INTRODUCTION

This manual has been prepared with the assistance of service and engineering specialists to provide you, Daewoo heavy commercial vehicle mechanics, with the information on the electrical equipment of Daewoo heavy duty trucks. We like to assure you that you will be acquainted with more suitable maintenance techniques. It contains a variety of illustrations and diagrams for the electrical equipment to help you easily understand.

Utilizing adequately this manual for you maintenance operations will not only greatly relieve you from unnecessary effort but also enhance maintenance reliability.

Should you have any questions or doubt as to the contents of this manual, do not hesitate to contact us.

Finally, we like to advise you that the specifications and other details on our Daewoo heavy commercial vehicles and are subject to change without prior notice for the purpose of product upgrading, and also we hope that this manual would be of a great help to you in your maintenance operations.

2003. 12

DAEWOO COMMERCIAL VEHICLE CO, LTD

CONTENTS

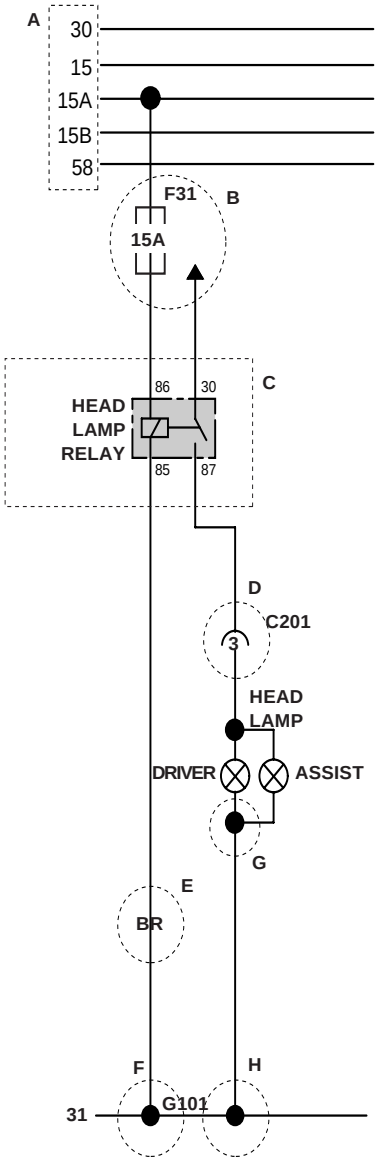
- DE / DV -

SECTION 1

GENERAL DESCRIPTIONS

1. ELECTRIC CIRCUIT DIAGRAM

1-1. HOW TO USE CIRCUIT DIAGRAM



CIRCUIT DAIGRAM

LOCATION	CONTENTS
A	• The power supply line on the circuitry are found in the upper space of the circuit diagram. • Power supply lines are #30, 15, 15a,15b, 58
B	• F31 : Fuse number, 15A : Electric capacity.
C	• This section shows the parts name and the pin number.
D	• This section represents the connector where different wirings are connected to each other. C201 indicates the kind of connector, while the #3 means that it is the third terminal of the connector.
E	• This section shows the color of the applicable wire. - BR - : Red stripes on black ground.
F	• This section indicates the location of ground Connection. • The bottom line is a battery(-) line or ground(#31). (G : ground)
G	• There are a number of cross lines. A crossing having a dot as in "" means that the lines A and B are connected to each other. On the other hand, a crossing having no dot indicates that the lines A and B are separate lines.
H	• This section indicates the body ground Connection. so, there is no wire ground like Gxxx.

1-2. POWER SUPPLY NUMBER

NUMBER	CONTENTS
30	• The battery(+) line.
15	• Electric power is supplied when the starter switch is turned to the "ON" position before the engine starts.
15A	• Electric power is supplied when the starter switch is turned to the "ACC" position.
15B	• Electric power is supplied from the starter switch "ON" relay #87.
58	• #58 is switched ON when the head lamp switch is ON.

1-3. COLOR SYMBOLS FOR WIRING

• To make it easy to read the circuit diagram, each wiring is given a unique color on the circuit diagram.

EX) B(black) R(red) Red wiring on black ground

Ground — Main color

SYMBOL	COLOR	SYMBOL	COLOR	SYMBOL	COLOR
R	Red	Y	Yellow	L	Blue
B	Black	Lg	Yellowish green	V	Vilocet
Br	Brown	Gr	Gray	O	Orange
W	White	G	Green	P	Pink

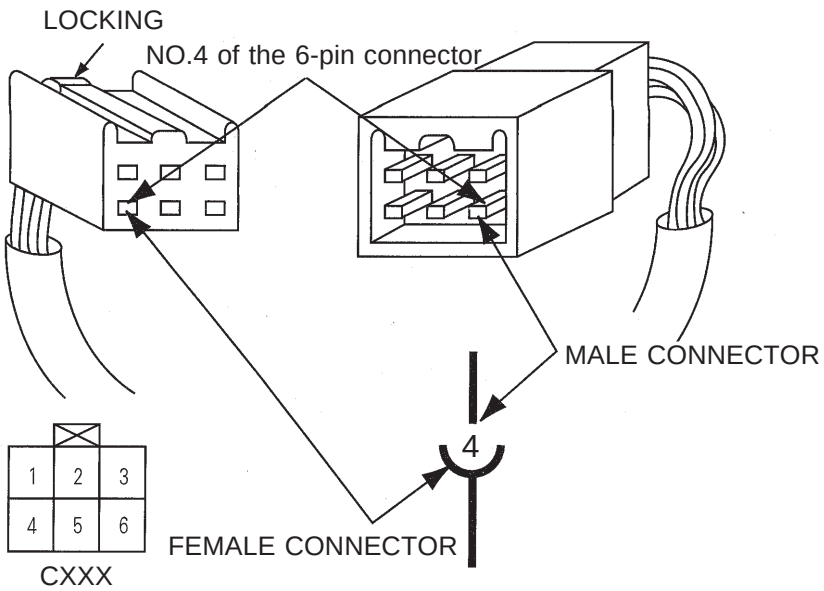
1-4. HOW TO KNOW CONNECTOR PIN NUMBER

1) CONNECTOR PIN FIGURE

Connector pin figure is the total hole number of the connector

2) CONNECTOR PIN NUMBER

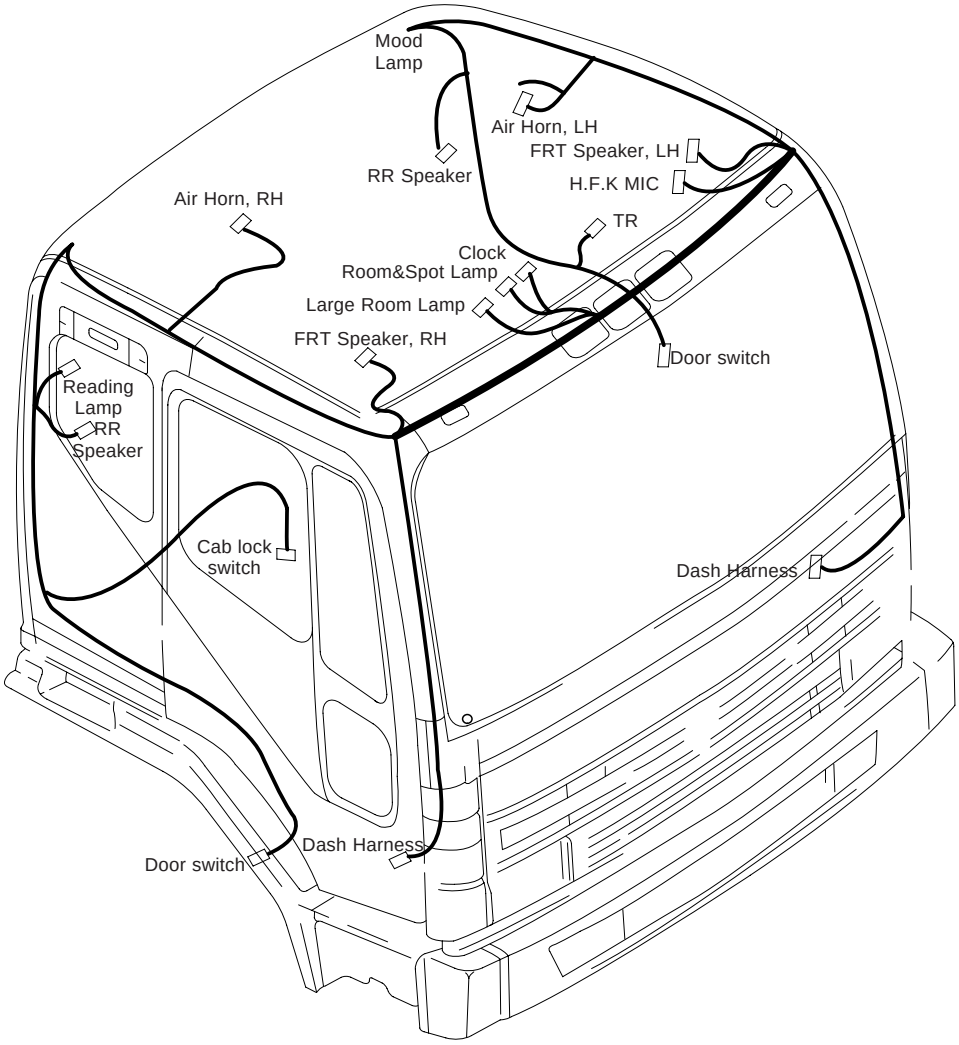
EX) NO.4 of the 6 pin connector



2. LOCATIONS OF ELECTRICAL HARNESSES

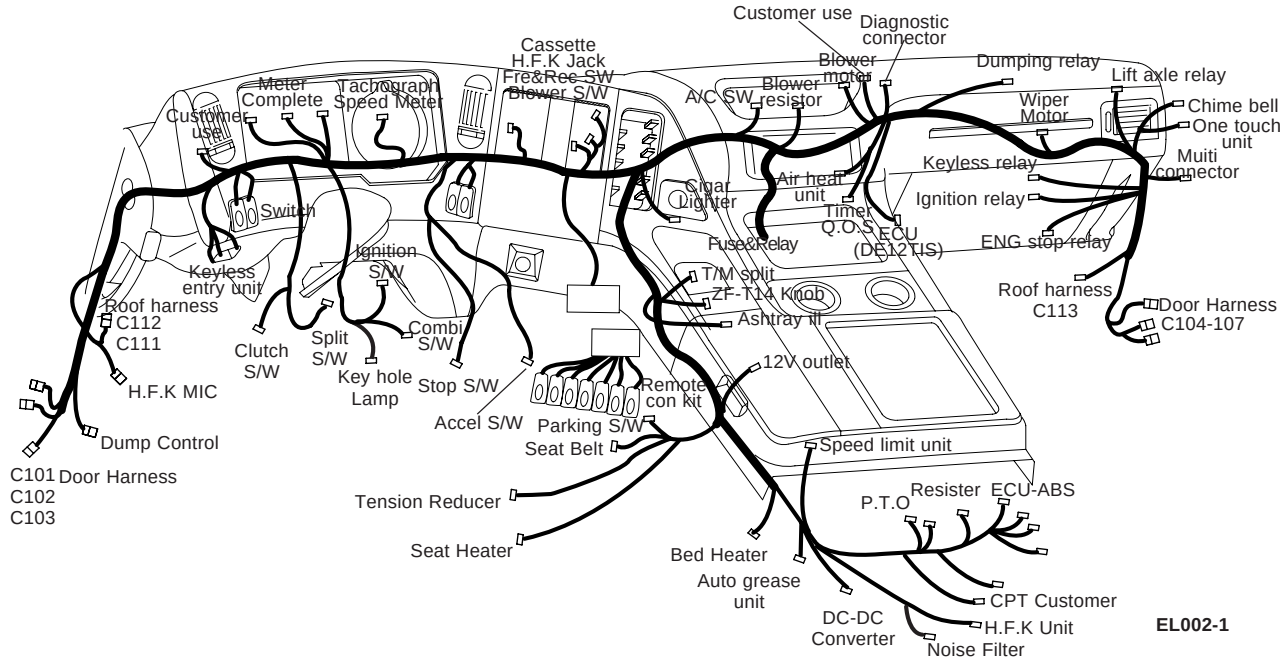
2-1. ROOF HARNESS/ DASH HARNESS/ DOOR HARNESS

2-1-a. ROOF HARNESS



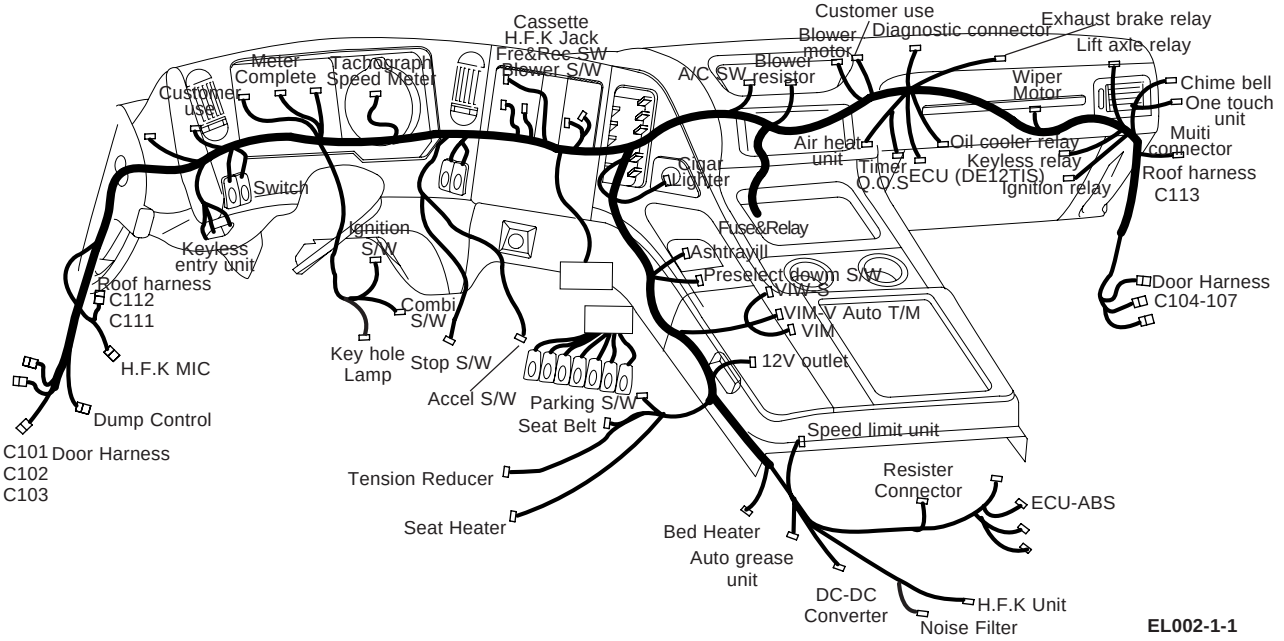
EL001

2-1-b. DASH HARNESS (DE/DV)



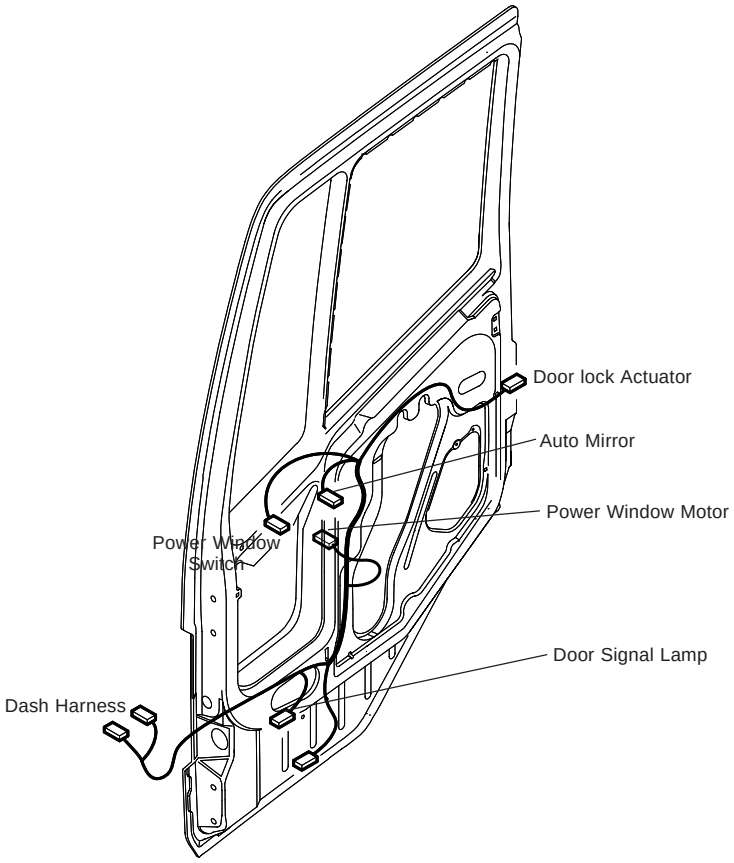
EL002-1

ALLISON (AUTO T/M)



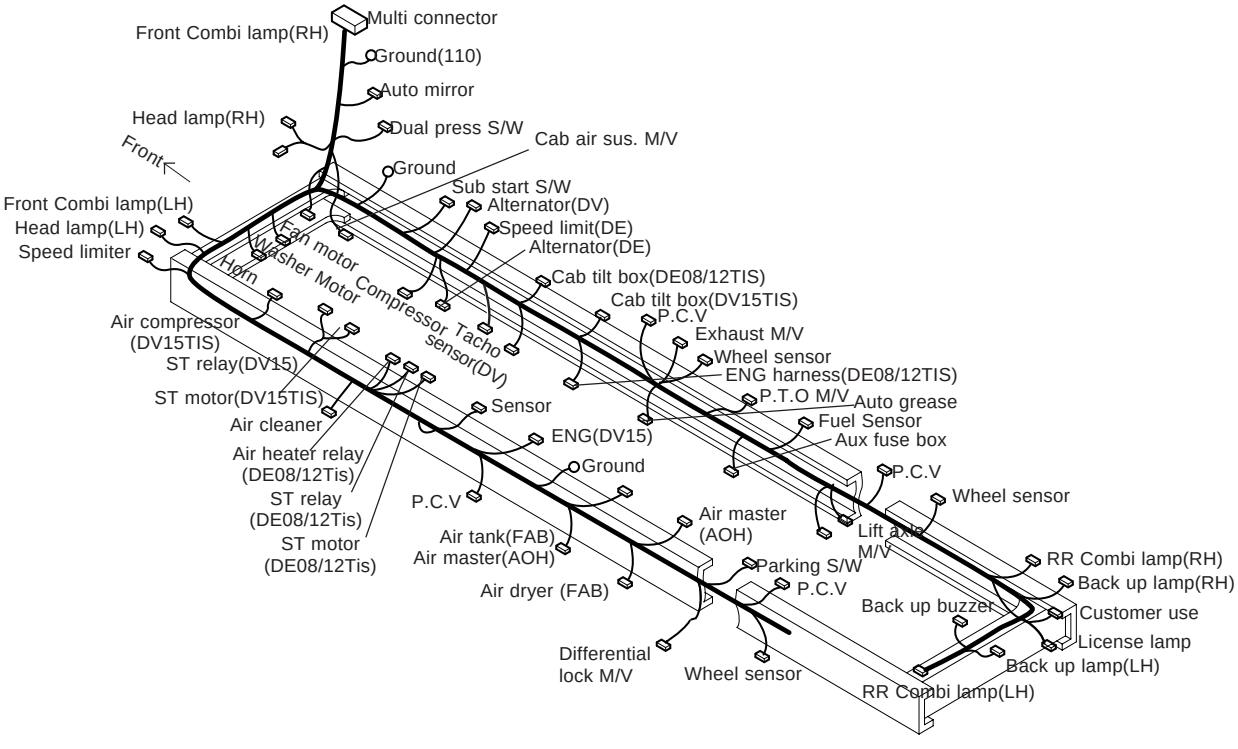
EL002-1-1

2-1-c. DOOR HARNESS



EL002-4

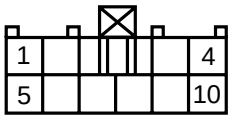
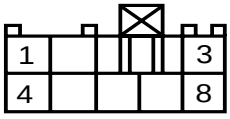
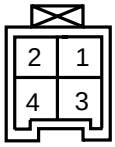
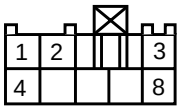
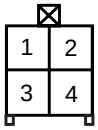
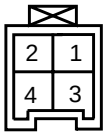
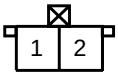
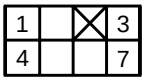
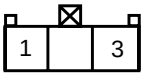
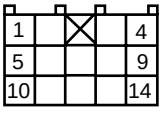
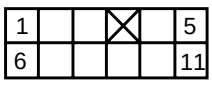
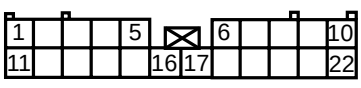
2-2. FRAME HARNESS (DE/DV)

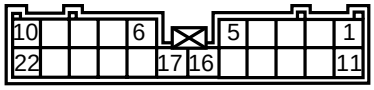
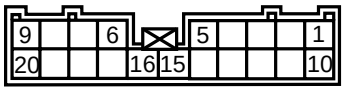
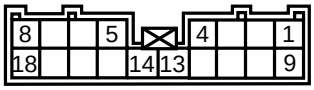
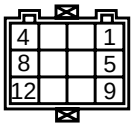
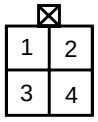
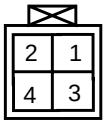
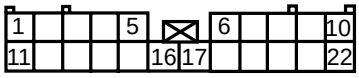
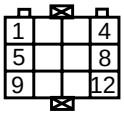
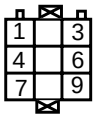
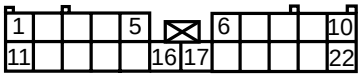


EL005-1

*** The location of harness is different by the vehicle type.**

2-3. CONNECTOR CONDITION

Connector for dash harness and driver's seat door harness	Connector for dash harness and driver's seat door harness
 C101(10pin)  C102(8pin) Based on dash harness	 C103(4pin) Based on dash harness
Connector for dash harness and assist seat door harness	Connector for dash harness and assist seat door harness
 C104(8pin)  C105(4pin) Based on dash harness	 C106(4pin)  C107(2pin) Based on dash harness
Connector for dash harness and driver's seat roof harness	Connector for dash harness and assist seat roof harness
 C111(7pin)  C112(2pin)  C114 H.F.K MIC Based on dash harness	 C113(14pin) Based on dash harness
Connector for dash harness and tachograph harness	Connector for dash harness and switch harness
 C121(11pin) Based on dash harness	 C131(22pin) Based on dash harness

Connector for dash harness and frame harness	Connector for dash harness and frame harness
 C201(22pin) Based on dash harness	 C202(20pin) Based on dash harness
Connector for dash harness and frame harness	Connector for dash harness and frame harness
 C203(18pin) Based on dash harness	 C204(12pin)  C205(4pin) Speed sensor Based on dash harness
Connector for dash harness and frame harness	Connector for dash harness and frame harness
 C206(4pin)  C207(2pin)  C208(1pin) Based on dash harness	 C209(22pin) ECM(ABS) Based on dash harness
Connector for dash harness and frame harness	Connector for dash harness and frame harness
 C210(2pin) ABS for trailer  C211(12pin)  C212(9pin) Based on dash harness	 C213(22pin) ECM(ABS/ASR) Based on dash harness

<table>
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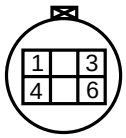
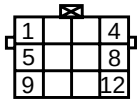
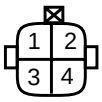
<tr><td> 

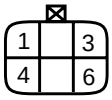
C302(6pin)
Split

Based on frame harness</td><td> 

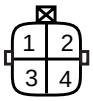
C311(12pin)

C312(4pin)
Speed sensor

Based on frame harness</td></tr>
<tr><td>Connector for frame harness and trailer harness</td><td>Connector for frame harness and trailer harness</td></tr>
<tr><td> 

C401(6pin)

Based on frame harness</td><td> 

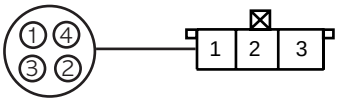
C402(4pin)
ABS

C403(1pin)
ABS

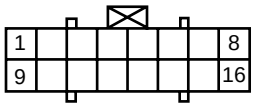
C404(1pin)
ABS

Based on frame harness</td></tr>
<tr><td>Connector for frame harness and ABS PCV harness</td><td>Connector for dash harness and instrument harness</td></tr>
<tr><td> 

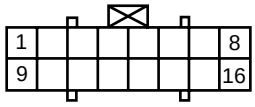
P.C.V

C501~504

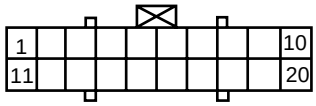
Wheel Speed sensor

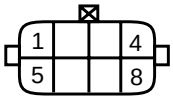
Based on frame harness</td><td> 

A(White)

B(Black)

C(White)
Based on dash harness</td></tr>
<tr><td>Connector for frame harness and auxiliary fuse box harness</td><td>Connector for frame harness and auxiliary fuse box harness</td></tr>
<tr><td> 

C601(8pin)

C602(2pin)

Based on frame harness</td><td> 

C603(1pin)
KEY ON Power
: Green

C604(1pin)
B+ Power

C605(1pin)
Trailer ABS Power
(tractor/Pull Cargo)
: Blue

Based on frame harness</td></tr>
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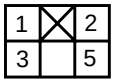
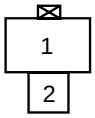
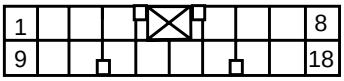


Facia Switch Connector



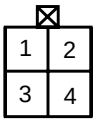
Customer service/Clutch/
Stop SW/Cigar lighter
/Seat connector

Based on dash harness

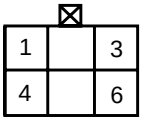


Keyless unit connector

Based on dash harness

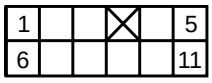


Ignition switch
(Engine stop motor)

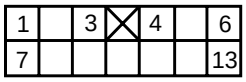


Ignition switch
(Sub starter)

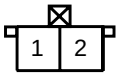
Based on dash harness



Combination
wiper S/W(RH)

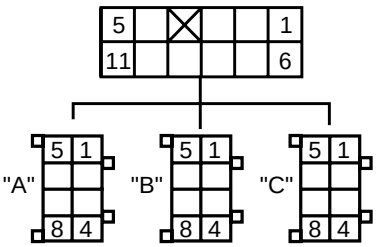


Combination
light S/W(LH)

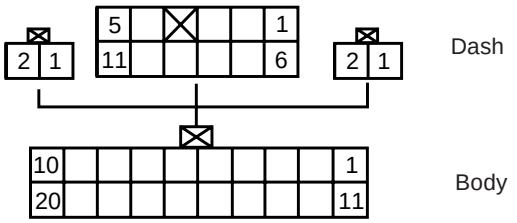


Key hole
lamp

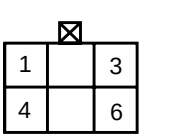
Based on dash harness



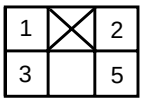
VDO Tachograph connector
(behind instrument)



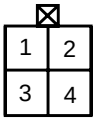
CASPO Digital tachograph connector
(behind instrument)



Blower switch

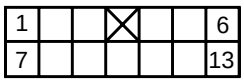


Fre&Rec switch

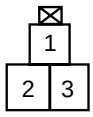


Blower resisstor
switch

Based on dash harness

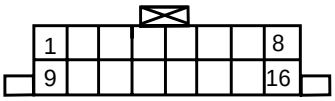


One touch unit



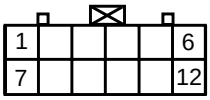
DC-DC converter/
ZF-T14 knob/
T/M Spliter connector

Based on dash harness

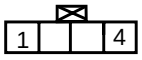


Diagnostic connector

Based on dash harness

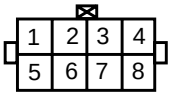


H.F.K unit

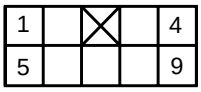


H.F.K jack

Based on dash harness



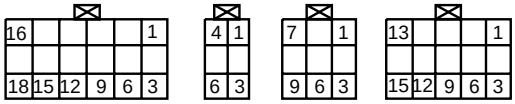
Air heat unit



Timer Q.O.S unit

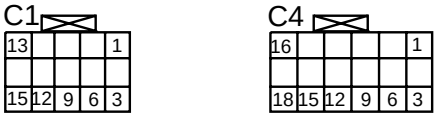
Based on dash harness

C1 C2 C3 C4



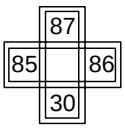
ABS/ASR ECM(D-version)connector

C1 C4

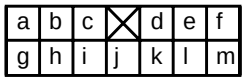


ABS/ASR ECM(E-Version, D-version basic)connector

Based on dash harness

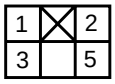


Starter switch "ON"/Keyless relay connector (Inside groove box)



Chime bell connector

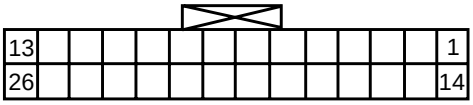
Based on dash harness



Wiper motor connector

Bed-heater

Based on dash harness

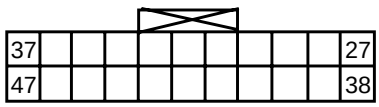


DE12TIS ECM Frame harness(connector)

Based on dash harness

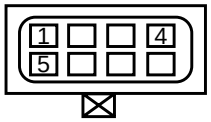
DE12TIS Memory clear connector(Black)

DE12TIS Diagnostic connector(white)



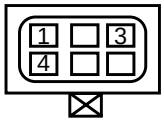
DE12TIS ECM dash harness(connector)

Based on dash harness



Wiper intermittent/
Door lock/
mirror heater unit

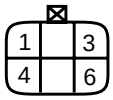
8



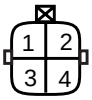
6

Key hole lamp unit

Fuse relay box

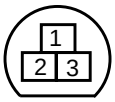


FRT/RR
combination lamp

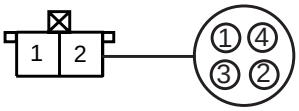


Head lamp
connector

Based on frame harness

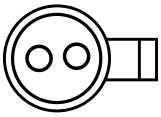


Engine stop motor
connector

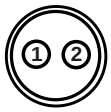


ASR valve connector

Based on frame harness

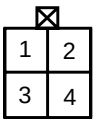


ABS pressure control
valve connector

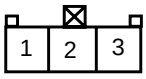


Air dryer
connector

Based on frame harness



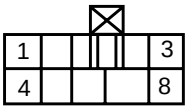
Clock
connector



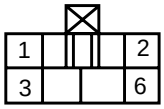
Room/Spot
connector

Large room lamp
connector

Based on roof harness

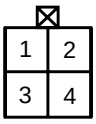


Auto mirror
switch connector

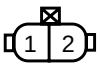


Mirror heater/
mirror motor connector

Based on door harness

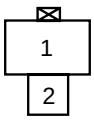


Air horn



Cab lock S/W

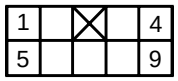
Based on roof harness



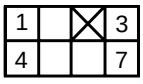
Seat belt tension reducer
/Speaker connector

Reading/Mood lamp

Based on roof harness



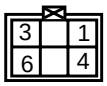
Driver seat power window switch



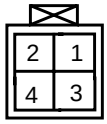
Assist seat power window switch

Power window motor connector

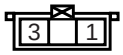
Based on door harness



Prestroke actuator & sensor

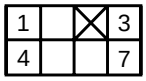


Rack sesnsor

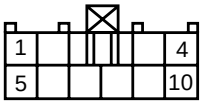


NE(Pick-up) sensor

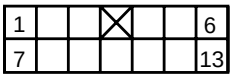
DE12TIS Engine
Based on Frame harness



VIW-S

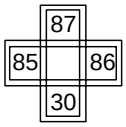


VIW-V

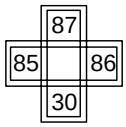


VIM

Based on dash harness(Auto T/M)

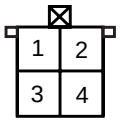


Exhaust brake relay



T/M oil cooler relay

Based on dash harness



Auto grease / Pump connector

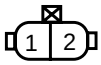
Dual pressure S/W

Temperature S/W

Based on frame harness

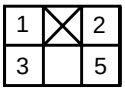
Cab tilt motor

Chime bell

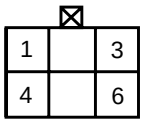


Cab tilt PBS switch

Cab tilt box
Based on frame harness

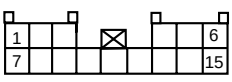


Exhaust brake/ Preselect down switch

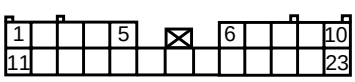


Auto grease unit

Based on dash harness

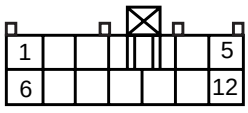


PTO Actuator

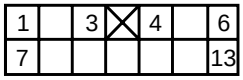


PTO Controler

Based on dash harness

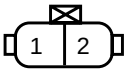


Speed limit unit



Cassette

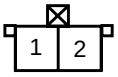
Based on dash harness



Resistor 120 ohm

Based on dash harness

ZF



T14

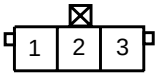
T/M Split high switch

Based on engine harness

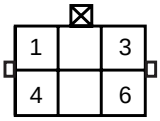
Neutral/
Back up lamp

Air heater relay

Based on engine harness



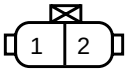
Limit switch



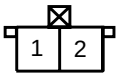
Step motor

ESCS actuator connector

Based on frame harness

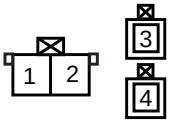


Back up/Keyless buzzer
connector



Back up lamp/
License lamp

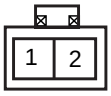
Based on frame harness



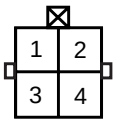
Water pump relay

Preheater relay

Based on frame harness



A



B

C

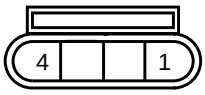
Switch box

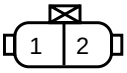
Based on frame harness

T/M oil temp switch

T/M oil cooler

Based on frame harness





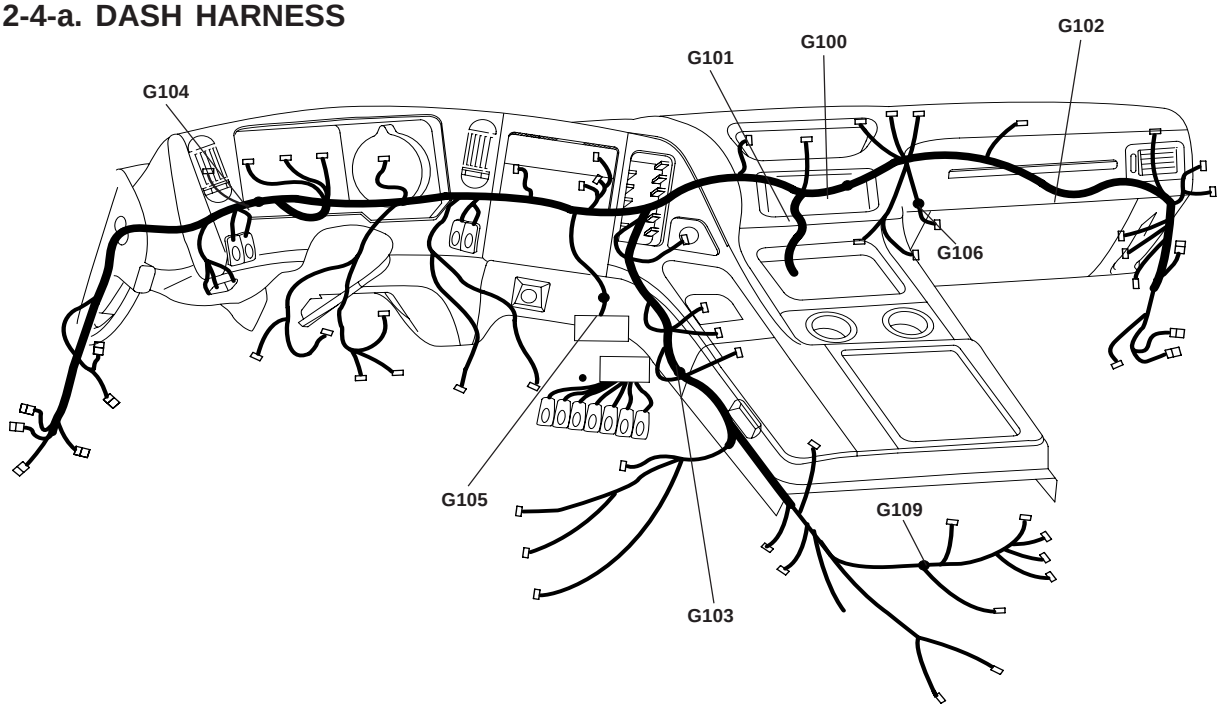
Door lock actuator

Door turn signal lamp

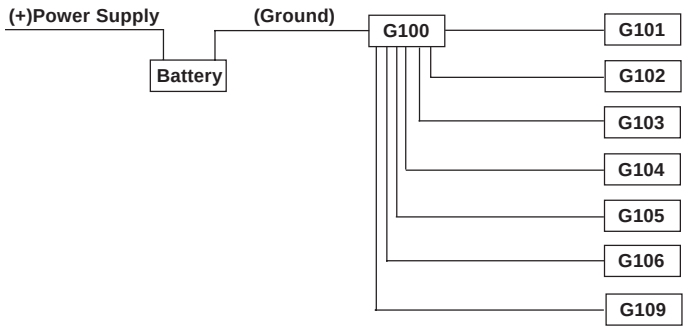
Based on door harness

2-4. LOCATIONS OF GROUND CONNECTIONS

2-4-a. DASH HARNESS



EL002-2

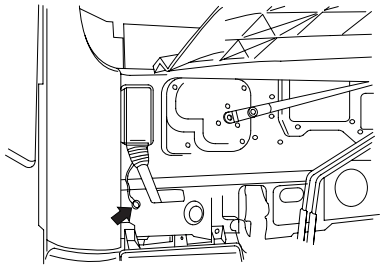


Ground No	Location of the ground earth connector wiring
G100	Near the blower motor
G101	Near the blower motor
G102	Near the wiper motor on passenger's side
G103	Near the bed heater behind the passenger seat
G104	Near the clutch pedal switch
G105	Near the switch connector wiring at the right side of the driver's seat
G106	Near the ECU (DE12TIS)
G109	Near the PTO unit

2-4-b. FRAME HARNESS

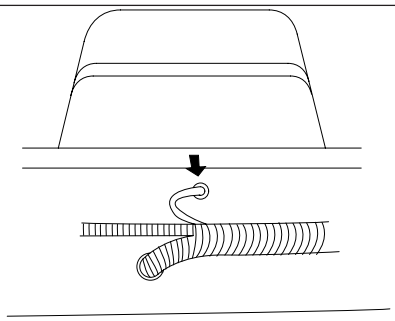
CAB GROUND

This is located at the right, upper end of the front lid.
It is fastened firmly to the wiper motor housing cover.



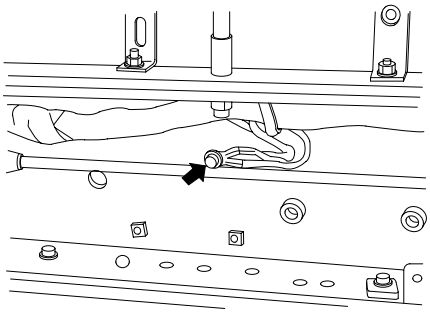
FRAME GROUND (DRIVER'S SEAT)

This is located inward the left frame .
It is fasted to the inner frame of the battery



FRAME GROUND (ASSIST SEAT)

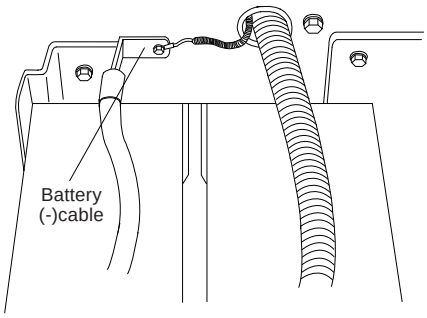
This is located inward the right frame :
It is fstened to the inner frame of the receiver dryer



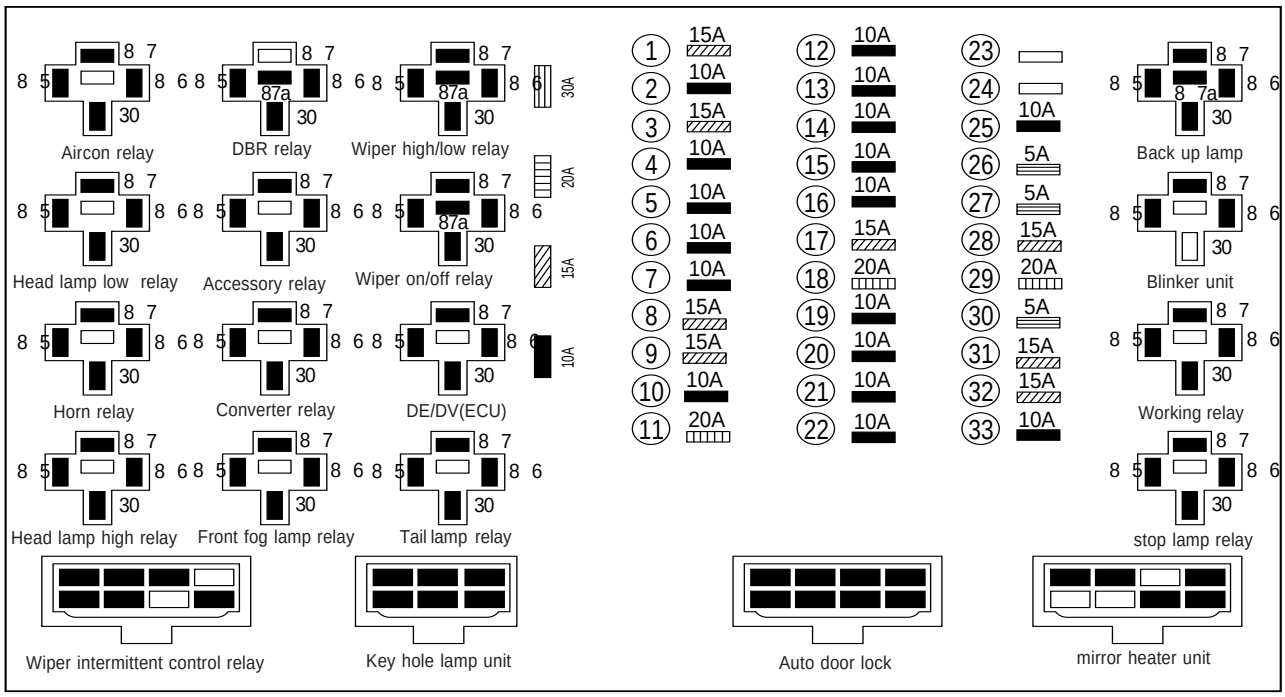
AUX. FUSE BOX GROUND

This is located outward the aux fuse box frame.

It is fastened to the outer frame of the aux fuse box.

