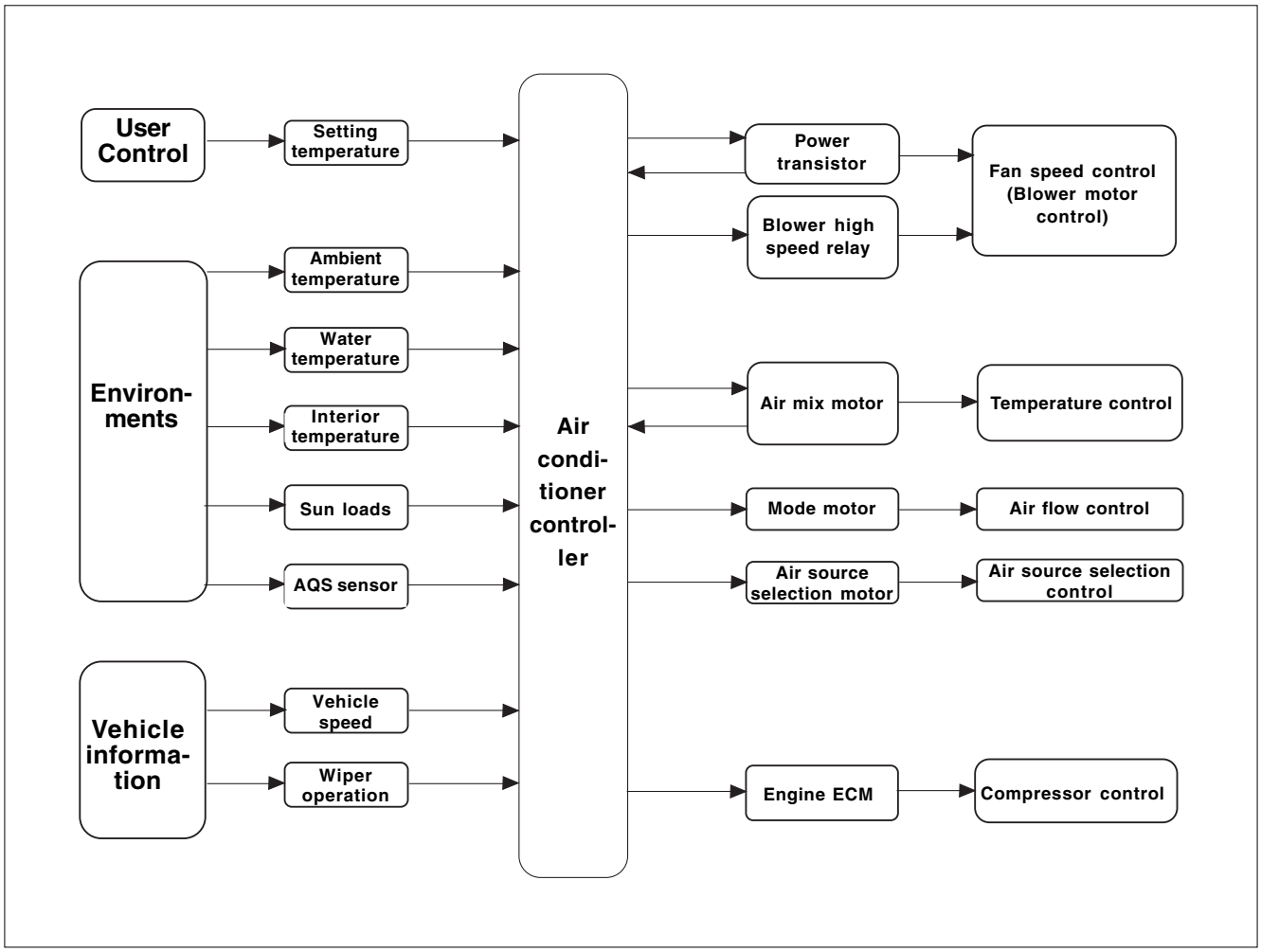
[Note]

For sun sensor, the diagnosis for short circuit is only available. When the switch circuit is opened, the system recognize it as a night.

