

CAB AND CHASSIS ELECTRICAL

SECTION 8 CAB AND CHASSIS ELECTRICAL

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GENERAL INFORMATION

General Information

The chassis electrical system is of 12-volt specifications with a negative ground polarity.

Wire sizes are appropriate to respective circuits, and classified by color. (The classification of harnesses by color is shown on the circuit diagram for ease of harness identification.)

The wire size is determined by load capacity and the length of wire required.

The vehicle harnesses are: body harness, floor harness, engine harness, frame front harness, frame rear harness, rear body harness, dome light harness, door harness and battery cable.

The harnesses are protected either by tape or corrugated tube, depending on harness location.

The circuit for each system consists of the power source, wire, fuse, relay switch, load parts and ground, all of which are shown on the circuit diagram.

In this manual, each electrical device is classified by system. For major parts shown on the circuit based on the circuit diagram for each system, a summary, diagnosis of troubles, inspection and removal and installation procedures are detailed.

Notes for Working on Electrical Items

Battery Cable

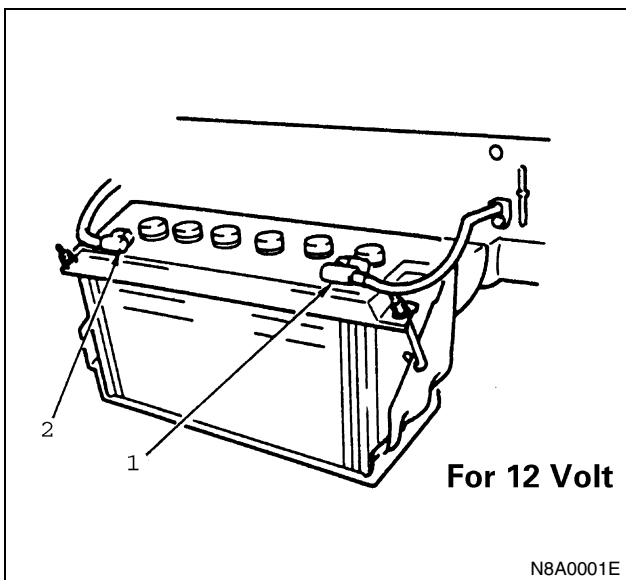
Disconnecting The Battery Cable

1. All switches should be in the "OFF" position.
2. Disconnect the battery ground cable 1.
3. Disconnect the battery positive cable 2.
4. Disconnect the battery cable 3.

Caution:

It is important that the battery ground cable be disconnected first.

Disconnecting the battery positive cable first can result in a short circuit.

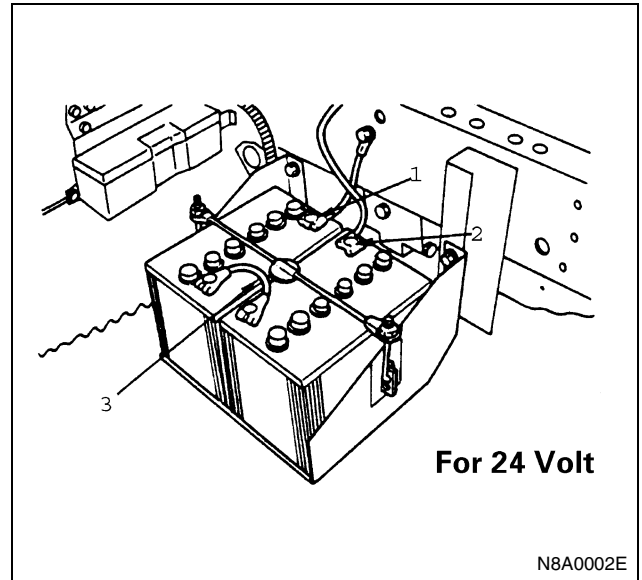


Connecting The Battery Cable

Follow the disconnecting procedure in the reverse order.

Caution:

Clean the battery terminal and apply a light coat of grease to prevent terminal corrosion.



Connector Handling

Disconnecting The Connectors

Some connectors have a tang lock to hold the connectors together during vehicle operation.

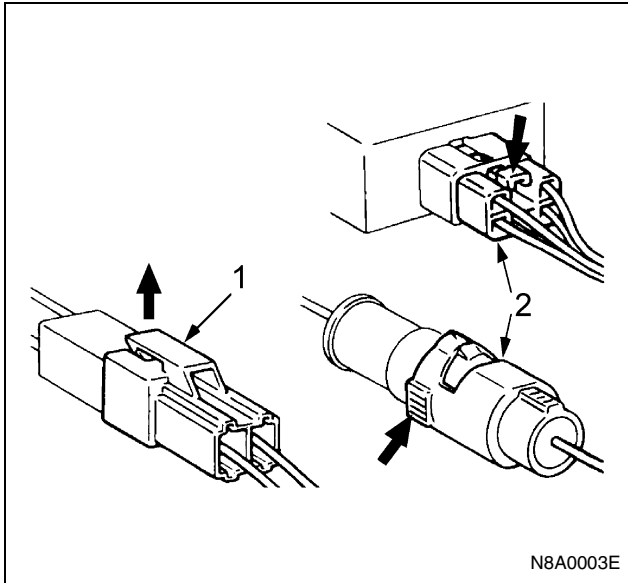
Some tang locks are released by pulling them towards you 1.

Other tang locks are released by pressing them forward 2.

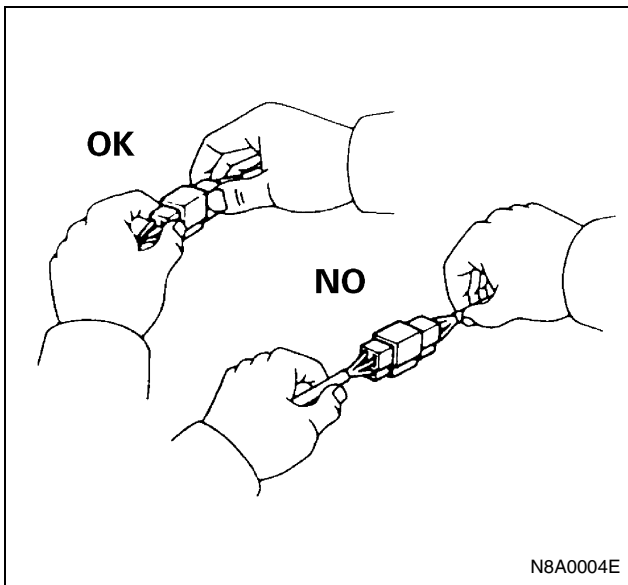
Determine which type of tang lock is on the connector being handled.

Firmly grasp both sides (male and female) of the connector.

Release the tang lock and carefully pull the two halves of the connector apart.

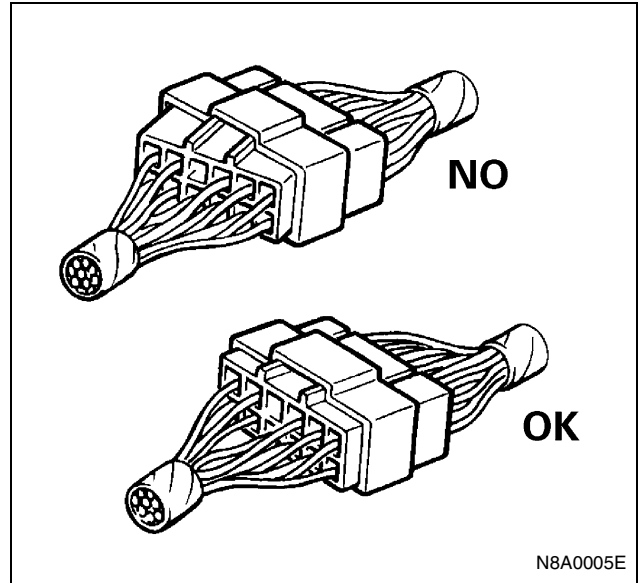


Never pull on the wires to separate the connectors. This will result in wire breakage.



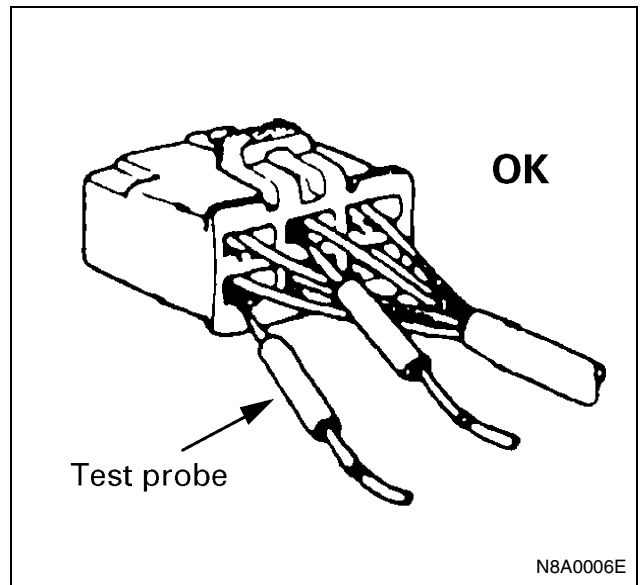
Connecting the Connector

Firmly grasp both sides (male and female) of the connector. Be sure that the connector pins and pin holes match. Be sure that both sides of the connector are aligned with each other. Firmly but carefully push the two sides of the connector together until a distinct click is heard.