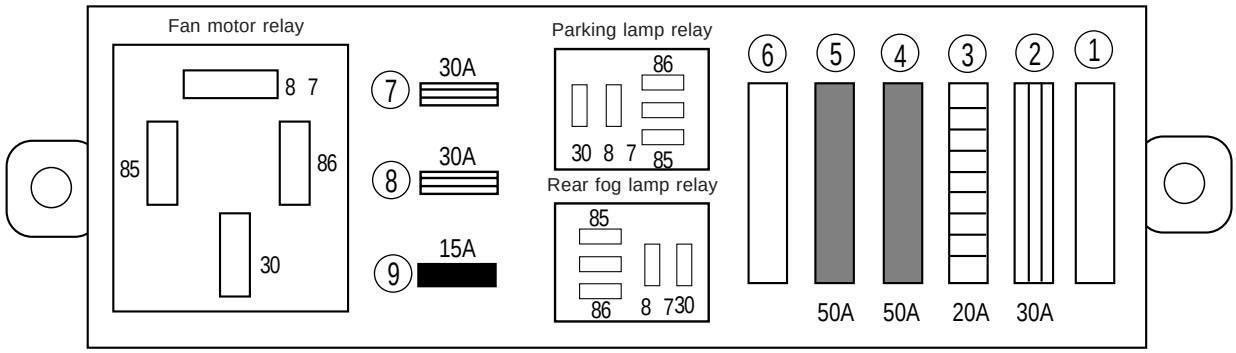


2-5. FUSE AND RELAY LAYOUT



Fuse No	Capa-city	Description	Fuse No	Capa-city	Description
F1	15A	Ignition switch, Meter, Tachograph	F18	20A	Air con, Blower motor, Fre & Rec SW
F2	10A	Large Room lamp, Door step lamp, Keyhole unit, Diagnosis	F19	10A	Cab tilt, Cab lock SW
F3	15A	DC-DC converter	F20	10A	Preheater U, Key hole lamp, Seat belt
F4	10A	Clock(B+),Cassette(B+),Noise Fitter	F21	10A	Cassette, clock, Hands free kit unit
F5	10A	Engine stop motor, Key box	F22	10A	Bed heater, Cigar, Seat heater
F6	15A	ABS C1-8(ABS/ASR:10A, ABS:15A)	F23		T/M oil cooler(Auto T/M), Customer service
F7	10A	ABS C1-9	F24		Customer service
F8	15A	Blinker unit	F25	10A	Auto grease unit
F9	15A	Door lock,Horn,Keyless,Keyhole lamp,Auto T/M(E-module)	F26	5A	ABS C1-7, DBR Relay
F10	10A	Fog lamp relay	F27	5A	Trailer ABS(IGN+)
F11	20A	Dual one touch unit	F28	15A	Wiper system, Combi SW
F12	10A	Power window switch, Mirror heater unit/switch	F29	20A	DE12TIS Power R #30
F13	10A	PTO, Diff lock(L/R), Split, Dump control, Lift axle, ELM	F30	5A	ECM memory clear C, Prest R, ECM Power
F14	15A	Differential lock(F/R), ZF-T14 Knob, Lock brake SW, Buzzer unit			R #85 Air heater R(DE12TIS)
F15	10A	Stop lamp, Auxiliary fuse box	F31	15A	Head lamp high R #30/85
F16	10A	Reverse R/S, Water pump switch	F32	15A	Head lamp low R #30/85
F17	15A	Working lamp switch/relay	F33	10A	Tail lamp R #30/85

2-6. AUXILIARY FUSE AND RELAY BOX



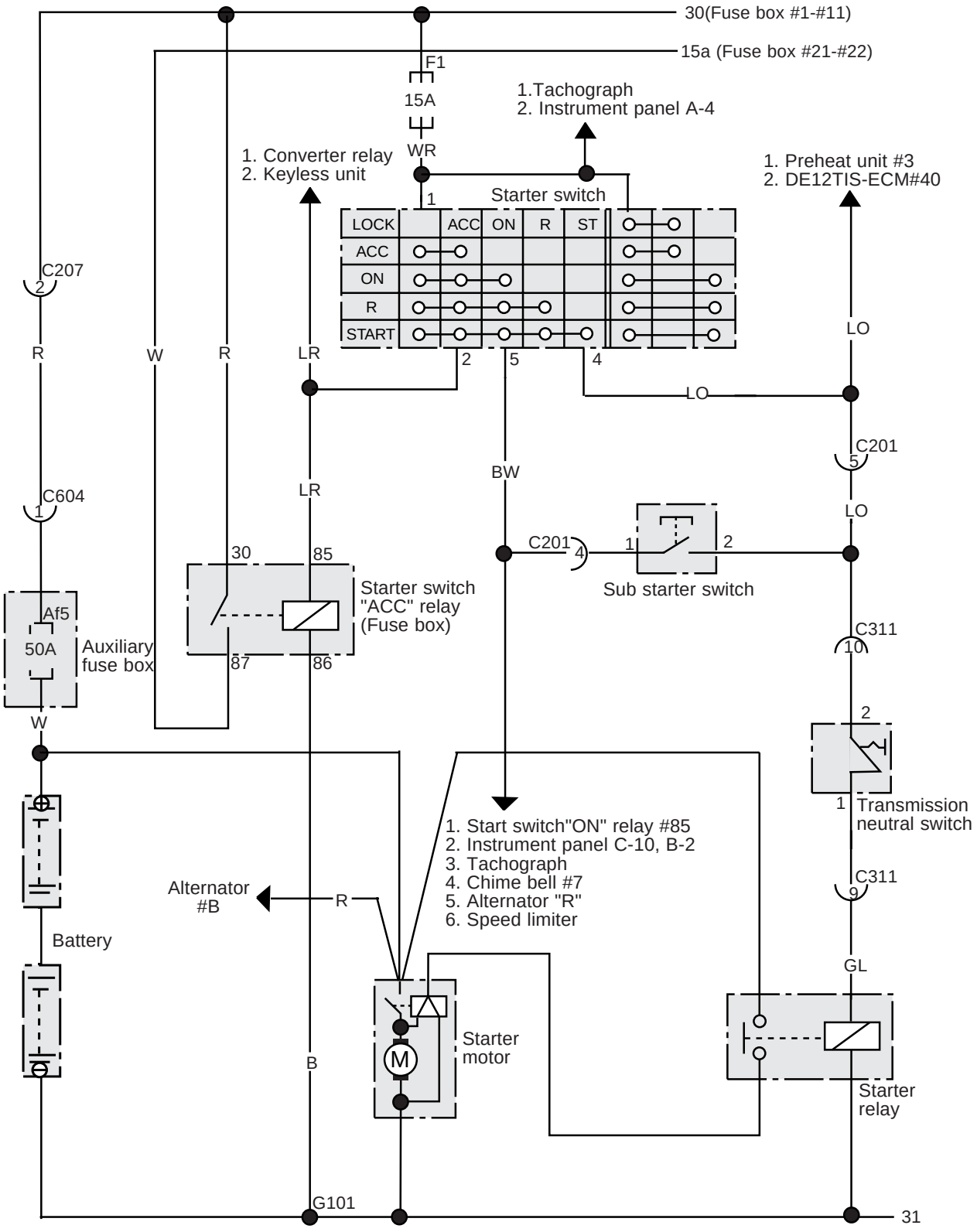
Fuse No	Capa-city	Description	Fuse No	Capa-city	Description
1			6		
2	30(A)	The room fuse #31 - #33 B+(light)	7	30(A)	Cab tilt box B+
3	20(A)	Trailer ABS B+	8	30(A)	Mixer switch box B+
4	50(A)	Starter switch "IG" relay #30	9	15(A)	Condenser fan motor relay #30
5	50(A)	The room fuse #1 - #11,23,24 B+ Accessary Relay #30			

2-7. THE OTHERS RELAY

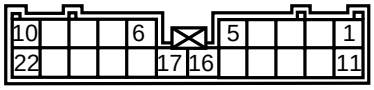
1. IG relay
2. Keyless relay
3. Engine stop relay
4. Lift axle relay
5. Dumping relay

SECTION 2
CIRCUIT DIAGRAMS BY SYSTEMS

1. STARTER MOTOR AND STARTER SWITCH " ACC" CIRCUIT DIAGRAM



1) CONNECTOR AND PIN NUMBER

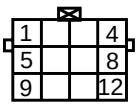


C201, 22pin

Dash - Frame harness
(Based on dash harness)

C207, 2pin

Dash - Frame harness
(Based on dash harness)

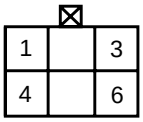


C311, 12pin

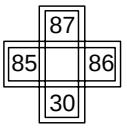
Frame - Engine harness
(Based on frame harness)

C604, 1pin

Frame - Aux fuse box
(Based on frame harness)

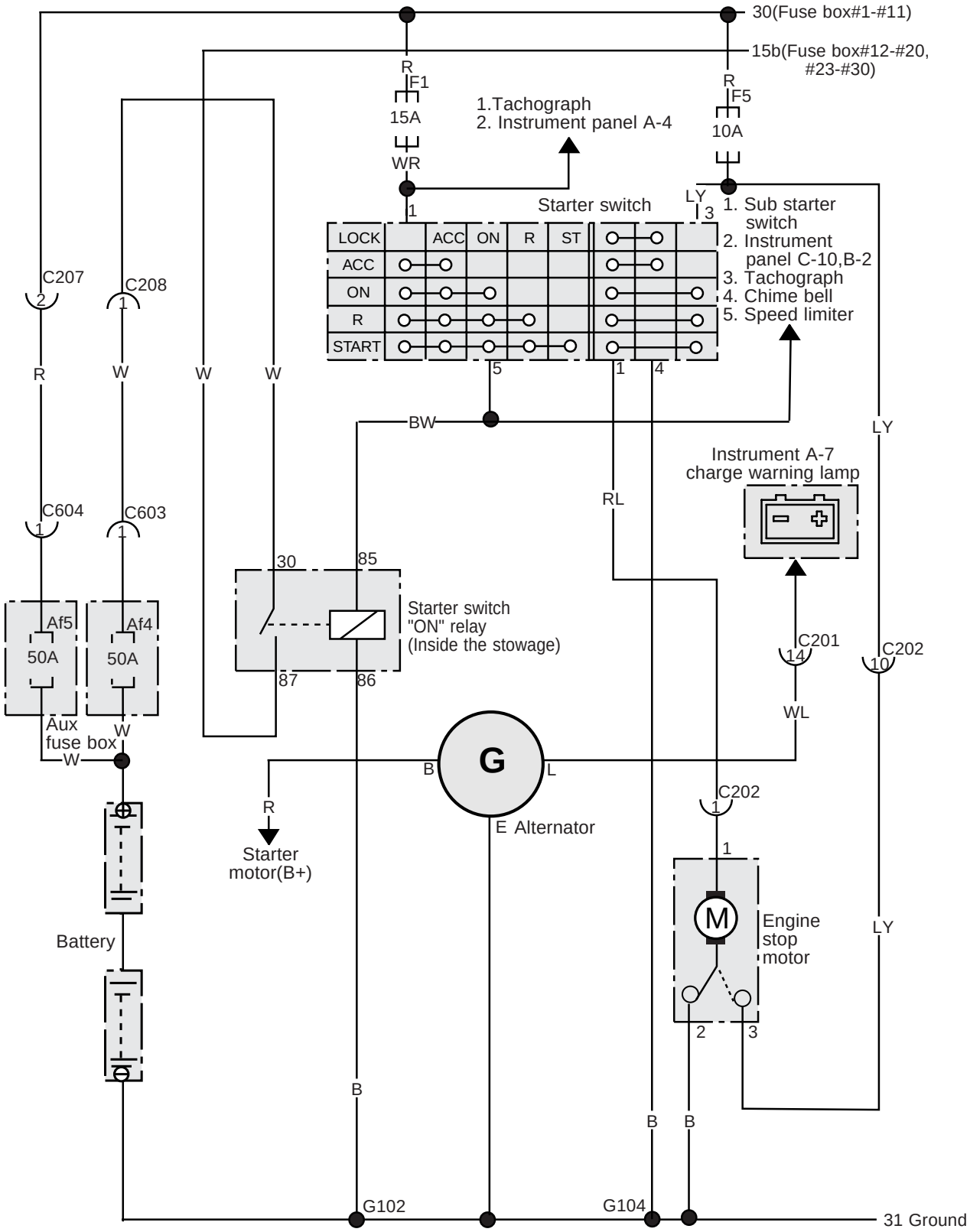


Starter switch
(Based on dash harness)

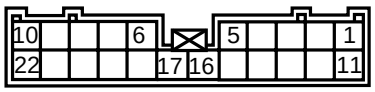


"ACC" Relay
(Fuse relay box)

2. CHARGING AND STARTER SWITCH " ON" / ENGINE STOP MOTOR CIRCUIT DIAGRAM

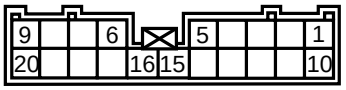


1) CONNECTOR AND PIN NUMBER



C201, 22pin

Dash - Frame harness
(Based on dash harness)



C202, 20pin

Dash - Frame harness
(Based on dash harness)

C207, 2pin

Dash - Frame harness
(Based on dash harness)

C208, 1pin

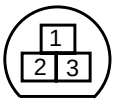
Dash - Frame harness
(Based on dash harness)

C603, 1pin

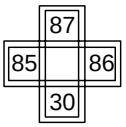
Frame - Aux fuse box
(Based on frame harness)

C604, 1pin

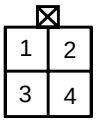
Frame - Aux fuse box
(Based on frame harness)



Engine stop motor
(Based on frame harness)

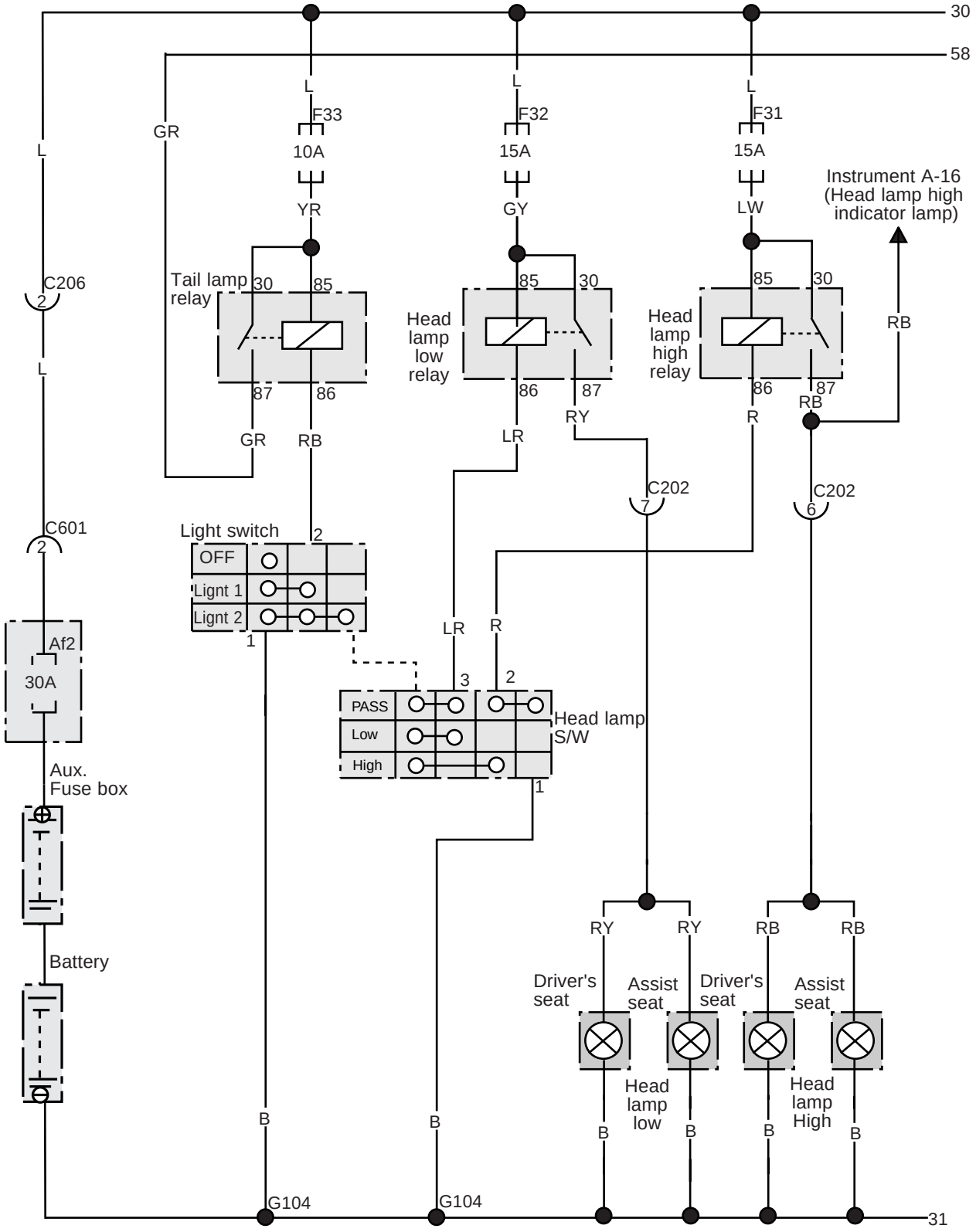


Starter S/W
"ON" relay
(Inside the stowage)

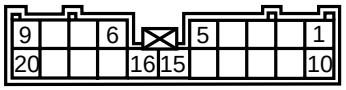


Starter switch
(Based on dash harness)

3. LIGHT CIRCUIT DIAGRAM

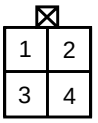


1) CONNECTOR AND PIN NUMBER



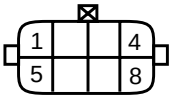
C202, 20pin

Dash - Frame harness
(Based on dash harness)



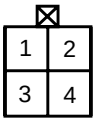
C206, 4pin

Dash - Frame harness
(Based on frame harness)

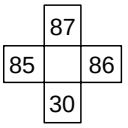


C601, 8pin

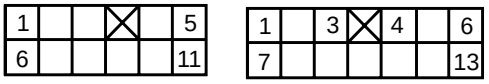
Frame - Aux fuse box harness
(Based on frame harness)



Head-Lamp high/low
(Based on frame harness)

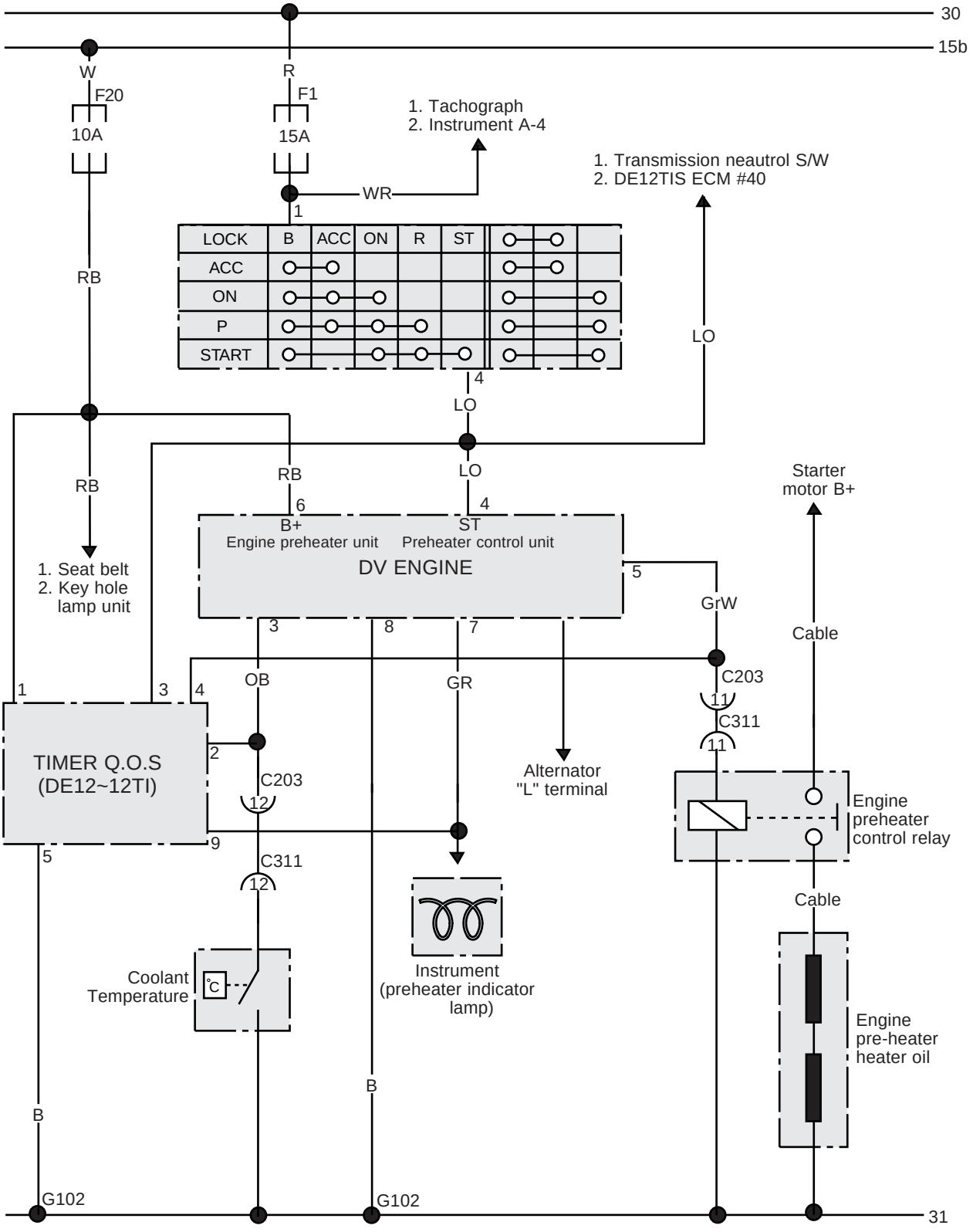


Tail lamp relay
Head lamp high
/low relay
(Fuse relay box)

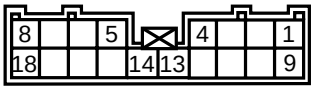


Light/head lamp combi S/W
(Based on dash harness)

4. HEATING SYSTEM CIRCUIT DIAGRAM

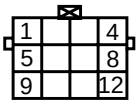


1) CONNECTOR AND PIN NUMBER



C203, 18pin

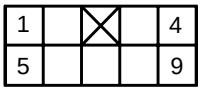
Dash - Frame harness
(Based on dash harness)



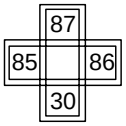
C311, 12pin

Frame - Engine harness
(Based on engine harness)

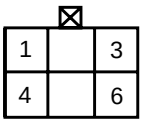
Air heater relay
(Based on engine harness)



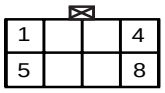
Timer Q.O.S unit
(Based on dash harness)



IG switch "ON" relay
(Based on dash harness)

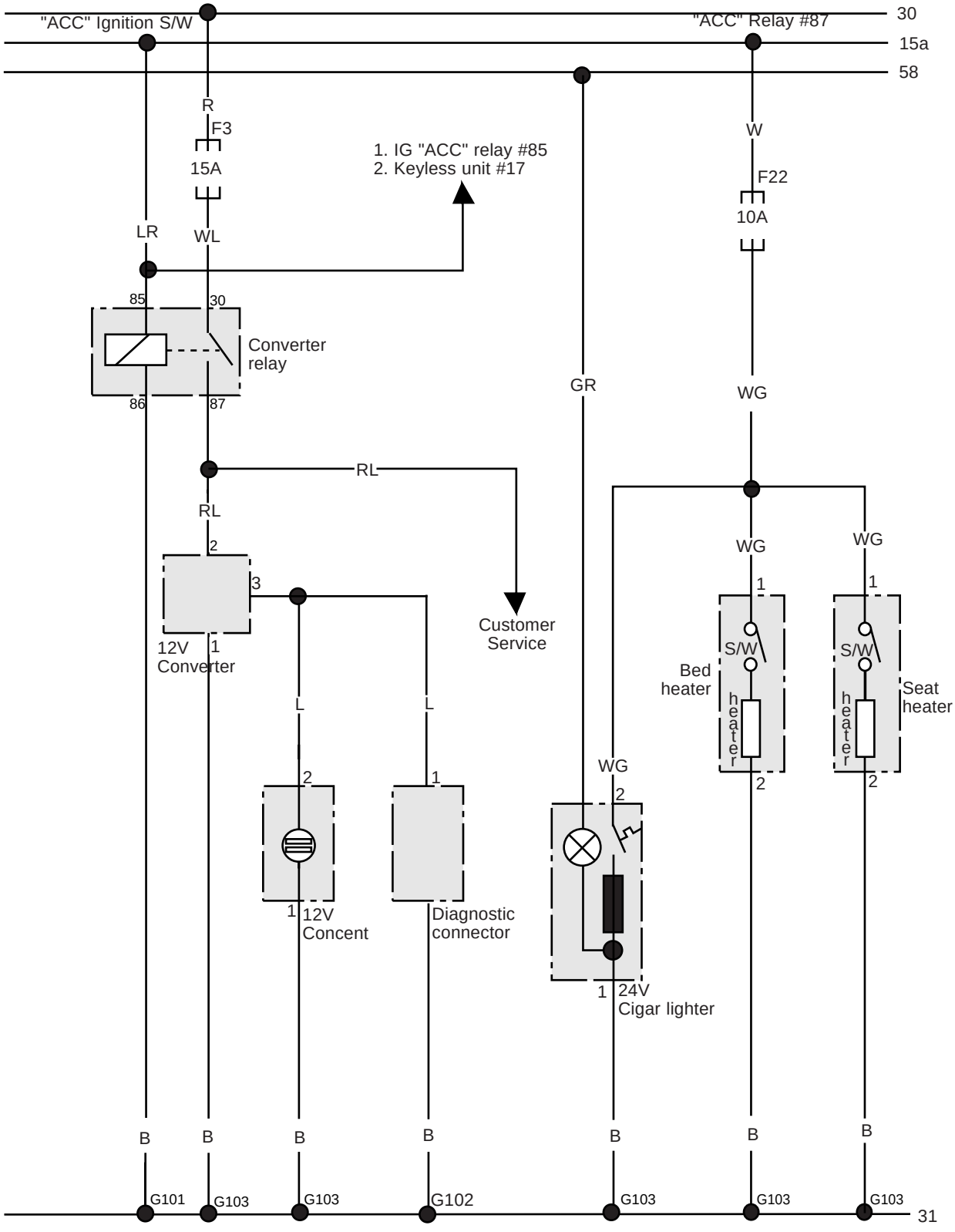


Ignition S/W
(Based on dash harness)

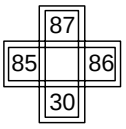


Engine preheater unit
(Based on dash harness)

5. 12V CONVERTER, CIGAR LIGHTER, BED HEATER, SEAT HEATER CIRCUIT DIAGRAM

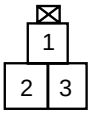


1) CONNECTOR AND PIN NUMBER

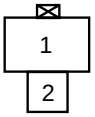


Converter relay
(fuse box)

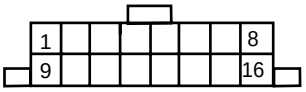
Bed heater
(Based on dash harness)



12V converter
(Based on dash harness)

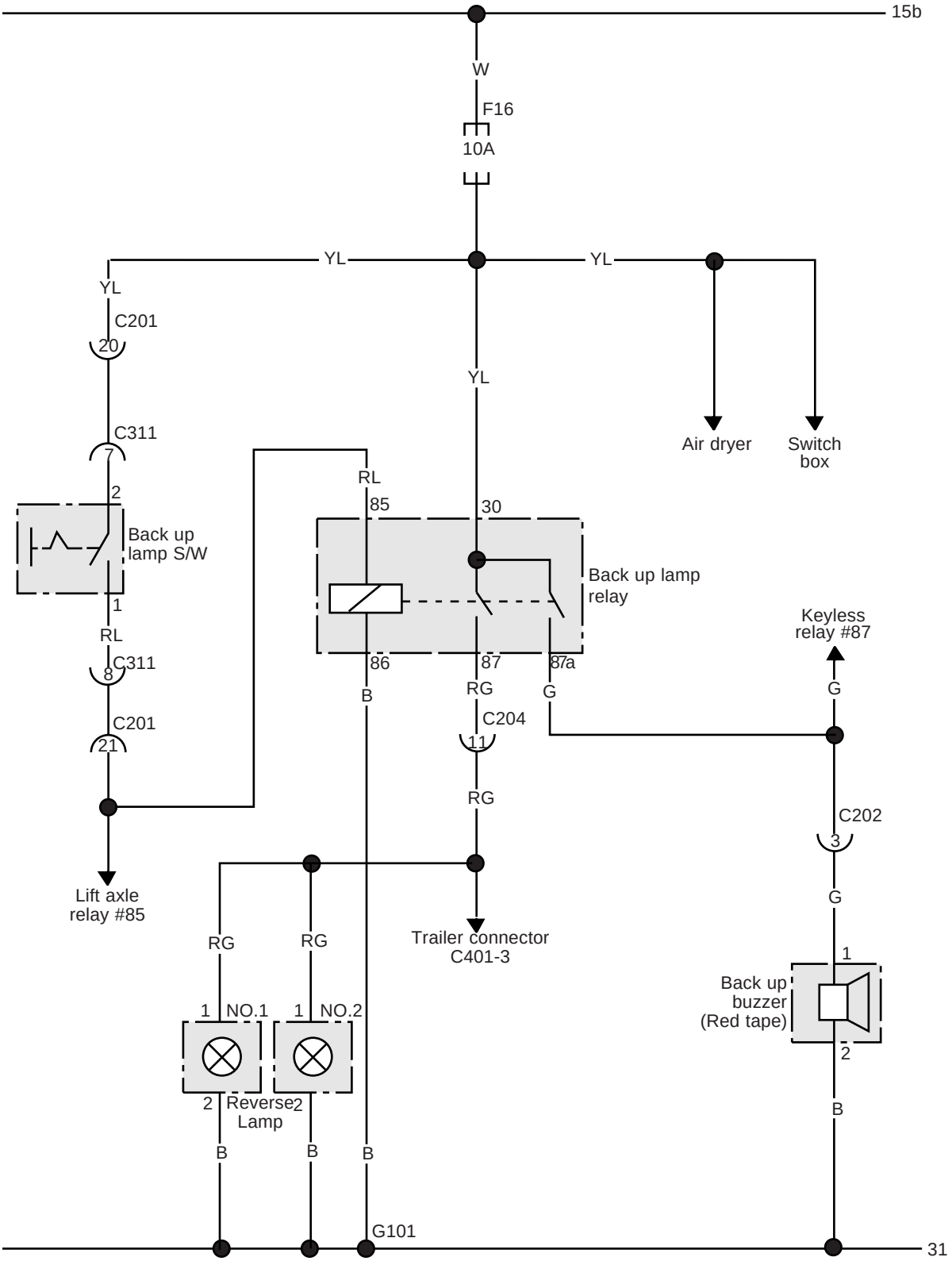


12V Concent, cigar lighter, seat heater
(Based on dash harness)

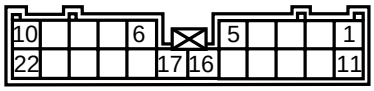


ABS Dignostic connector
(Based on dash harness)

6. BACK UP LAMP CIRCUIT DIAGRAM

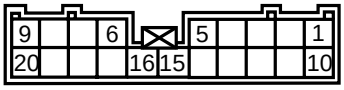


1) CONNECTOR AND PIN NUMBER



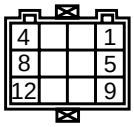
C201, 22pin

Dash - Frame harness
(Based on dash harness)



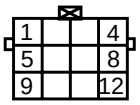
C202, 20pin

Dash - Frame harness
(Based on dash harness)



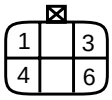
C204, 12pin

Dash - Frame harness
(Based on dash harness)



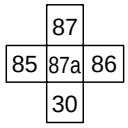
C311, 12pin

Frame - Engine harness
(Based on frame harness)

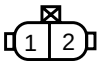


C401, 6pin

Frame - Trailer harness
(Based on frame harness)

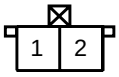


Back up lamp relay
(Fuse relay box)



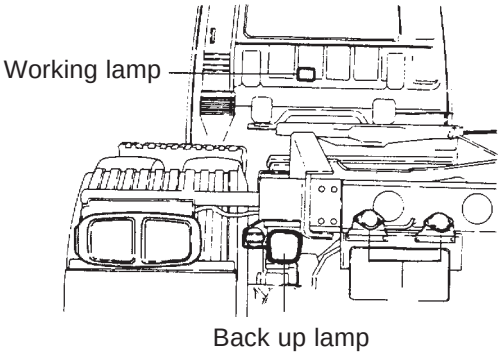
Back up buzzer
(Based on frame harness)

Back up S/W
(Based on engine harness)

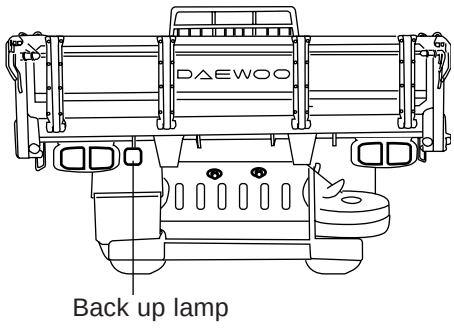


Back up lamp
(Based on frame harness)

2) LOCATION OF PARTS

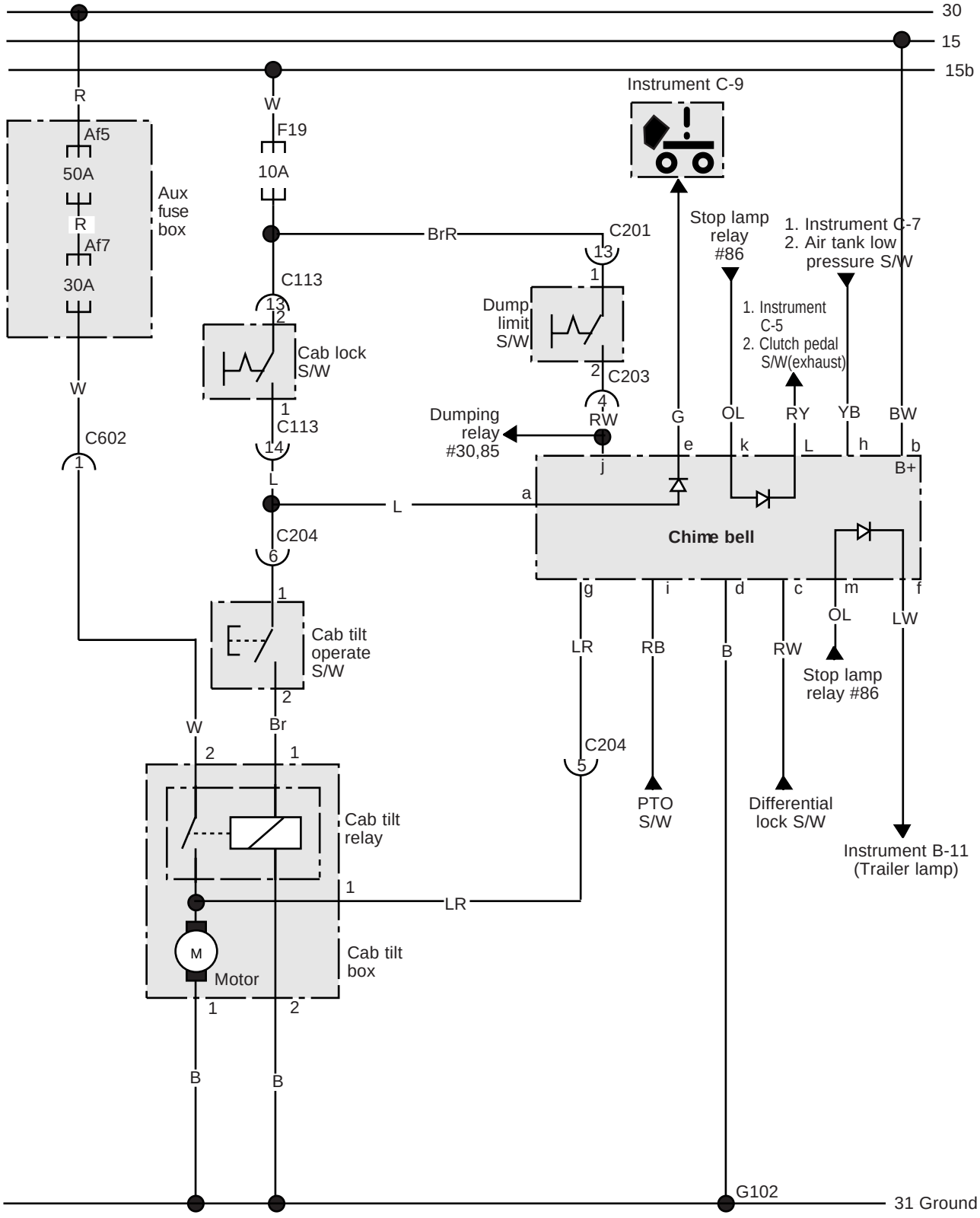


Tractor back up lamp

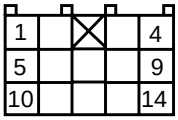


Cargo back up lamp

7. CAB TILT(MECHANIC TYPE), CHIME BELL CIRCUIT DIAGRAM

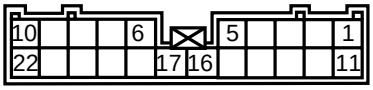


1) CONNECTOR AND PIN NUMBER



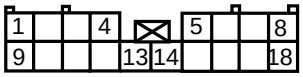
C113, 14pin

Dash - Roof harness
(Based on dash harness)



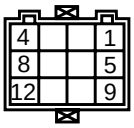
C201, 22pin

Dash - Frame harness
(Based on dash harness)



C203, 18pin

Dash - Frame harness
(Based on frame harness)

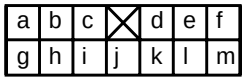


C204, 12pin

Dash - Frame harness
(Based on dash harness)

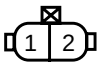
C602, 2pin

Aux fuse box - Frame harness
(Based on frame harness)



Chime bell connector
(Based on dash harness)

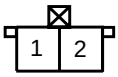
Cab lock S/W
(Based on roof harness)



Cab tilt operate S/W
Dump limit S/W
(Based on frame harness)

Cab tilt motor

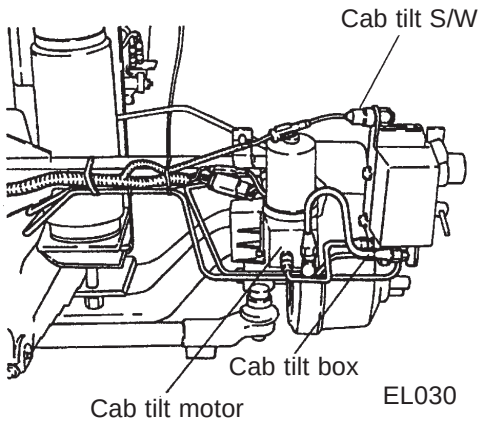
Chime bell



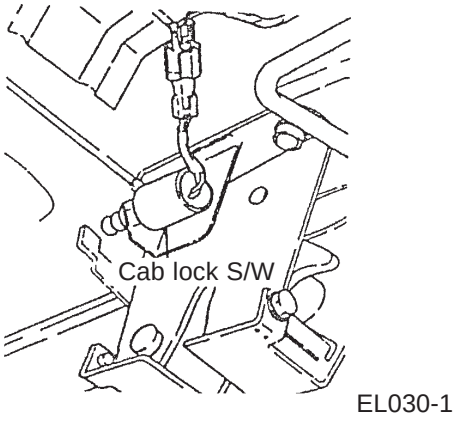
Cab tilt PBS SW

Cab tilt box
(Based on frame harness)

2) LOCATION OF PARTS

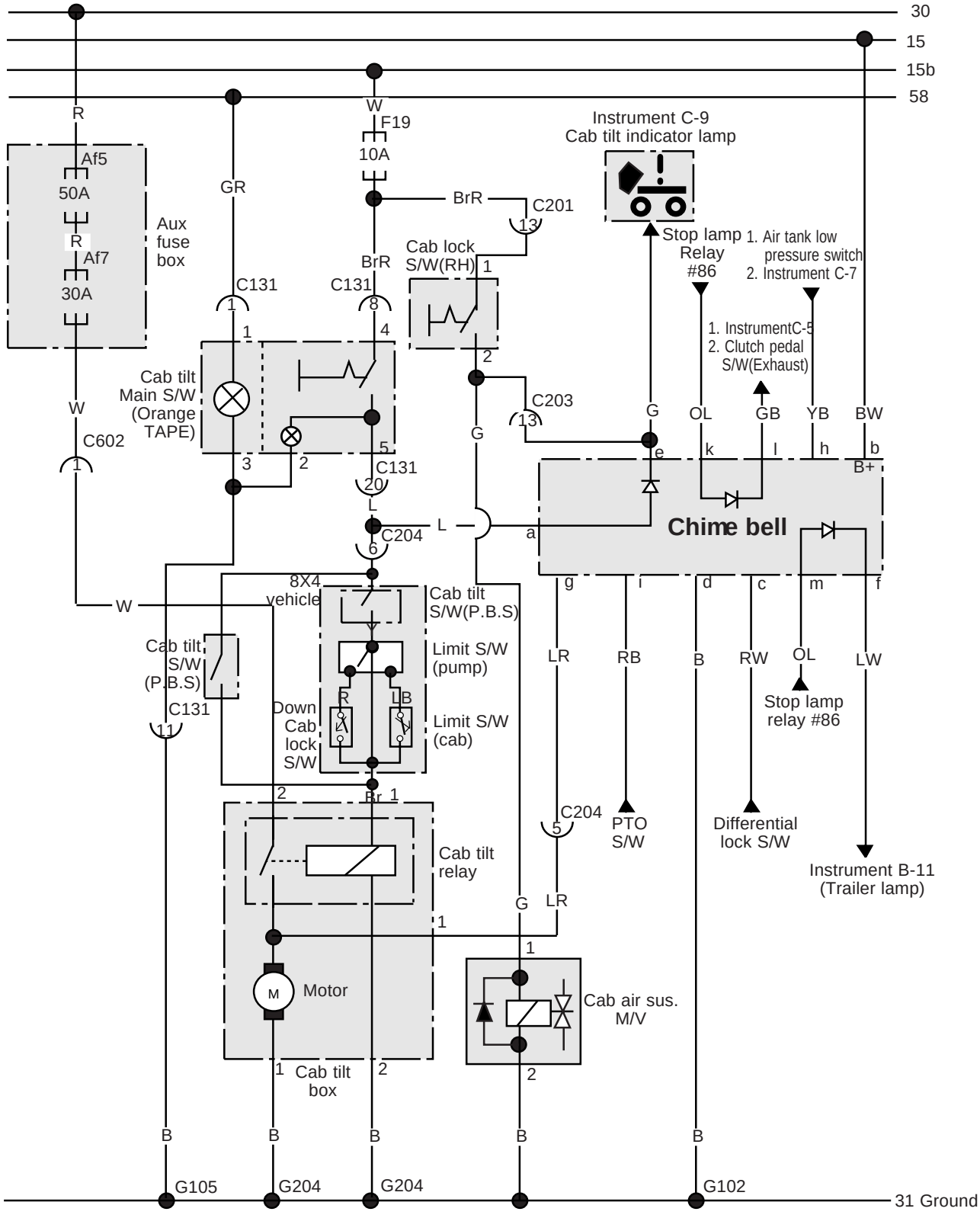


Cab tilt box

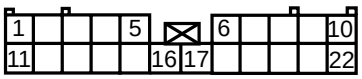


Cab lock S/W-Near the rear cab

8. CAB TILT (HYDRAULIC TYPE), CHIME BELL CIRCUIT DIAGRAM

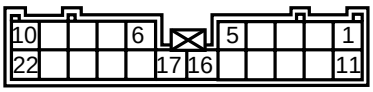


1) CONNECTOR AND PIN NUMBER



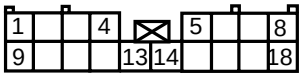
C131, 22pin

Dash - Roof harness
(Based on dash harness)