Phenomenon when air conditioner system is defective (Initial automatic diagnosis)

1. If any sensor in the air conditioner system is defective, the temperature display blinks about 3 times during initial operation of air conditioner controller.

SYSTEM DIAGRAM



Air conditioner compressor control by engine ECU

In case of current vehicle models, the system turns ON/OFF the compressor switch according to refrigerant pressure, ambient temperature and condenser temperature to protect air conditioner circuits. However, for the vehicle equipped with DI engine, the engine ECU turns off air conditioner compressor as below in addition to above conditions.

1. Coolant temperature: below -20°C
2. Coolant temperature: over 115°C
3. For approx. 4 seconds after starting the engine
4. When engine speed is below 650 rpm
5. When engine speed is over 4,500 rpm
6. During abrupt acceleration for the vehicle equipped with manual transmission

ACTIVE INCAR/HUMIDITY SENSOR (AIH SENSOR)

The AIH sensor is installed at the driver side instrument panel undercover. It is a sensor that detects interior temperature and humidity.

Functions

1. Interior temperature sensor

   This sensor is a negative temperature coefficient (NTC) thermistor and detects the interior temperature with air coming from senor hole and then sends the voltage value according to the changed resistance to FATC controller.

2. Humidity sensor

   This sensor detects the interior humidity with humidity cell and then sends the voltage value according to the changed humidity to FATC controller.

Inspection

If the active incar sensor defect code (DTC 1) and the humidity sensor defect code (DTC 10) are set, check as below:

[Active incar sensor]

1. Remove the integrated AIH sensor and measure the resistance between terminal No. 5 and 6 on the sensor connector. (standard: approx. 25°C, 2.2 kW)
2. If the measured value is out of the specified range, replace the AIH sensor. If the measured values are within the specified range, check as below.
3. Turn the ignition switch to ON position and measure the voltage to active incar sensor from the FATC controller connector. (standard: approx. 2 V at 25°C)
4. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

[Humidity sensor]

1. Apply 5 V to terminal No. 1 and 3 on the humidity sensor connector.
2. Connect the positive (+) probe of a tester on No. 2 terminal and the negative (-) probe on No. 3 terminal, and measure the output voltage while the voltage is applied. (output voltage: approx. 0.8 ~ 3.4 V)
3. Check whether the output voltage is changed when blowing into the inlet of the sensor. If there is a voltage change, the sensor is in normal condition. However, if the voltage is not changed, replace the humidity sensor.
4. In addition, if the output voltage is extremely high or low even in the specified range, replace the humidity sensor.

AIR QUALITY SYSTEM (AQS)

1.Components of AQS

Air Quality System (AQS) changes the air source selection to recirculation mode when polluted air is detected through AQS sensor. The air source selection returns back to fresh air intake mode after a specified period or the polluted air is disappeared.

2.AQS and air source selection switch

The AQS switch is integrated with the air source selection switch.

3.AUTO Mode

The air source is not changed when pressing the AQS and air source selection switch in “AUTO” mode. However, the indicator on the switch turned ON/OFF. In other words, the air source cannot be changed to recirculation mode in AUTO mode by just pressing the switch.

To change the air source to recirculation mode in AUTO mode, get into Manual mode first, then press the air source selection switch.

4.Manual Mode

To change the AQS mode to Manual mode from AUTO mode, use the MODE switch or the fan speed control dial. In Manual mode, the “AUTO” symbol on the display is disappeared. When pressing the AQS and air source selection switch, the mode is changed in order of AQS LED ON, AQS LED OFF (fresh air), and air source LED ON (recirculation).

The figure shows that the mode has been changed to the recirculation mode from fresh air mode under AQS mode (AQS LED ON) after detecting the polluted outside air.