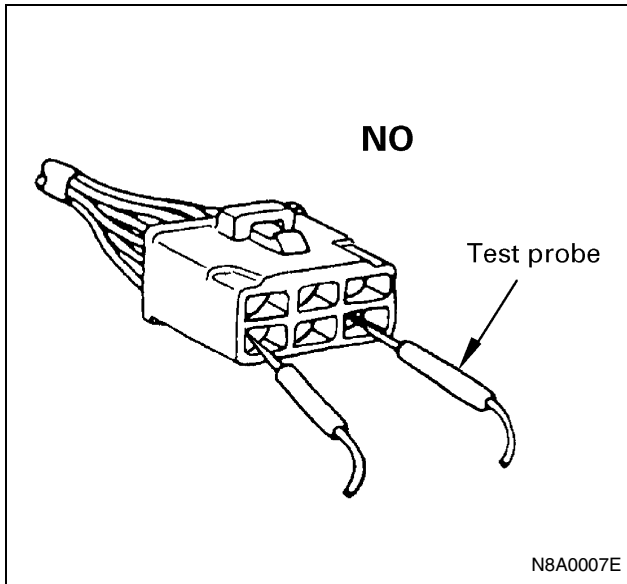
Connector Inspection

Use a circuit tester to check the connector for continuity. Insert the test probes from the connector wire side.



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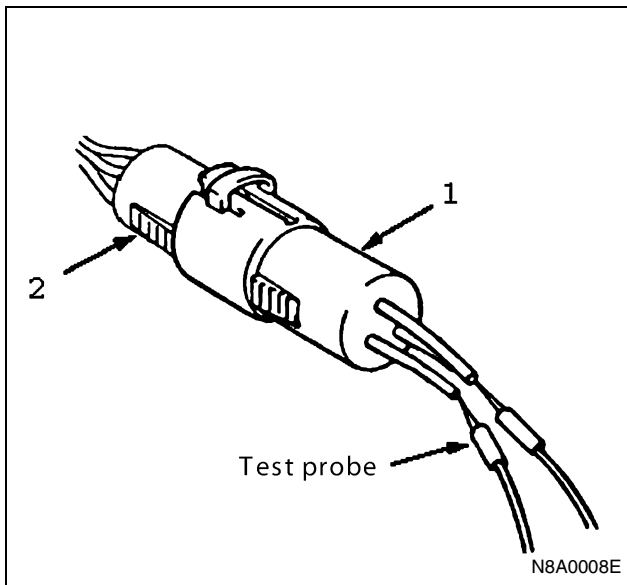
Never insert the circuit tester test probes into the connector open end to test the continuity. Broken or open connector terminals will result.



Waterproof Connector Inspection

It is not possible to insert the test probes into the connector wire side of a waterproof connector.

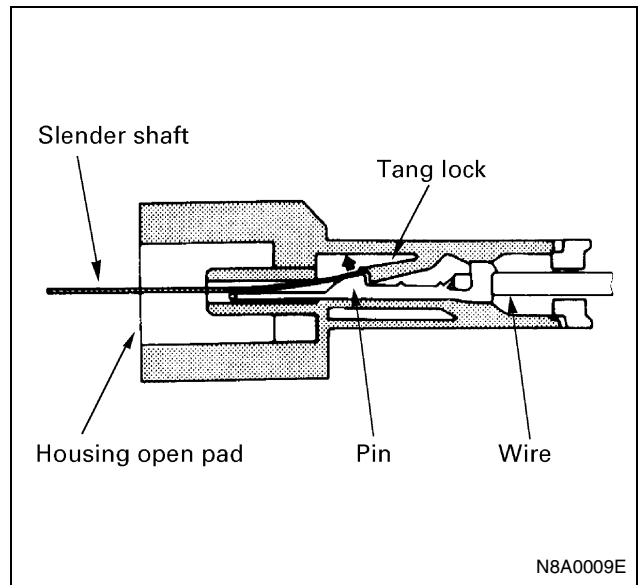
Use one side of a connector 1 with its wires cut to make the test. Connect the test connector 2 to the connector to be tested. Connect the test probes to the cut wires to check the connector continuity.



Connector Pin Removal

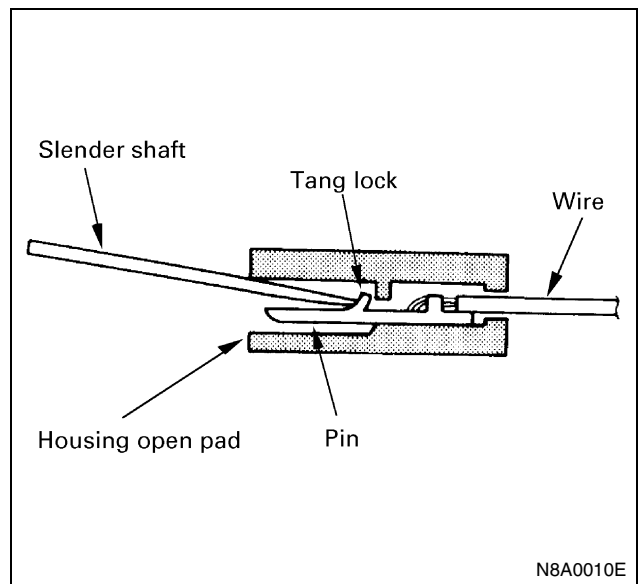
Connector Housing Tang Lock Type

1. Insert a slender shaft into the connector housing open end.
2. Push the tang lock up (in the direction of the arrow in the illustration). Pull the wire with pin free from the wire side of the connector.



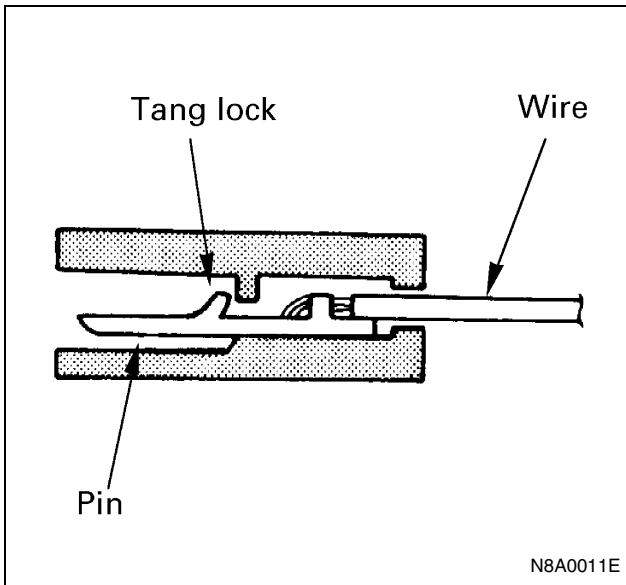
Pin Tang Lock Type

1. Insert a slender shaft into the connector housing open end.
2. Push the tang lock flat (toward the wire side of the connector). Pull the wire with pin free from the wire side of the connector.

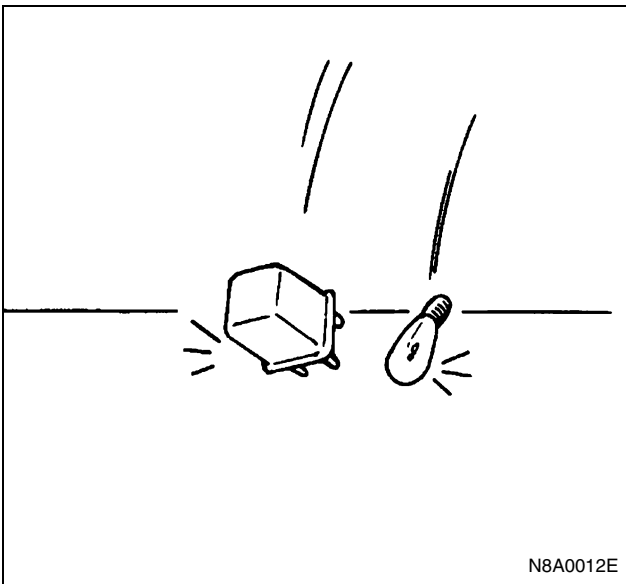


Connector Pin Insertion

1. Check that the tang lock is fully up.
2. Insert the pin from the connector wire side. Push the pin in until the tang lock closes firmly.
3. Gently pull on the wires to make sure that the connector pin is firmly set in place.