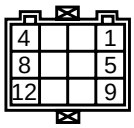
C201, 22pin

Dash - Frame harness
(Based on dash harness)



C203, 18pin

Dash - Frame harness
(Based on frame harness)

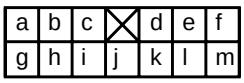


C204, 12pin

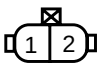
Dash - Frame harness
(Based on dash harness)

C602, 2pin

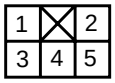
Aux fuse box - Frame harness
(Based on frame harness)



Chime bell connector
(Based on dash harness)



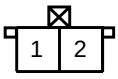
Cab air sus. M/V
(Based on frame harness)



Cab tilt main S/W
(Based on dash harness)

Cab tilt motor

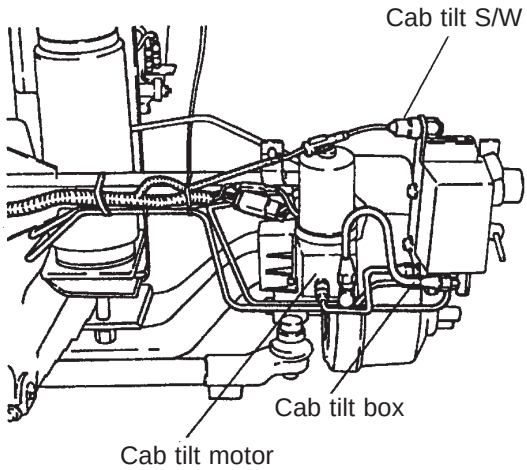
Chime bell



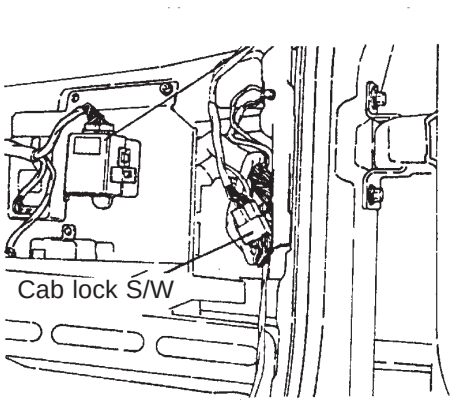
Cab tilt PBS SW

Cab tilt box
(Based on frame harness)

2) LOCATION OF PARTS



Cab tilt box

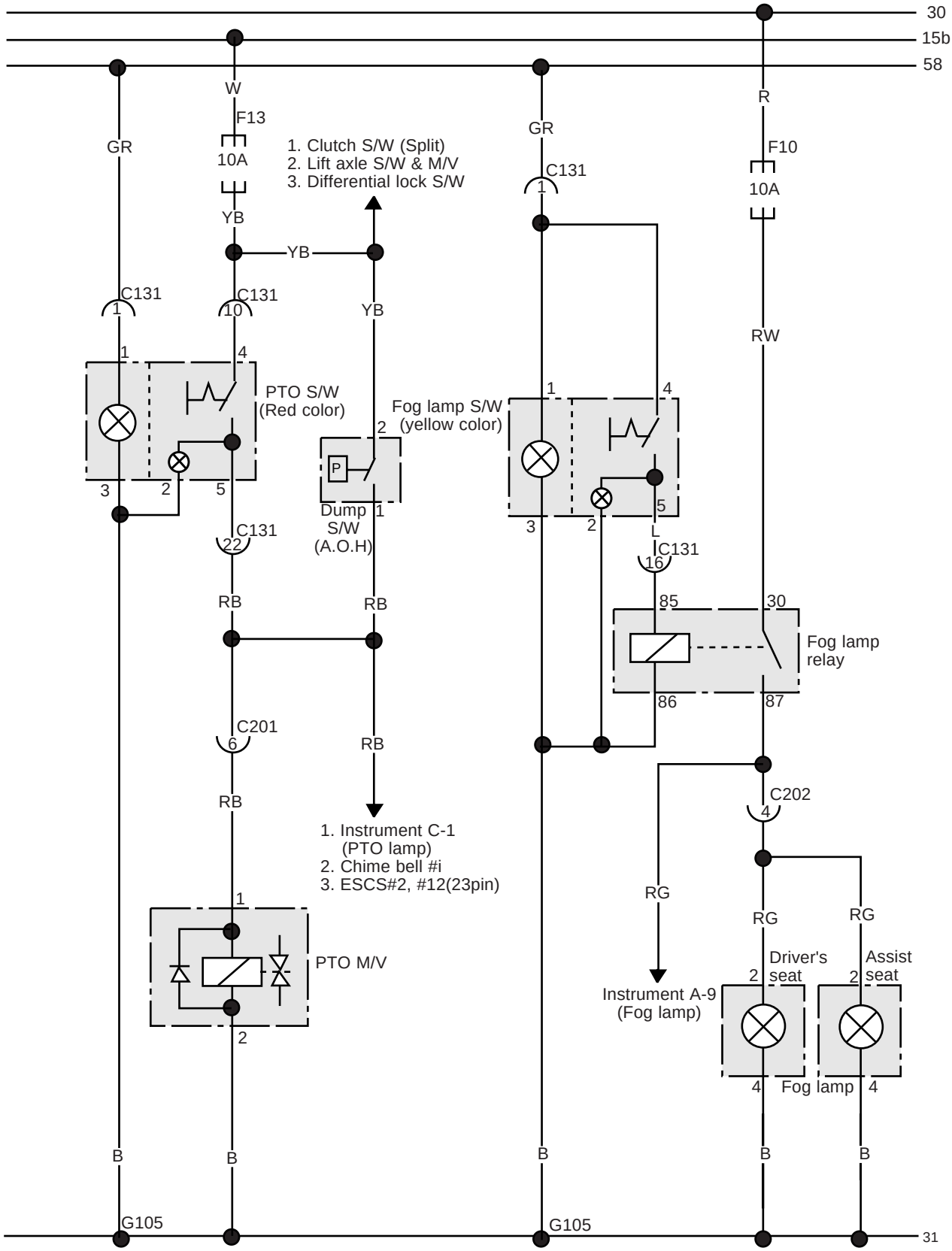


EL030

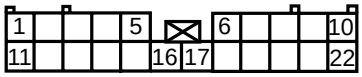
Cab lock s/w - near the rear cab

Ground

9. P.T.O, FOG LAMP CIRCUIT DIAGRAM

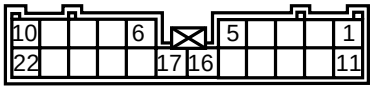


1) CONNECTOR AND PIN NUMBER



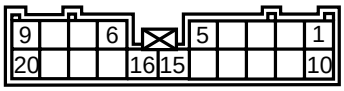
C131, 22pin

Dash - Switch harness
(Based on dash harness)



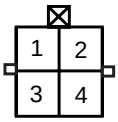
C201, 22pin

Dash - Frame harness
(Based on dash harness)

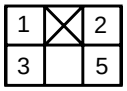


C202, 20pin

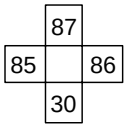
Dash - Frame harness
(Based on dash harness)



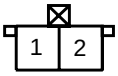
Head lamp
(Based on frame harness)



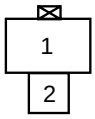
PTO/Fog lamp S/W
(Based on dash harness)



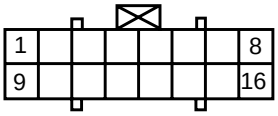
Fog lamp relay
(Fuse box)



PTO M/V
(Based on frame harness)

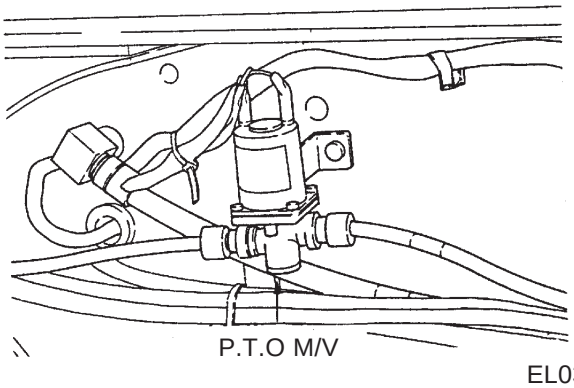


Dump control lever
(Based on dash harness)



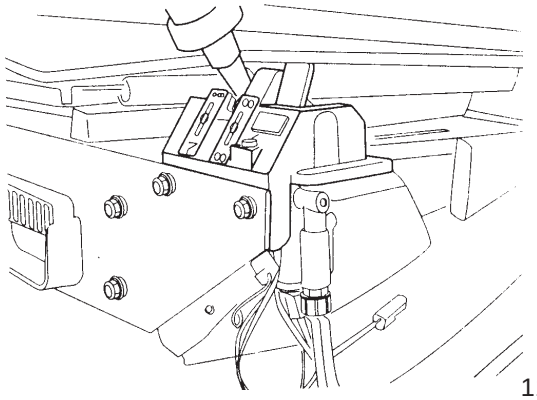
Instrument A
(Based on dash harness)

2) LOCATION OF PARTS



EL031

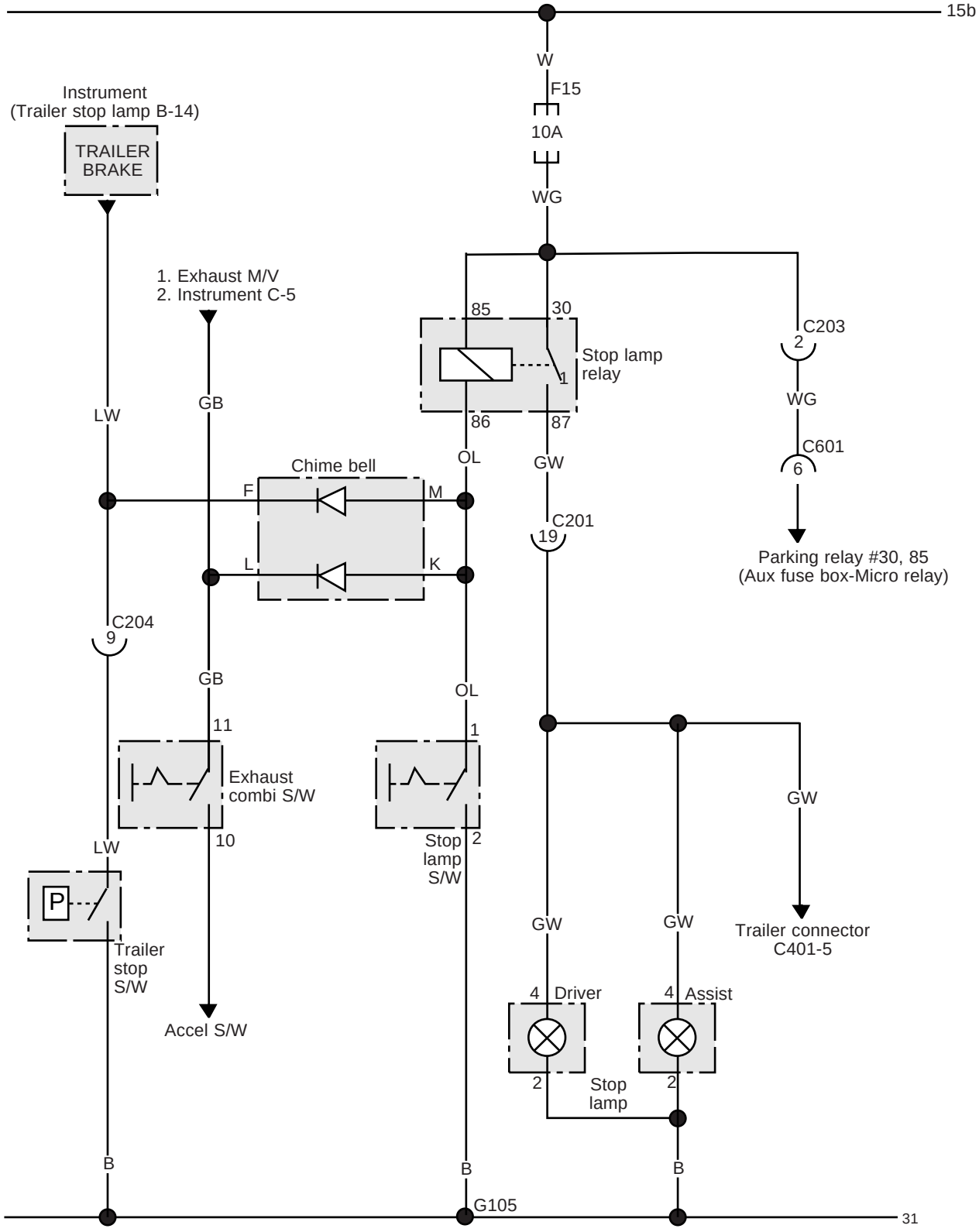
P.T.O M/V - Inside the Frame



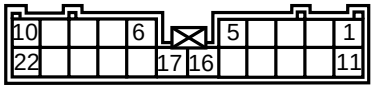
11

Dump control lever-Near the driver's seat

10. STOP LAMP, TRAILER STOP LAMP CIRCUIT DIAGRAM

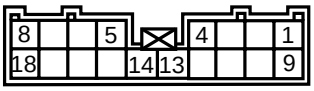


1) CONNECTOR AND PIN NUMBER



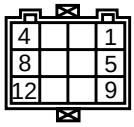
C201, 22pin

Dash - Frame harness
(Based on dash harness)



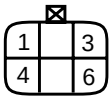
C203, 18pin

Dash - Frame harness
(Based on dash harness)



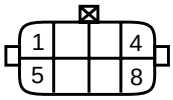
C204, 12pin

Dash - Frame harness
(Based on dash harness)



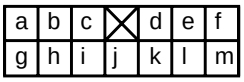
C401, 6pin

Frame - Trailer harness
(Based on frame harness)

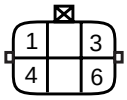


C601, 8pin

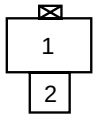
Frame - Aux fuse box harness
(Based on frame harness)



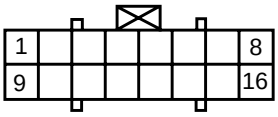
Chime bell unit
(Based on dash harness)



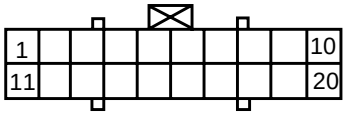
RR combi lamp(stop lamp)
(Based on frame harness)



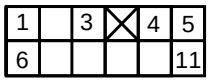
Stop lamp S/W
(Based on dash harness)



Instrument B
(Based on dash harness)

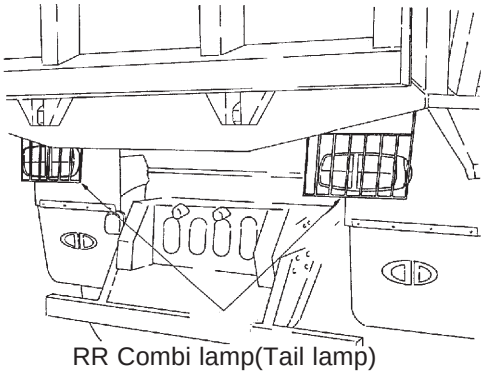


Instrument C
(Based on dash harness)

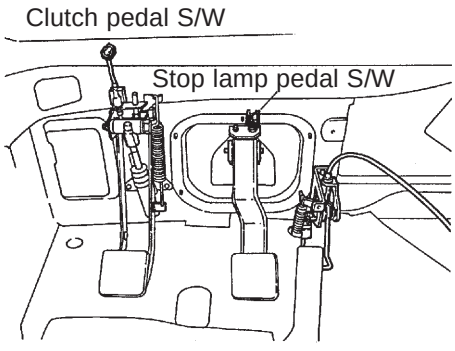


Exhaust combi S/W
(Based on dash harness)

2) LOCATION OF PARTS



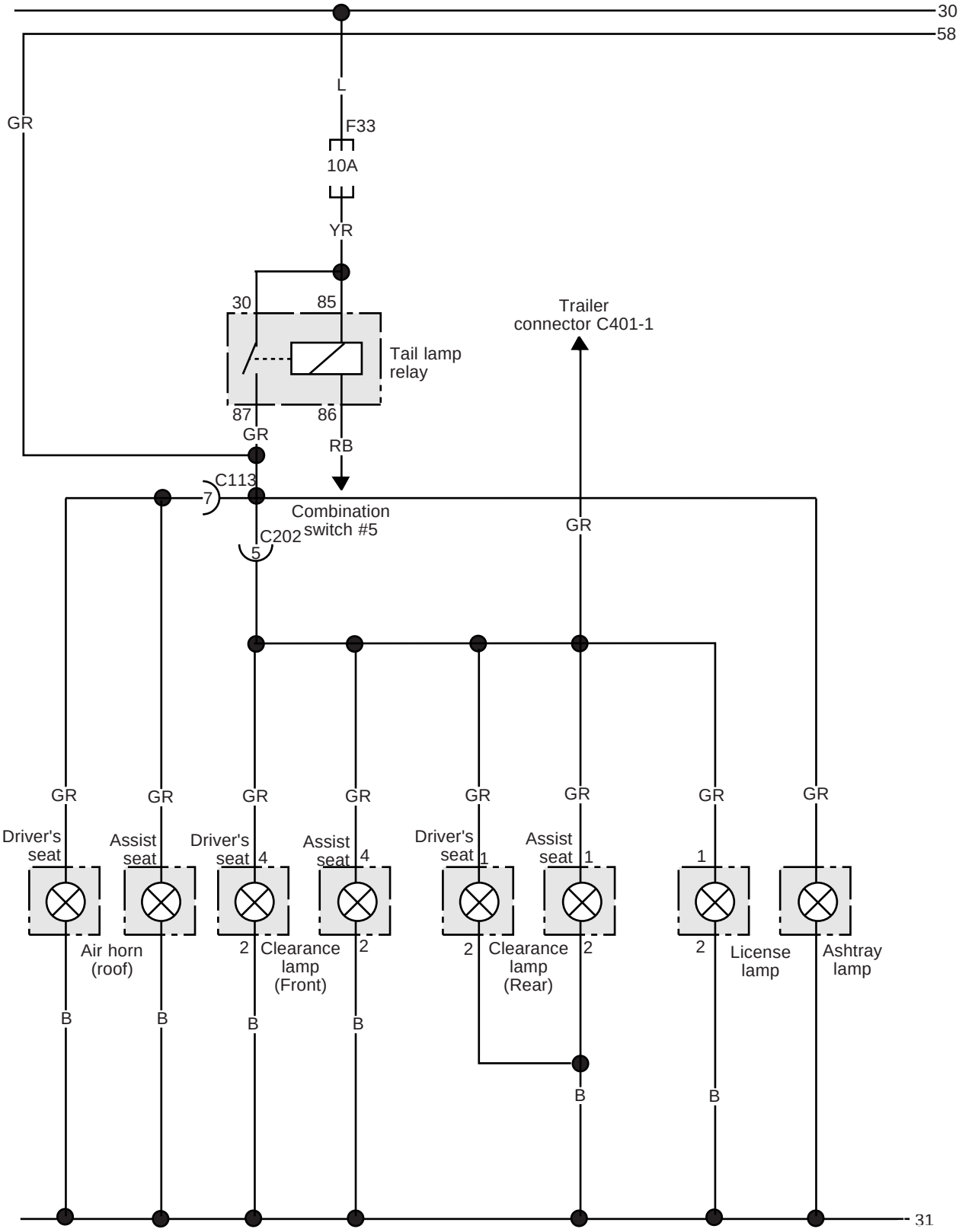
RR Combi lamp



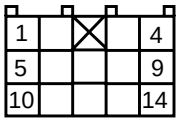
EL032

Stop lamp S/W - Upper brake pedal

11. CLEARANCE LAMP, LICENSE LAMP, ASHTRAY LAMP CIRCUIT DIAGRAM

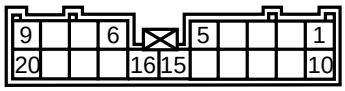


1) CONNECTOR AND PIN NUMBER



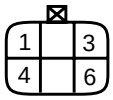
C113, 14pin

Dash - Roof harness
(Based on dash harness)



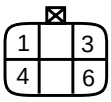
C202, 20pin

Dash - Frame harness
(Based on dash harness)

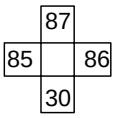


C401, 6pin

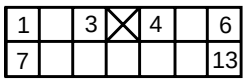
Frame - Trailer harness
(Based on frame harness)



FRT/RR combi lamp
(Based on frame harness)

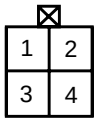


Tail lamp relay
(Fuse box)



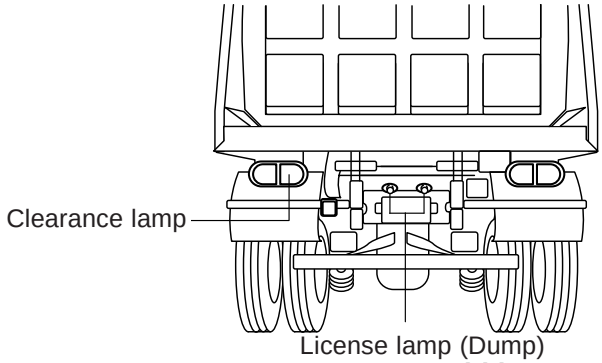
Combination S/W
(Based on dash harness)

License lamp
(Based on frame harness)

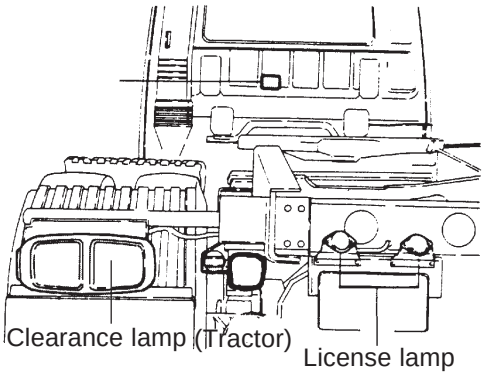


Air horn
(Based on roof harness)

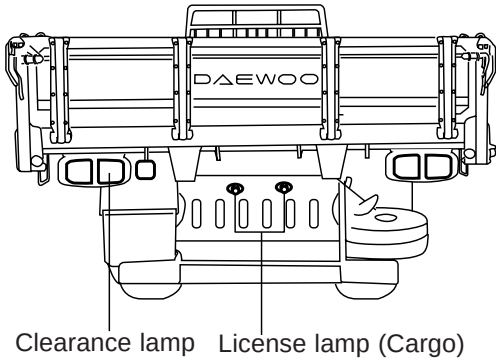
2) LOCATION OF PARTS



Dump rear combi lamp



Tractor rear combi lamp



EL033

Cargo rear combi lamp

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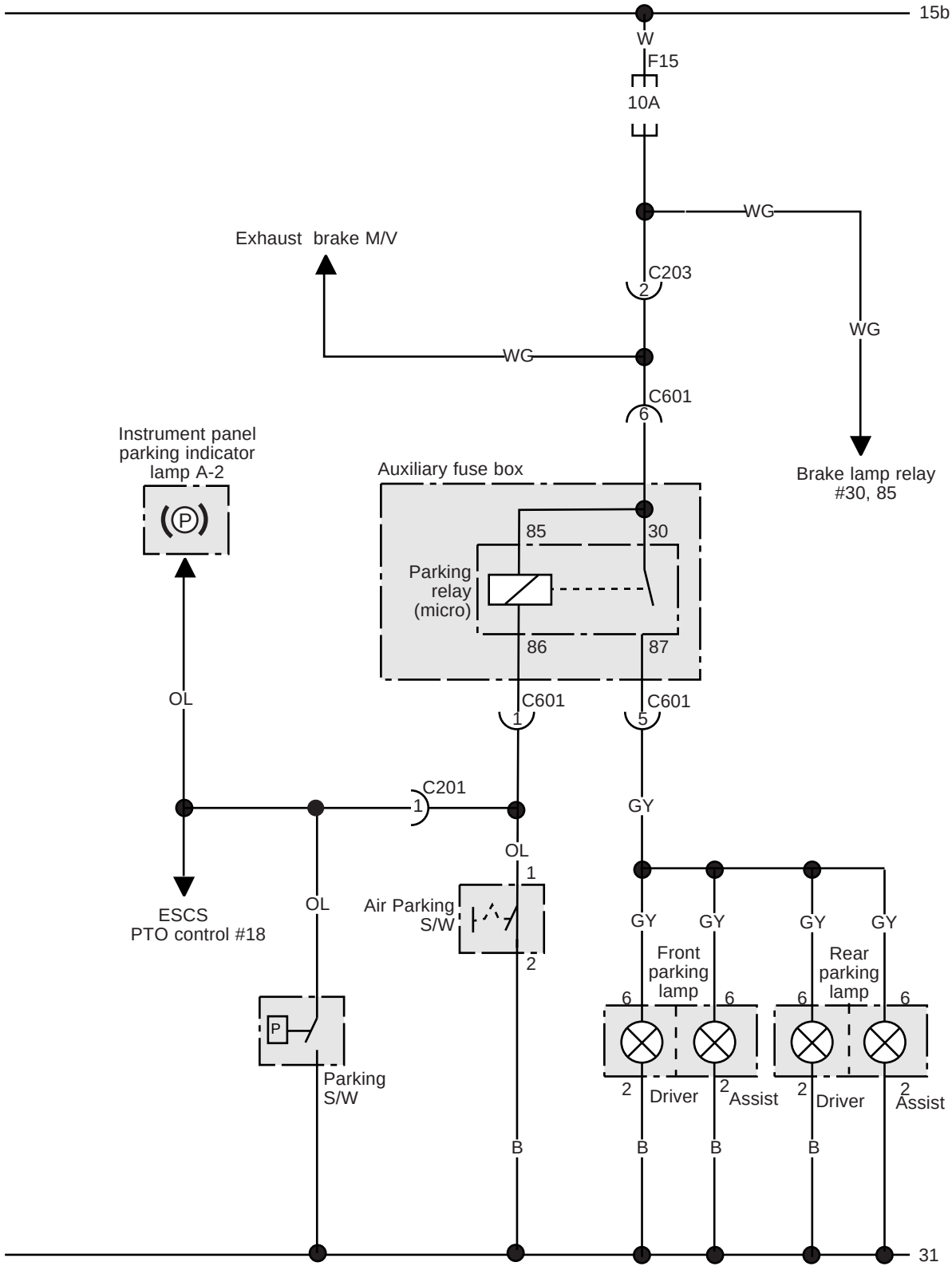
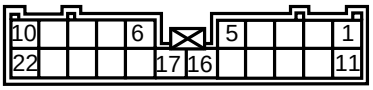
12. PARKING LAMP CIRCUIT DIAGRAM

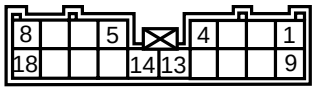


1) CONNECTOR AND PIN NUMBER



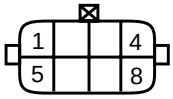
C201, 22pin

Dash - Frame harness
(Based on dash harness)



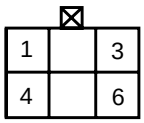
C203, 18pin

Dash - Frame harness
(Based on dash harness)

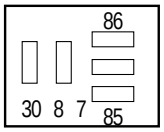


C601, 8pin

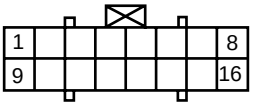
Frame - Aux fuse box harness
(Based on frame harness)



Combi lamp
(Based on frame harness)

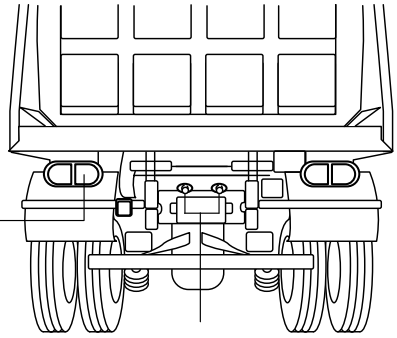


Parking lamp relay
(Aux. fuse box)

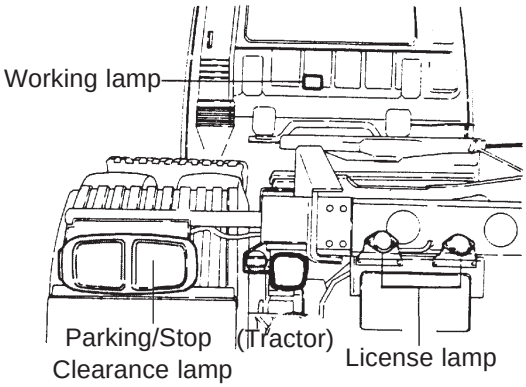


Instrument panel A
(Based on dash harness)

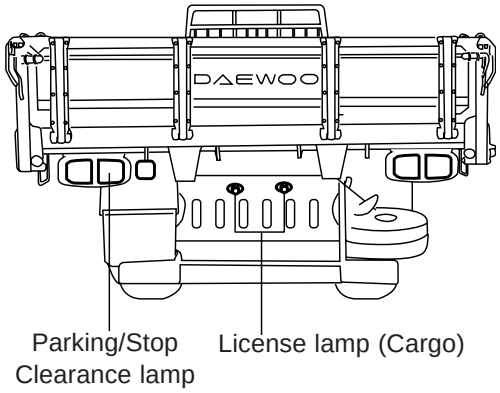
2) LOCATION OF PARTS



Dump rear combi lamp

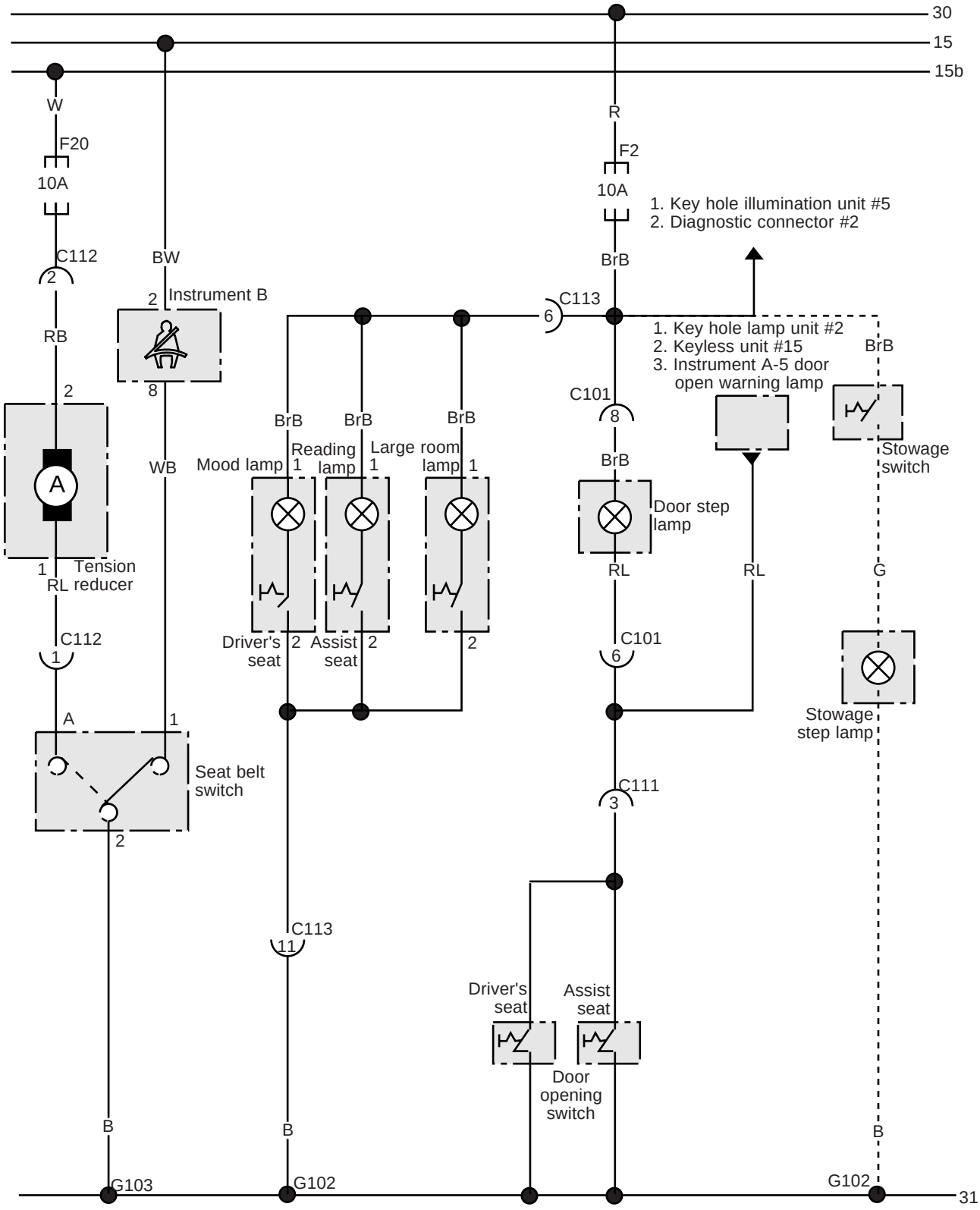


Tractor rear combi lamp

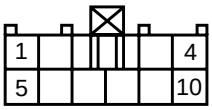


Cargo rear combi lamp

13. SEAT BELT TENSION REDUCER, STEP LAMP, LARGE ROOM LAMP, READING LAMP, MOOD LAMP, STOWAGE LAMP CIRCUIT DIAGRAM

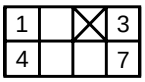


1) CONNECTOR AND PIN NUMBER



C101, 10pin

Dash - Door harness
(Based on dash harness)

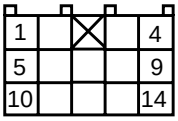


C111, 7pin

Dash - Roof harness
(Based on dash harness)

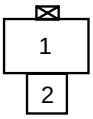
C112, 2pin

Dash - Roof harness
(Based on dash harness)

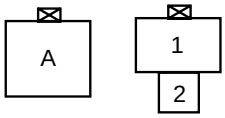


C113, 14pin

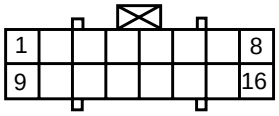
Dash - Roof harness
(Based on dash harness)



Tension reducer
(Based on roof harness)



Set belt S/W
(based on dash harness)

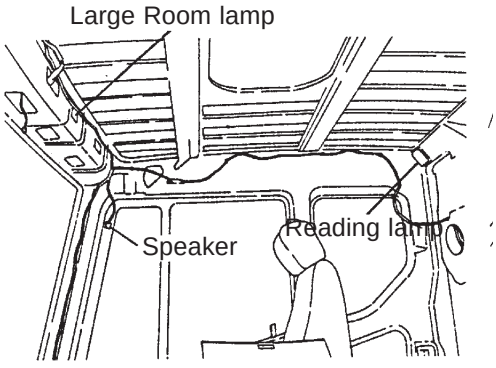


Instrument panel A
(Based on dash harness)

Large room lamp
(based on roof harness)

Mood/Reading lamp
(based on roof harness)

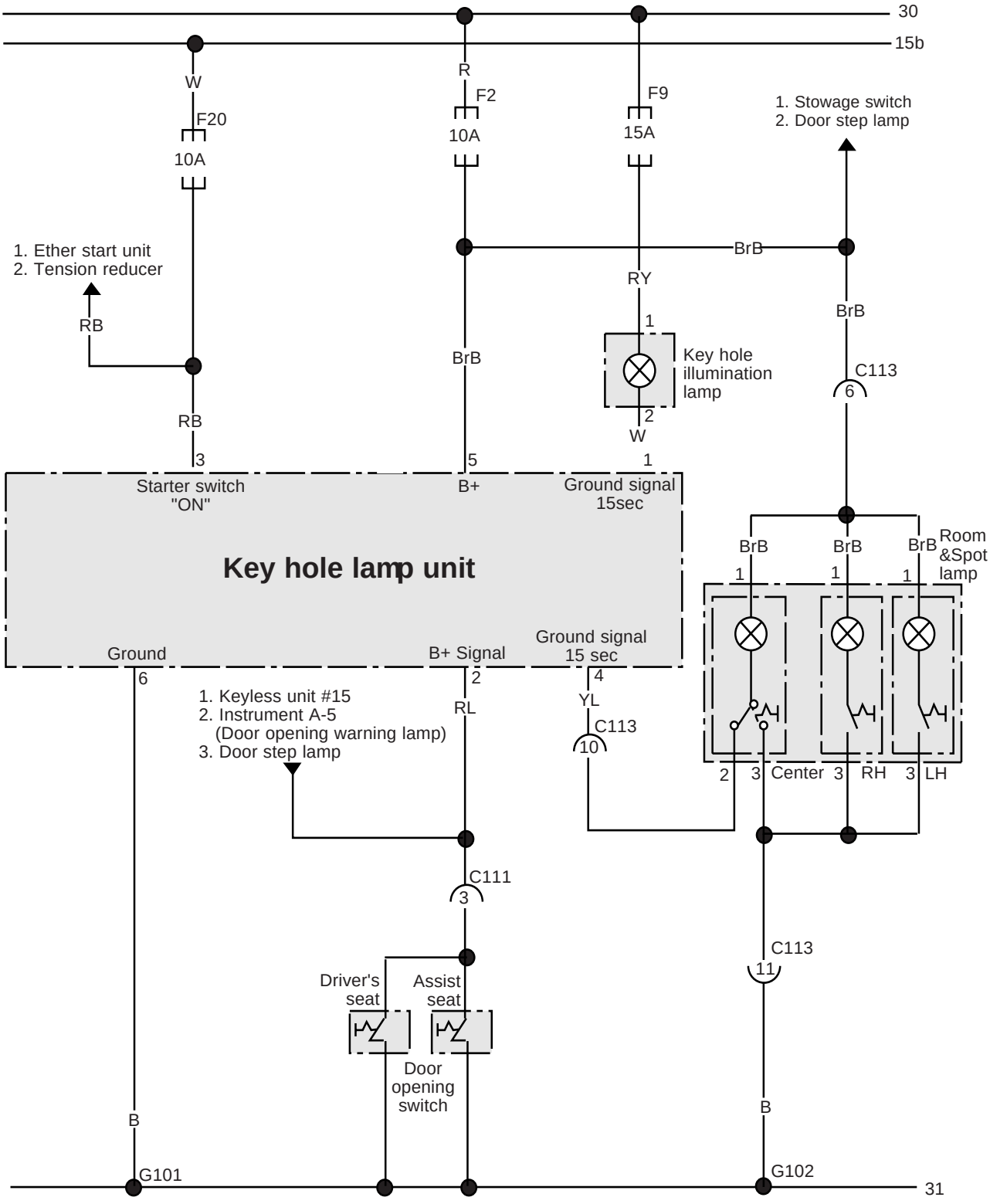
2) LOCATION OF PARTS



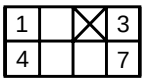
EL035

Large Room lamp / Reading lamp - Upper Cab

14. KEY HOLE ILLUMINATION LAMP, ROOM&SPOT LAMP CIRCUIT DIAGRAM

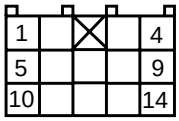


1) CONNECTOR AND PIN NUMBER



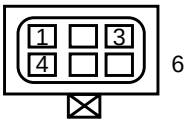
C111, 7pin

Dash - Roof harness
(Based on dash harness)

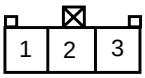


C113, 14pin

Dash - Roof harness
(Based on dash harness)



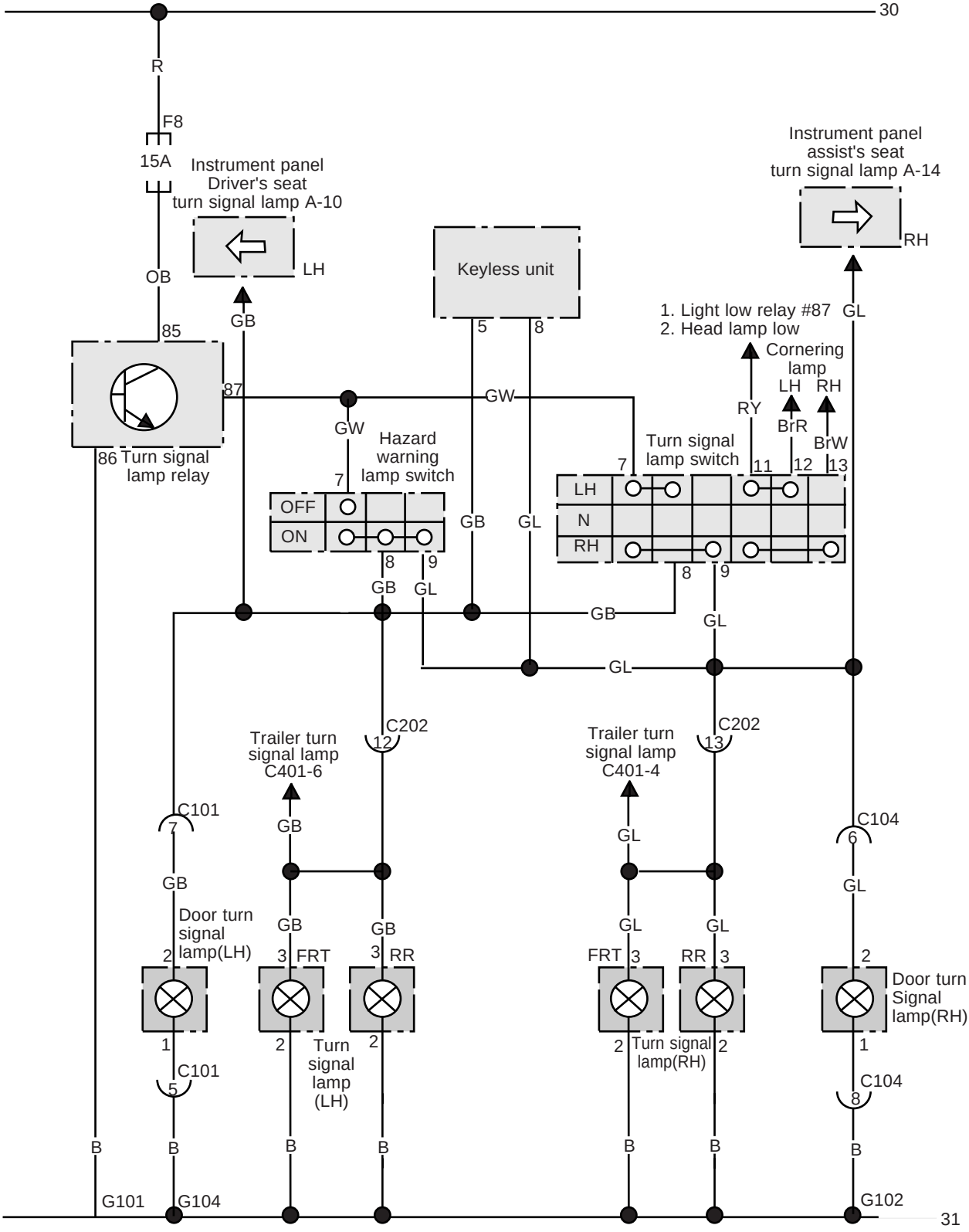
Key hole illumination lamp unit
(Fuse box)