5.AQS operation

The AQS operates under air conditioner AUTO mode or when the AQS switch is pressed under manual mode. It requires preheating time (for seconds) for operation and the module and sensor are integrated.

(However, it operates only when the DEF (defroster) switch on the air conditioner switch panel is not pressed in.)

Self diagnosis and preheating process during initial operation of A/C controller (AUTO mode)

1. When the air conditioner controller is operated in AUTO mode during its initial operation, the air source is changed to the recirculation mode and AQS LED comes on.
   (This is the self diagnosis and preheating process for AQS.)
2. After completing the above process, the AQS LED is turned off and the air source is automatically changed to the fresh air mode.

[Note]

If the AQS switch is pressed in, the AQS function works regardless of air conditioner controller operation.

6.AQS operation (AQS switch is pressed in): detecting the polluted outside air

1. When pressing the AQS switch, the LED on the AQS switch is turned on and the AQS function is activated.
2. When the polluted outside air is detected, the AQS operates and converts the air source to recirculation mode automatically. At this moment, the recirculation mode indicator comes on in the display.

7.When driving out of polluted area

1. If the polluted air is disappeared, the air source is automatically changed to the fresh air mode and AQS LED stays on.
2. The air source is not changed when pressing the AQS and air source selection switch in “AUTO” mode. To change the air source to recirculation mode in AUTO mode, get into Manual mode first, then press the air source selection switch.

AQS OPERATION CIRCUIT

[AQS sensor]

1. Measure the voltage value of AQS. (between connector terminal No. 3 and 4.)
2. If the measured voltage is out of 0.1 to 4.8 V, replace the AQS.
3. If the measured voltage is out of the specified range, replace the AQS. If it is within the specified range, check as below.
4. Turn the ignition key to “ON” position.
5. Measure the voltage between terminal B9 and B15 on the air conditioner controller.
6. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

[Ambient temperature sensor]

1. Remove the sensor and measure the resistance between terminal No. 5 and 6 on the sensor connector. (standard: approx. 25°C, 2.2 kW)

   In addition, if the resistance is extremely high or low, replace the sensor.
2. If the measured value is out of the specified range, replace the ambient temperature sensor. If the measured value is within the specified range, check as below.
3. Turn the ignition switch to ON position and measure the voltage to ambient temperature sensor from the FATC controller connector. (standard: approx. 2 V at 25°C)
4. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

SUN SENSOR

It is installed on the upper left end of instrument panel. It is using characteristics that the amount of current changes according to amount of light on the photosensitive surface. Photo diode, converts the changes in light intensity into electrical changes, detects the amount of light coming through windshield and changes it into current and then sends the signal to FATC controller.

Inspection

1. Remove the sun sensor and measure the current between terminals under sunlight.
2. Measure the current again under shade. It is in normal conditions if the measured value is less than the measured value under sunlight.
3. Turn the ignition switch to “ON” position.
4. Measure the voltage to the sun sensor from FATC connector. (approx. 2.5 V under sunlight and 4.8 V under shade.)
5. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

WATER TEMPERATURE SENSOR

The water temperature sensor is installed on the top of heater unit. It detects the inside temperature of water and transmits the voltage value that is changed according to resistance value (NTC) to FATC controller.

Inspection

If the water temperature sensor defect code (DTC 3) is set, check as below.

1. Remove the water temperature sensor and measure the resistance between terminals on the sensor connector. (standard: approx. 25°C, 2.2 kW)

   In addition, if the resistance is extremely high or, replace the sensor.
2. If the measured value is out of the specified range, replace the water temperature sensor. If the measured value is within the specified range, check as below.
3. Turn the ignition switch to ON position and measure the voltage to water temperature sensor from the FATC controller connector. (standard: approx. 2 V at 25°C)
4. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

POWER TRANSISTOR

The power transistor controls the fan speed. It controls the blower motor operating speed without stages by changing the current value to the base of power transistor when receiving the fan control signal from FATC.