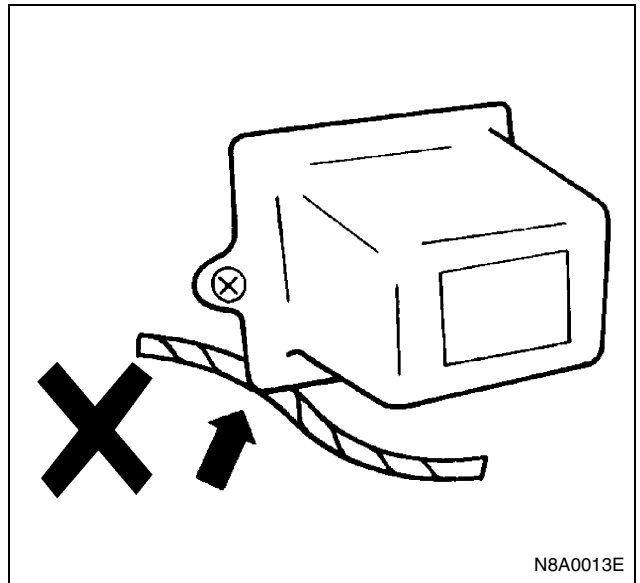
**Parts Handling**

Be careful when handling electrical parts. They should not be dropped or thrown, because short circuit or other damage may result.

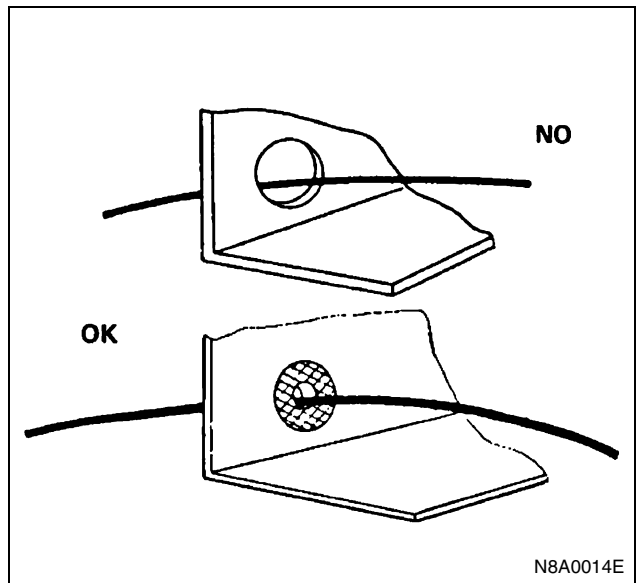
**Cable Harness**

When installing the parts, be careful not to pinch or wedge the wiring harness.

All electrical connections must be kept clean and tight.

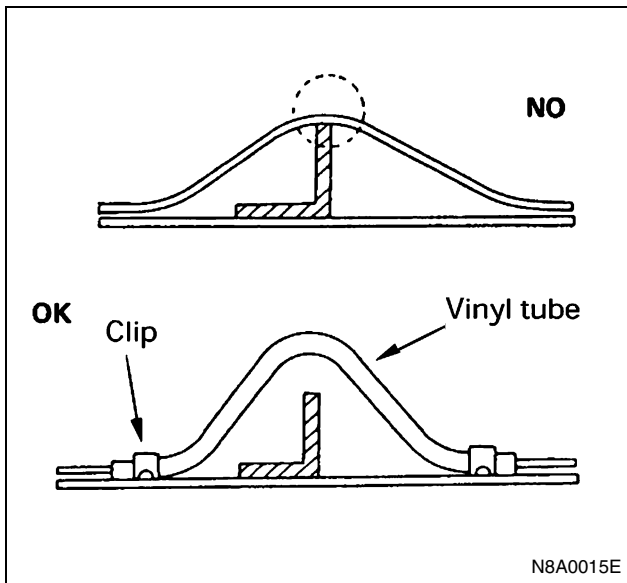


Use a grommet or guard tube to protect the wiring harness from contacting a sharp edge or surface.

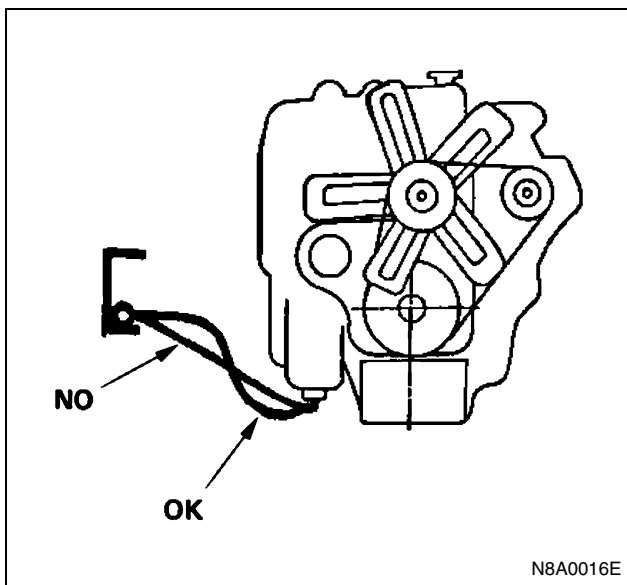


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Position the wiring harness with a enough clearance from the other parts and guard the wiring harness with a vinyl tube and clips to avoid direct contact.



The wiring harness between engine and chassis should be long enough to prevent chafing or damage due to various vibrations.



Splicing Wire

1. Open the Harness

If the harness is taped, remove the tape. To avoid wire insulation damage, use a sewing “seam ripper” (available from sewing supply stores) to cut open the harness.

If the harness has a block plastic conduit, simply pull out the desired wire.

2. Cut the wire

Begin by cutting as little wire off the harness as possible. You may need the extra length of wire later if you decide to cut more wire off to change the location of a splice. You may have to adjust splice locations to make certain that each splice is at least

1-2/2” (40 mm) away from other splices, harness branches, or connectors.

3. Strip the insulation

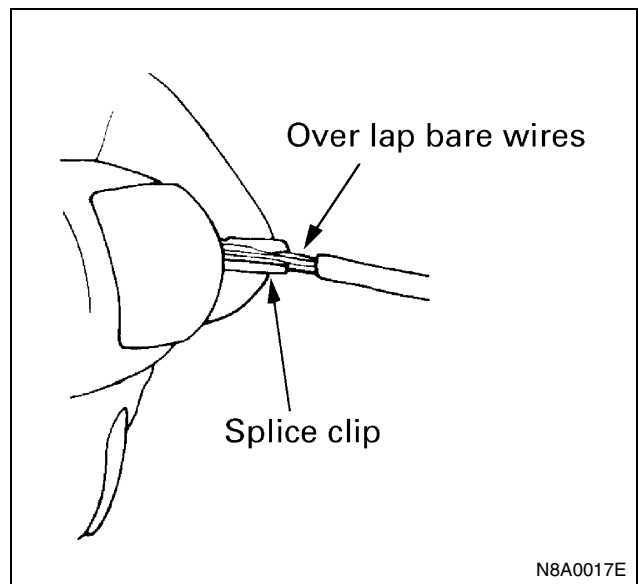
When replacing a wire, use a wire of the same size as the original wire. Check the stripped wire for nicks or cut stands. If the wire is damaged, repeat the procedure on a new section of wire. The two stripped wire ends should be equal in length.

4. Crimp the Wires

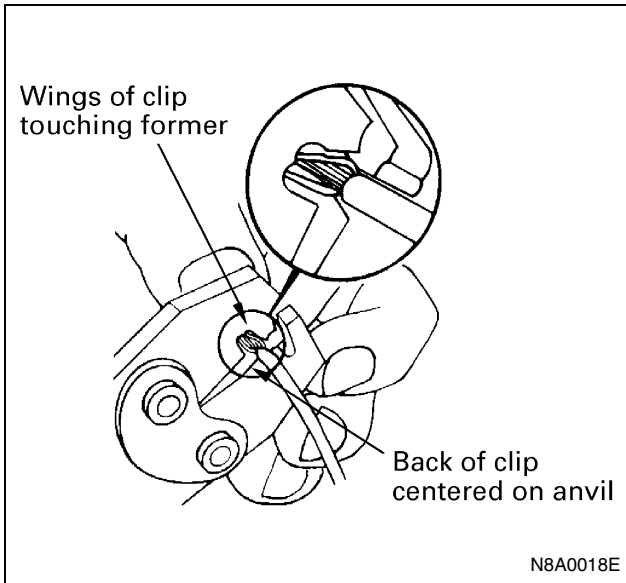
Select the proper clip to secure the splice. To determine the proper clip size for the wire being spliced, follow the directions included with your clips.

Select the correct anvil on the crimper. (On most crimpers your choice is limited to either a small or large anvil.) Overlap the two stripped wire ends and hold them between your thumb and forefinger.

Then, center the splice clip under the stripped wires and hold it in place.