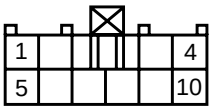
Room & spot lamp connector
(based on roof harness)

Key hole lamp
(Based on dash harness)

15. TURN SIGNAL LAMP, HAZARD WARNING LAMP CIRCUIT DIAGRAM

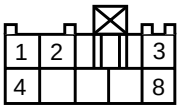


1) CONNECTOR AND PIN NUMBER



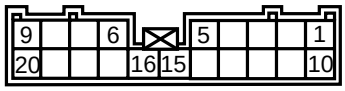
C101, 10pin

Dash - Driver's seat Door harness
(Based on dash harness)



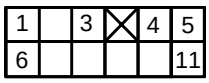
C104, 8pin

Dash - Assist seat Door harness
(Based on dash harness)

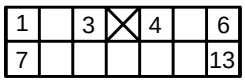


C202, 20pin

Dash - Frame harness
(Based on dash harness)

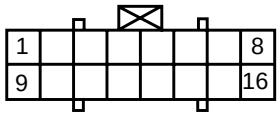


Wiper, hazard warning lamp

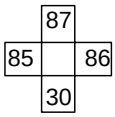


Light, turn signal lamp

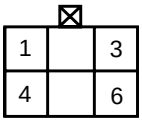
Combination S/W connector



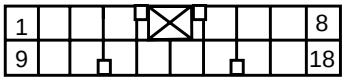
Instrument panel A
(Based on dash harness)



Turn signal lamp relay
(Fuse relay box)

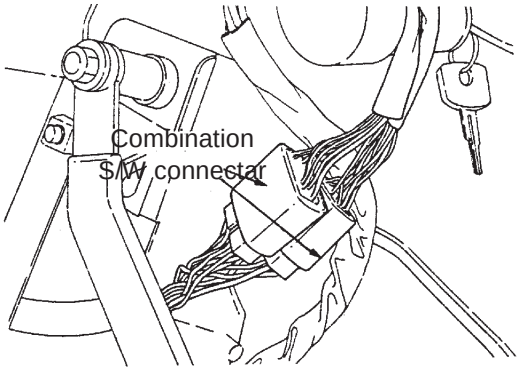


Combination (turn signal)connector
Trailer turn signal connector
(Based on frame harness)



Keyless unit connector
(Based on dash harness)

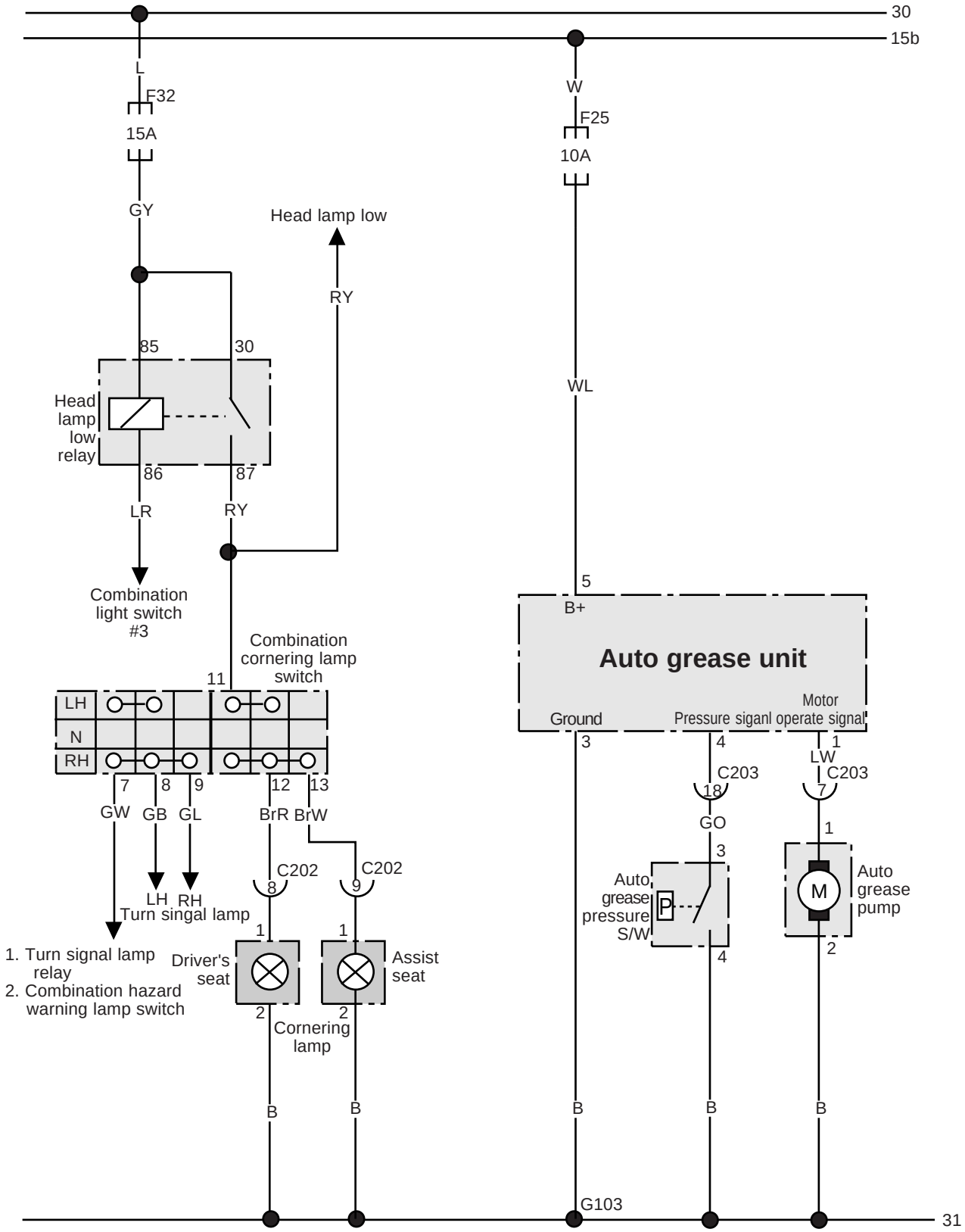
2) LOCATION OF PARTS



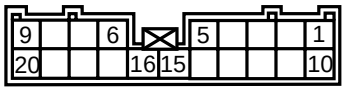
EL036

Combination S/W - Under the starter switch

16. CORNERING LAMP, AUTO GREASE CIRCUIT DIAGRAM

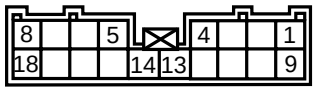


1) CONNECTOR AND PIN NUMBER



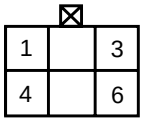
C202, 20pin

Dash - Frame harness
(Based on dash harness)

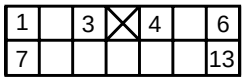


C203, 18pin

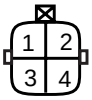
Dash - Frame harness
(Based on dash harness)



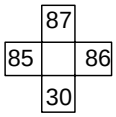
Auto grease unit
(Based on dash harness)



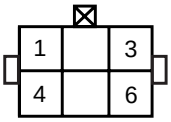
Cornering combination S/W
(Based on dash harness)



Auto grease S/W & pump connector
(Based on frame harness)

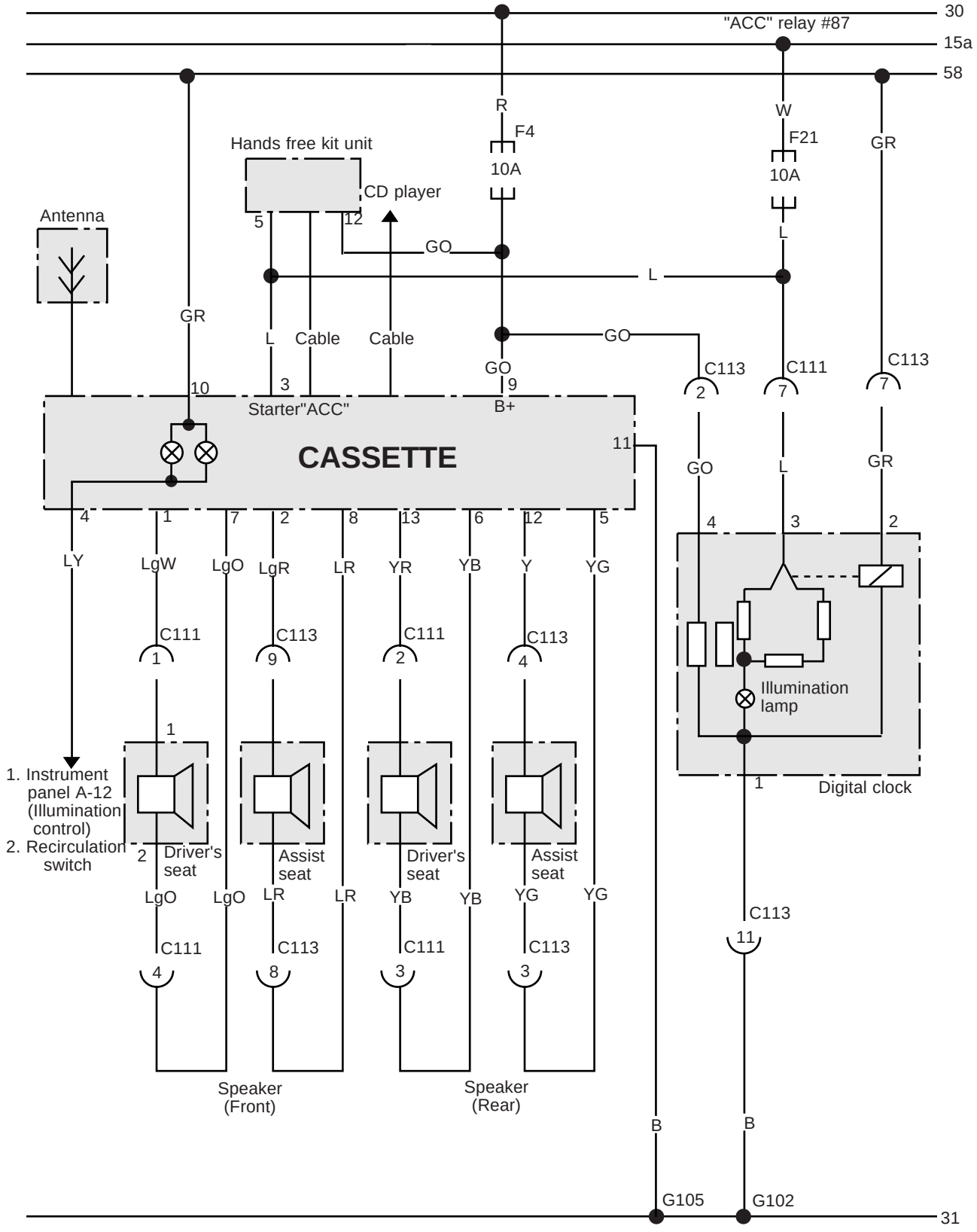


Head lamp low relay
(Fuse relay box)

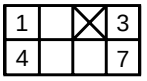


Combination cornering lamp
(based on frame harness)

17. CASSETTE, DIGITAL CLOCK CIRCUIT DIAGRAM

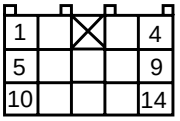


1) CONNECTOR AND PIN NUMBER



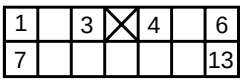
C111, 7pin

Dash - Roof harness
(Based on dash harness)

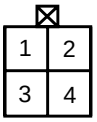


C113, 14pin

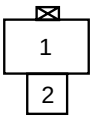
Dash - Roof harness
(Based on dash harness)



Cassette connector
(Based on dash harness)



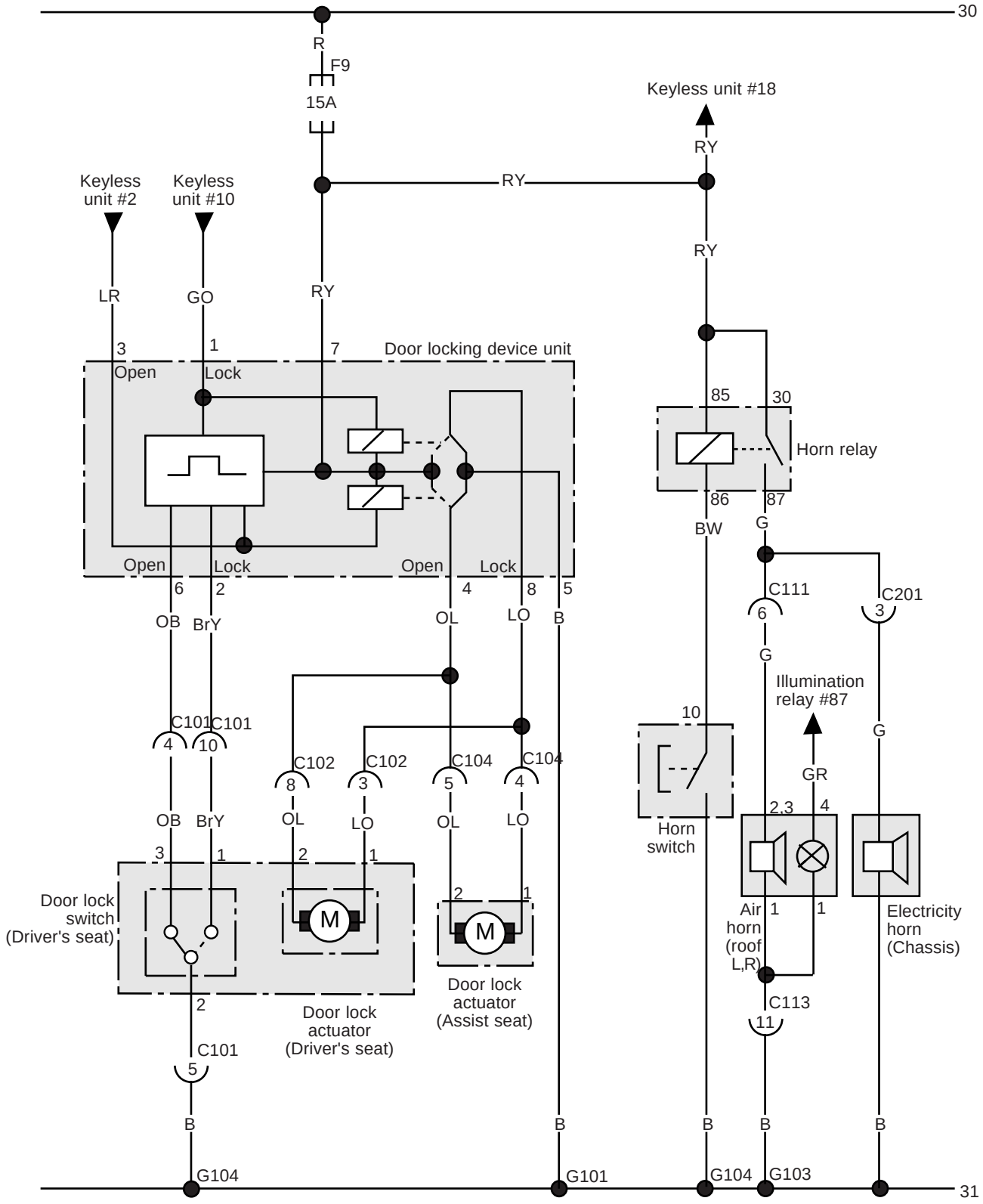
Digital clock connector
(Based on roof harness)



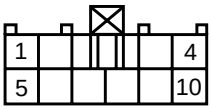
Speaker connector
(Based on roof harness)

31

18. DOOR LOCKING DEVICE, HORN CIRCUIT DIAGRAM

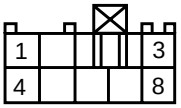


1) CONNECTOR AND PIN NUMBER



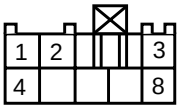
C101, 10pin

Dash - Driver's seat door harness
(Based on dash harness)



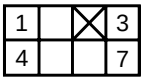
C102, 8pin

Dash - Driver's seat door harness
(Based on dash harness)



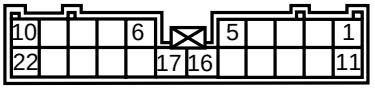
C104, 8pin

Dash - Assist seat Door harness
(Based on dash harness)



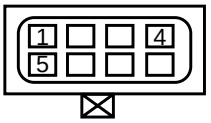
C111, 7pin

Dash - Roof harness
(Based on dash harness)



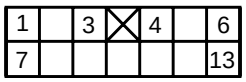
C201, 22pin

Dash - Frame harness
(Based on dash harness)

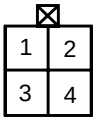


8

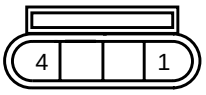
Door lock connector
(Fuse relay box)



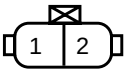
Combination horn S/W
(Based on dash harness)



Air horn
(Based on roof harness)

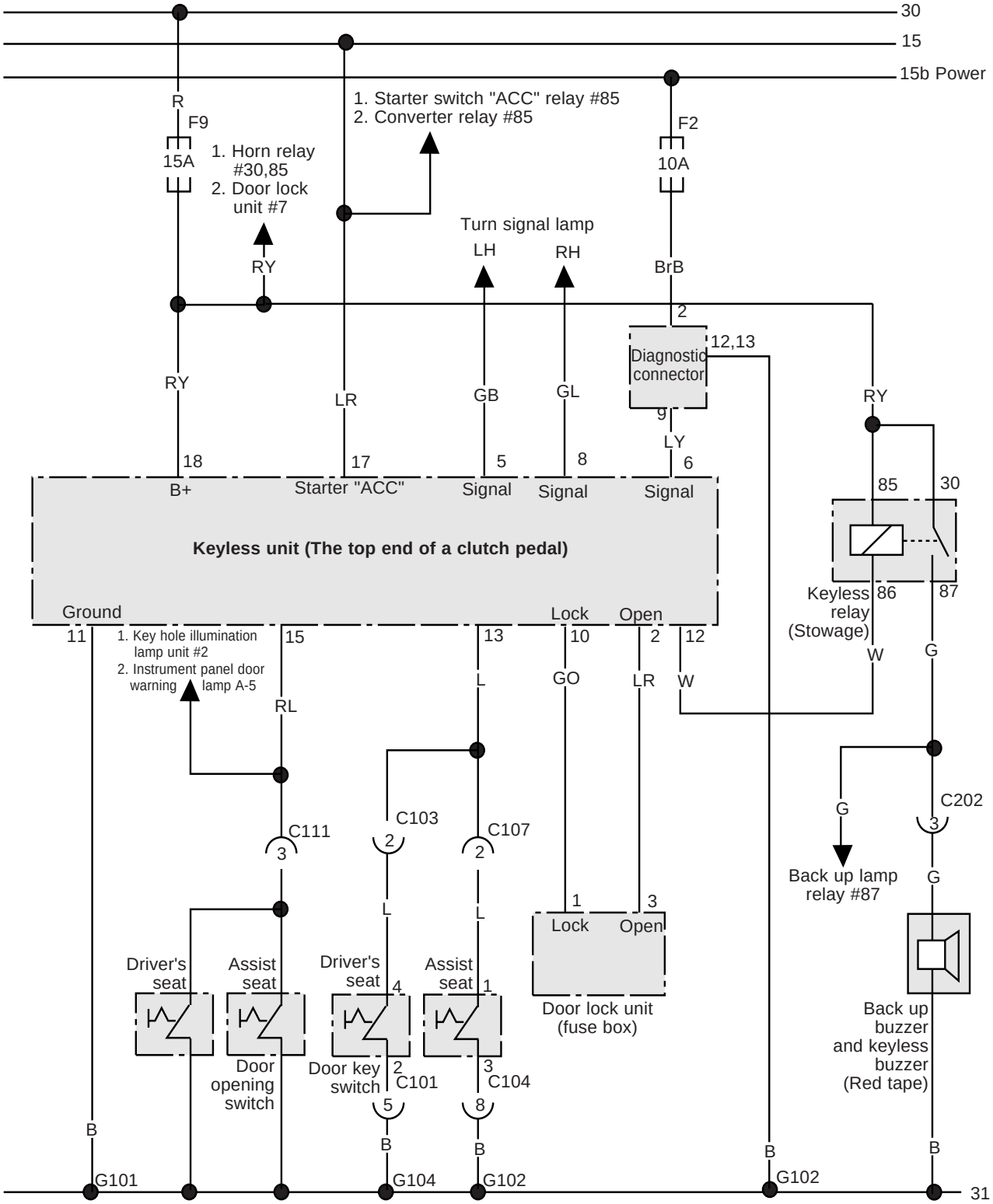


Door lock switch
(Based on door harness)

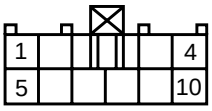


Door lock motor
(Based on door harness)

19. KEYLESS ENTRY SYSTEM

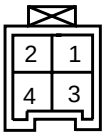


1) CONNECTOR AND PIN NUMBER



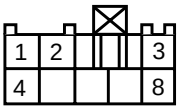
C101, 10pin

Dash - Door harness
(Based on dash harness)



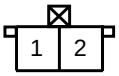
C103, 4pin

Dash - Door harness
(Based on dash harness)



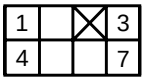
C104, 8pin

Dash - Door harness
(Based on dash harness)



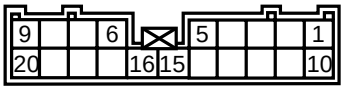
C107, 2pin

Dash - Door harness
(Based on dash harness)



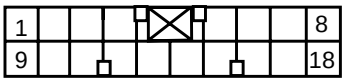
C111, 7pin

Dash - Roof harness
(Based on dash harness)

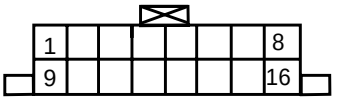


C202, 20pin

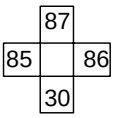
Dash - Frame harness
(Based on dash harness)



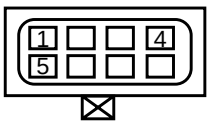
Keyless unit
(Based on dash harness)



Diagnostic connector
(Based on dash harness)

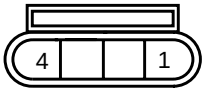


Keyless relay
(Based on dash harness)

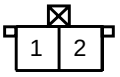


8

Door lock unit
(Fuse box)

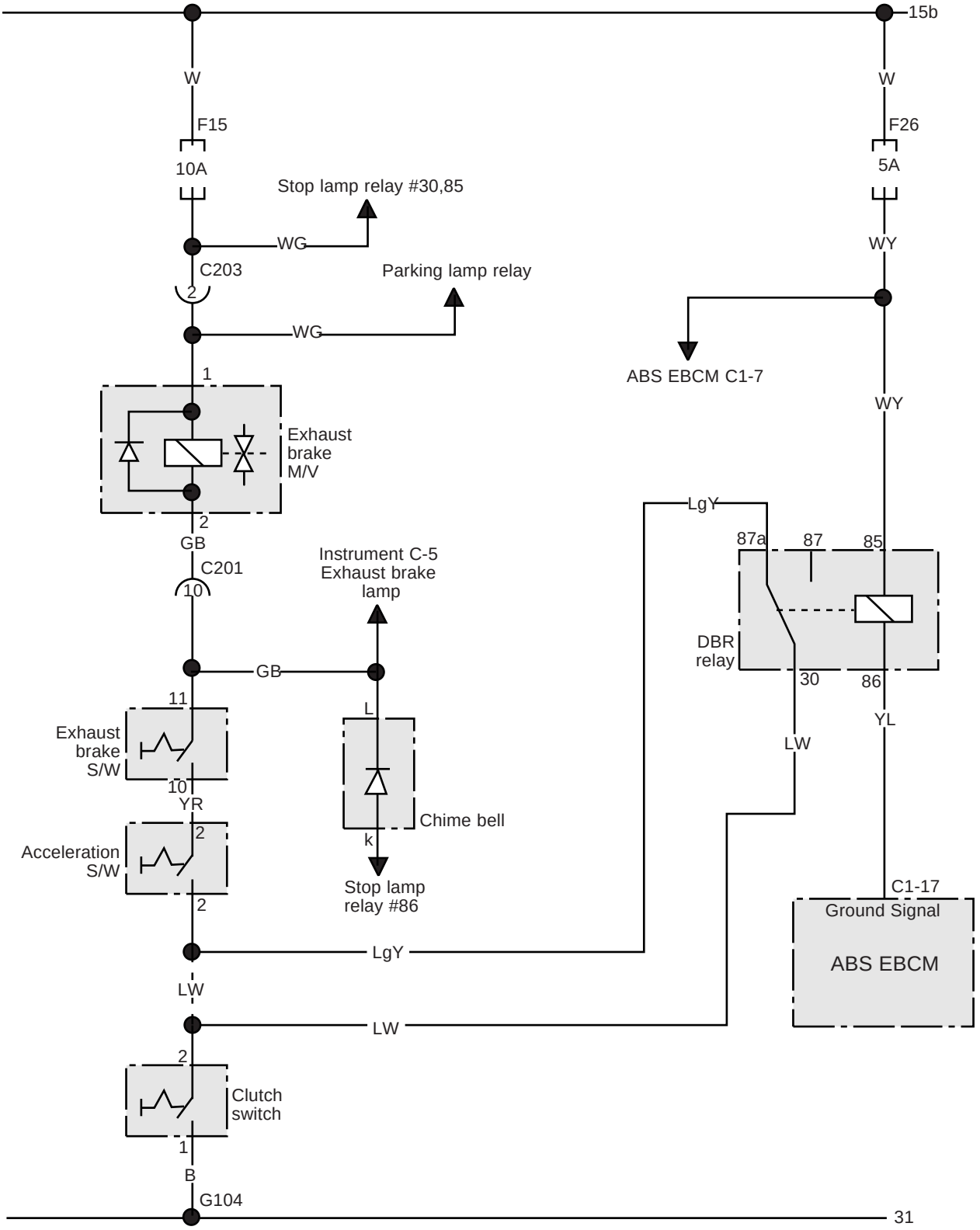


Door lock switch
(Based on door harness)

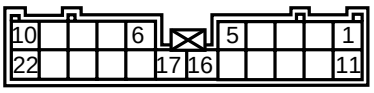


Keyless buzzer
(Based on frame harness)

20. EXHAUST BRAKE, DBR CIRCUIT DIAGRAM

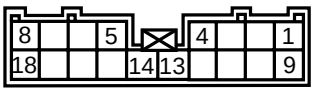


1) CONNECTOR AND PIN NUMBER



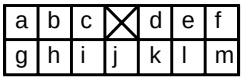
C201, 22pin

Dash - Frame harness
(Based on dash harness)

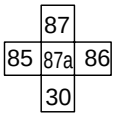


C203, 18pin

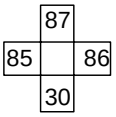
Dash - Frame harness
(Based on dash harness)



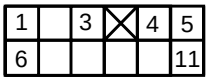
Chime bell unit
(Based on dash harness)



DBR relay
(Fuse relay box)

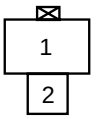


Stop lamp relay
(Fuse relay box)

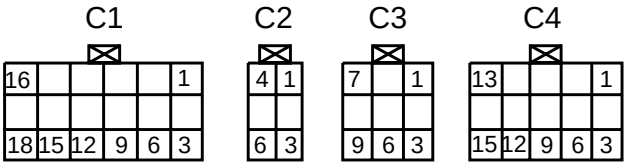


Exhaust combination S/W
(Based on dash harness)

Exhaust brake M/V
(Based on frame harness)

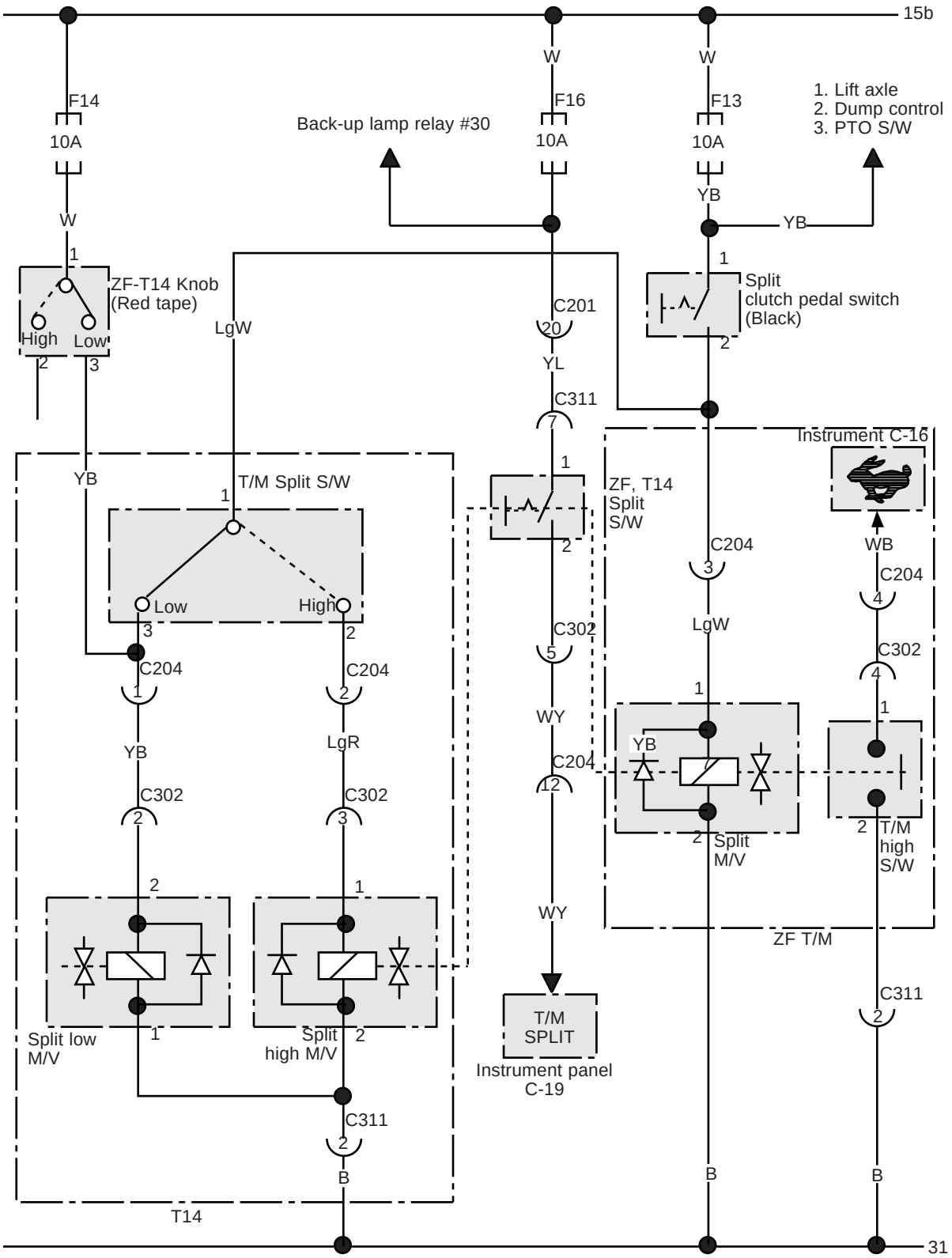


Acceleration S/W
Clutch S/W
(Based on dash harness)

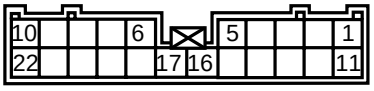


ABS/ASR ECM Connector

21. SPLIT SYSTEM (ZF, T14 TRANSMISSION)

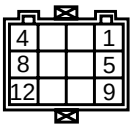


1) CONNECTOR AND PIN NUMBER



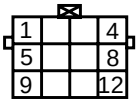
C201, 22pin

Dash - Frame harness
(Based on dash harness)



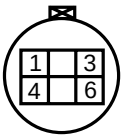
C204, 12pin

Dash - Frame harness
(Based on dash harness)



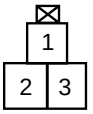
C311, 12pin

Frame - Engine harness
(Based on frame harness)

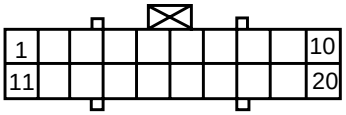


C302, 6pin

Frame - Engine harness
(Based on frame harness)



ZF-T14 Knob connector
(Based on dash harness)

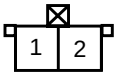


Instrument panel C
(Based on dash harness)

Split low M/V
(Based on engine harness)

Spliter high M/V
(Based on engine harness)

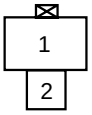
Split M/V
(Based on frame harness)



T14

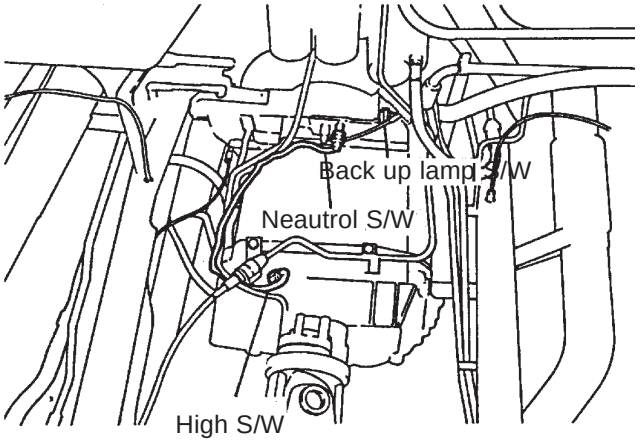
ZF

T/M Spliter S/W
(Based on engine harness)



Spliter(Black) S/W
(Based on dash harness)

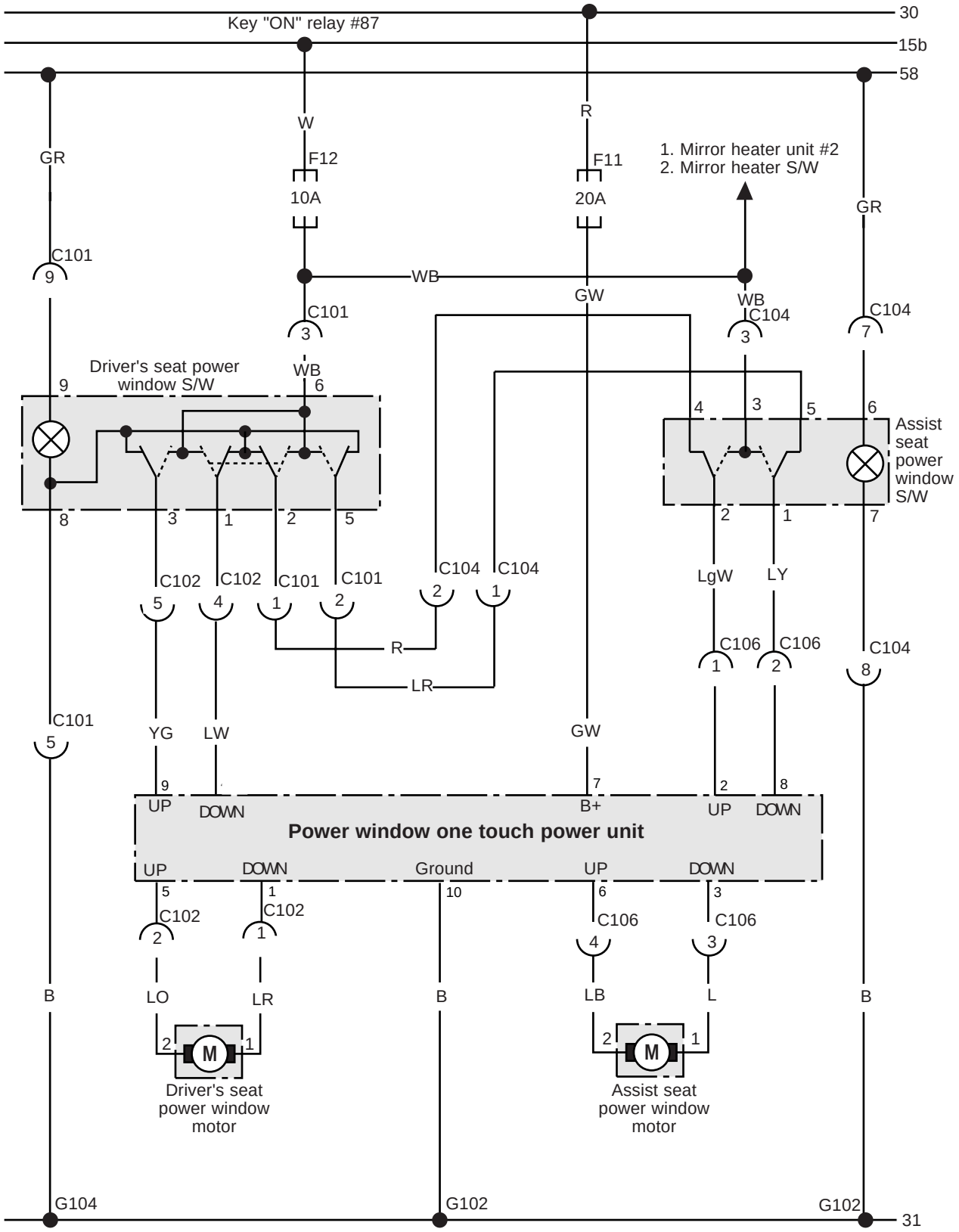
2) LOCATION OF PARTS



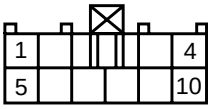
EL040

ZF transmission inside frame

22. POWER WINDOW CIRCUIT DIAGRAM

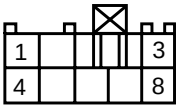


1) CONNECTOR AND PIN NUMBER



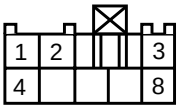
C101, 10pin

Dash - Driver's seat door harness
(Based on dash harness)



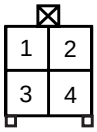
C102, 8pin

Dash - Driver's seat door harness
(Based on dash harness)



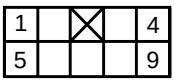
C104, 8pin

Dash - Assist seat Door harness
(Based on dash harness)

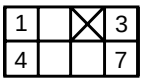


C106, 4pin

Dash - Assist seat Door harness
(Based on dash harness)

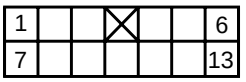


Driver's seat power
window S/W connector
(Based on door harness)



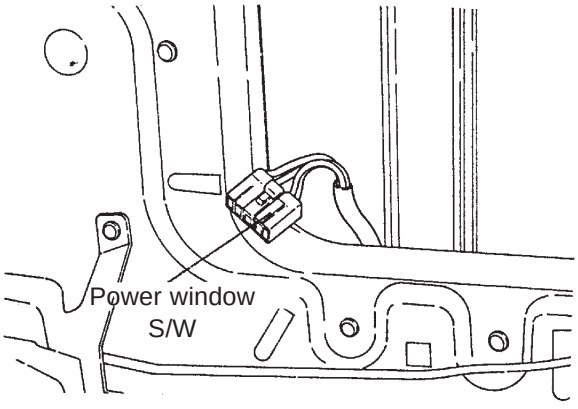
Assist seat power
window S/W connector
(Based on door harness)

Power window motor
(Based on door harness)

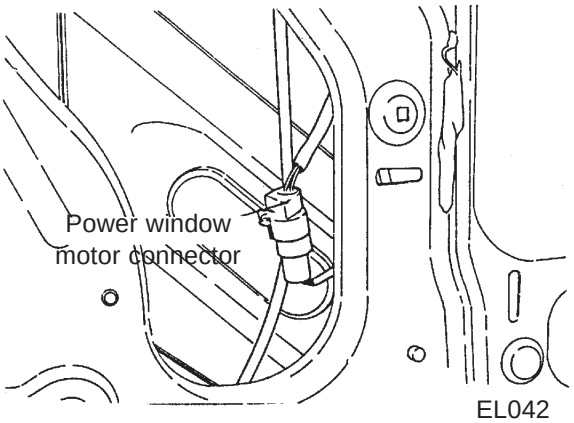


Power window one touch unit
(Based on dash harness)

2) LOCATION OF PARTS

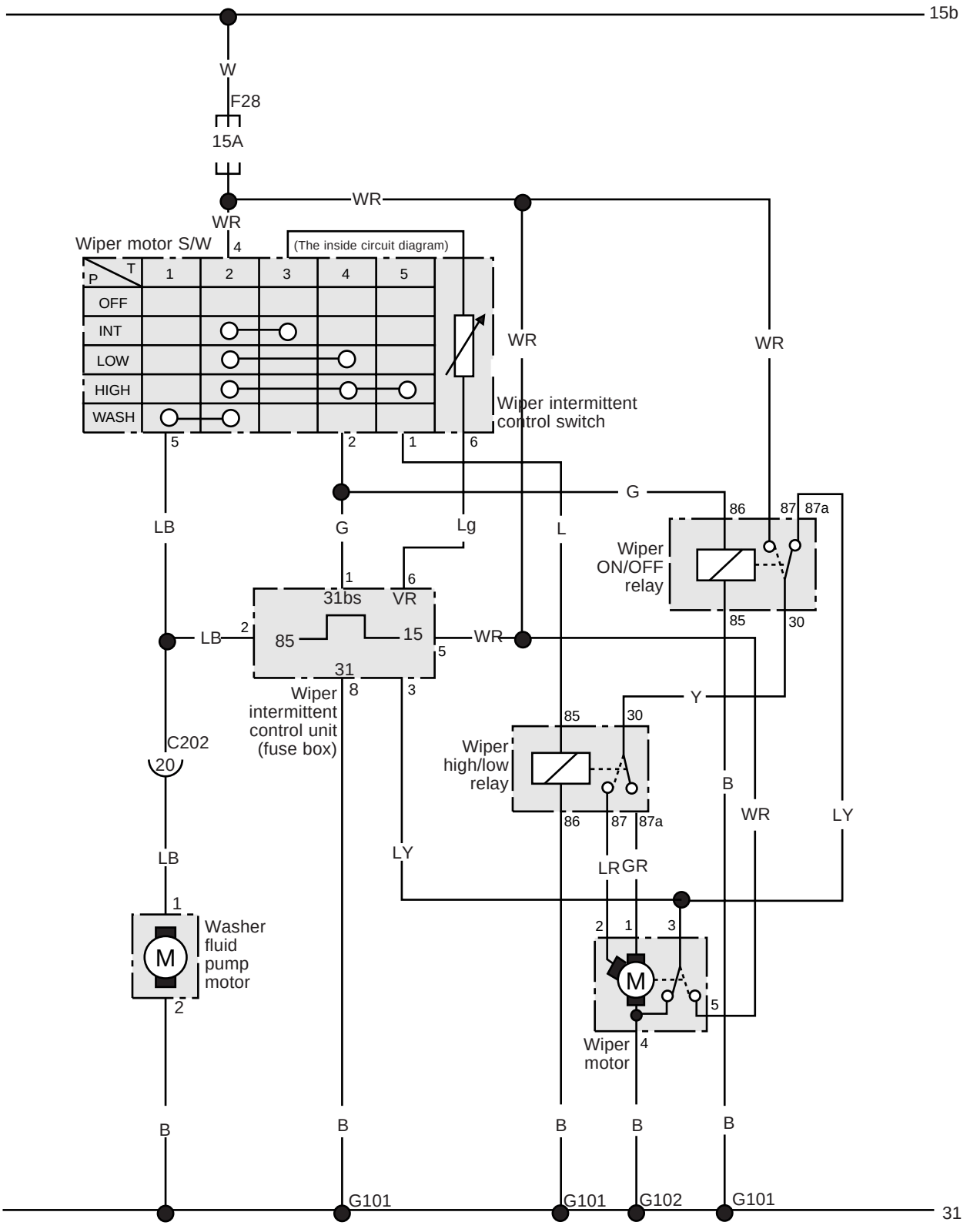


Power window S/W-Inside the door

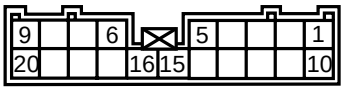


Power window motor - inside the door

23. WIPER CIRCUIT DIAGRAM

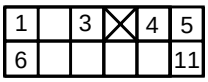


1) CONNECTOR AND PIN NUMBER

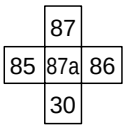


C202, 20pin

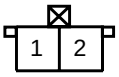
Dash - Frame harness
(Based on dash harness)