INTAKE SENSOR

The intake sensor outputs the compressor ON or OFF signal to ECU to prevent evaporator from freezing. The sensing part of the thermistor is the evaporator fin contact type.

If the air conditioner does not turn on, check as below.

1. Remove the intake sensor and measure the voltage between terminal No. 1 and 2 on the connector.
2. Check whether the output voltages (ON: approx. 12 V, off: 0 V).
3. If the voltage value is out of the specified value, replace the intake sensor. If the circuit is in normal condition, check as below.
4. Turn the ignition switch to ON position and turn on the air conditioner by pressing the A/C button. And measure the voltage between terminal A12 and A11 on the FATC controller connector. (standard: approx. 12 V)
5. If the voltage value cannot be measured, check the circuit for open. If the measured value is within the specified range, replace the FATC controller.

VEHICLE SPEED CALIBRATION

On the Ambient or the 1/3 Ambient and the blower AUTO, the blower decreases the voltage with the vehicle speed 100 Km/h such as 1.5 V for the Ambient, 1.0 V for the 1/3 Ambient.

But it is the exception for the blower max.

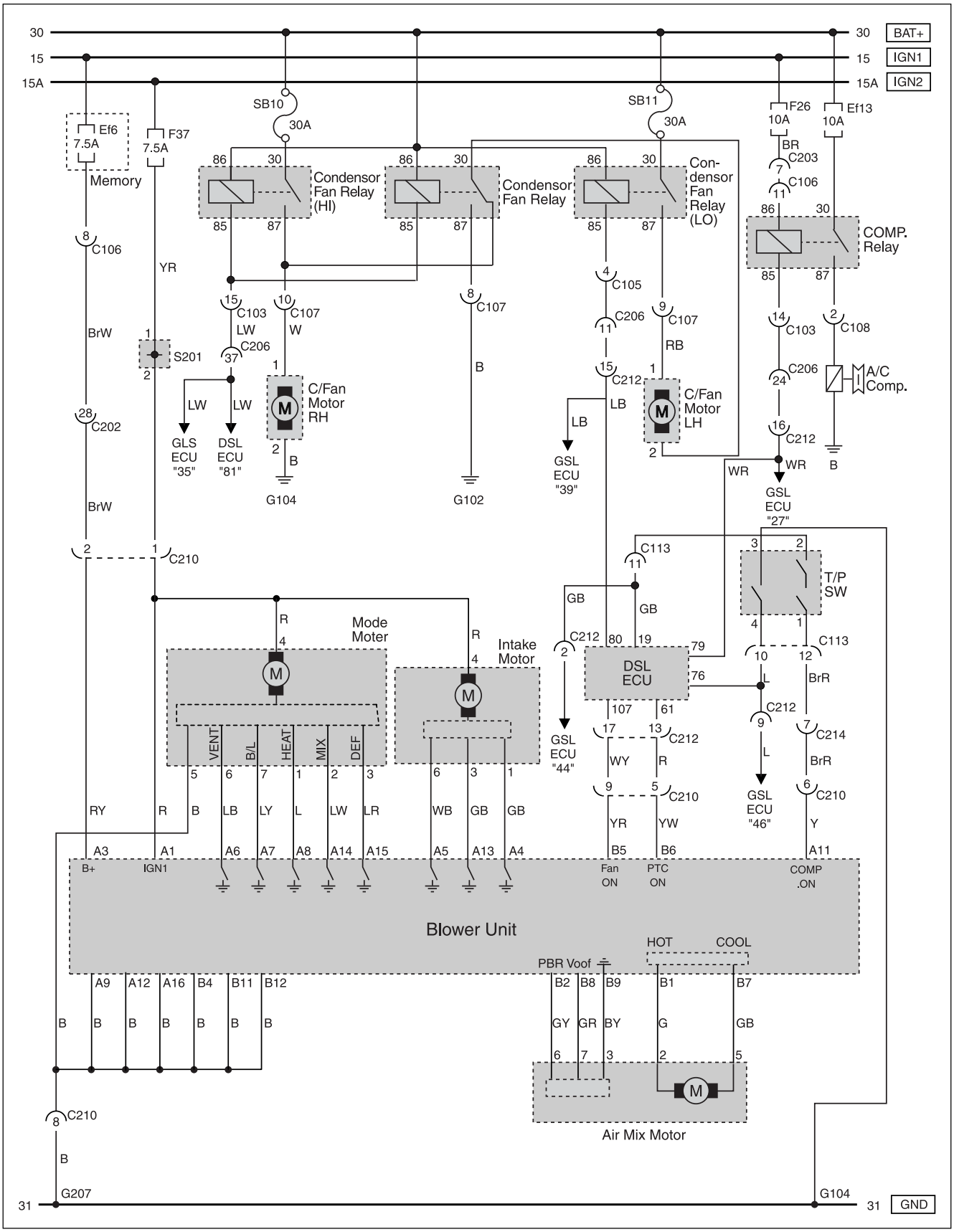
WIPER CALIBRATION CONTROL

It is possible to generate the frost on the windshield in the rainy days. At this time, FATC controller allows the mode to change the AUTO defroster mode.

1. Operation Condition: When the passenger operates the wiper on AUTO mode, the system controls the wiper on the A/C AUTO mode after sending the wiper signal and controlling the delay for 1 minutes.

38. AIR-CON (MANUAL) CIRCUIT 6810

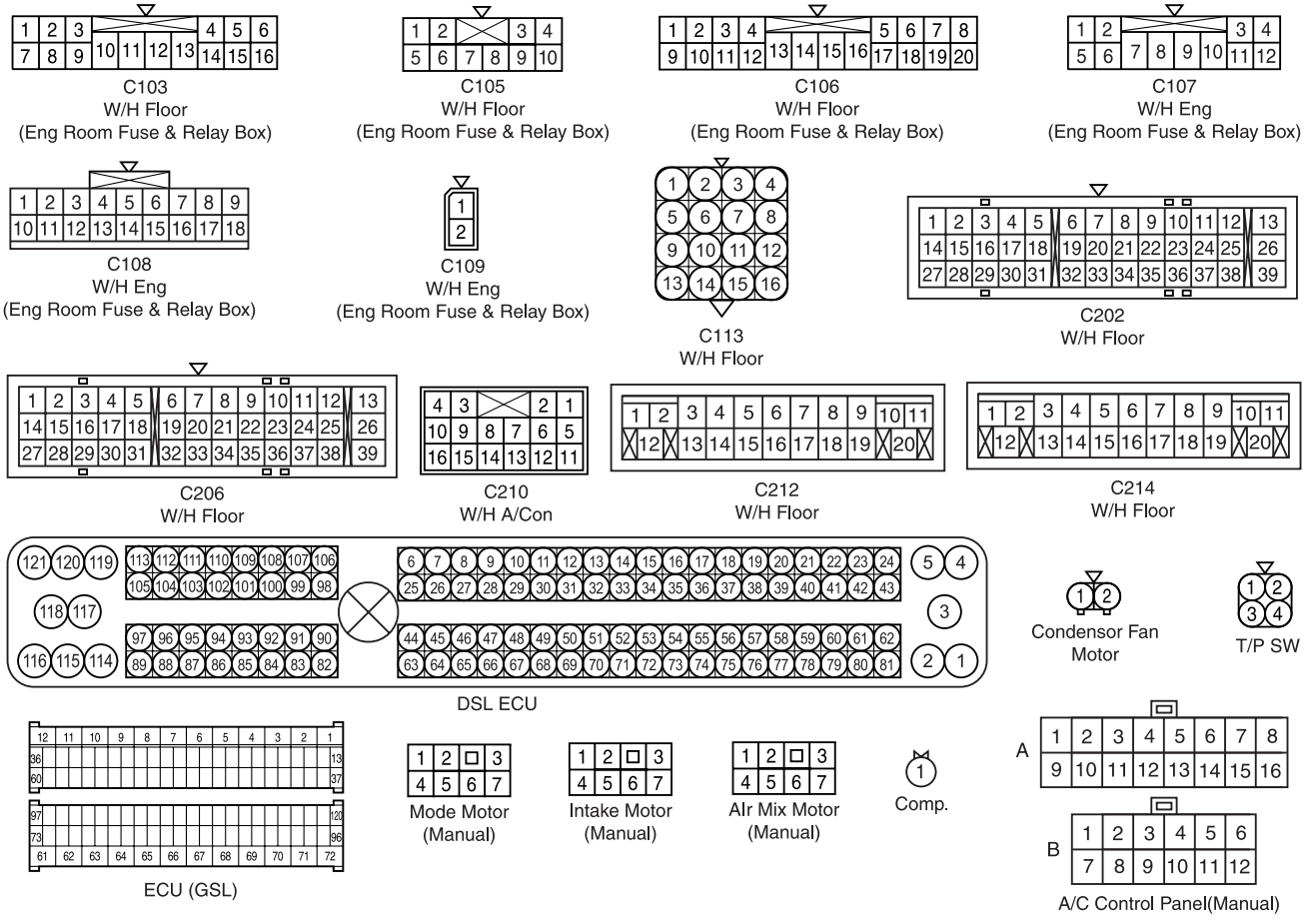
1) COMPRESSOR, MOTOR (MODE, INTAKE, AIR MIX)