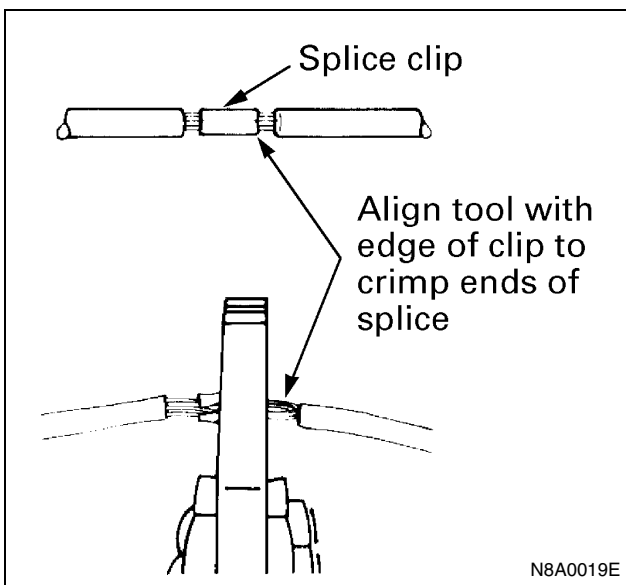
- Open the crimping tool to its full width and rest one handle on a firm flat surface.
- Center the back of the splice clip on the proper anvil and close the crimping tool to the point where the back of the splice clip touches the wings of the clip.
- Make sure that the clip and wires are still in the correct position. Then, apply steady pressure until the crimping tool closes.



Before crimping the ends of the clip, be sure that:

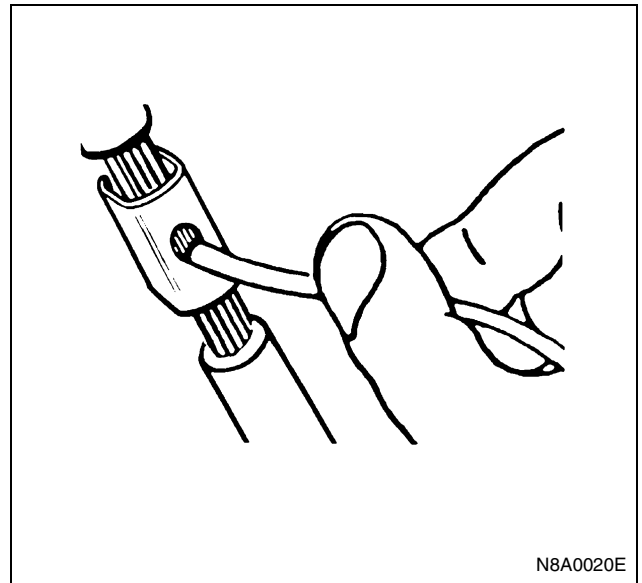
- The wires extend beyond the clip in each direction.
- No strands of wire are cut loose, and
- No insulation is caught under the clip.

Crimp the splice again, once on each end. Do not let the crimping tool extend beyond the edge of the clip or you may damage or nick the wires.



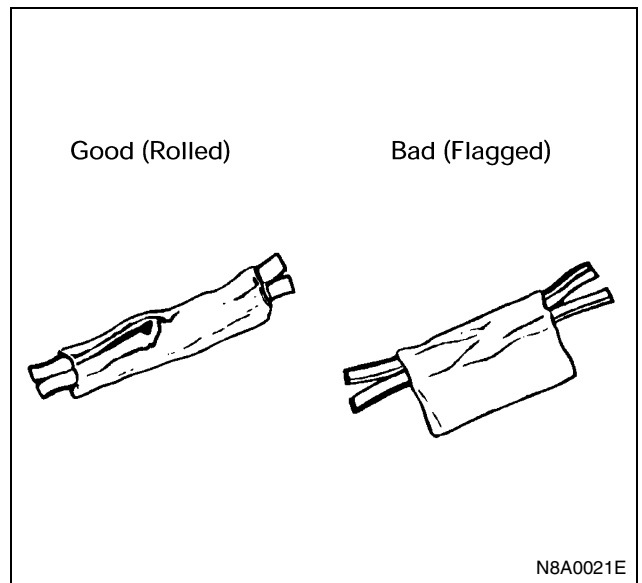
5. Solder

Apply 60/40 rosin core solder to the opening in the back of the clip. Follow the manufacturer's instructions for the solder equipment you are using.



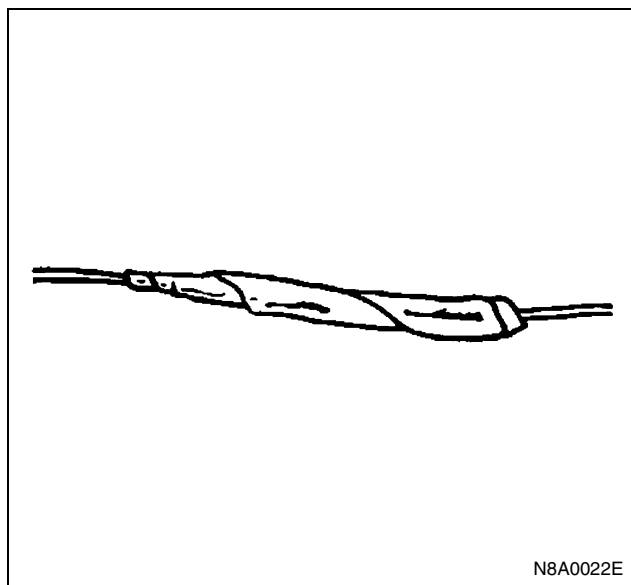
6. Tape the Splice

Center and roll the splicing tape. The tape should cover the entire splice. Roll on enough tape to duplicate the thickness of the insulation on the existing wires. Do not flag the tape. Flagged tape may not provide enough insulation, and the flagged ends will tangle with the other wires in the harness.



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If the wire does not belong in a conduit or other harness covering, tape the wire again. Use a winding motion to cover the first piece of tape.

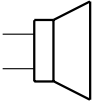
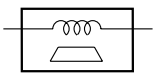
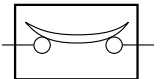
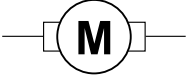
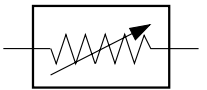


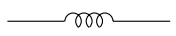
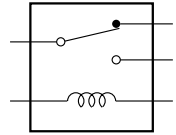
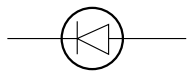
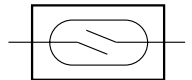
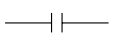
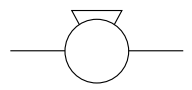
Symbols and Abbreviations

Symbols

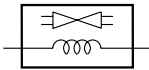
Symbol	Meaning of Symbol
N8A5501E	Fuse
N8A5502E	Fusible link
N8A5503E	Fusible link wire
N8A5504E	Switch

Symbol	Meaning of Symbol
N8A5505E	Switch
N8A5506E	Switch (Normal close type)
N8A5507E	Contact wiring
N8A5508E	Battery
N8A5509E	Diode
N8A5510E	Electronic Parts
N8A5511E	Resistor

Symbol	Meaning of Symbol
 N8A5512E	Speaker
 N8A5513E	Buzzer
 N8A5514E	Circuit breaker
 N8A5515E	Bulb
 N8A5516E	Double filament bulb
 N8A5517E	Motor
 N8A5518E	Variable resistor Rheostat

Symbol	Meaning of Symbol
 N8A5519E	Coil (inductor), solenoid, magnetic valve
 N8A5520E	Relay
 N8A5521E	Connector
 N8A5522E	Light emitting diode
 N8A5523E	Reed switch
 N8A5524E	Condenser
 N8A5525E	Horn

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Symbol	Meaning of Symbol
 N8A5526E	Vacuum switching valve

Abbreviations

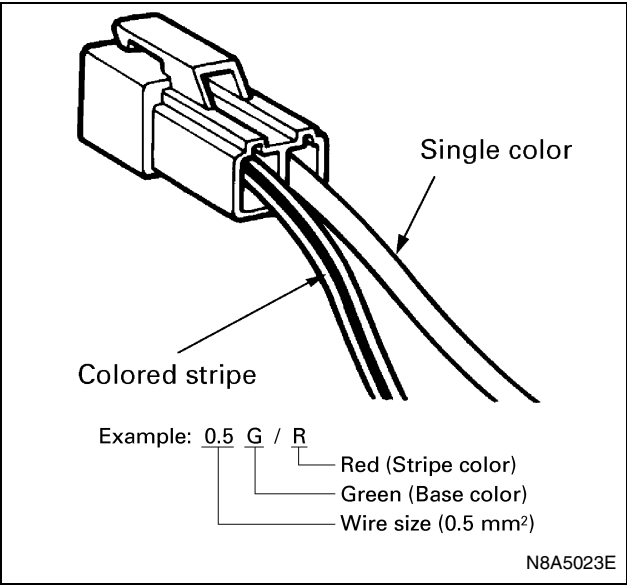
Abbreviation	Meaning of Abbreviation	Abbreviation	Meaning of Abbreviation
A	Ampere (S)	kW	kilowatt
ABS	Anti-lock brake system	LH	Left hand
ASM	Assembly	LWB	Long wheel base
AC	Alternating current	M/T	Manual transmission
A/C	Air conditioner	OD	Over drive
ACC	Accessories	OPT	Option
C/B	Circuit breaker	QOS	Quick on start
CSD	Cold start device	RH	Right hand
DIS	Direct ignition system	RR	Rear
EBCM	Electronic brake control module	RWAL	Rear wheel anti-lock brake system
ECGI	Electronic control gasoline injection	ST	Start
ECM	Electronic control module	STD	Standard
ECU	Electronic control unit	SW	Switch
EFE	Early fuel evaporation	SWB	Short wheel base
4X4	Four-wheel drive	V	Volt
FL	Fusible link	VSV	Vacuum switching valve
FRT	Front	W	Watt (S)
H/L	Headlight	WOT	Wide open throttle
IC	Integrated circuit	W/	With
IG	Ignition	W/O	Without

Parts for Electrical Circuit

Wiring

Wire Color

All wires have color-coded insulation. Wires belonging to a system’s main harness will have a single color. Wires belonging to a system’s subcircuits will have a colored stripe. Striped wires use the following code to show wire size and colors.