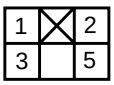
Wiper combination switch
(Based on dash harness)



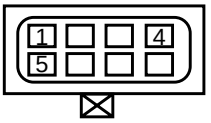
Wiper high/low relay
wiper ON/OFF relay
(fuse box)



Washer fluid motor
(Based on frame harness)

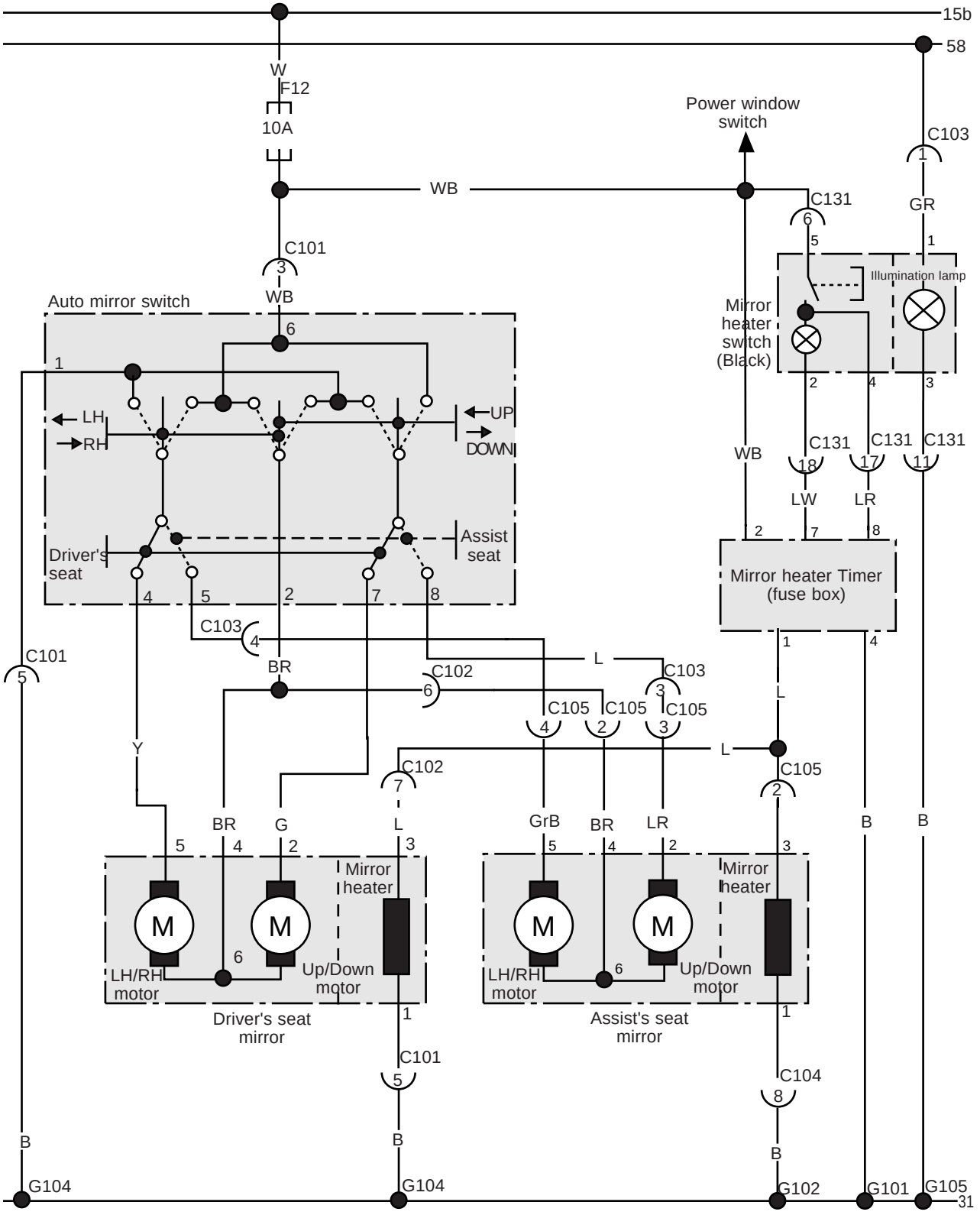


Wiper motor connector
(Based on dash harness)

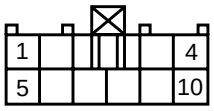


Wiper intermittent
control unit
(fuse box)

24. AUTO MIRROR AND MIRROR HEATER CIRCUIT DIAGRAM

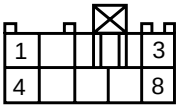


1) CONNECTOR AND PIN NUMBER



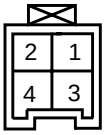
C101, 10pin

Dash - Door harness
(Based on dash harness)



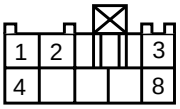
C102, 8pin

Dash - Door harness
(Based on dash harness)



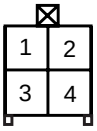
C103, 22pin

Dash - Door harness
(Based on dash harness)



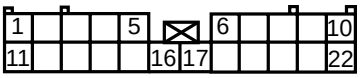
C104, 8pin

Dash - Door harness
(Based on dash harness)



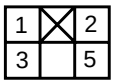
C105, 4pin

Dash - Door harness
(Based on door harness)

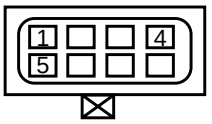


C131, 22pin

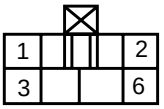
Dash - Switch harness
(Based on dash harness)



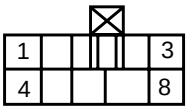
Mirror heater switch
(Based on dash harness)



Mirror heater unit
(Fuse box)

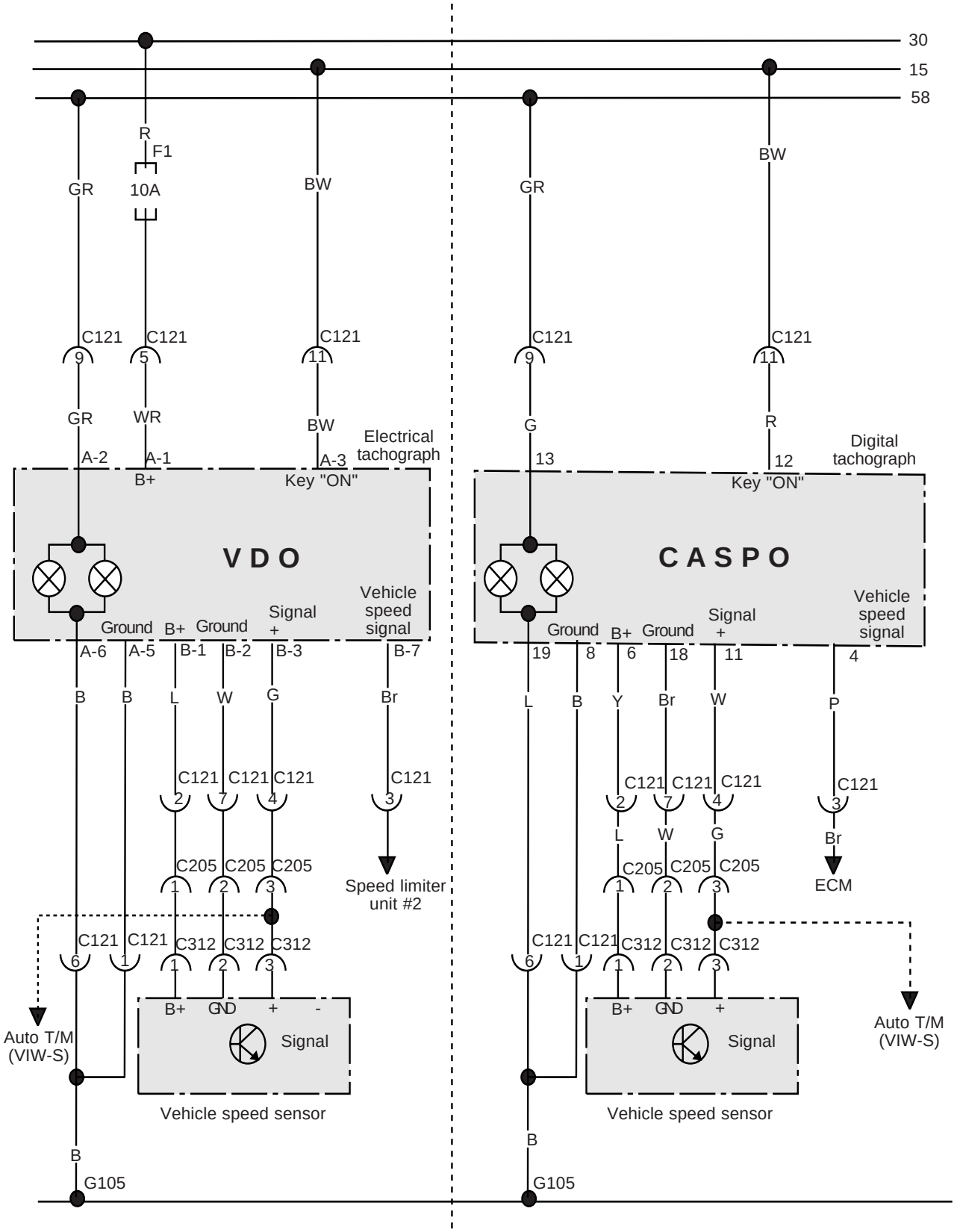


Mirror heater/Mirror motor
(Based on door harness)

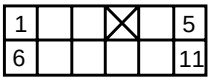


Auto mirror switch
(Based on door harness)

25. TACHOGRAPH CIRCUIT DIAGRAM (VDO, CASPO)

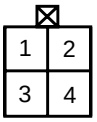


1) CONNECTOR AND PIN NUMBER



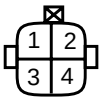
C121, 11pin

Dash - Tachograph harness
(Based on dash harness)



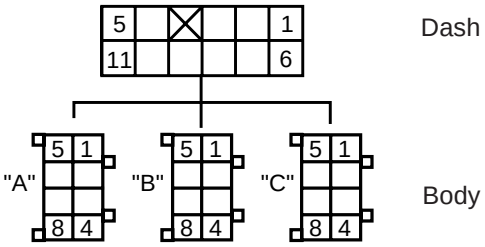
C205, 4pin

Dash - Frame harness
(Based on dash harness)

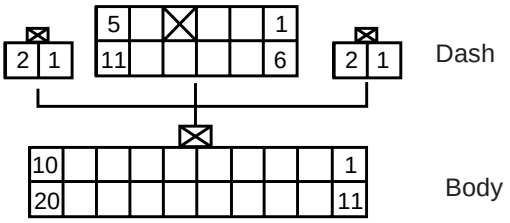


C312, 4pin

Frame - Engine harness
(Based on frame harness)

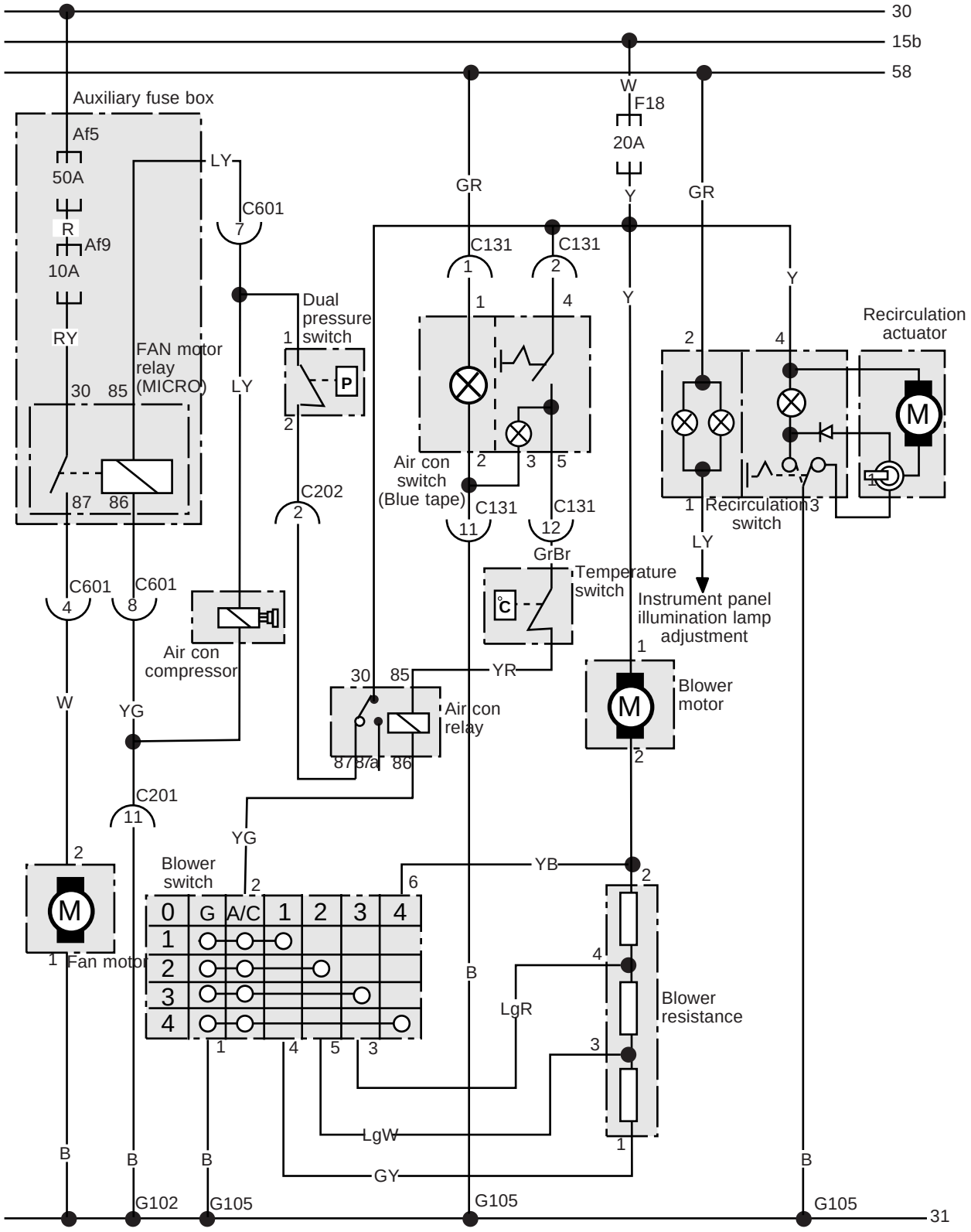


VDO electrical tachograph

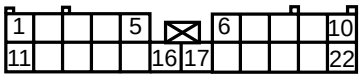


CASPO Digital Tachograph

26. HEATER AND AIR CONDITIONER CIRCUIT DIAGRAM

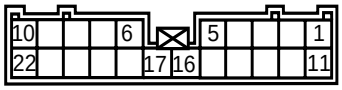


1) CONNECTOR AND PIN NUMBER



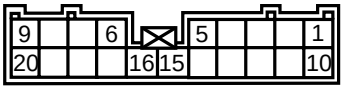
C131, 22pin

Dash - Switch harness
(Based on dash harness)



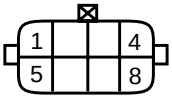
C201, 22pin

Dash - Frame harness
(Based on dash harness)



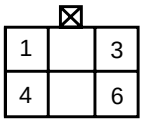
C202, 20pin

Dash - Frame harness
(Based on dash harness)

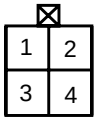


C601, 8pin

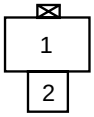
Frame - Aux fuse box harness
(Based on frame harness)



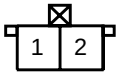
Blower switch
(Based on dash harness)



Blower resistance
(Based on dash harness)

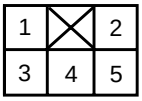


Blower motor
(Based on dash harness)



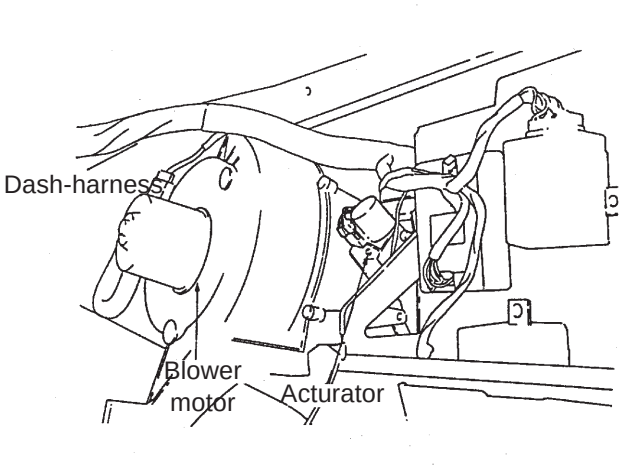
Fan motor
(Based on frame harness)

Dual pressure switch
(Based on frame harness)

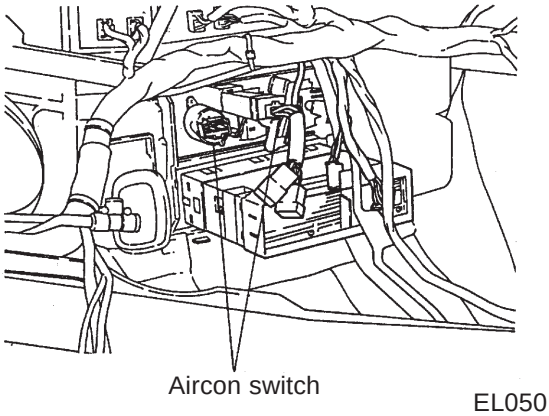


Aircon/recirculation switch
(Based on dash harness)

2) LOCATION OF PARTS

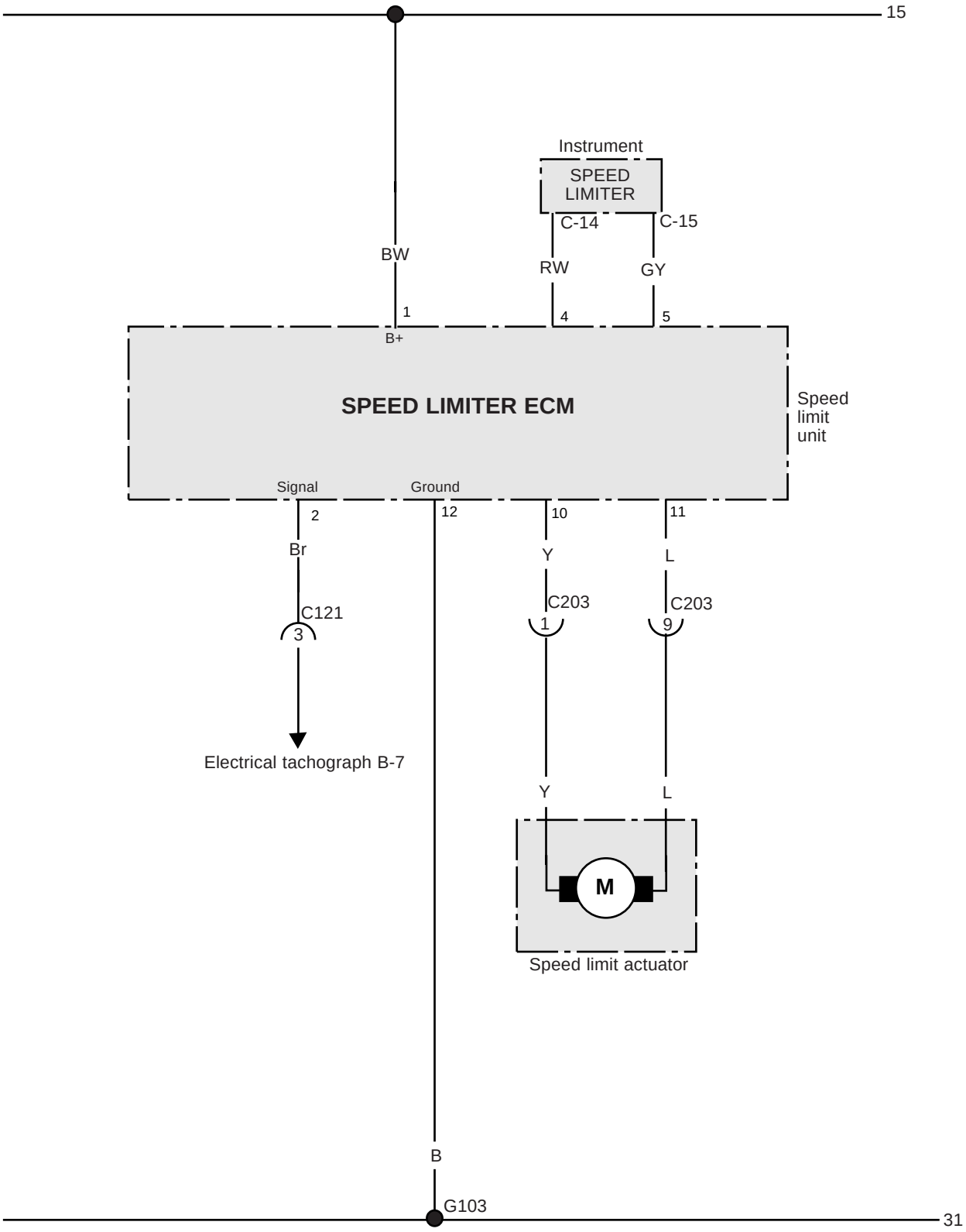


Blower motor - inside IP

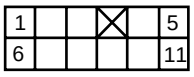


Aircon switch - inside IP

27. SPEED LIMITER CIRCUIT DIAGRAM(ELECTRICAL TACHOGRAPH)

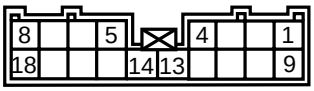


1) CONNECTOR AND PIN NUMBER



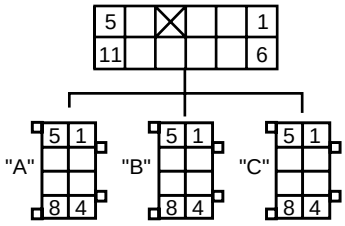
C121, 11pin

Dash - Tachograph harness
(Based on dash harness)

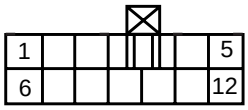


C203, 18pin

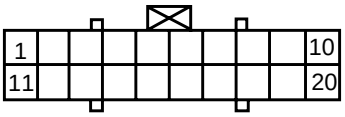
Dash - Frame harness
(Based on dash harness)



VDO electrical tachogrpah

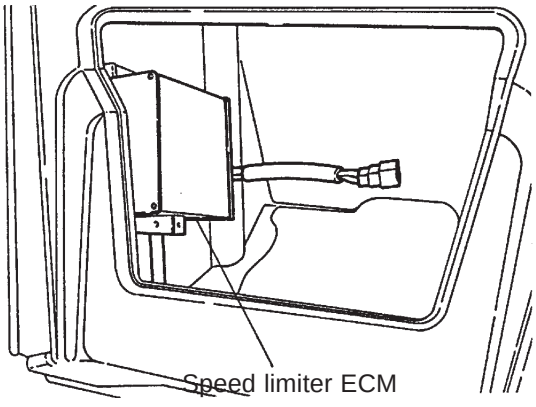


Speed limiter unit



Instrument C
(Based on dash harness)

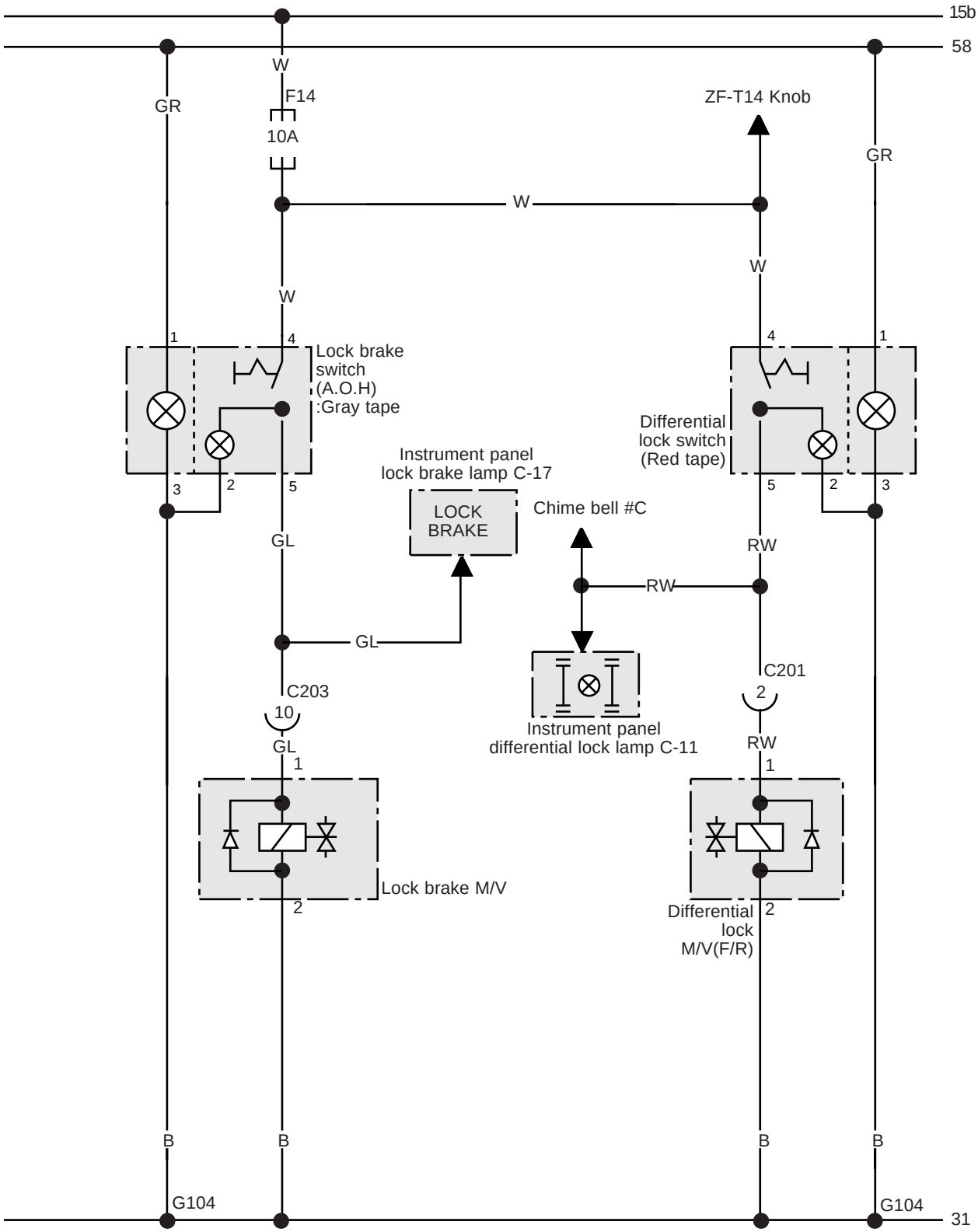
2) LOCATION OF PARTS



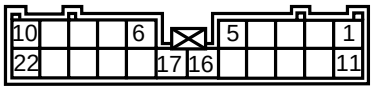
EL051

Speed limiter ECM - Inside the assist seat

28. LOCK BRAKE, DIFFERENTIAL LOCK BRAKE(EXCEPT HUB REDUCTION) CIRCUIT DIAGRAM.

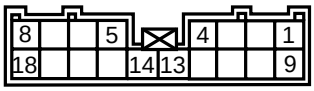


1) CONNECTOR AND PIN NUMBER



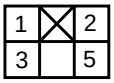
C201, 22pin

Dash - Frame harness
(Based on dash harness)

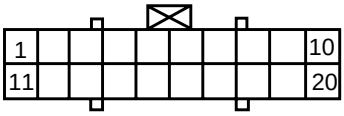


C203, 18pin

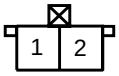
Dash - Frame harness
(Based on dash harness)



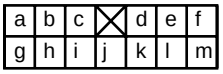
Differential lock/lock brake switch
(Based on dash harness)



Instrument panel C
(Based on dash harness)

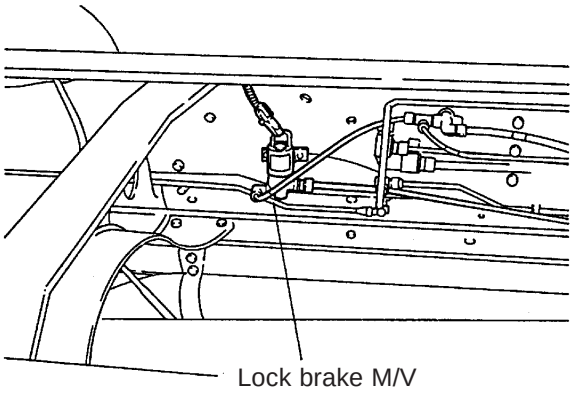


Differential lock/lock brake M/V
(Based on frame harness)



Chime bell unit
(Based on dash harness)

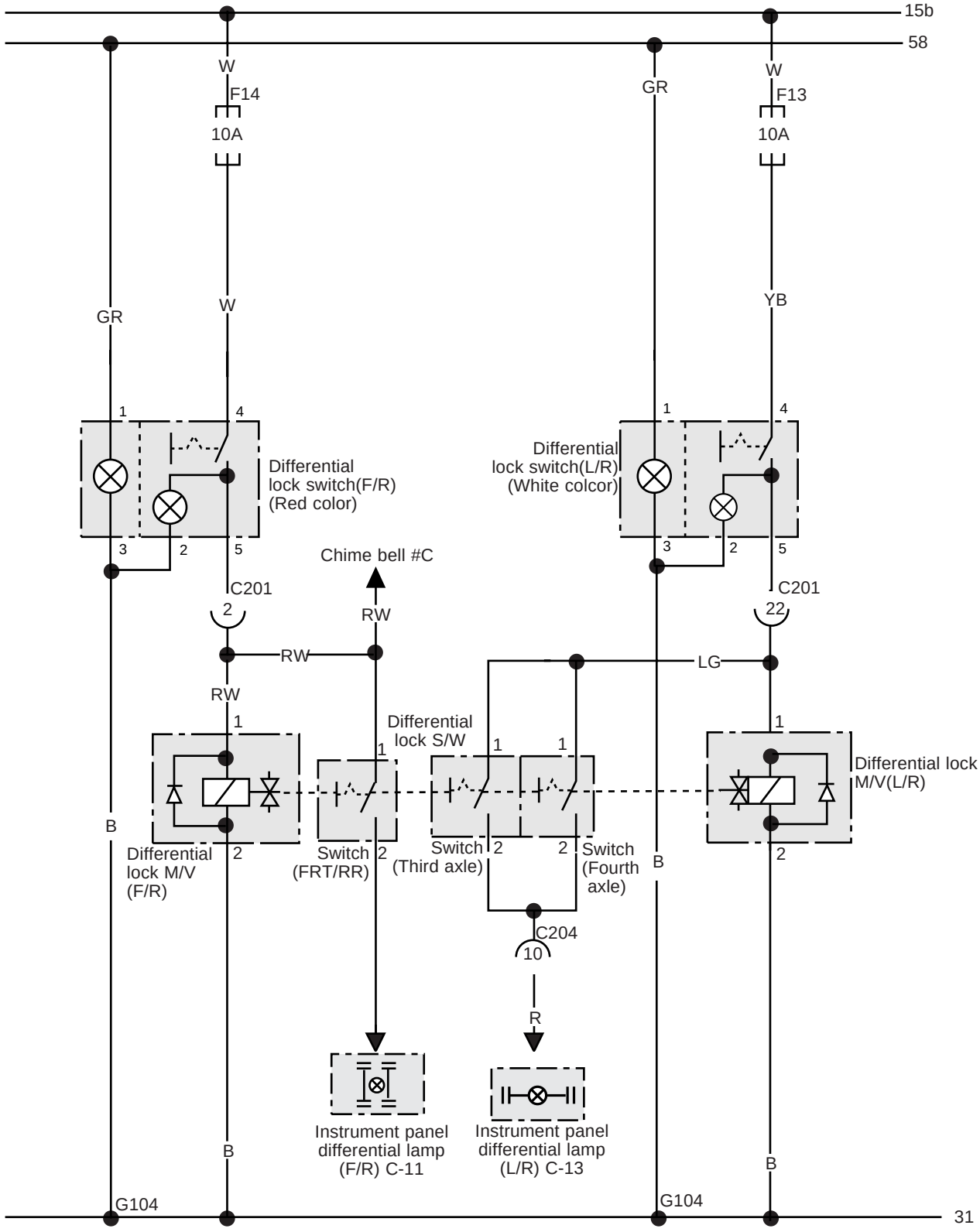
2) LOCATION OF PARTS



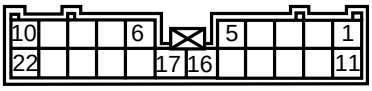
EL054

Lock brake/Differential lock M/V - Inside frame

29. DIFFERENTIAL LOCK (HUB REDUCTION) CIRCUIT DIAGRAM

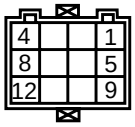


1) CONNECTOR AND PIN NUMBER



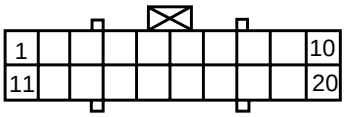
C201, 22pin

Dash - Frame harness
(Based on dash harness)

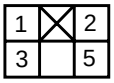


C204, 12pin

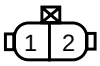
Dash-Frame harness
(Based on frame harness)



Instrument panel C
(Based on dash harness)

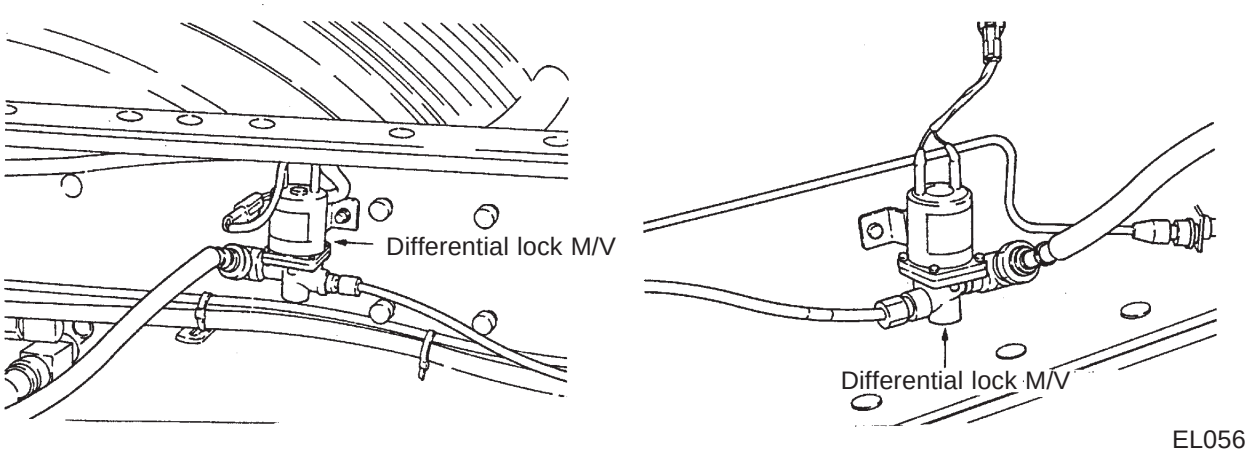


Differential lock switch
(Based on dash harness)



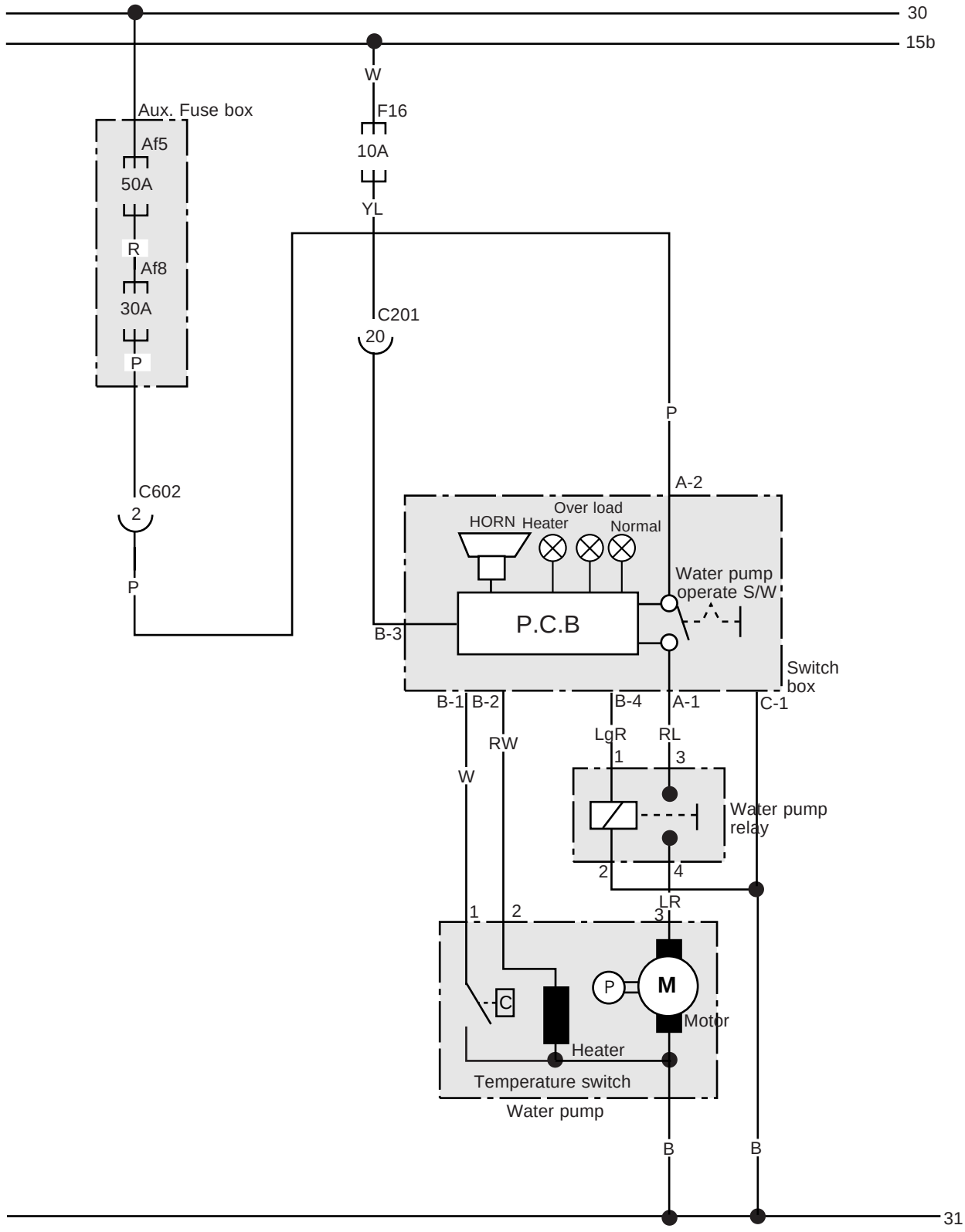
Differential lock M/V
(Based on frame harness)

2) LOCATION OF PARTS

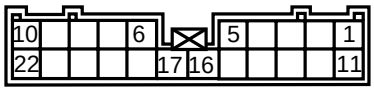


Differential lock M/V - inside frame

30. WATER PUMP - MIXER DRUM CIRCUIT DIAGRAM



1) CONNECTOR AND PIN NUMBER

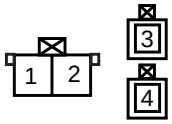


C201, 22pin

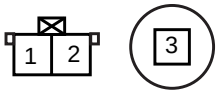
Dash - Frame harness
(Based on dash harness)

C602, 2pin

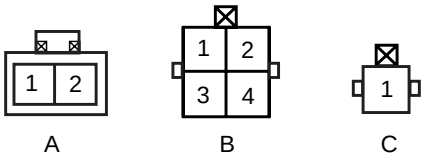
Frame - Aux fuse box harness
(Based on frame harness)



Water pump relay
(Based on frame harness)

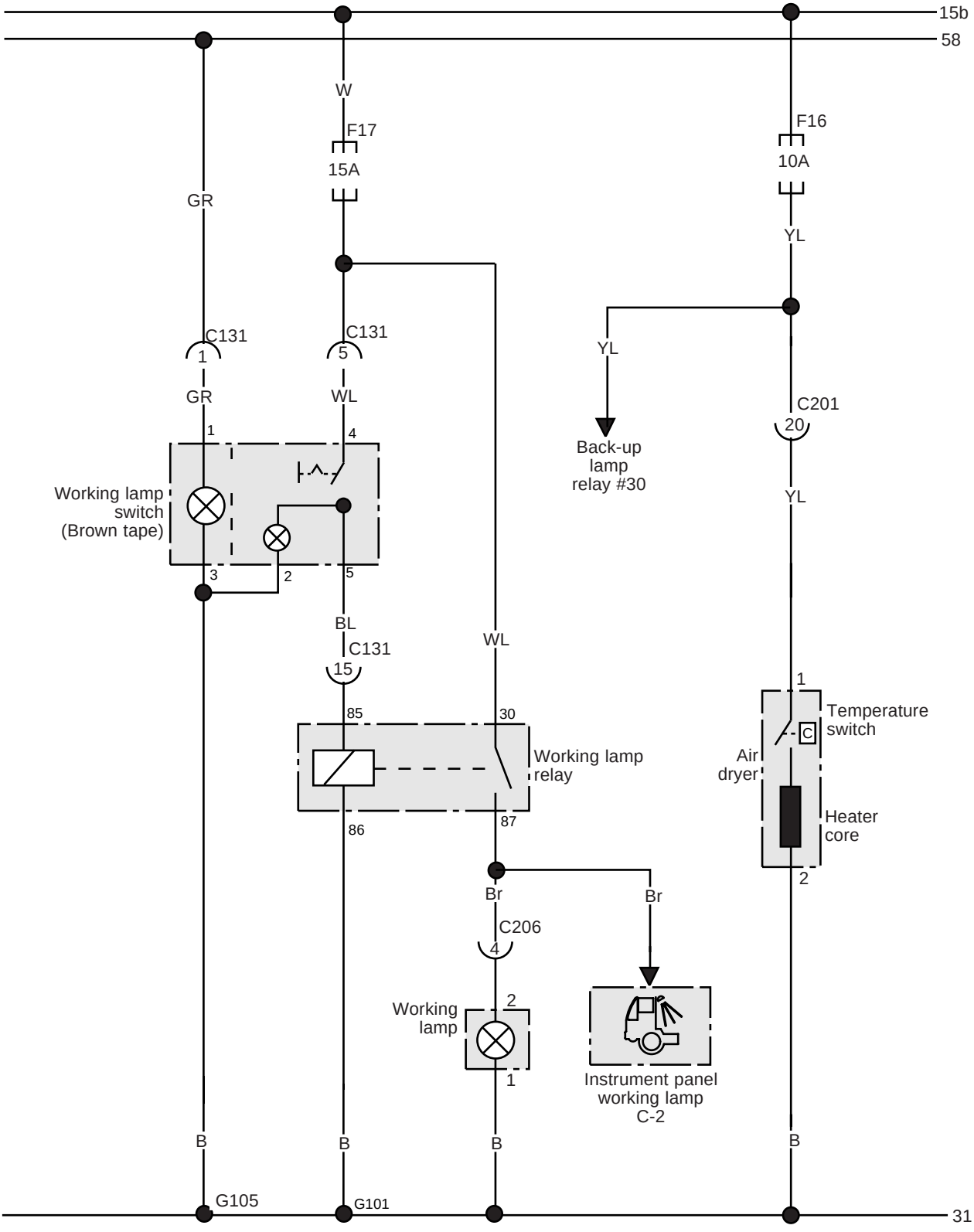


Water pump
(Based on frame harness)