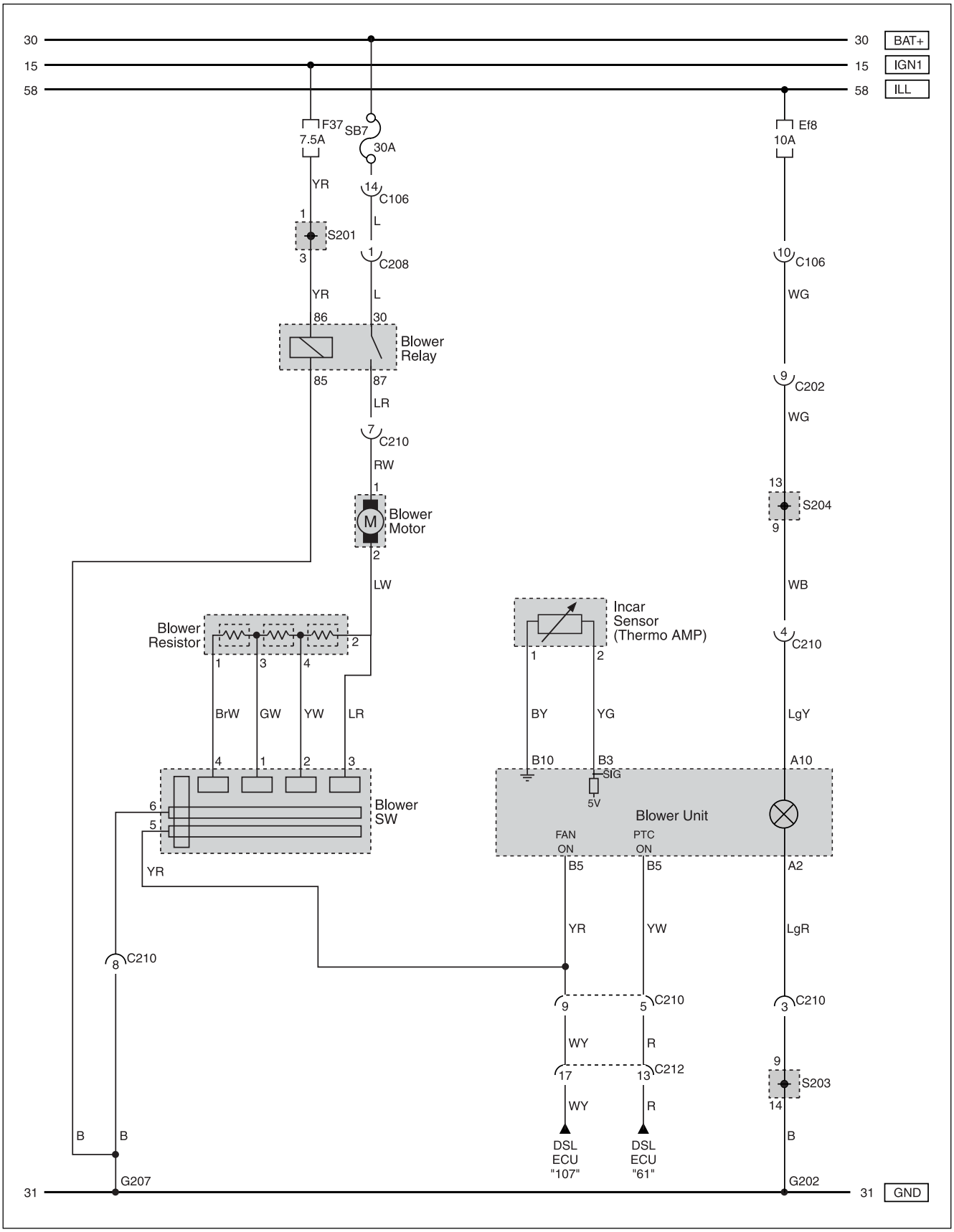
A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C103 (16Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C105 (10Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C107 (12Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C108 (18Pin, White)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C109 (2Pin, Black)	W/H Eng - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C113 (16Pin, Black)	W/H Eng - W/H Floor	Inside RH Fender PNL	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C206 (39Pin, Black)	W/H Main - W/H Floor	Upper the Drvier Legroom	C/Holder
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
C214 (20Pin, Yellow)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G102	W/H Eng Room	Behind LH Head Lamp	
G103	W/H Eng Room	LH FRT END PNL (LH Head Lamp Side)	
G104	W/H Eng Room	Behind RH Head Lamp	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION



2) BLOWER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7.5A
SB7
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Ef8
10A
YR
14
C106
L
1
S201
3
1
C208
YR
L
86
30
Blower
Relay
85
87
LR
7
C210
RW
1
M
Blower
Motor
2
LW
10
C106
WG
9
C202
WG
13
S204
9
WB
4
C210
Blower
Resistor
2
1
3
4
BrW
GW
YW
LR
Incar
Sensor
(Thermo AMP)
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2
BY
YG
LgY
4
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2
3
B10
B3
SIG
5V
A10
6
5
Blower
SW
Blower Unit
FAN
ON
PTC
ON
B5
B5
A2
YR
YW
LgR
C210
8
9
5
C210
C210
3
WY
R
9
17
13
C212
S203
14
WY
R
B
B
DSL
ECU
"107"
DSL
ECU
"61"
B
G207
G202
31
31 GND

A. CONNECTOR INFORMATION

Connector Number (Pin Number, Color)	Connecting Wiring Harness	Connector Position	Remark
C106 (20Pin, White)	W/H Floor - Eng Room Fuse & Relay Box	Eng Room Fuse & Relay Box	
C202 (39Pin, Black)	W/H Main - W/H Floor	Driver Cowl Side C/Holder	
C208 (4Pin, Colorless)	W/H Main - W/H Floor	Upper the Driver Legroom	C/Holder
C210 (16Pin, White)	W/H Main - W/H A/Con	Inside the Middle I/P (Right PTC)	
C212 (20Pin, L/Green)	W/H Main - W/H Floor	Passenger Cowl Side C/Holder	
G202	W/H Main	Under the Driver “A” Pillar	
G207	W/H Main	Inner the Passenger Cowl Side PNL	
S201 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	
S203 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	GND
S204 (14Pin, Black)	W/H Main	RH Protector of the Driver Legroom	ILL

B. CONNECTOR IDENTIFICATION SYMBOL & PIN NUMBER POSITION