Abbreviations are used to indicate wire color within a circuit diagram. Refer to the following table.

Wire Color Coding

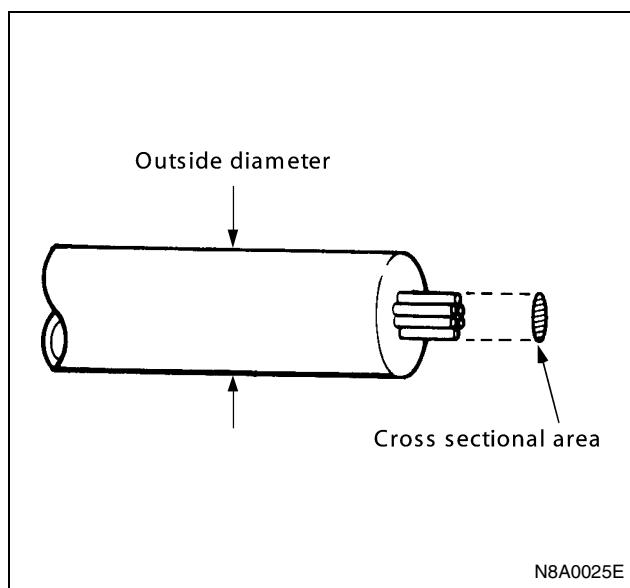
Color-Coding	Meaning	Color-Coding	Meaning
B	Black	BR	Brown
W	White	LG	Light green
R	Red	GR	Grey
G	Green	P	Pink
Y	Yellow	LB	Light blue
L	Blue	V	Violet
O	Orange		

Distinction of Circuit by Wire Base Color

Base color	Circuits	Base color	Circuits
B	Starter circuit	Y	Instrument circuit
W	Charging circuit	L, O, BR, LG, GR, P, LB, V	Other circuit
R	Lighting circuit		
G	Signal circuits		

Wire Size

The size of wire used in a circuit is determined by the amount of current (amperage), the length of the circuit, and the voltage drop allowed. The following wire size and load capacity, shown below, are specified by AWG (American Wire Gauge) (Nominal size means approximate cross sectional area).

**Wire Size Table**

Nominal size	Cross sectional area (mm ²)	Outside diameter (mm)	Allowable current (A)	AWG size (cross reference)
0.3	0.372	1.8	9	22
0.5	0.563	2.0	12	20
0.85	0.885	2.2	16	18
1.25	1.287	2.5	21	16
2	2.091	2.9	28	14
3	3.296	3.6	37.5	12
5	5.227	4.4	53	10
8	7.952	5.5	67	8
15	13.36	7.0	75	6
20	20.61	8.2	97	4

Fuse, Fusible Link and Circuit Breaker**Fuse**

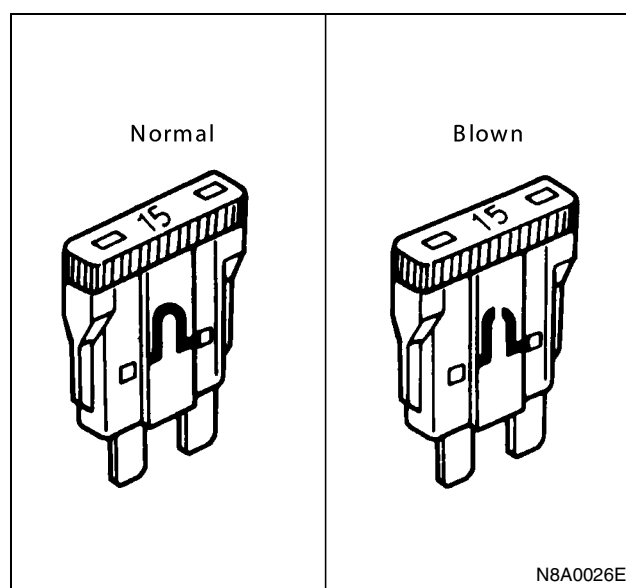
Fuses are the most common form of circuit protection used in vehicle wiring. A fuse is a thin piece of wire or strip of metal encased in a glass or plastic housing. It is wired in series with the circuit it protects. When there is an overload of current in a circuit, such as a short to ground, the wire or metal strip is designed to burn out and interrupt the flow of current. This prevents a surge of high current from reaching and damaging other components in the circuit.

Determine the cause of the overloaded before replacing the fuse.

The replacement fuse must have the same amperage specifications as the original fuse.

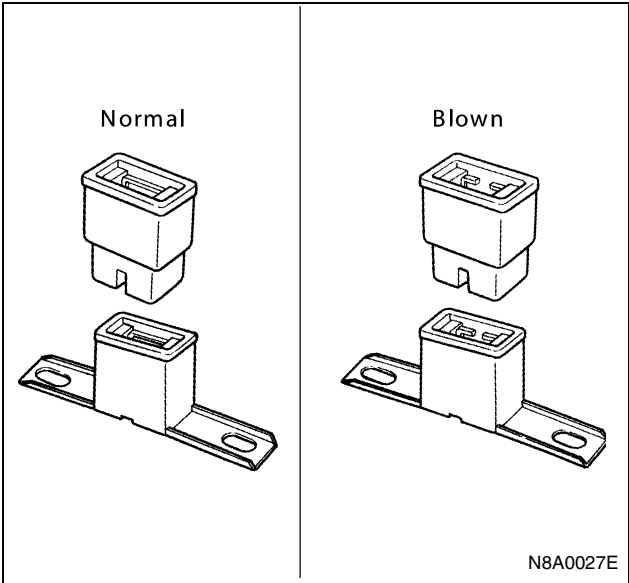
Never replace a blown fuse with a fuse of a different amperage specification.

Doing so can result in an electrical fire or other serious circuit damage. A blown fuse is easily identified.



Fusible Link

The fusible link is primarily used to protect circuits where high amounts of current flow and where it would not be practical to use a fuse. For example, the starter circuit. When a current overload occurs, the fusible link melts open and interrupts the flow of current so as to prevent the rest of the wiring harness from burning. Determine the cause of the overload before replacing the fusible link. The replacement fusible link must have the same amperage specification as the original fusible link. Never replace a blown fusible link with a fusible link of a different amperage specification. Doing so can result in an electrical fire or other serious circuit damage. A blown fusible link is easily identified.

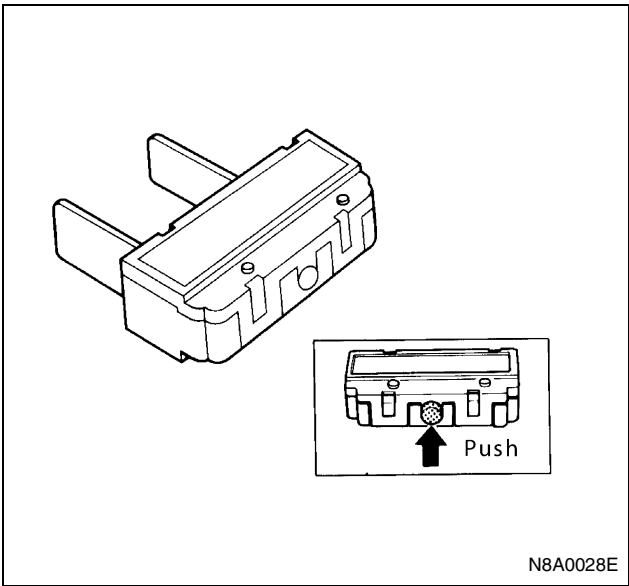


Fusible Link Specifications

Type	Rating	Case Color	Maximum Circuit Current (A)
Connector	30 A	Pink	15
Connector	40 A	Green	20
Bolted	50 A	Red	25
Bolted	60 A	Yellow	30
Bolted	80 A	Black	40