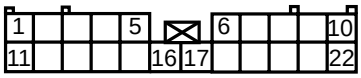


Switch box
(Based on frame harness)

31. WORKING LAMP, AIR DRYER HEATER CIRCUIT DIAGRAM

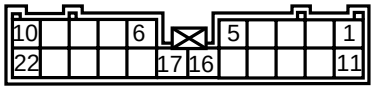


1) CONNECTOR AND PIN NUMBER



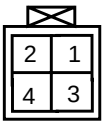
C131, 22pin

Dash - Switch harness
(Based on dash harness)



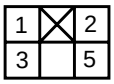
C201, 22pin

Dash - Frame harness
(Based on dash harness)

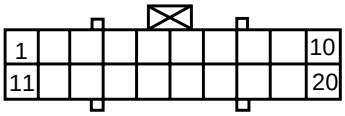


C206, 4pin

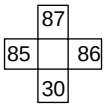
Dash - Frame harness
(Based on dash harness)



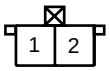
Working lamp switch
(Based on dash harness)



Instrument panel C
(Based on dash harness)



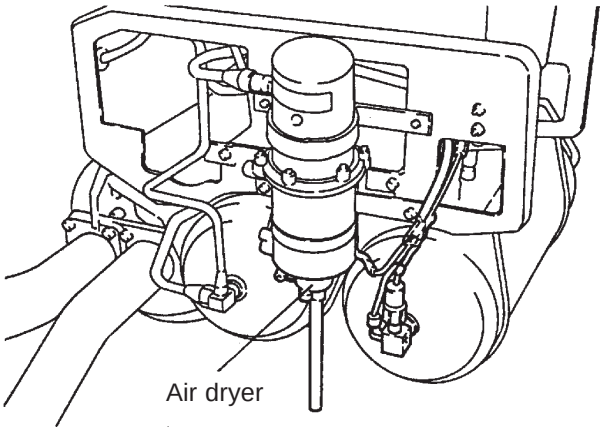
Working lamp relay
(Fuse relay box)



Working lamp
(Based on frame harness)

Air dryer
(Based on frame harness)

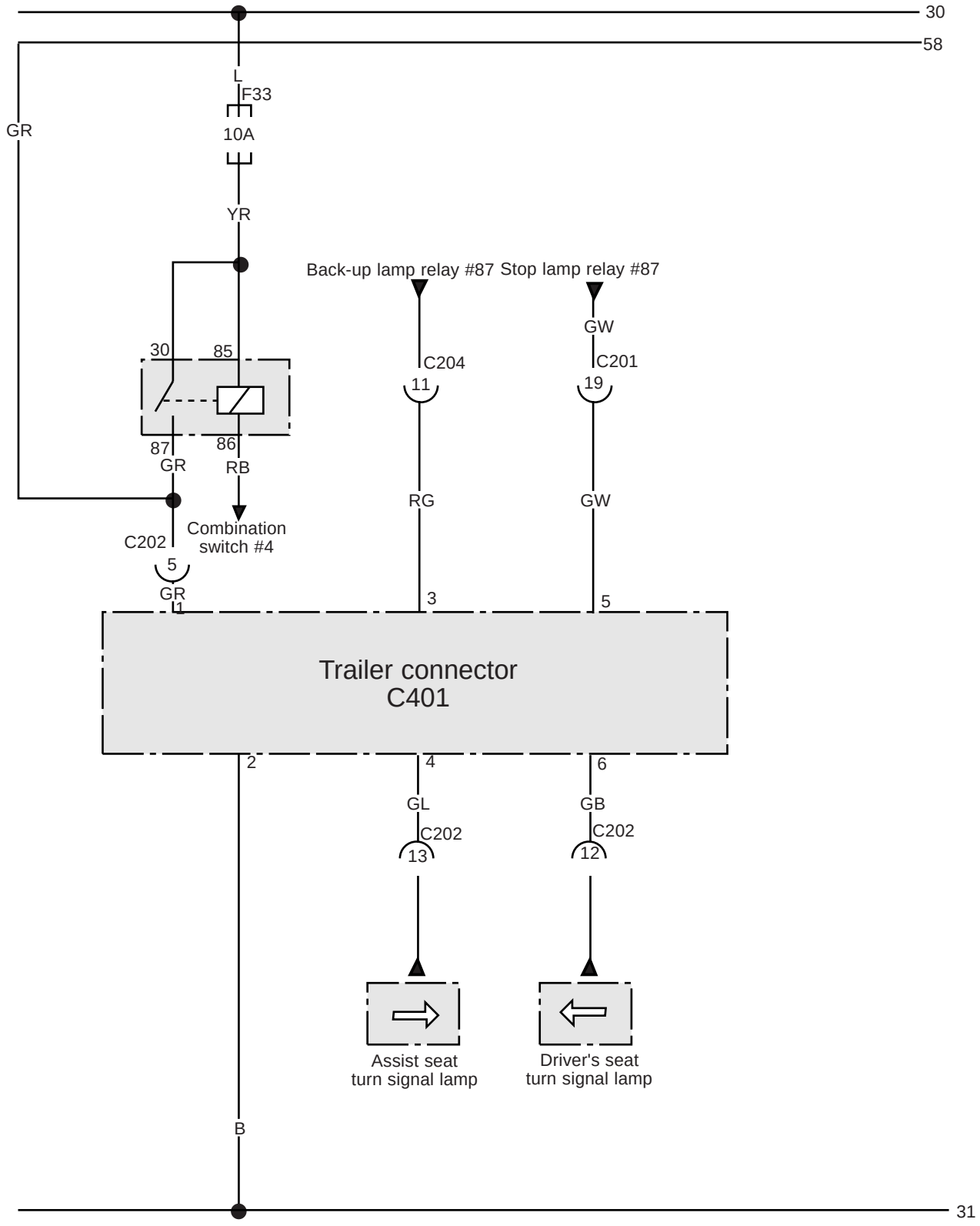
2) LOCATION OF PARTS



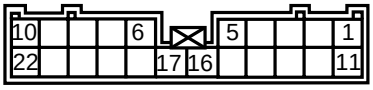
EL058

Air dryer

32. TRAILER CONNECTOR CIRCUIT DIAGRAM

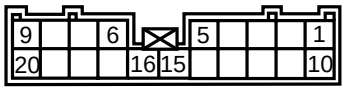


1) CONNECTOR AND PIN NUMBER



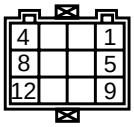
C201, 22pin

Dash - Frame harness
(Based on dash harness)



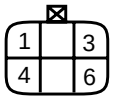
C202, 20pin

Dash - Frame harness
(Based on dash harness)



C204, 12pin

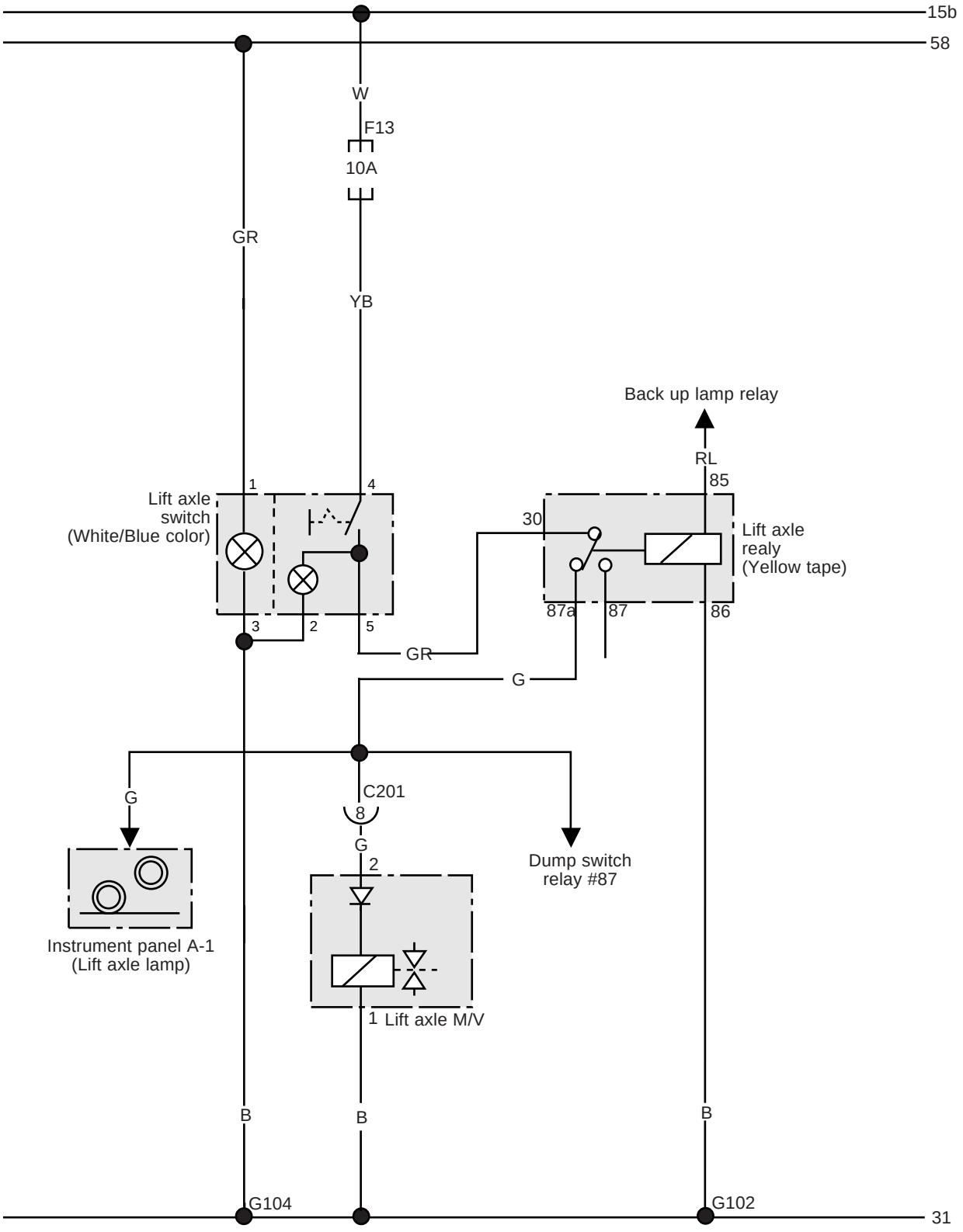
Dash - Frame harness
(Based on dash harness)



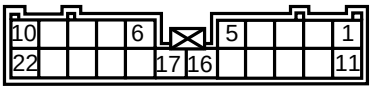
C401, 6pin

Frame - Trailer harness
(Based on frame harness)

33. LIFT AXLE CIRCUIT DIAGRAM

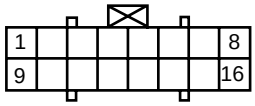


1) CONNECTOR AND PIN NUMBER

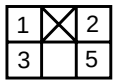


C201, 22pin

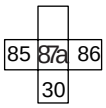
Dash - Frame harness
(Based on dash harness)



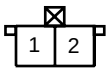
Instrument panel A
(Based on dash harness)



Lift axle S/W
(Based on dash harness)

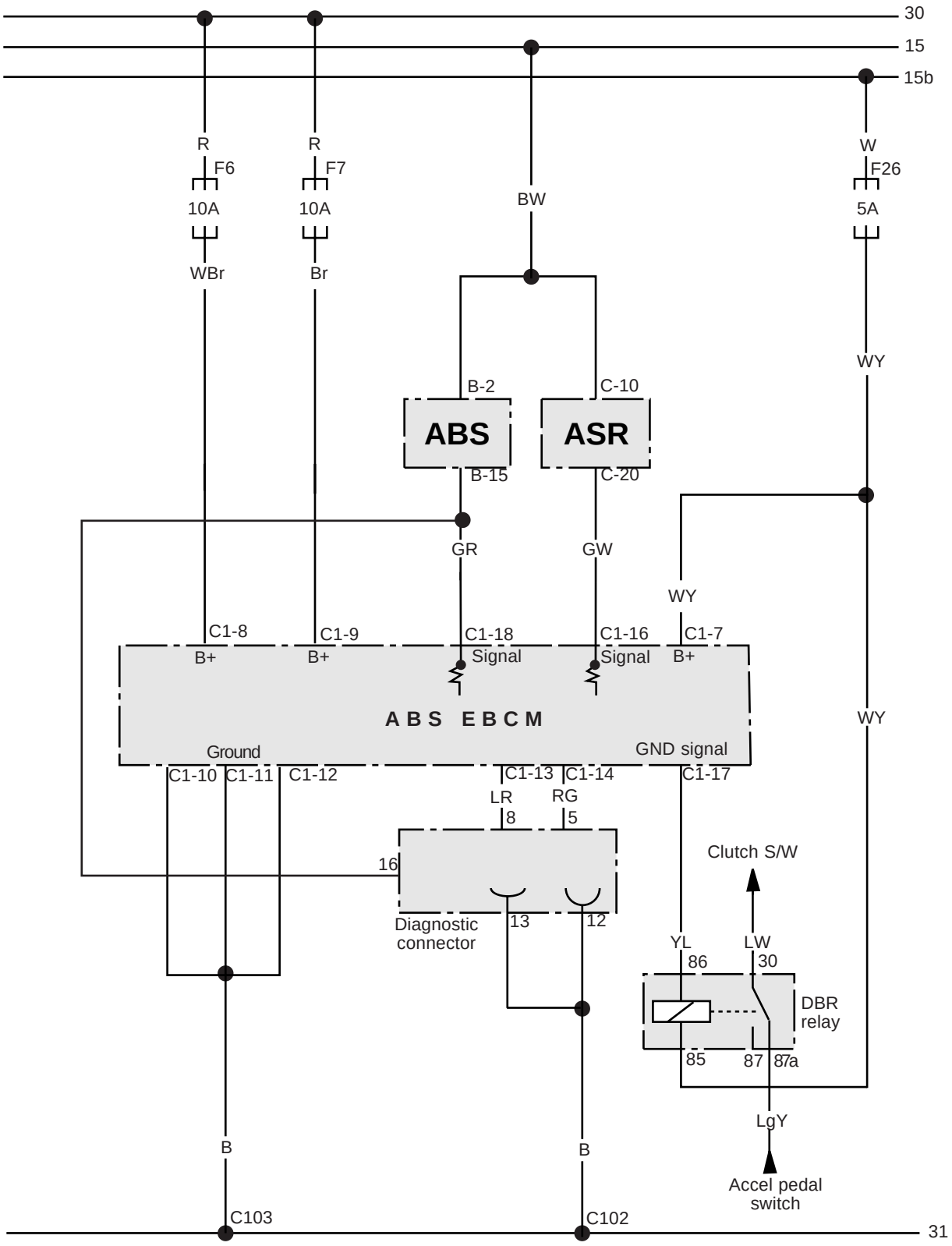


Lift axle relay
(Based on dash harness)

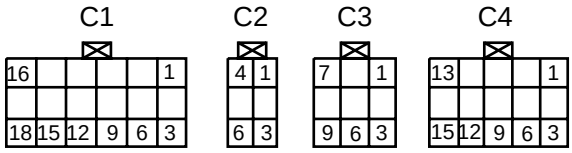


Lift axle M/V
(Based on frame harness)

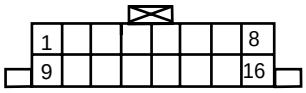
34. ABS/ASR ELECTRIC CIRCUIT DIAGRAM (D-VERSION)



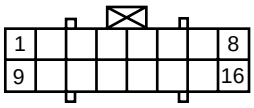
1) CONNECTOR AND PIN NUMBER



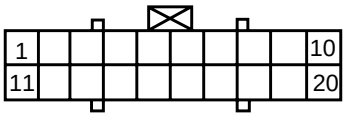
ABS/ASR ECM (D-Version) Connector



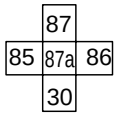
Diagnostic connector
(Based on dash harness)



Instrument panel B(Black)
(Based on dash harness)



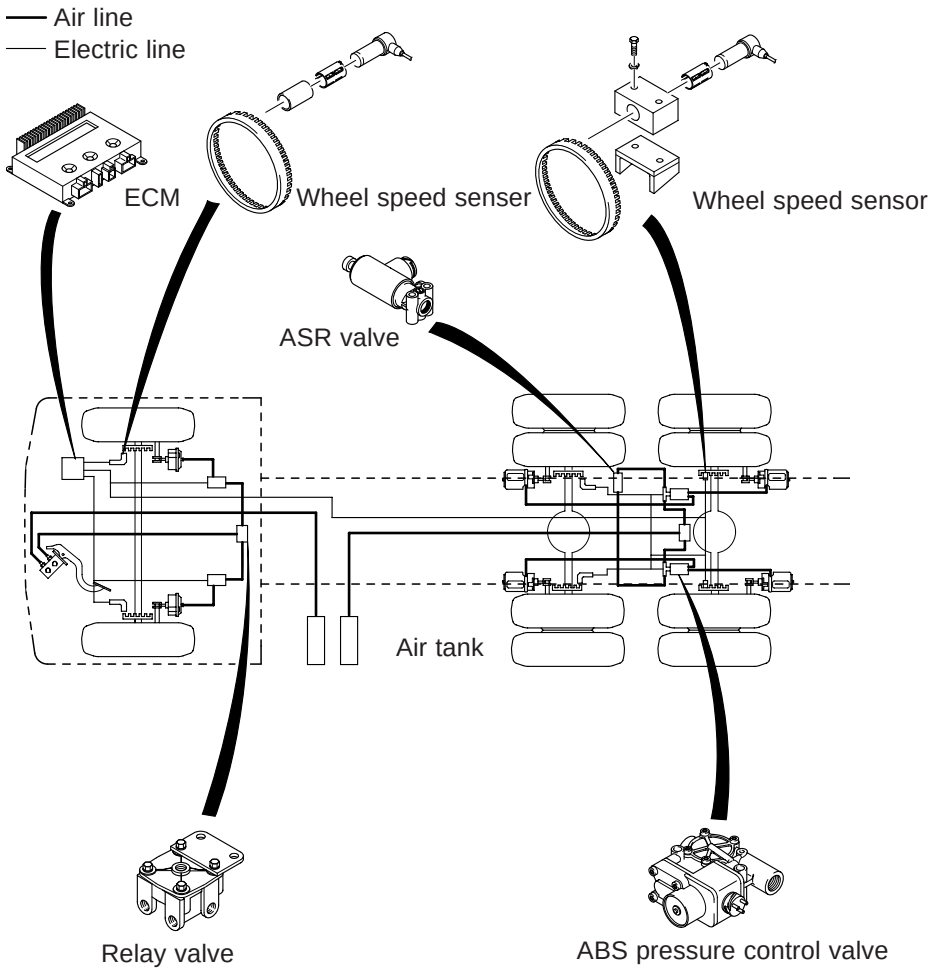
Instrument panel C
(Based on dash harness)



DBR relay
(Fuse relay box)

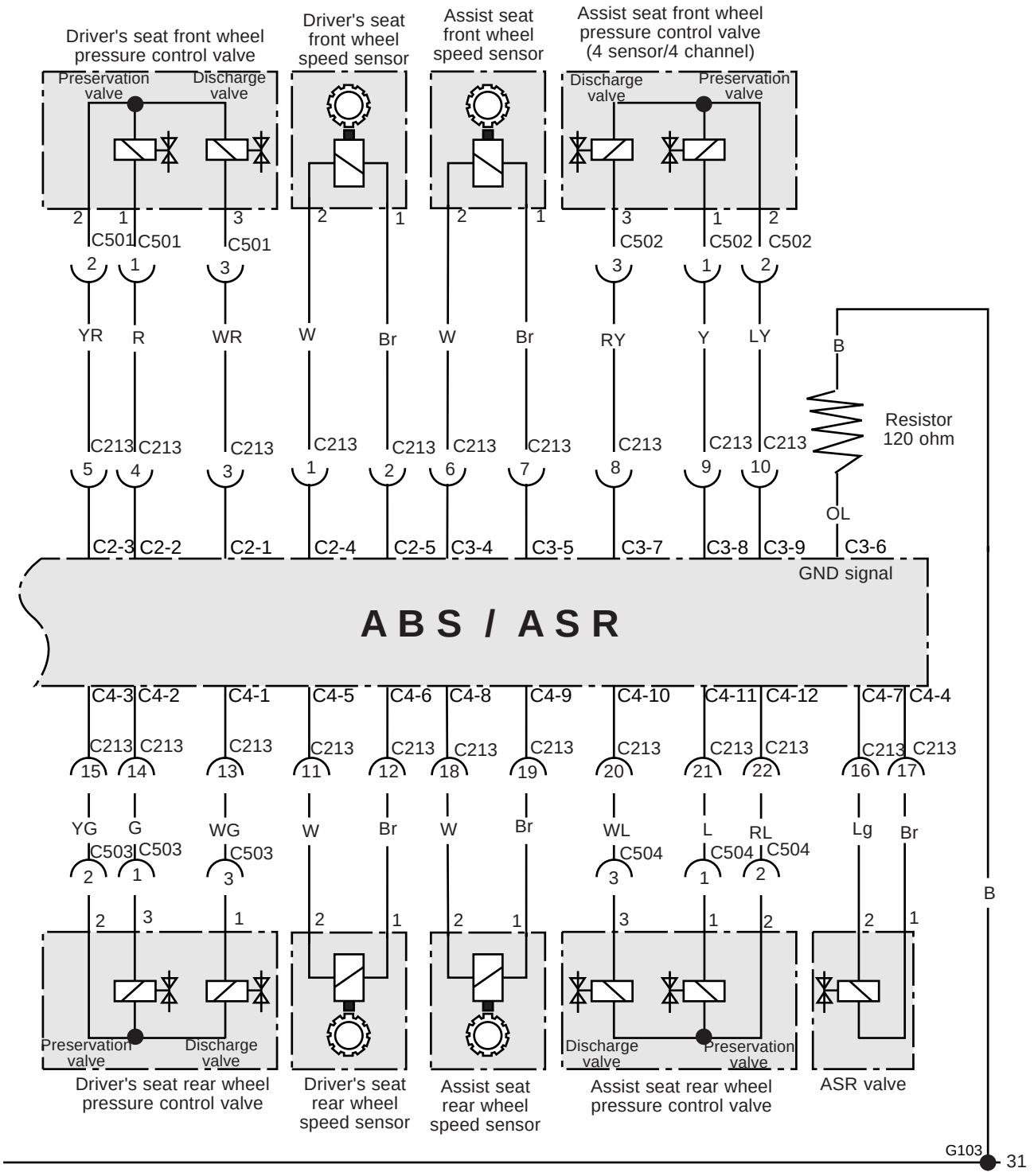
2) LOCATION OF PARTS

(NO.4 Sensor / NO.4 Channel D-version)

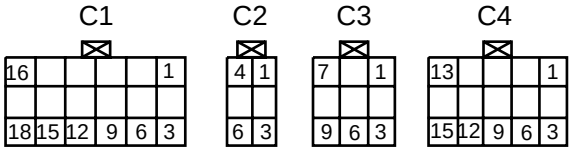


EL062-1

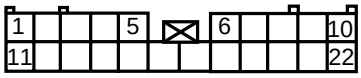
34-1. ABS/ASR PRESSURE CONTROL VALVE, WHEEL SPEED SENSOR CIRCUIT DIAGRAM (NO.4 SENSOR / NO.4 CHANNEL)



1) CONNECTOR AND PIN NUMBER

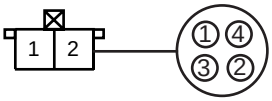


ABS/ASR ECM (D-Version)

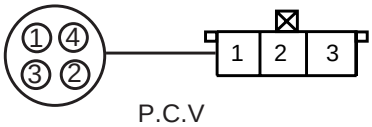


C213, 22pin

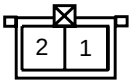
ABS/ACR ECM
(Based on dash harness)



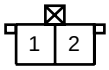
Sub-connector
(Based on frame harness)



P.C.V
C501-504
(Based on frame harness)

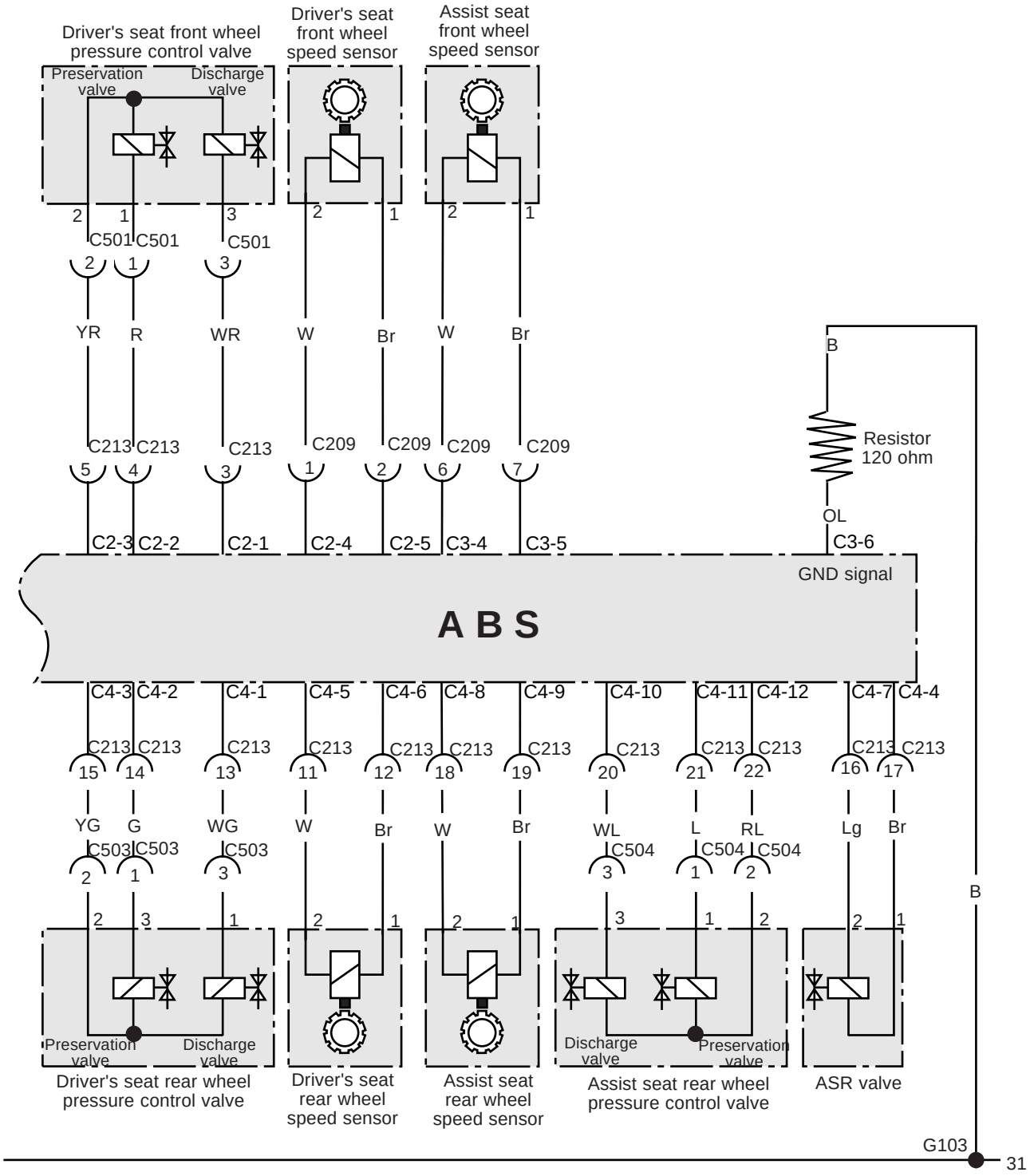


Wheel speed sensor
(Based on frame harness)

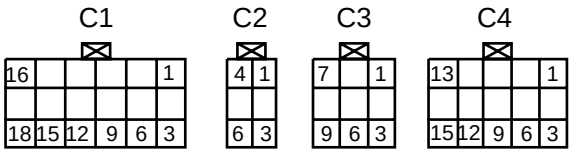


Resistor 120 ohm
(Based on dash harness)

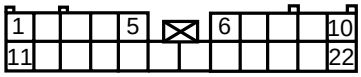
34-2. ABS/ASR PRESSURE CONTROL VALVE, WHEEL SPEED SENSOR CIRCUIT DIAGRAM (AOH: NO.4 SENSOR/NO.3 CHANNEL)



1) CONNECTOR AND PIN NUMBER

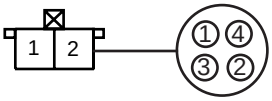


ABS/ASR ECM (D-Version)

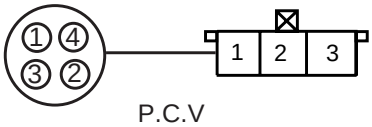


C213, 22pin

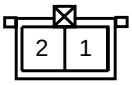
ABS/ASR ECM
(Based on dash harness)



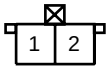
Sub-connector
ASR valve
(Based on frame harness)



P.C.V
C501-504
(Based on frame harness)

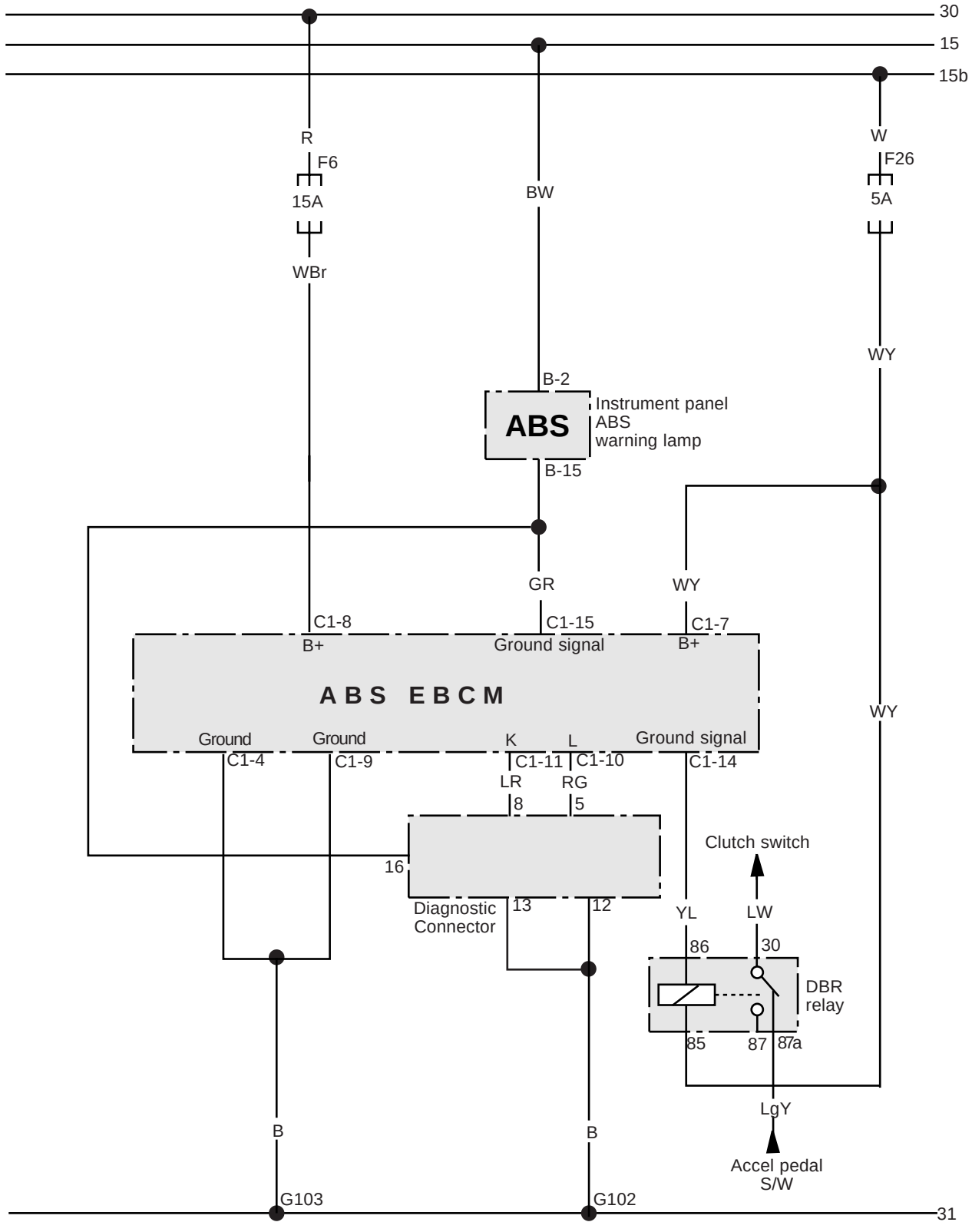


Wheel speed sensor
(Based on frame harness)

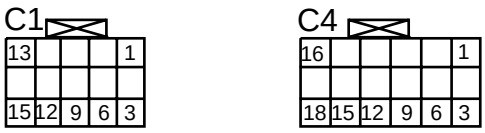


Resistor 120 ohm
(Based on dash harness)

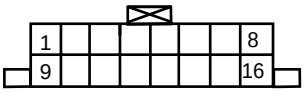
35. ABS ELECTRIC CIRCUIT DIAGRAM (D-VERSION BASIC)



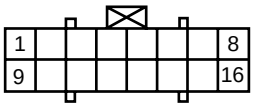
1) CONNECTOR AND PIN NUMBER



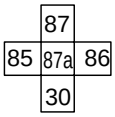
ABS/ASR ECM (D-Version Basic) Connector



Diagnostic connector
(Based on dash harness)

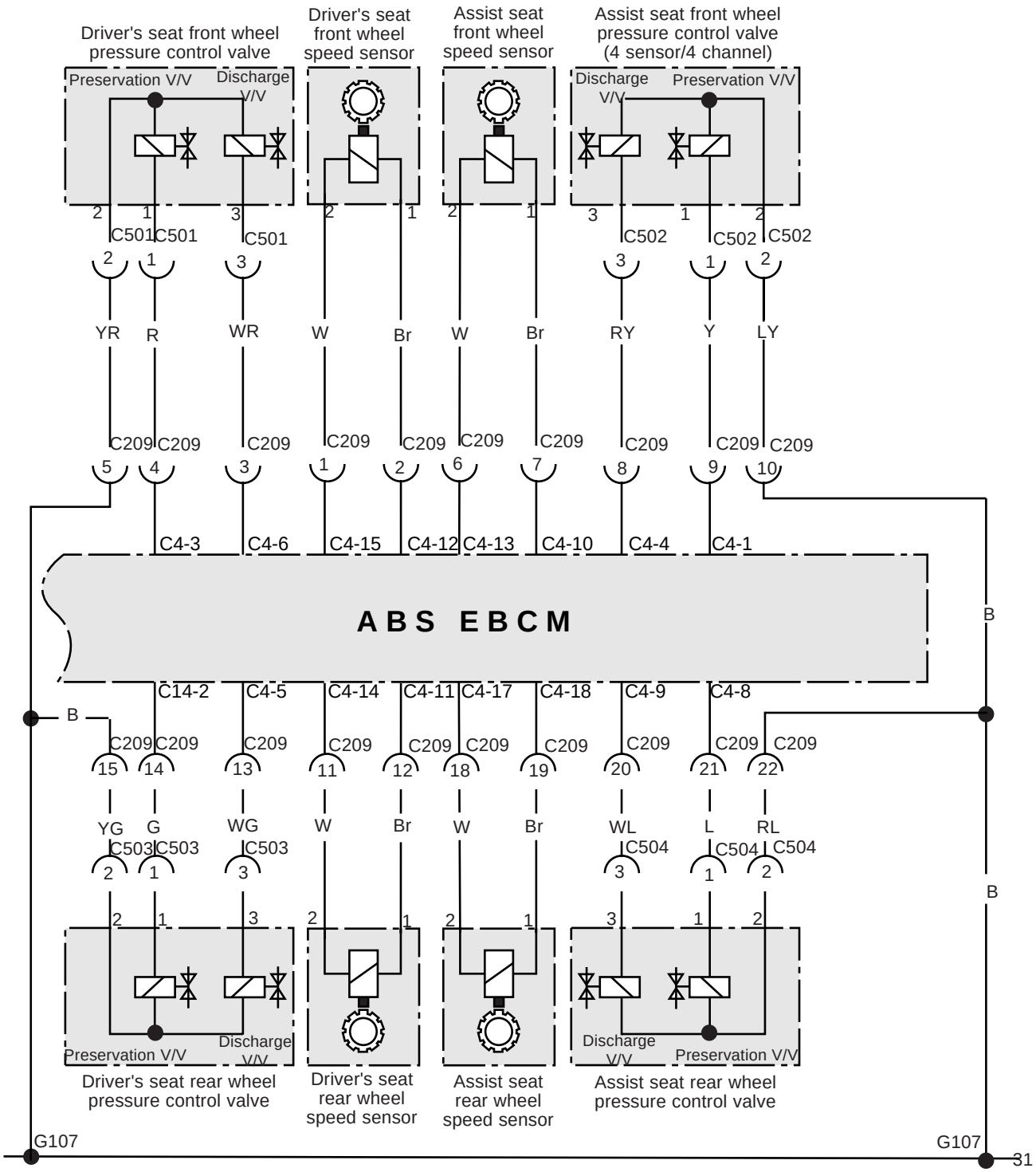


Instrument B
(Based on dash harness)

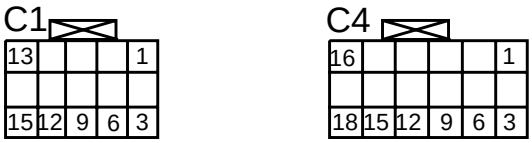


DBR relay
(Fuse relay box)

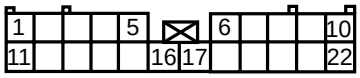
35-1. ABS PRESSURE CONTROL VALVE, WHEEL SPEED SENSOR CIRCUIT DIAGRAM (D-VERSION)



1) CONNECTOR AND PIN NUMBER

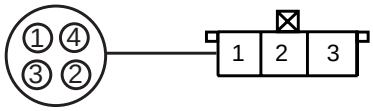


ABS/ASR ECM (D-Version) Connector

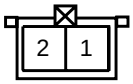


C209, 22pin

Dash - Frame harness
(Based on dash harness)

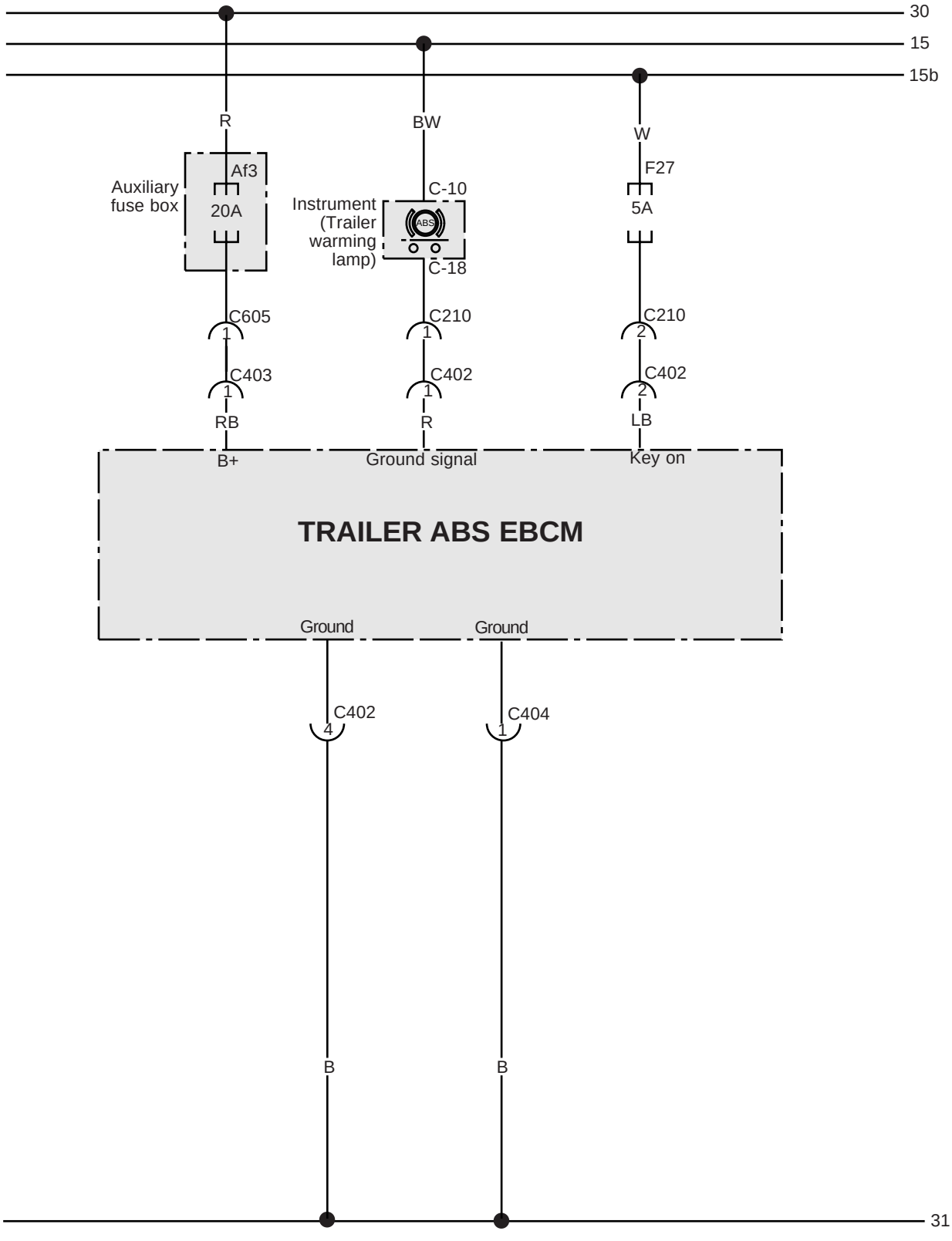


P.C.V
C501-504
(Based on frame harness)



Wheel speed sensor
(Based on frame harness)

36. TRAILER ABS CIRCUIT DIAGRAM (FOR TRACTOR)



1) CONNECTOR AND PIN NUMBER

C210, 2pin

Dash-frame harness
(Based on dash harness)

C404, 1pin

Frame-trailer harness
(Based on frame harness)

C402, 4pin

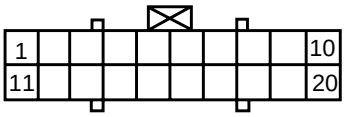
Frame-trailer haness
(Based on frame harness)

C605, 1pin

Frame-Aux fuse box harness
(Based on frame harness)

C403, 1pin

Frame-trailer harness
(Based on frame harness)



Instrument C (White)
(Based on dash harness)

37. BLINKCODE DESCRIPTION

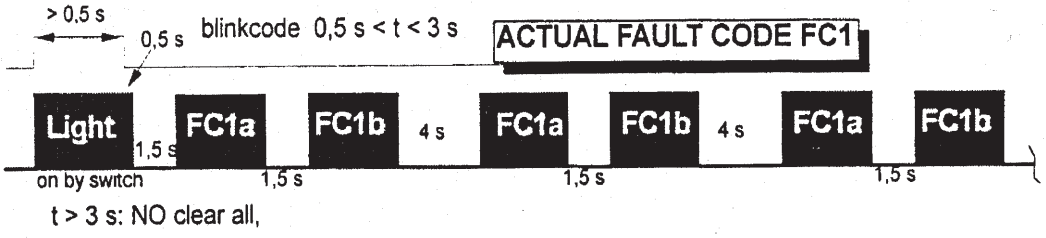
For blinkcode activation warning lamp respectively the ASR-L has to be grounded for a given time by a push button switch. Which signal lamp has to be used depends on ECU type respectively its parametersetting. The duration defines the mode. After release of the switch the signal light will be on for further 0.5 sec. to confirm that the grounding was detected and accepted by the Electronic Control Unit, ECU.