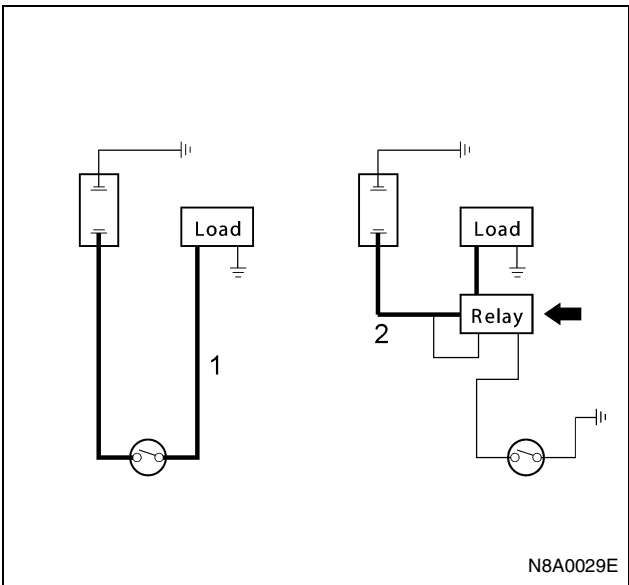
Circuit Breaker

The circuit breaker is a protective device designed to open the circuit when a current load is in excess of rated breaker capacity. If there is a short or other type of overload condition in the circuit, the excessive current will open the circuit between the circuit breaker terminals. The reset knob pops out when the circuit is open. Push the reset knob in place to restore the circuit after repairing it.



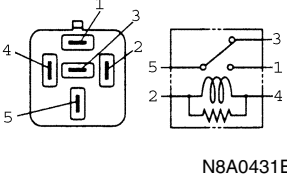
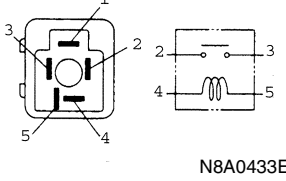
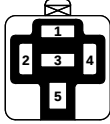
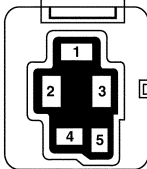
Relay

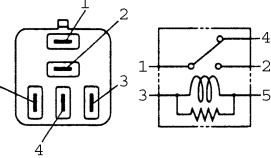
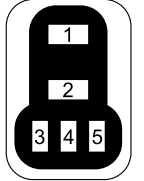
Battery and load location may require that a switch be placed some distance from either component. This means a longer wire and a higher voltage drop 1. The installation of a relay between the battery and the load reduces the voltage drop 2. Because the switch controls the relay, amperage through the switch can be reduced.



8-14 CAB AND CHASSIS ELECTRICAL

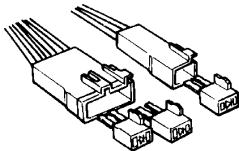
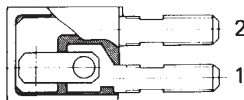
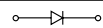
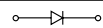
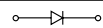
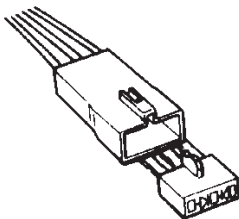
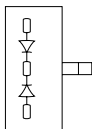
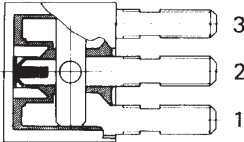
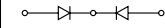
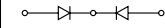
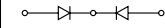
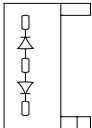
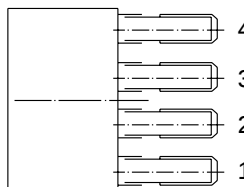
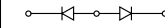
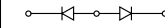
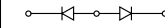
Relay Specification, Configuration and Inspection

Name/ Color	Rated voltage/ Coil resistance	Internal circuit		Name/ Color	Rated voltage/ Coil resistance	Internal circuit		
MR5C (1T)/ Black	12 V/ Approx. 90 Ω Minimum operating voltage: 7 V at 25°C (77°F)	 N8A0431E		MR82C/ White label	12 V/ Approx. 23 Ω Minimum operating voltage: 7 V at 20°C (68°F)	 N8A0433E		
MR5C (1T)/ Brown	12 V/ Approx. 90 Ω Minimum operating voltage: 10.5 V at 25°C (77°F)							
MR5C (1T)/ Green	24 V/ Approx. 266 Ω Minimum operating voltage: 16 V at 25°C (77°F)	 N8A0432E (connector face)		MR82C/ Green label	24 V/ Approx. 100 Ω Minimum operating voltage: 16 V at 20°C (68°F)	 N8A0434E (connector face)		
MR5C (1T)/ Grey	24 V/ Approx. 266 Ω Minimum operating voltage: 20 V at 25°C (77°F)							
Inspection		The way	Check to see if there is any continuity between the relay terminals.	Inspection		The way	Check to see if there is any continuity between the relay terminals.	
	Result	(When no voltage is applied relay terminals 2 -4) 3 -5 → continuity 1 -5 → No continuity Inspection			Result	(When no voltage is applied relay terminals 4 -5) 2 -3 → No continuity		
	Normal							
	Abnormal				(When minimum operating voltage is applied relay terminals between 2 -4) 3 -5 → continuity 1 -5 → No continuity			Abnormal
	Normal	(When minimum operating voltage is applied relay terminals between 2 -4) 3 -5 → No continuity 1 -5 → continuity				Normal	(When minimum operating voltage is applied relay terminals between 4 -5) 2 -3 → continuity	

Name/ Color	Rated voltage/ Coil resistance	Internal circuit	
ACM 13221 M04/ Black	12 V/ Approx. 120 Ω Minimum operating voltage: 8 V at 25°C (77°F)	 N8A5571E	
ACM 13222 M01/ Green	24 V/ Approx. 320 Ω Minimum operating voltage: 18 V at 25°C (77°F)	 N8A5572E (connector face)	
Inspection		The way	Check to see if there is any continuity between the relay terminals.
	Result	(When no voltage is applied relay terminals 3 - 5)	
	Normal	1 - 4 → continuity 1 - 2 → No continuity Inspection	
	Abnormal	(When minimum operating voltage is applied relay terminals between 3 - 5) 1 - 4 → continuity 1 - 2 → No continuity	
	Normal	(When minimum operating voltage is applied relay terminals between 3 - 5) 1 - 4 → No continuity 1 - 2 → continuity	

Diode

Diode Specifications and Configurations

SHAPE	MARK/ COLOR	CONSTRUCTION	CHECKING																			
	 BLACK	 2 1	THERE SHOULD BE CONTINUITY IN EITHER A OR B WHEN A CIRCUIT TESTER IS CONNECTED WITH DIODE TERMINAL <table><tr><td>TERMINAL NO.</td><td colspan="2"></td></tr><tr><td></td><td>2</td><td>1</td></tr><tr><td>CONNECTION PATTERN</td><td>A</td><td>⊕ ⊖</td></tr><tr><td></td><td>B</td><td>⊖ ⊕</td></tr></table>	TERMINAL NO.				2	1	CONNECTION PATTERN	A	⊕ ⊖		B	⊖ ⊕							
TERMINAL NO.																						
	2	1																				
CONNECTION PATTERN	A	⊕ ⊖																				
	B	⊖ ⊕																				
	 BLACK	 3 2 1	<table><tr><td>TERMINAL NO.</td><td colspan="3"></td></tr><tr><td></td><td>3</td><td>2</td><td>1</td></tr><tr><td>CONNECTION PATTERN</td><td>A</td><td>⊖ ⊕</td><td>⊕ ⊖</td></tr><tr><td></td><td>B</td><td>⊕ ⊖</td><td>⊖ ⊕</td></tr></table>	TERMINAL NO.					3	2	1	CONNECTION PATTERN	A	⊖ ⊕	⊕ ⊖		B	⊕ ⊖	⊖ ⊕			
	TERMINAL NO.																					
	3	2	1																			
CONNECTION PATTERN	A	⊖ ⊕	⊕ ⊖																			
	B	⊕ ⊖	⊖ ⊕																			
 BLACK	 4 3 2 1	<table><tr><td>TERMINAL NO.</td><td colspan="4"></td></tr><tr><td></td><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td>CONNECTION PATTERN</td><td>A</td><td>⊖ ⊕</td><td>⊕ ⊖</td><td>⊕ ⊖</td></tr><tr><td></td><td>B</td><td>⊕ ⊖</td><td>⊖ ⊕</td><td>⊖ ⊕</td></tr></table>	TERMINAL NO.						3	2	1		CONNECTION PATTERN	A	⊖ ⊕	⊕ ⊖	⊕ ⊖		B	⊕ ⊖	⊖ ⊕	⊖ ⊕
TERMINAL NO.																						
	3	2	1																			
CONNECTION PATTERN	A	⊖ ⊕	⊕ ⊖	⊕ ⊖																		
	B	⊕ ⊖	⊖ ⊕	⊖ ⊕																		