If a fault occurs or signal lamp is grounded for longer than 6.3 sec. blinkcode will be terminated. If grounding is detected for more than 15 sec., fault detection of warning lamp open circuit can be detected and stored in ECU EEPROM (non-volatile memory). Blinkcode activation on ASR-lamp do not cause fault memorizing because open circuit is not detected.

Dashboard signal lamp check devices which grounds the lamp in the described way activates the related mode.

1) DIAGNOSTIC MODE

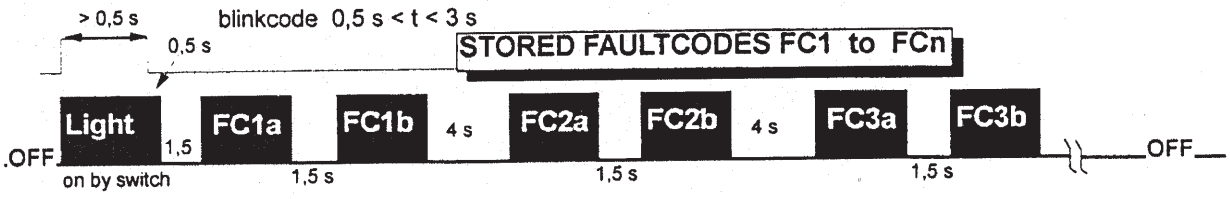
For diagnostic mode activation signal lamp has to be grounded for 0.5 sec. to 3.0 sec.



FC : Faultcode // 1 to 8 // a: first part ; b: second part see Blinkcode List
FC1 repeated because fault is actual

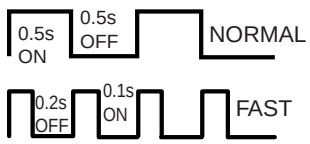
If one fault was detected during current "IGNITION ON" (autual fault) the ECU blinks out that fault. If more faults were detected during that period blinkcode shows just the latest detected fault. For termination ignition must be switched off/on or vehicle has to move (measured speed of more than one axle).

If there is no actual fault, the last fault will be blinked out fist. Further fault numbers may not represent the sequence of occurrence. The stored fault blink mode is self terminating.



FC : Faultcode // 1 to 8 // a: first part ; b:second part see Blinkcode List

Blink code timing:

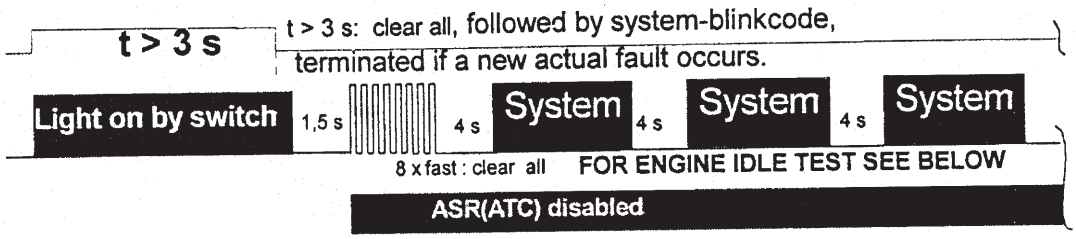


2) SYSTEM MODE, CLEAR ALL MEMORIZED FAULTS:

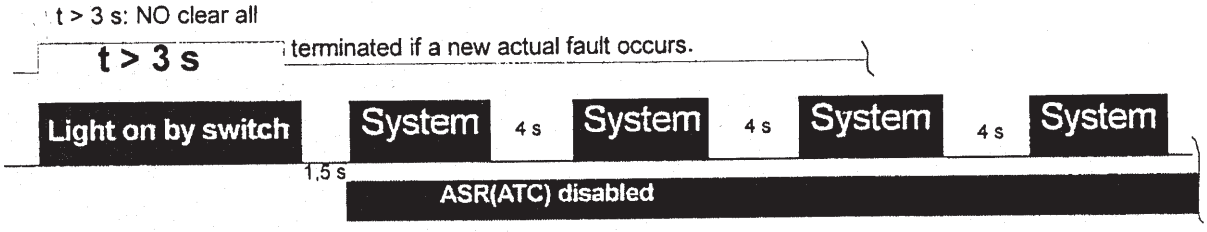
System mode is activated if the signal lamp is grounded for a time of 3 to 6.3 sec. All stored faults are erased, if no fault is actual.
For termination ignition has to be switched off / on or vehicle has to move (measured speed of more than one axle).
System code (one number) represents the expected system and should be used to check correct ECU type. After activating system mode ASR(ATC) is disabled for dyno tests. With WL blinkcode ECU's ASR(ATC) lamp is permanently on indicating ASR(ATC) disabling.

Two seconds after system mode activation further functions are available:
1. ASR (ATC) engine control function can be tested by two times extra grounding of a time of > 0.5 sec (ASR(ATC) commands idle torque for 10 sec.)
2. ASR(ATC) respectively Retardercontrol system can be reconfigured by three times extra grounding of a time of > 0.5 sec (missing components can be confirmed).
   Reconfiguration is confirmed by four short flashes

Without actual fault : CLEARS ALL MEMORIZED FAULTS
CLEAR ALL is accepted and confirmed by 8 short flashes followed by the system code.



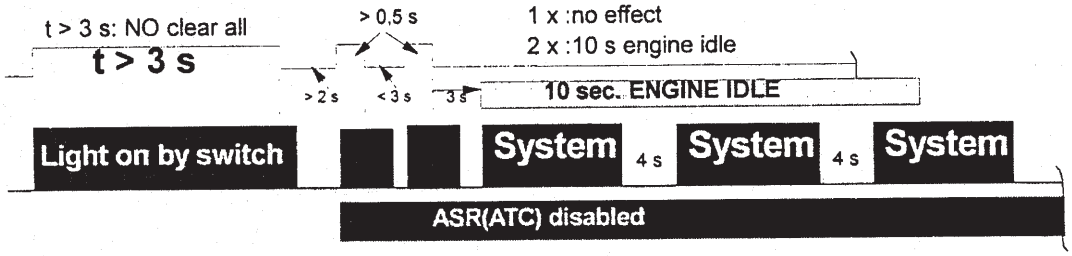
Without actual fault
Identical to no actual fault condition but CLEAR ALL is not accepted.



System :		
	2 x 4S/4M	6 x 4S/3M (VAR rear)
	3 x 4S/3M (MAR/VAR front)	7 x 4S/2M (VAR both)

3) ENGINE CONTROL FUNCTION TEST:

For testing engine control function a 10 sec idle torque can be commanded if the signal lamp is additionally two times grounded. The duration of grounding has to be longer than 0.5 sec. and time between the two grounding has to be less than 3 sec.
The 10 sec. time starts 3 sec. after last grounding. Parallel to the engine control function test the system blinkout continues.

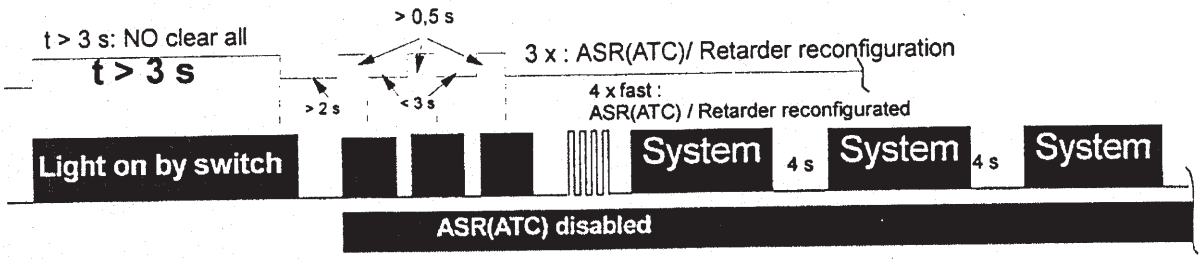


4) RECONFIGURATION:

- The ECU modifies its default system (without ASR/ATC) to ASR/ATC if a differential brake valve and one of the engine control interfaces are connected.
- Connected SAE J1939 (SAE J 1922) without a differential brake valve cause an extension of the supervised ABS components.
- Connected endurance brake relay (DBR output) or received retarder messages on data link (SAE J1922 resp. SAE J1939) stores and extends the ABS components too.

Without reconfiguration such ECU'S could not be used in vehicles without those components. Additional to diagnostic tools this reconfiguration can be done by the means of blinkcode.
To avoid unintentional reconfiguration this function has to be confirmed by three times grounding of the signal lamp in the way described above for engine control function test. Before system code continues 4 short flashes confirm the modification of parameters.

The ASR/ATC lamp bulbtest duration shows whether ASR/ATC is configured or not. Without ASR/ ATC:1,5 sec. ; with ASR/ATC 3 sec. (as Warning Lamp).



5) DYNOTESTER FUNCTION:

For certain dynotester it is necessary to disable ASR/ATC to allow higher speed difference between driven and steering axle. By activating system mode ASR/ATC can be disabled. With WL Blinkcode ECU's ASR(ATC) lamp is permanently on indicating ASR(ATC) diabling.
To prevent dangerous situations caused by brakeforce in case of ignition off/on or powersupply inter rupts, ASR/ATC is disabled as long as there are speed differences after ECU reset. For indication the ASR/ATC lamp is permanently on until ignition is switched off/on.

6) BLINKCODE LIST

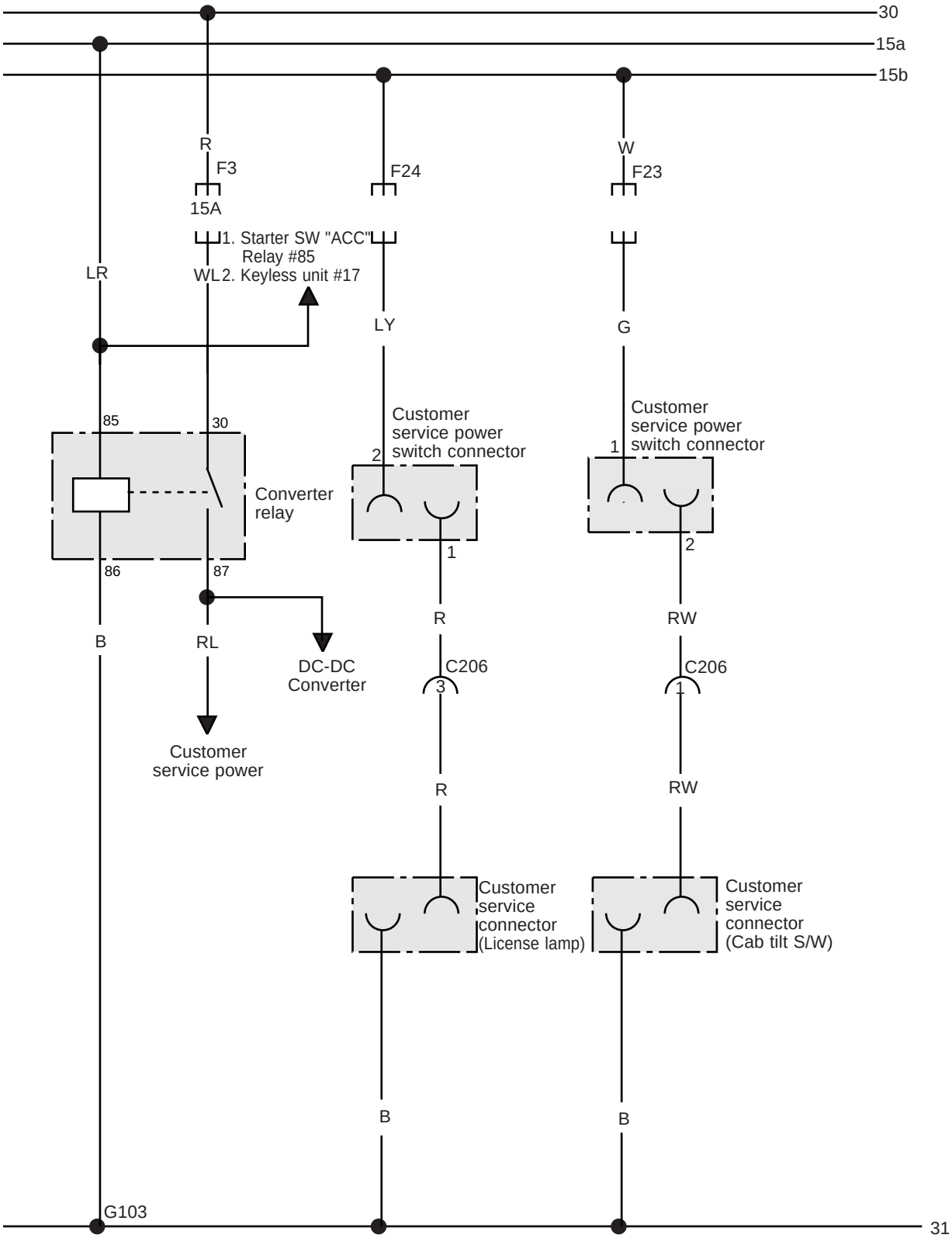
First faultcodepart (FC.a)	Second faultcodepart (FC.b)
1 NO FAULTS	1 NO FAULTS
2 ABS MODULATOR 3 SENSOR AIR GAP 4 SENSOR SHORT / OPEN 5 SENSOR ERRATIC / TIRE SIZE 6 SENSOR TONE RING	1 RIGHT FRONT 2 LEFT FRONT 3 RIGHT REAR 4 LEFT REAR 5 RIGHT THIRD 6 LEFT THIRD
7 SYSTEM FUNCTION	1 DATA LINK 2 ASR(ATC) VALVE 3 ENDURANCE BRAKE (THIRD BRAKE RELAY) 4 WARNING LAMP 5 ASR(ATC) CONFIGURATION 6 ASR(ATC) PROP/DIF LOCK/STOP VALVE 7 BRAKE SIGNAL
8 ECU	1 POWER SUPPLY LOW 2 POWER SUPPLY HIGH 3 INTERNAL FAULT 4 CONFIGURATION ERROR 5 GROUND

7) FAULTCODES / REPAIR INSTRUCTIONS

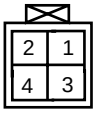
2. n	Check modulator wires. Inlet(EV) or outlet(AV) or common wire is permanently or temporarily broken or shorted to plus respectively ground.
3. n	Amplitude of sensorsignal is to low. Check bearing play, polewheel run out, push sensor to polewheel. Check sensor wiring and connectors for intermittent contact. Other possible reason:gear engaged at slippery conditions. 16 sec. slip duration.
4. n	Check sensor wiring. Open circuit, short circuit to plus respectively ground or between sensorwires IG/IGM is detected
5. n	Check sensor wiring and connectors for intermittent contact. Check toothed wheel for damages. Check for mismatch-fault of another sensor. Pneus or number of polewheel teeth are different.
6. n	Check polewheel for damages/missing teeth/run out. Use WABCO sensor probe. Replace polewheel if not checked o. k. If additional airgap faults are stored, adjust airgap.
7-1	ECU with PROP : Check wire and speedometer signal. C3/B7 signal calibration, check tyre sizes. Gear switch signals neutral or is manipulated. Electronic engine control: Check wiring respectively other ECU's Excessive slip / dynotester ? One axle was much faster than other?
7-2	Check wire. Output wire is interrupted or grounded or shorted to battery supply.
7-3	Check wire. Output wire is interrupted or grounded or shorted to battery supply. ECU with SAE J1922 resp. SAE J1939:Check other ECU's. No access to the link
7-4	Check wire and bulb. Was blinkcode switch activated longer than 16 s?
7-5	Check wires resp. parametersetting. Diff-brake valve without engine control is detected or CAN, PWM, PROP are detected while selfparameterizing is disabled.
7-6	Check wire. Output wire is interrupted or shorted to ground or battery supply.
7-7	Check brake sensor wiring. Intput wire is interrupted or shorted to ground or battery supply.
8-1	Check supply wire and fuse. Supply voltage is temporarily too low
8-2	Check alternator and battery. Supply voltage too high for more than 5 sec.
8-3	Replace ABS(ASR) electronic if fault detection repeats.
8-4	No modulators connected or wrong ECM or wrong parameterized
8-5	Check ECU ground wires and common modulator wires

BLANK

38. SERVICE ELECTRIC EQUIPMENTS FOR USER CIRCUIT DIAGRAM

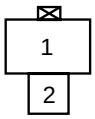


1) CONNECTOR AND PIN NUMBER

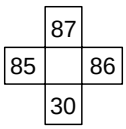


C206, 4pin

Dash-frame harness
(Based on dash harness)

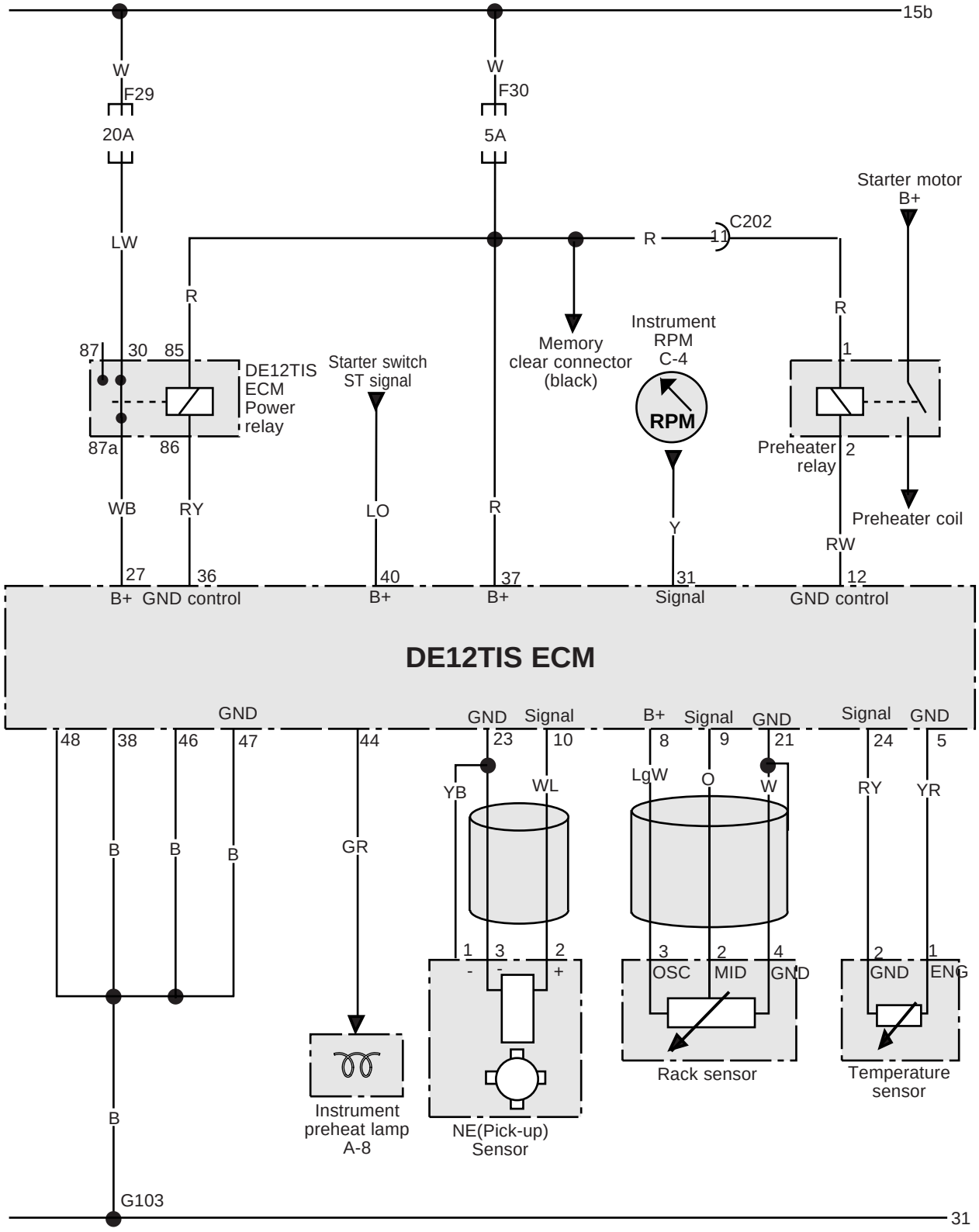


Customer service S/W connector
(Based on dash harness)

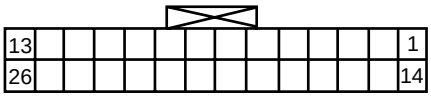


Converter relay
(Fuse relay box)

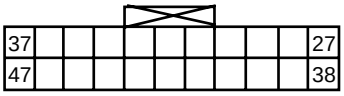
39. DE12TIS ECM POWER, RACK SENSOR, RPM SENSOR CIRCUIT DIAGRAM



1) CONNECTOR AND PIN NUMBER

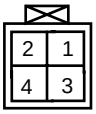


DE12TIS ECM Frame harness connector

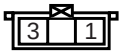


DE12TIS ECM Dash harness connector

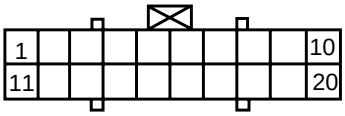
Temperature
sensor connector
(Based on dash harness)



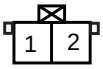
Rack sensor
(Based on frame harness)



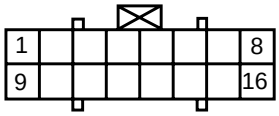
NE(pick-up)
sensor connector



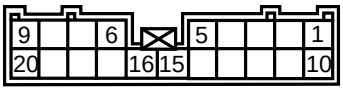
Instrument C (Whie)
(Based on dash harness)



Airheater relay
(Based on frame harness)

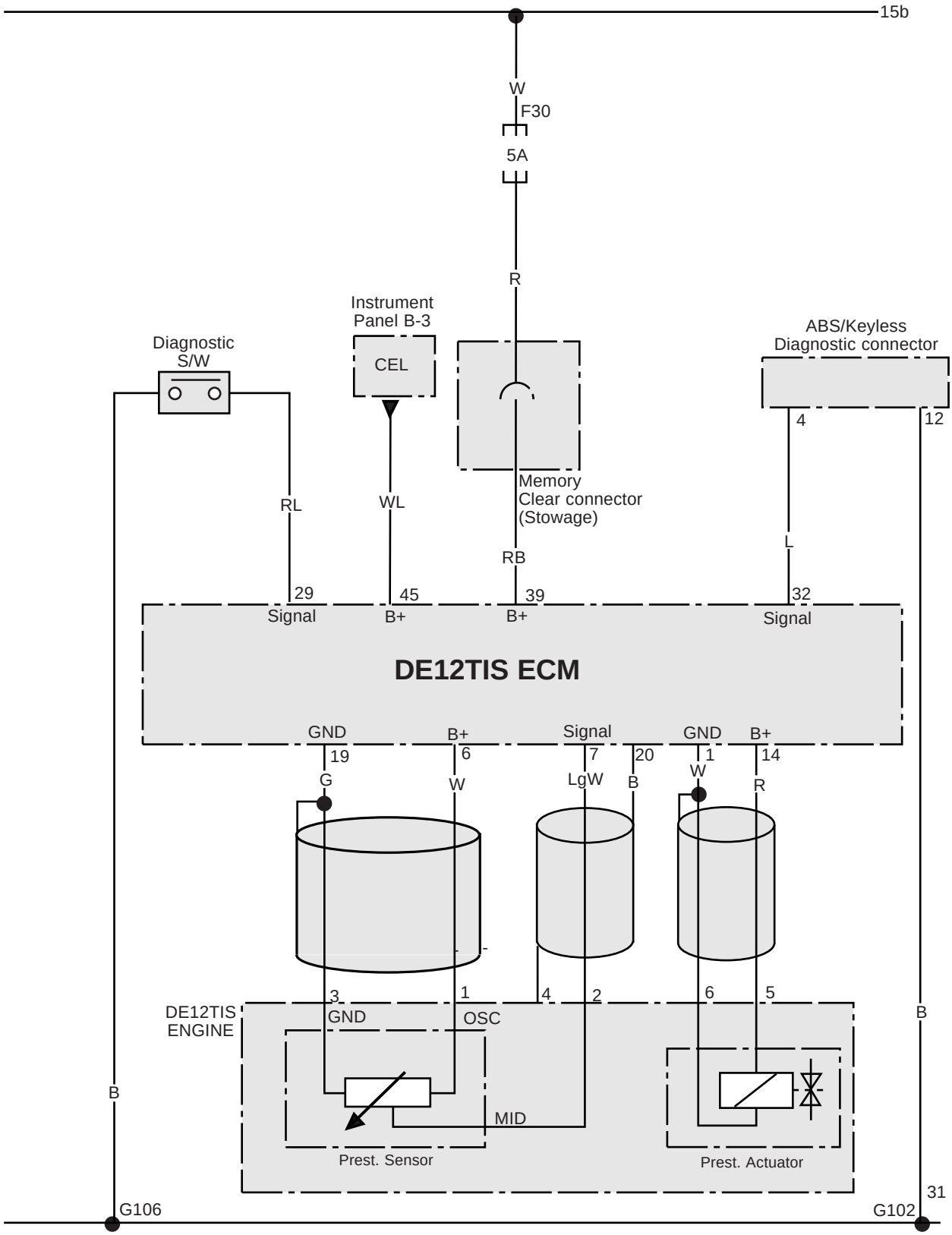


Instrument A (White)
(Based on dash harness)

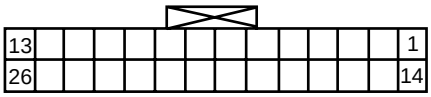


C202, 20pin
(Based on dash harness)

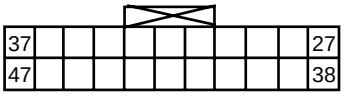
40. DE12TIS DIAGNOSTIC, PREST SENSOR AND ACTUATOR CIRCUIT DIAGRAM



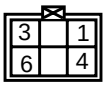
1) CONNECTOR AND PIN NUMBER



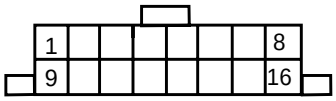
DE12TIS ECM Frame harness connector



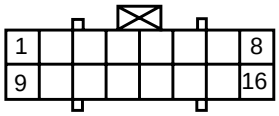
DE12TIS ECM Dash harness connector



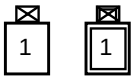
Prest. actuator connector



Diagnostic connector (Based on dash harness)

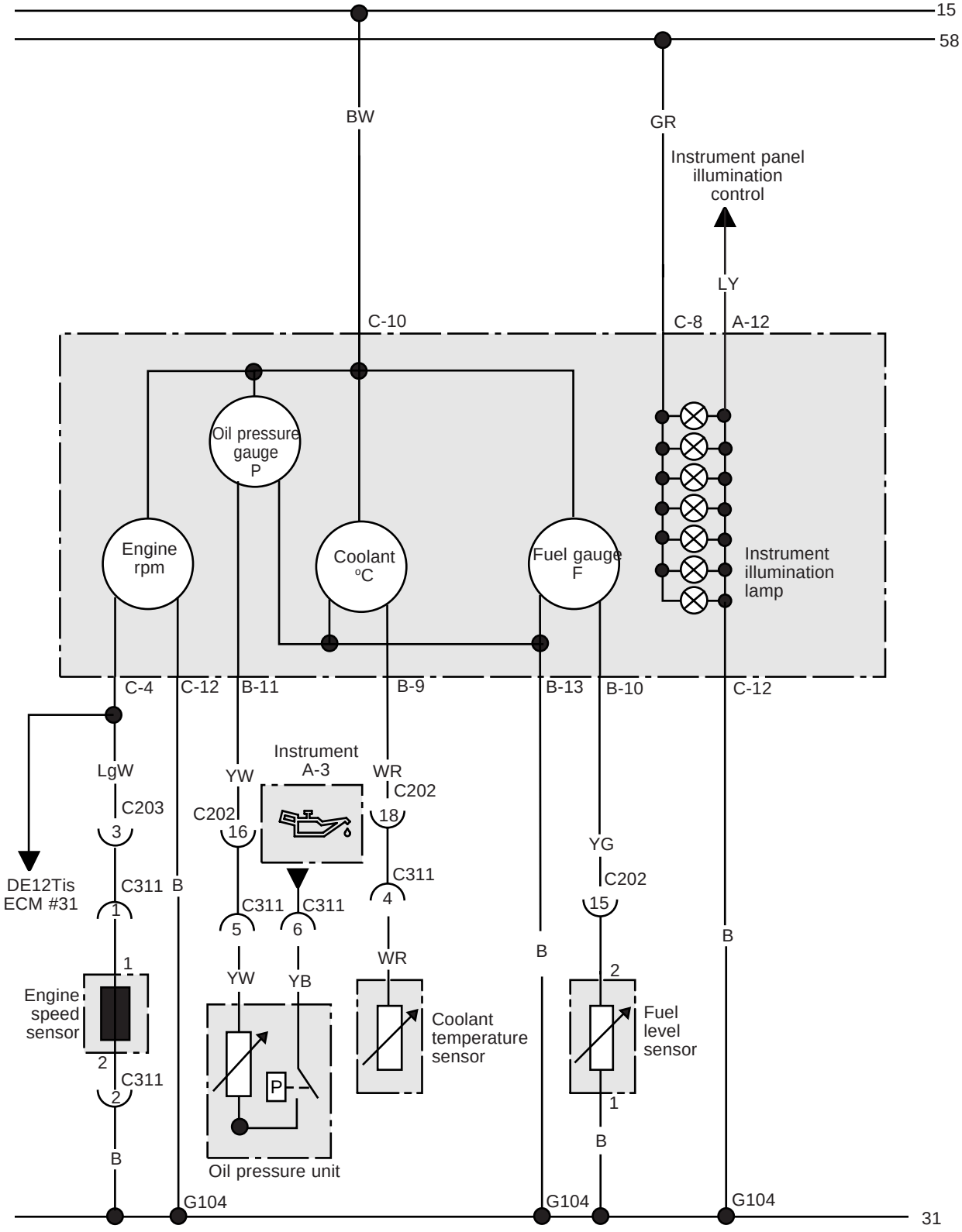


Instrument B (Based on dash harness)

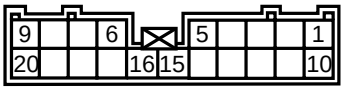


DE12TIS Memory clear connector

41. INSTRUMENT SYSTEM CIRCUIT DIAGRAM
41-1. INSTRUMENT SYSTEM FOR DE ENGINE CIRCUIT DIAGRAM



1) CONNECTOR AND PIN NUMBER

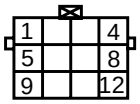


C202, 20pin

Dash-frame harness
(Based on dash harness)

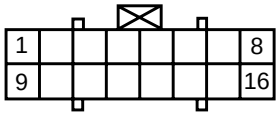
C203, 18pin

Dash-frame harness
(Based on dash harness)

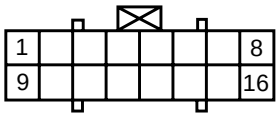


C311, 12pin

Frame-engine harness
(Based on frame harness)

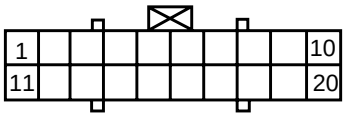


A



B(Black)

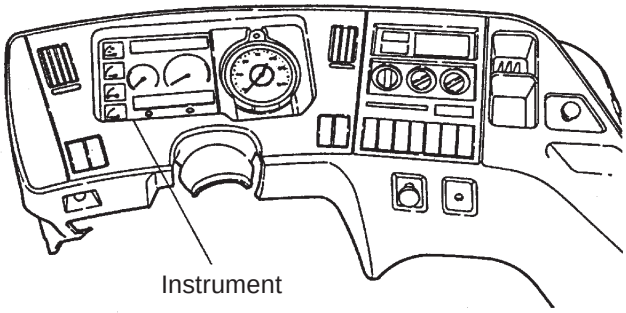
Fuel level sensor
(Based on frame harness)



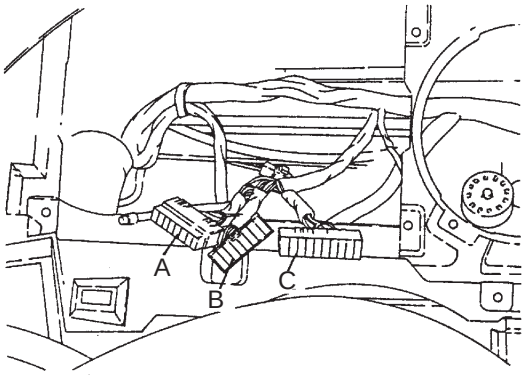
C

Instrument connector

2) LOCATION OF PARTS



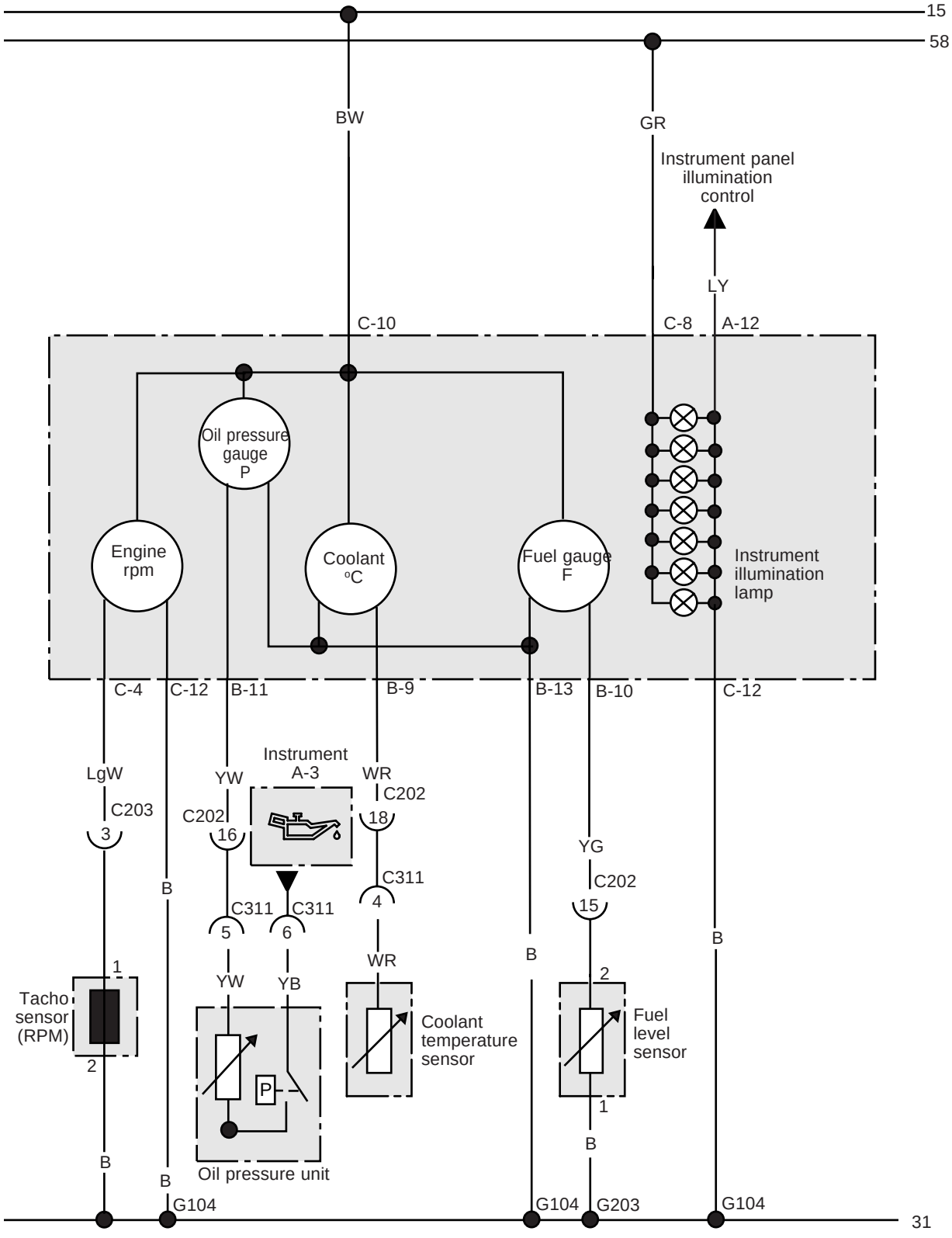
I.P panel



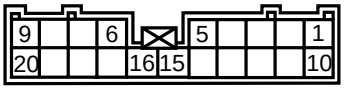
EL073

Instrument connector

41-2. INSTRUMENT SYSTEM FOR DV ENGINE CIRCUIT DIAGRAM

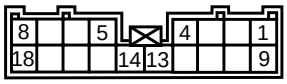


1) CONNECTOR AND PIN NUMBER



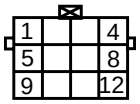
C202, 20pin

Dash-frame harness
(Based on dash harness)



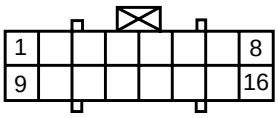
C203, 18pin

Dash-frame harness
(Based on dash harness)

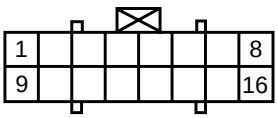


C311, 12pin

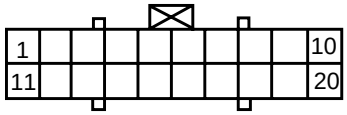
Frame-engine harness
(Based on frame harness)



A



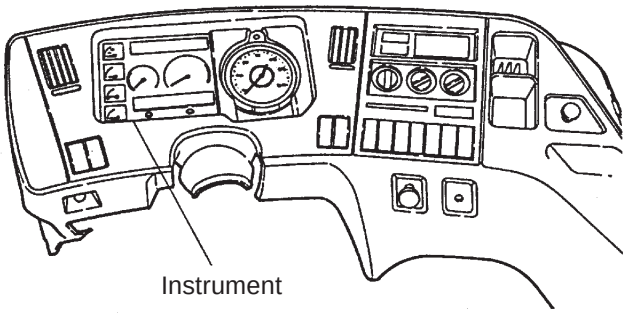
B(Black)



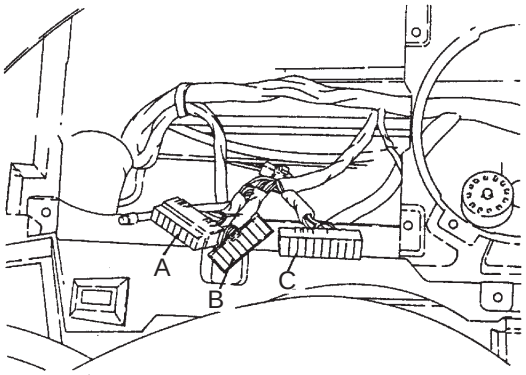
C

Instrument connector

2) LOCATION OF PARTS



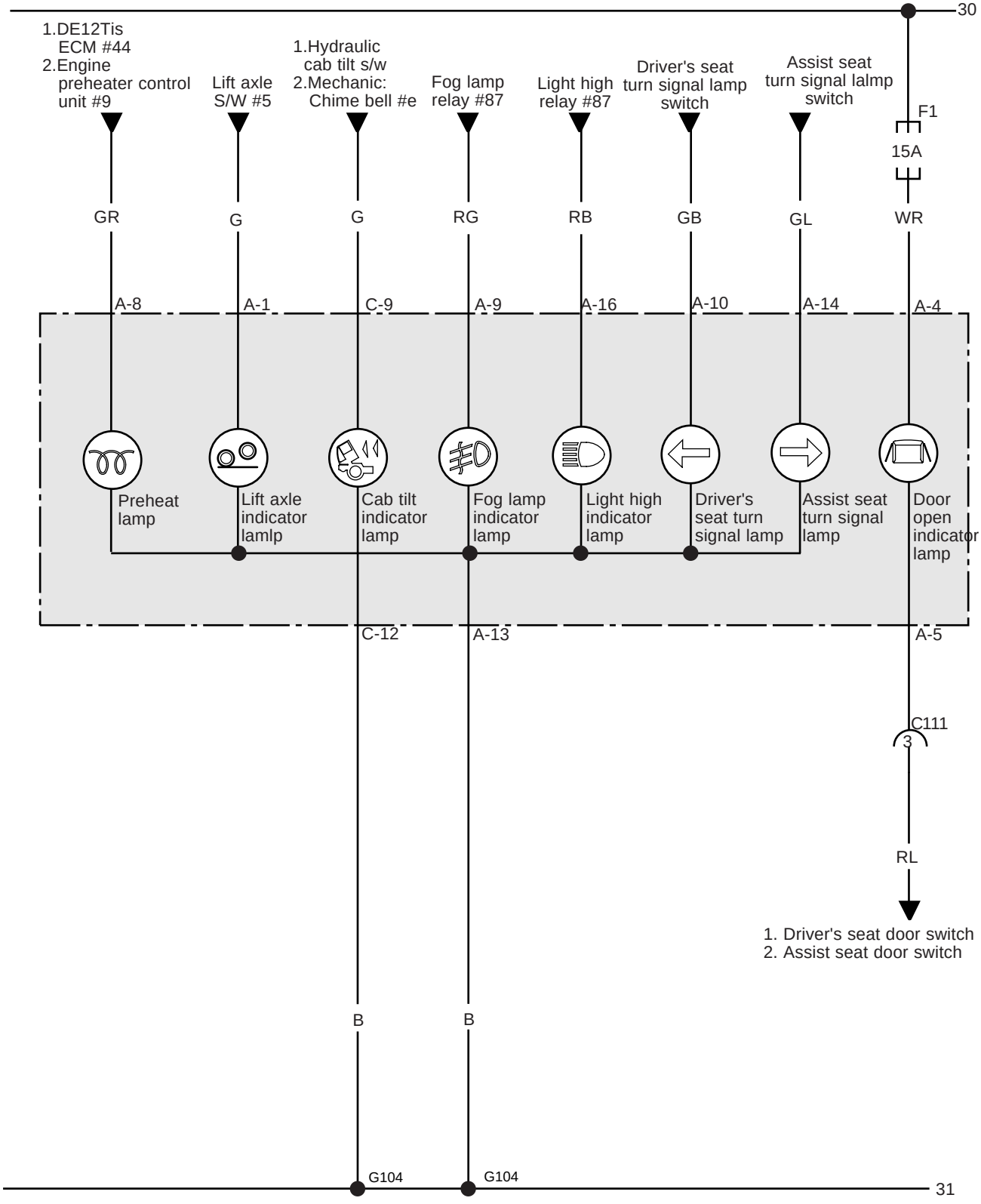
I.P panel



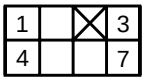
EL073

Instrument connector

41-3. INDICATOR LAMP OF INSTRUMENT CIRCUIT DIAGRAM (PREHEAT, LIFT AXLE, CAB TILT LAMP ETC.)