N8A0032E

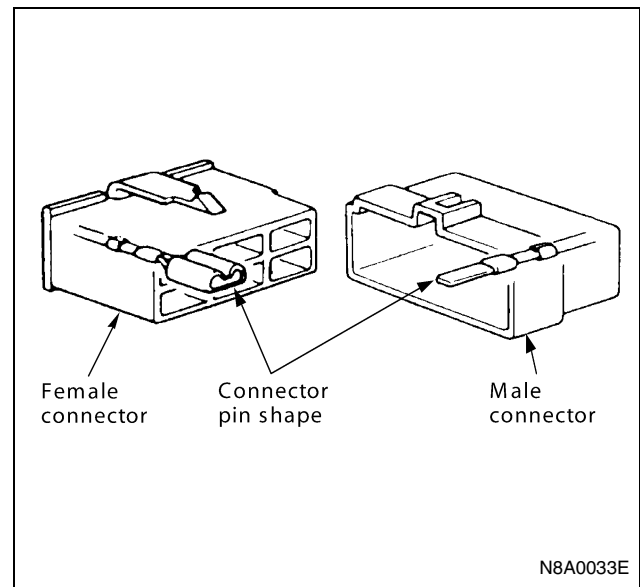
N8A0032E

Maximum Rating (Temp. = 25°C)

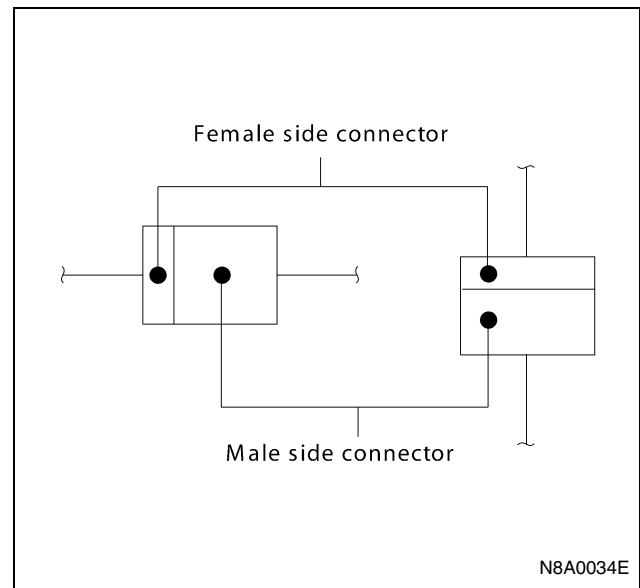
Items	Rating	Remarks
Peak reverse voltage	400 V	
Transient peak reverse voltage	500 V	
Average output current	1.5 A	Temp. = 40°C
Working ambient temperature	-30°C — 80°C	
Storage temperature	-40°C — 100°C	

Connector

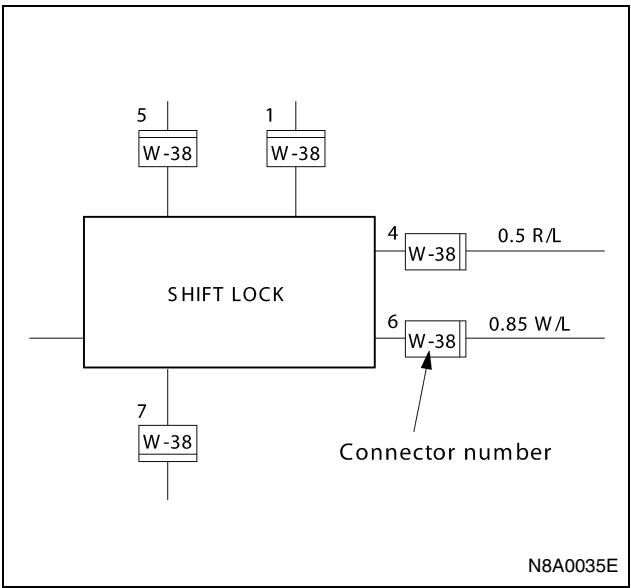
The connector pin shape determines whether the connector is male or female.
The connector housing configuration does not determine whether a connector is male or female.



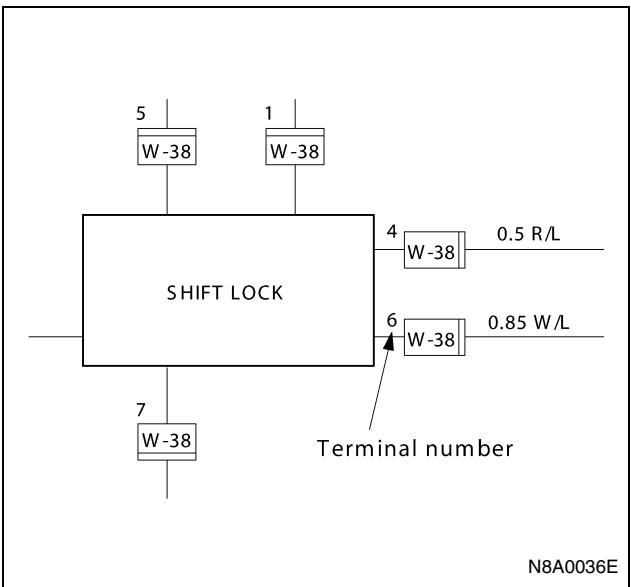
The symbol illustrated in the figure is used as connector, in the circuit of this section.



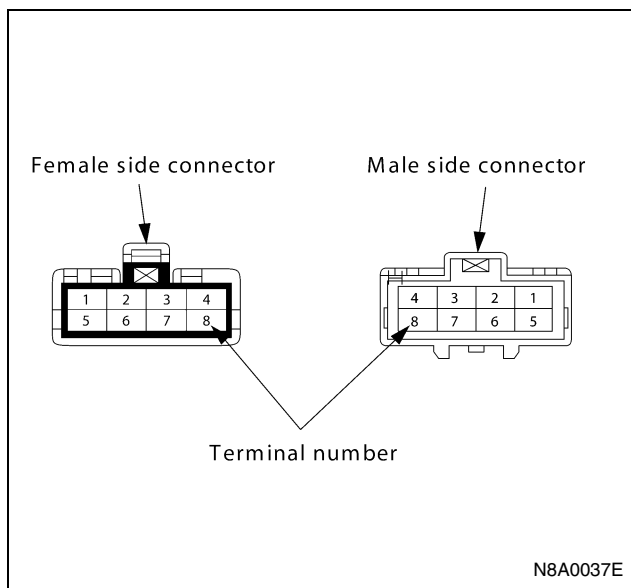
Connector is identified with a number.



The applicable terminal number is shown for each connector.

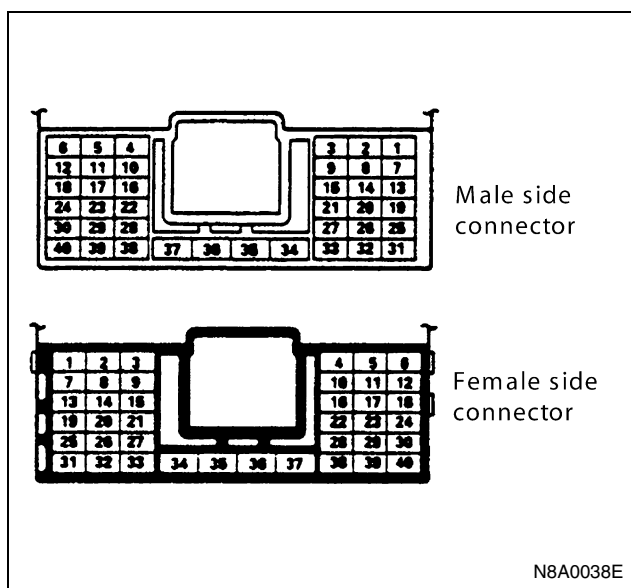
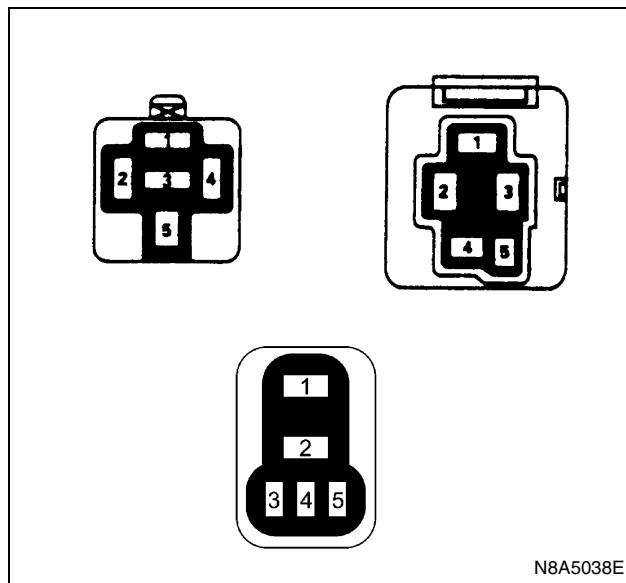


Connector terminal numbers are clearly shown.
Male side connector terminal numbers are in sequence from upper right to lower left.
Female side connector terminal numbers are in sequence from upper left to lower right.