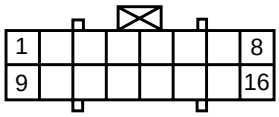


1) CONNECTOR AND PIN NUMBER

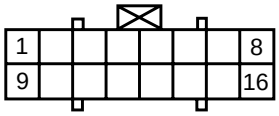


C111, 7pin

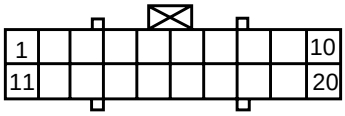
Dash-Roof harness
(Based on dash harness)



A



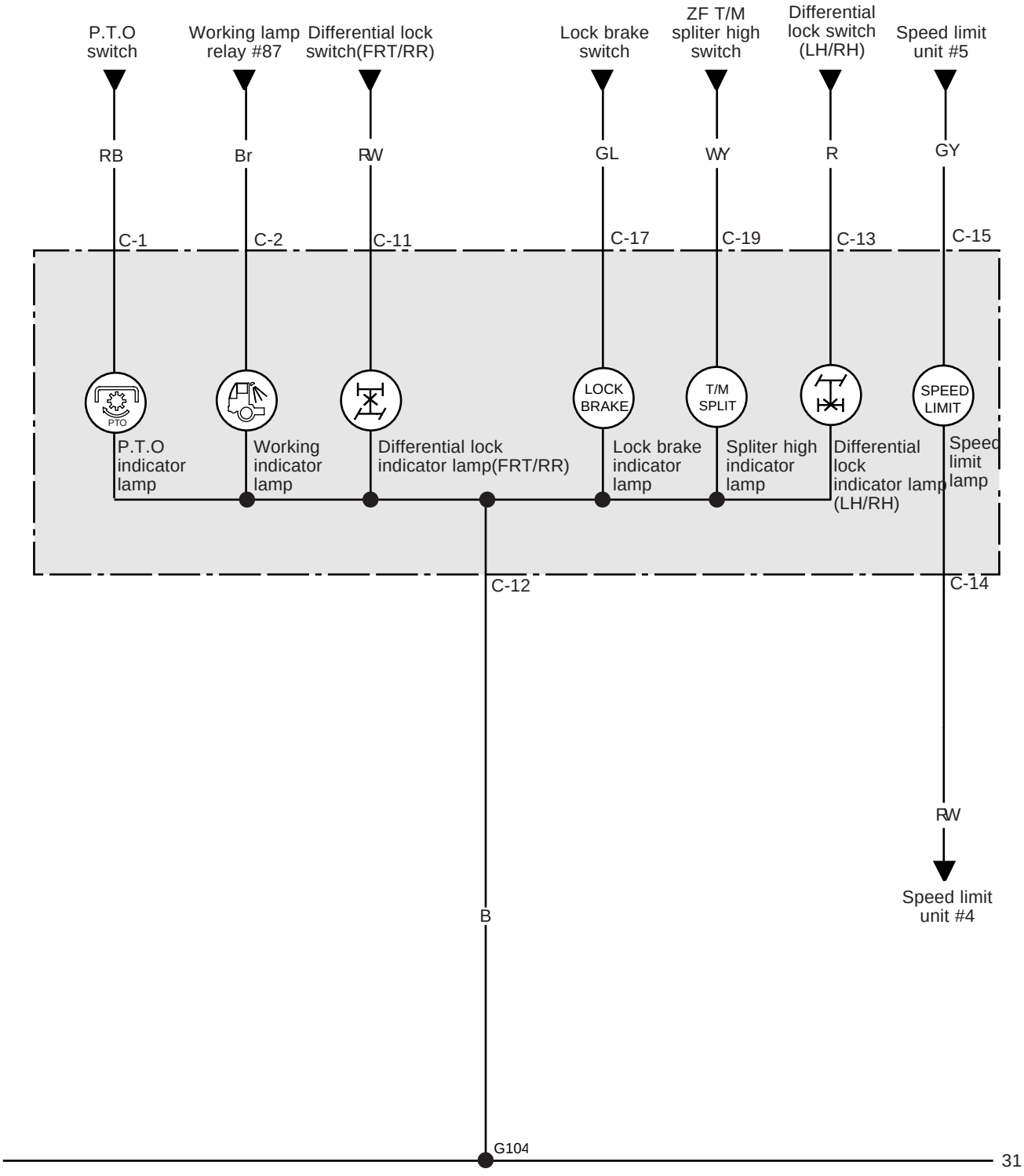
B(Black)



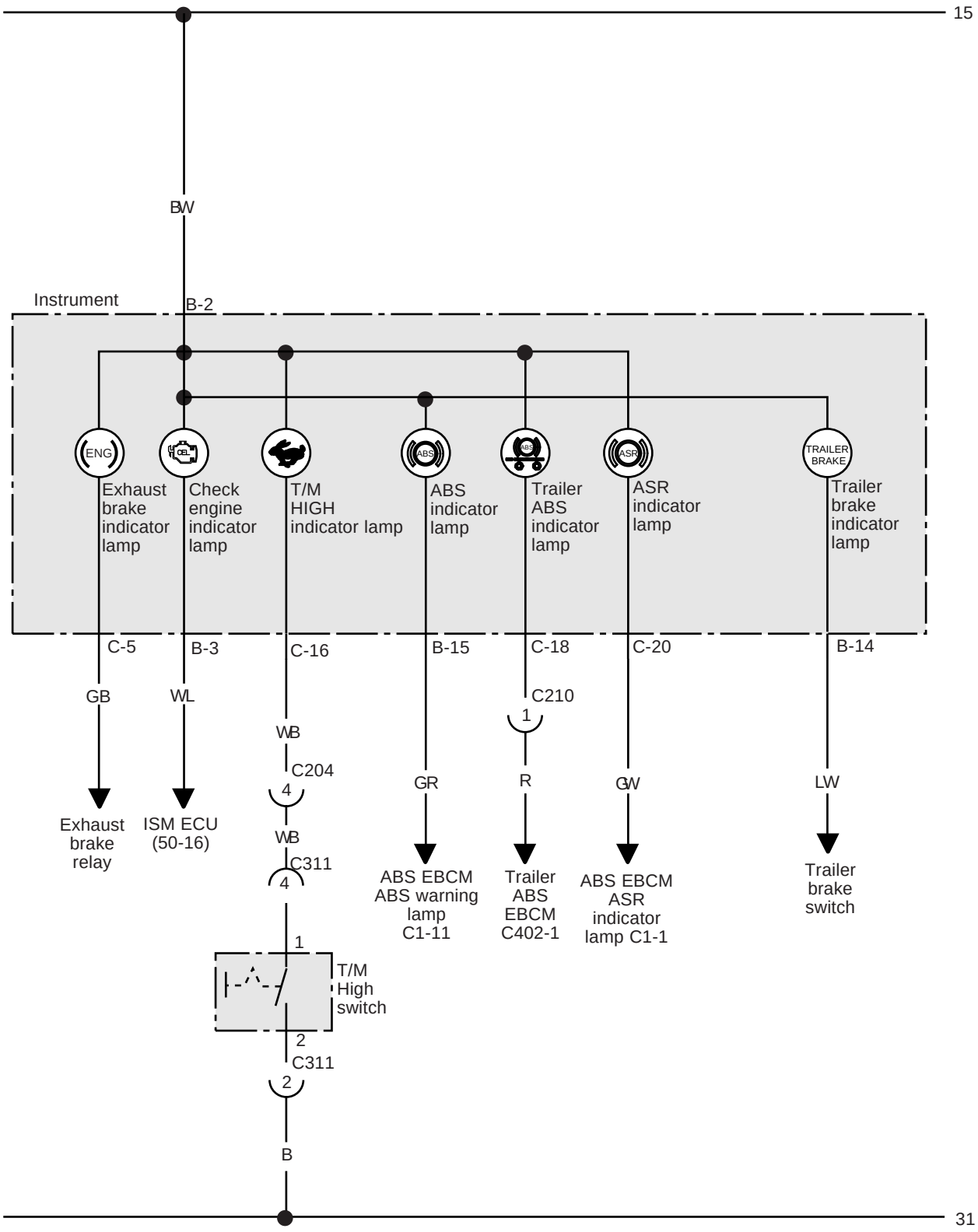
C

Instrument connector

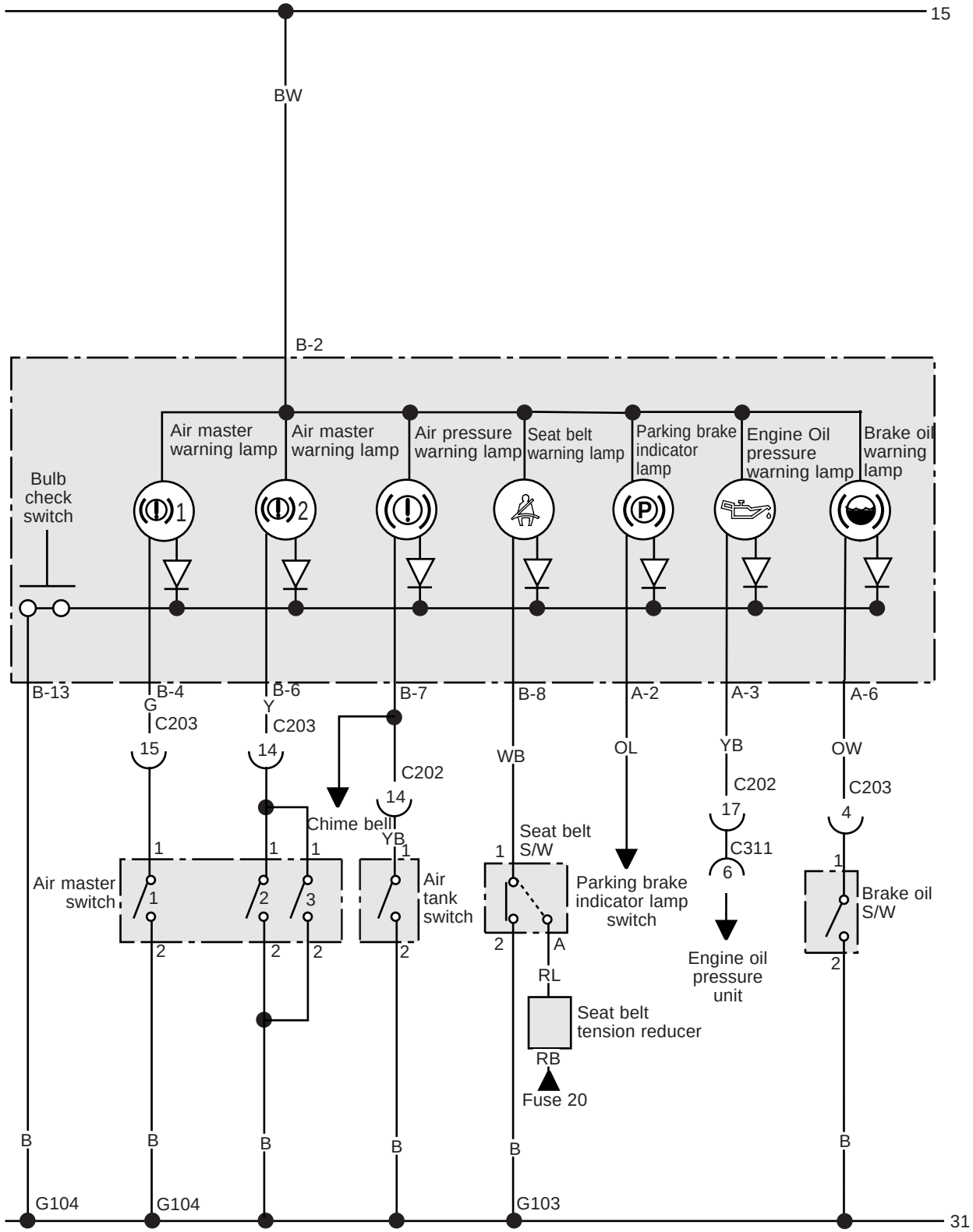
41-4. INDICATOR LAMP OF INSTRUMENT CIRCUIT DIAGRAM (PTO LAMP, DIFFERENTIAL LOCK LAMP ETC.)



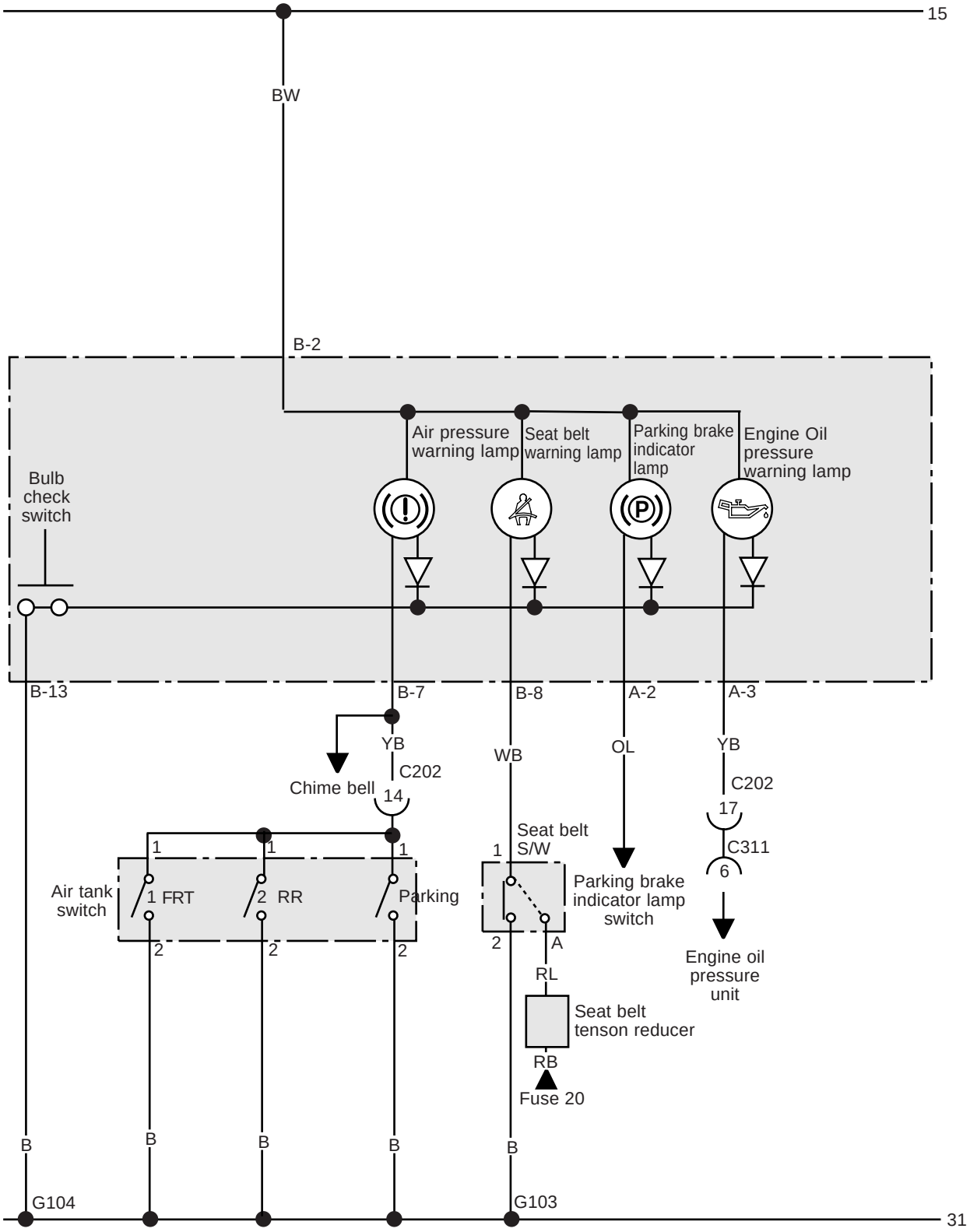
41-5. SWITCH AND WARNING LAMP CIRCUIT DIAGRAM (EXHAUST BRAKE, CHECK ENGINE, ABS/ASR, TRAILER BRAKE LAMP)



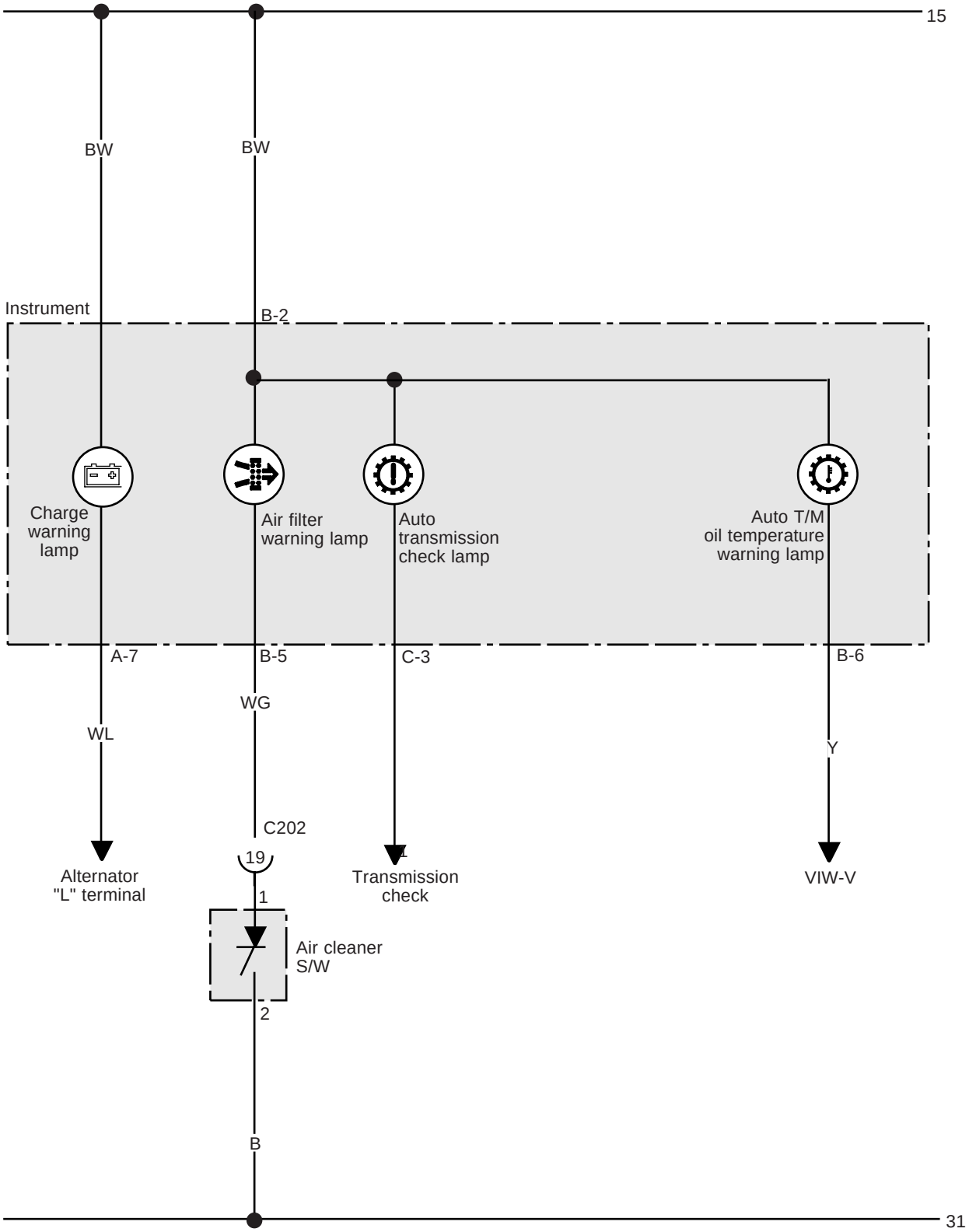
41-5-1. SWITCH AND WARNING LAMP CIRCUIT DIAGRAM(FOR AOH)



41-5-2. SWITCH AND WARNING LAMP CIRCUIT DIAGRAM(FOR FAB)

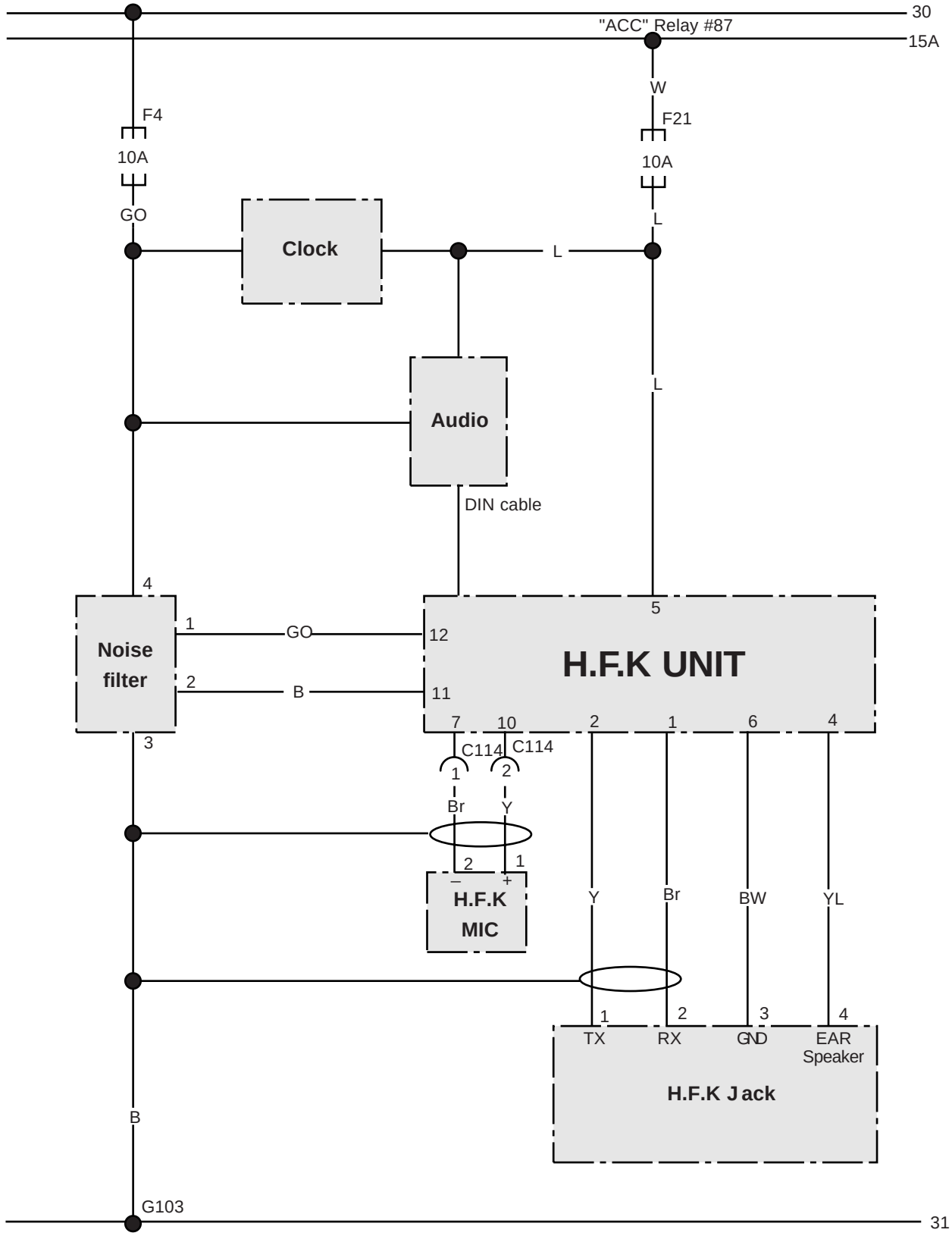


41-5-3. SWITCH AND WARNING LAMP CIRCUIT DIAGRAM

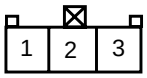


BLANK

42. HANDS FREE KIT CIRCUIT DIAGRAM

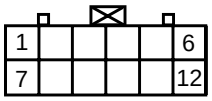


1) CONNECTOR AND PIN NUMBER

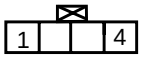


C114, 3pin

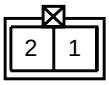
Dash - Root harness
(Based on dash harness)



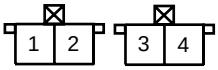
H.F.K unit
(Based on dash harness)



H.F.K jack
(Based on dash harness)

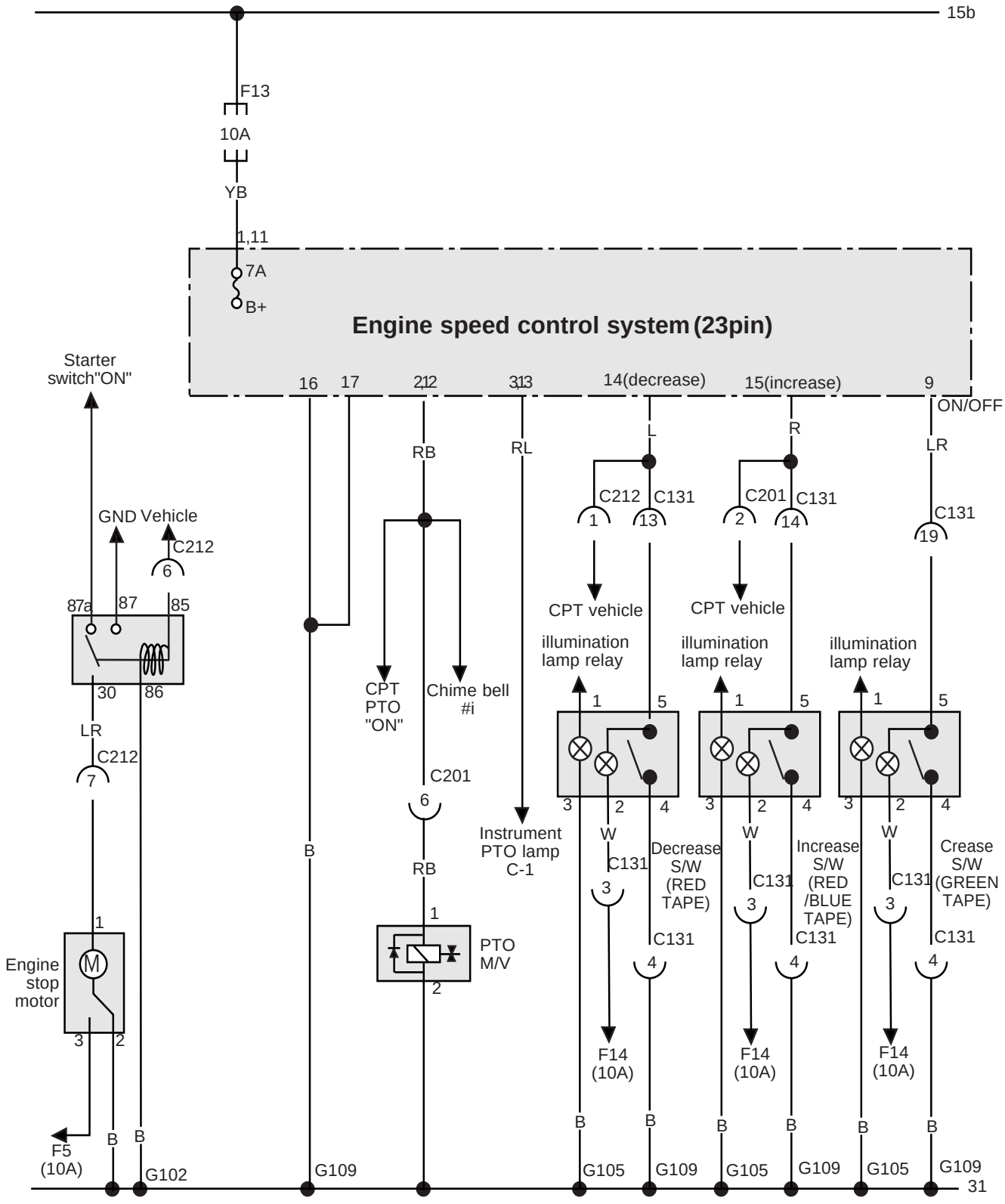


H.F.K MIC
(Based on roof harness)



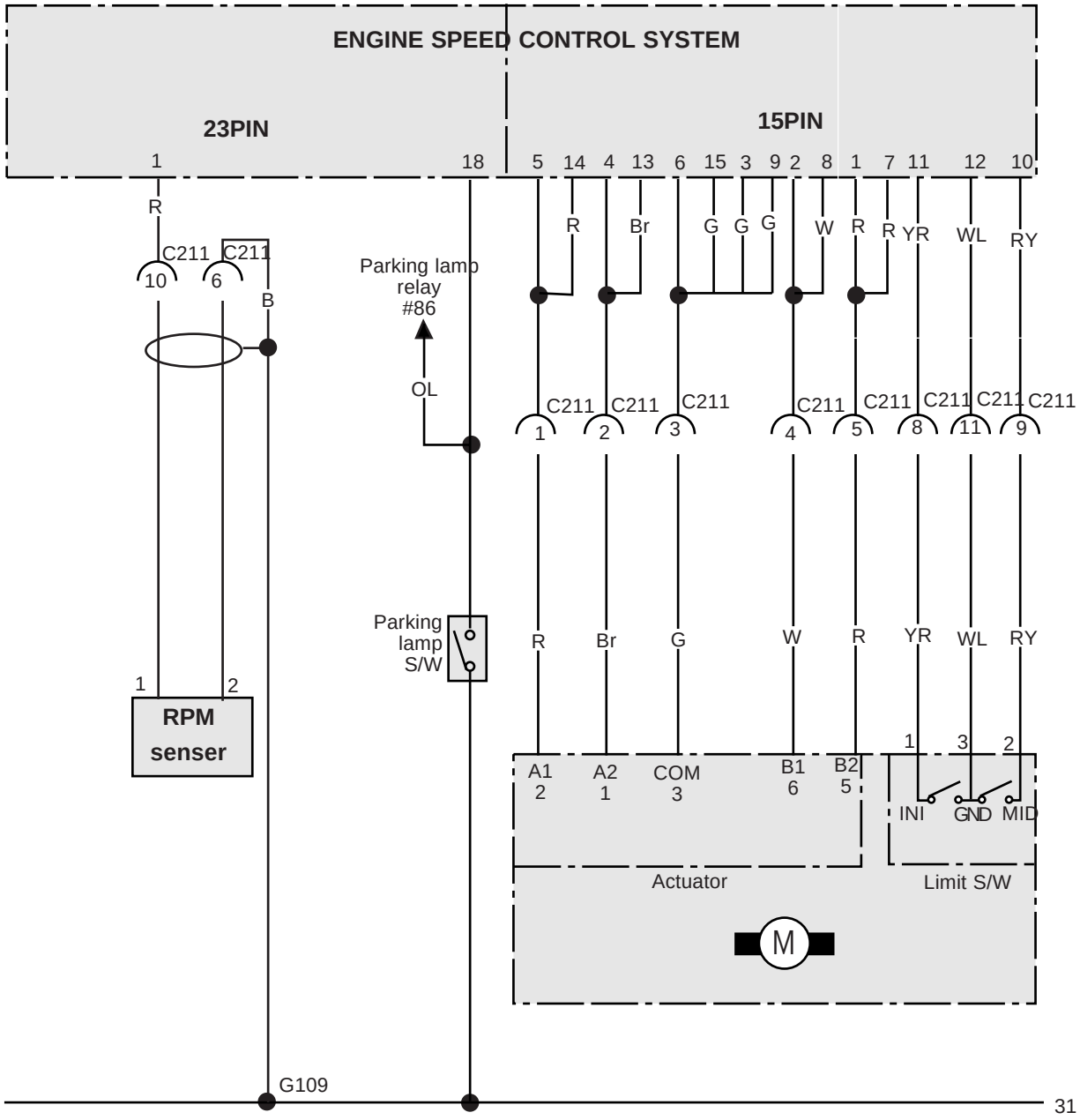
Noise filter
(Based on dash harness)

43. ENGINE SPEED CONTROL SYSTEM(E S C S)

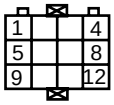


BLANK

43-1. ENGINE SPEED CONTROL SYSTEM (E S C S)

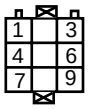


1) CONNECTOR AND PIN NUMBER



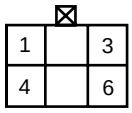
C211

Dash - Frame harness
(Based on dash harness)

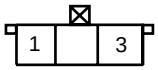


C212

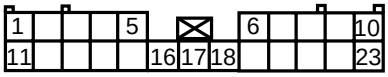
Dash - Frame harness
(Based on dash harness)



Actuator-motor
(Based on frame harness)

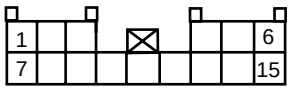


Actuator-limit S/W
(Based on frame harness)



23pin

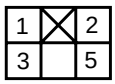
ESCS ECU connector
(Based on dash harness)



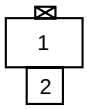
15pin

ESCS ECU harness
(Based on dash harness)

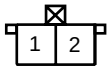
Neutral S/W
(Based on engine harness)



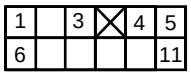
PTO/decrease/increase S/W
(Based on dash harness)



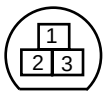
Engine stop S/W



RPM sensor/PTO M/V
(Based on frame harness)



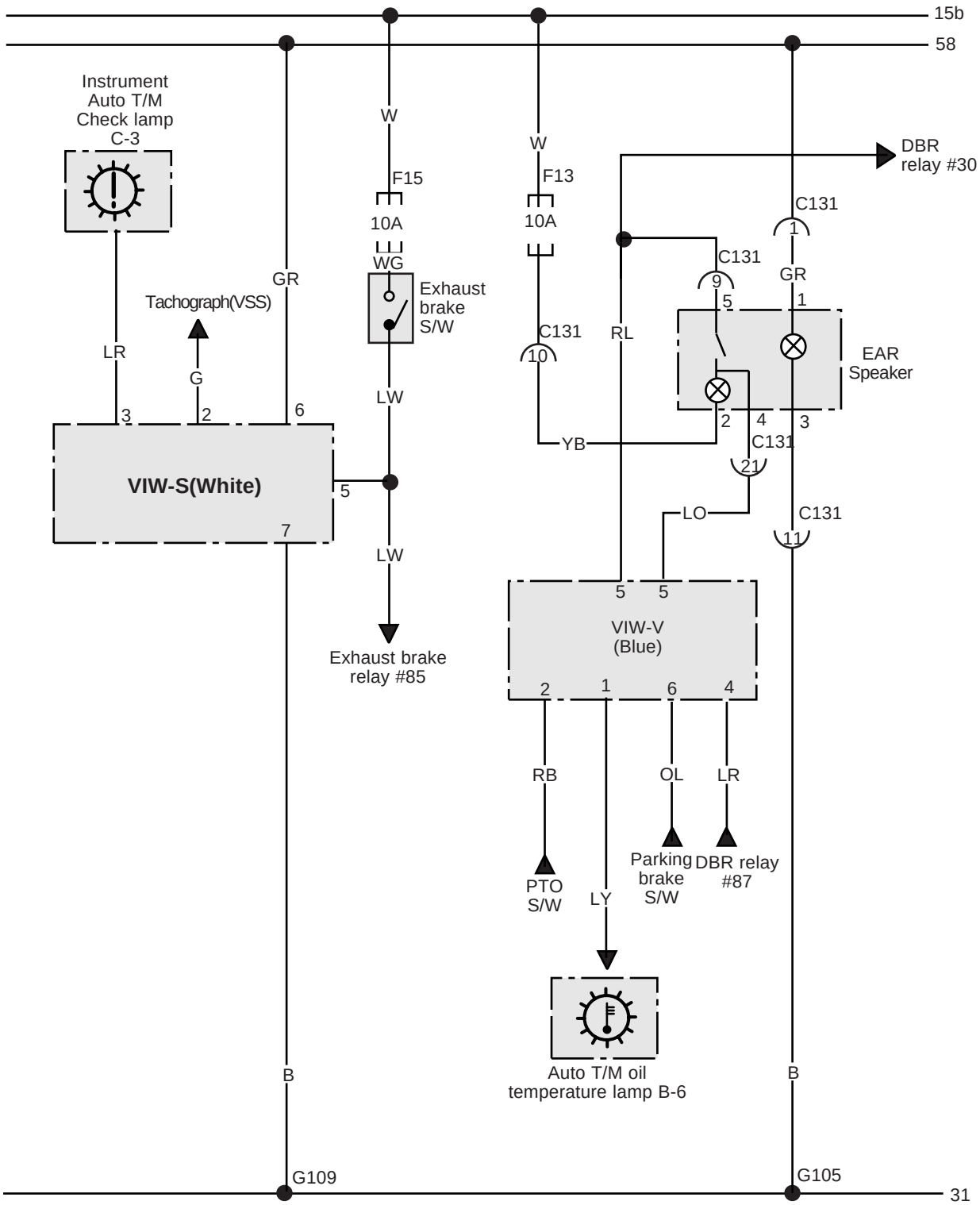
Exhaust combination S/W
(Based on dash harness)



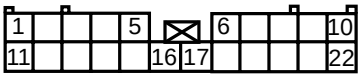
Engine stop motor
(Based on frame harness)

44. OIL COOLER CIRCUIT DIAGRAM (ALLISON AUTO TRANSMISSION)

44-1. AUTO TRANSMISSION OIL COOLER CIRCUIT DIAGRAM.

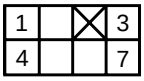


1) CONNECTOR AND PIN NUMBER

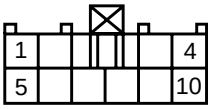


C131, 22pin

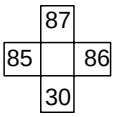
Dash - Switch harness
(Based on dash harness)



VIW-S
(Based on dash harness)

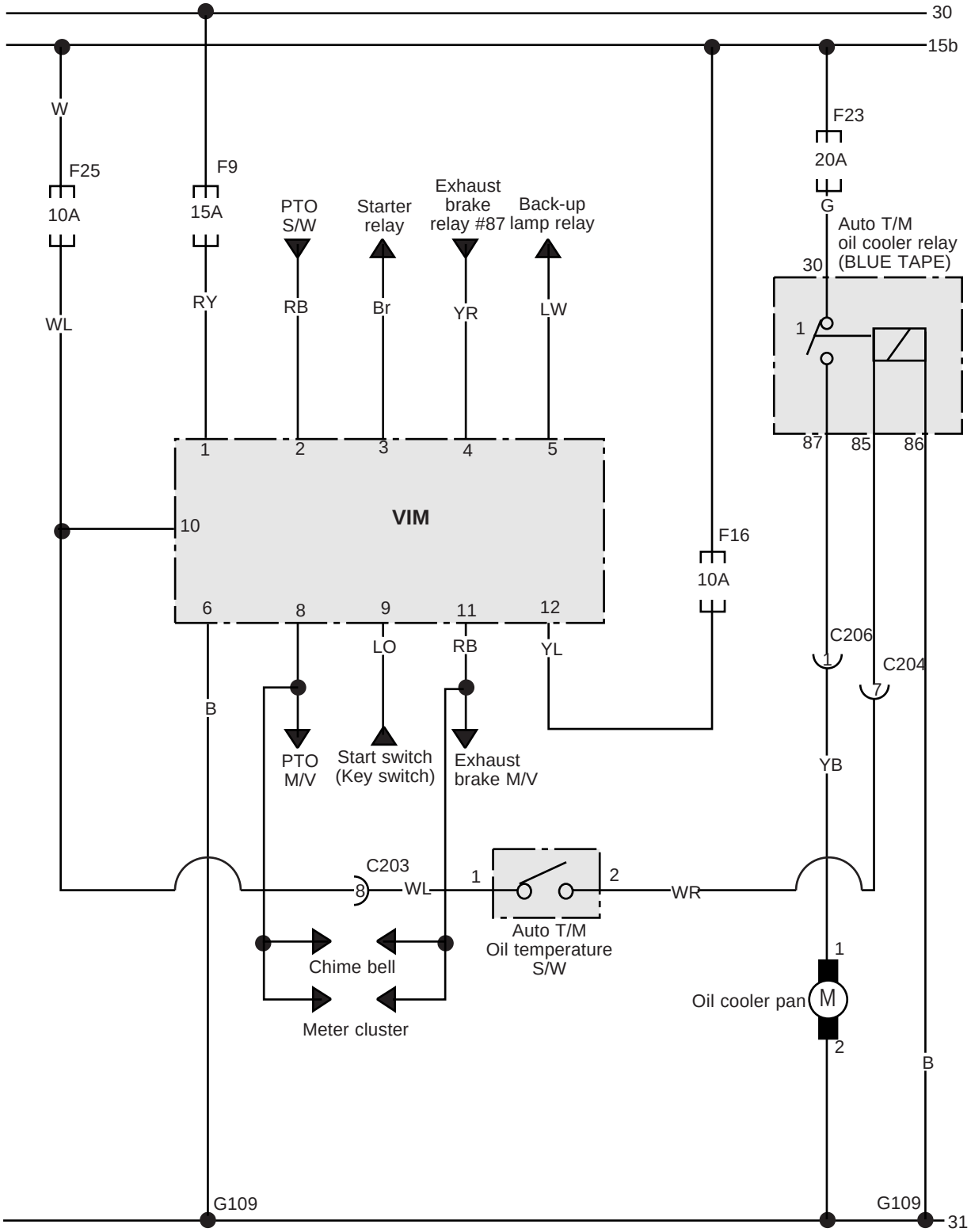


VIW-V
(Based on dash harness)

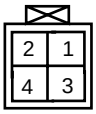


Exhaust brake relay

44-2. AUTO T/M OIL COOLER CIRCUIT DIAGRAM

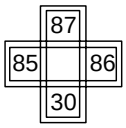


1) CONNECTOR AND PIN NUMBER

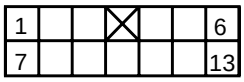


C206, 4pin

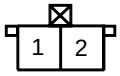
(Based on frame harness)



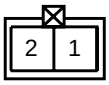
T/M oil cooler relay
(Based on dash harness)



VIM
(Based on dash harness)



T/M oil temperature S/W
(Based on frame harness)



T/M oil cooler
(Based on frame harness)