**Notice:**

For those connectors on which specific terminal numbers or symbols are shown (such as ECM), the terminal numbers or symbols are used in the circuit diagram, irrespective of the above rule.

The connectors used for relays have their own terminal number assignment, irrespective of the above rule.

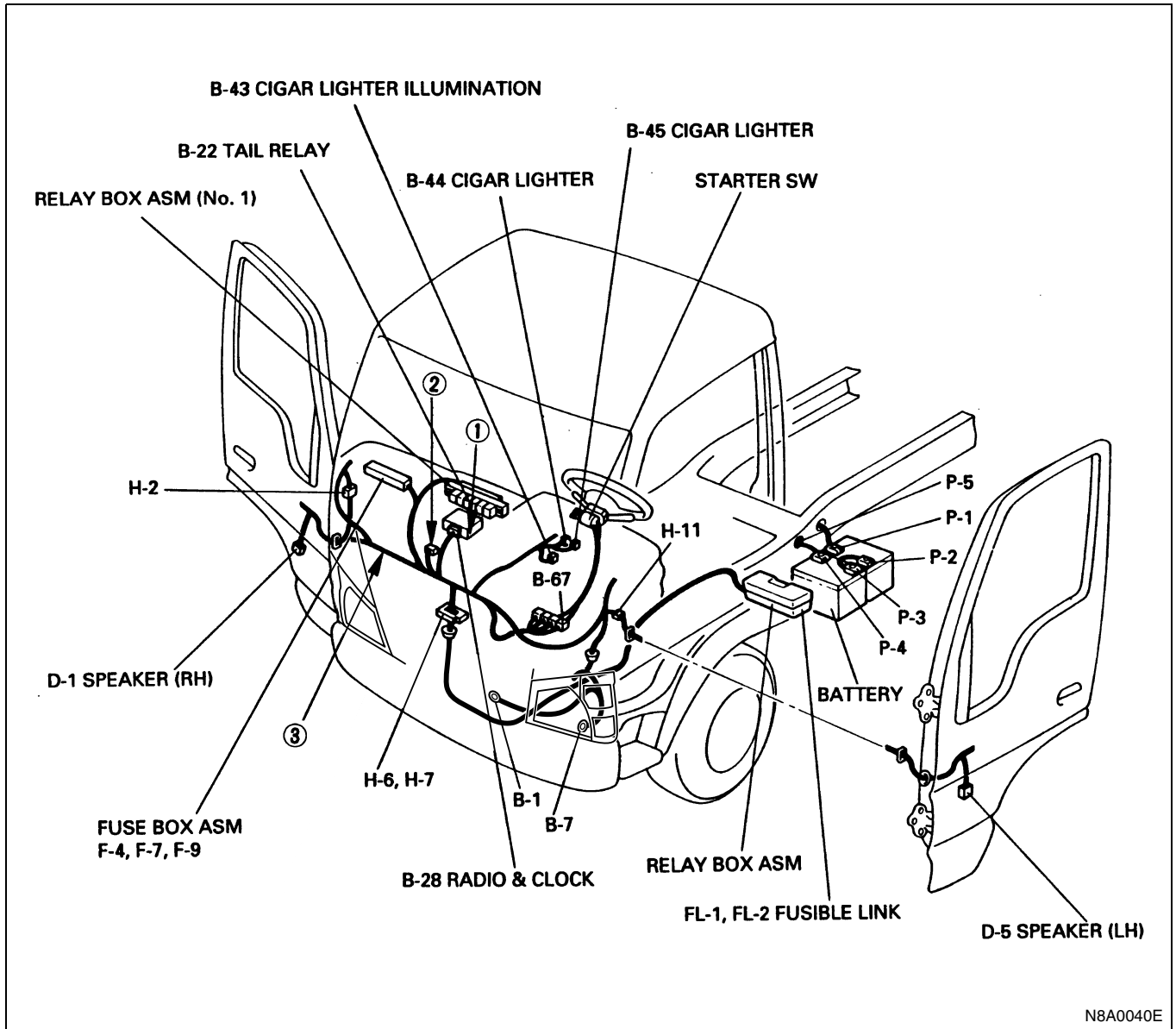


Reading The Circuit Diagram

In this manual, each system has its own parts location illustration, circuit diagram and connector configuration used in the circuit diagram.

Parts Location

The parts location shows the location of the parts 1 and the connector 2 used in each harness routing 3.

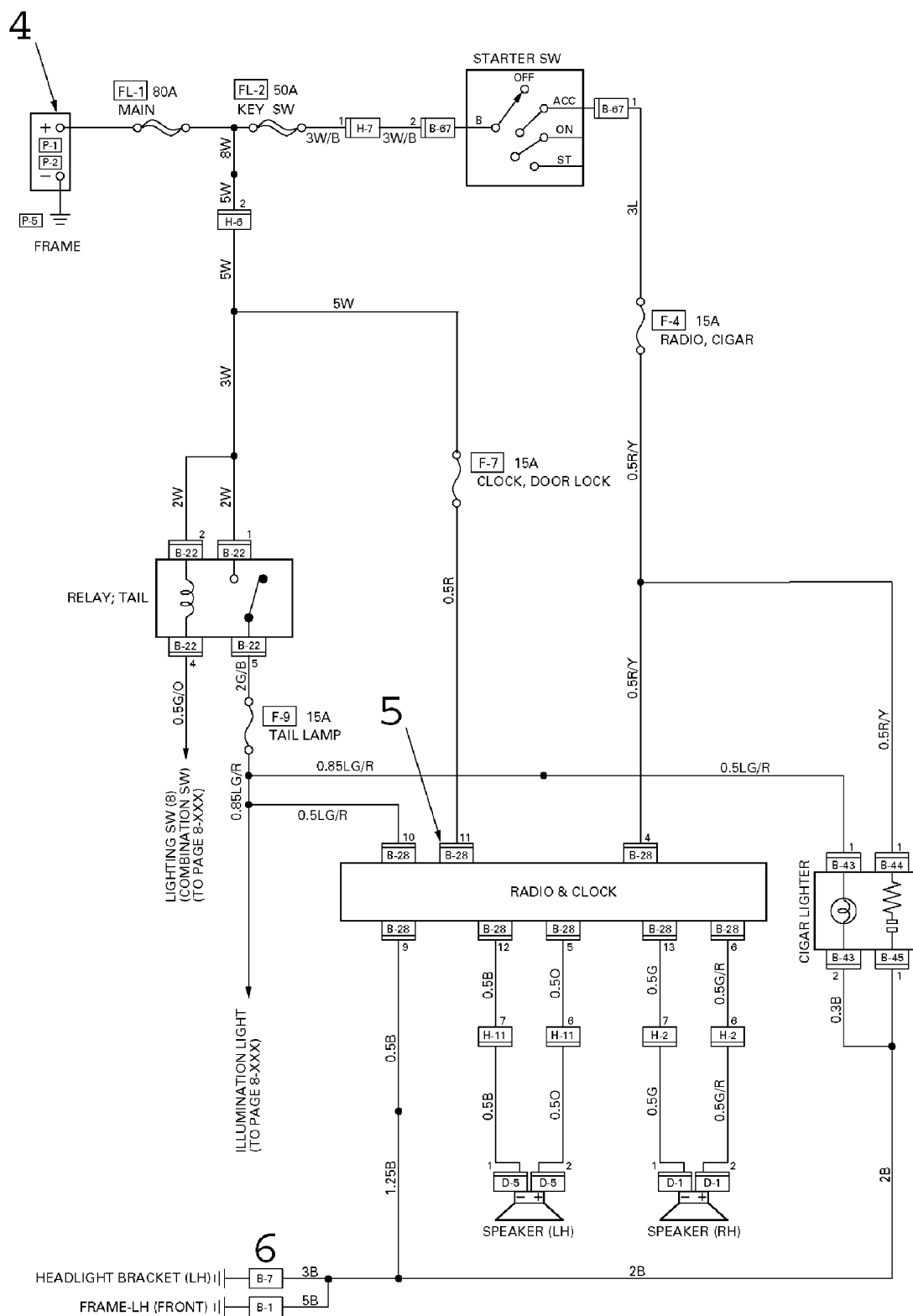


N8A0040E

8-20 CAB AND CHASSIS ELECTRICAL

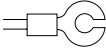
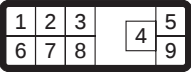
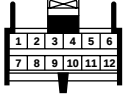
Circuit Diagram

The circuit diagram shows the power supply 4 the load or loads 5 and the grounding point(s) 6.



Connector List

The connector list shows each connectors' configuration 7 and the pin number 8.

No.	Connector Face	No.	Connector Face
7 ↙ B-341	8 ↘  002-009	E-5	 000-009
B-232	 002-009	E-16	 002-014
B-51	 014-001	E-110	 009-003
B-52	 012-003	E-76	

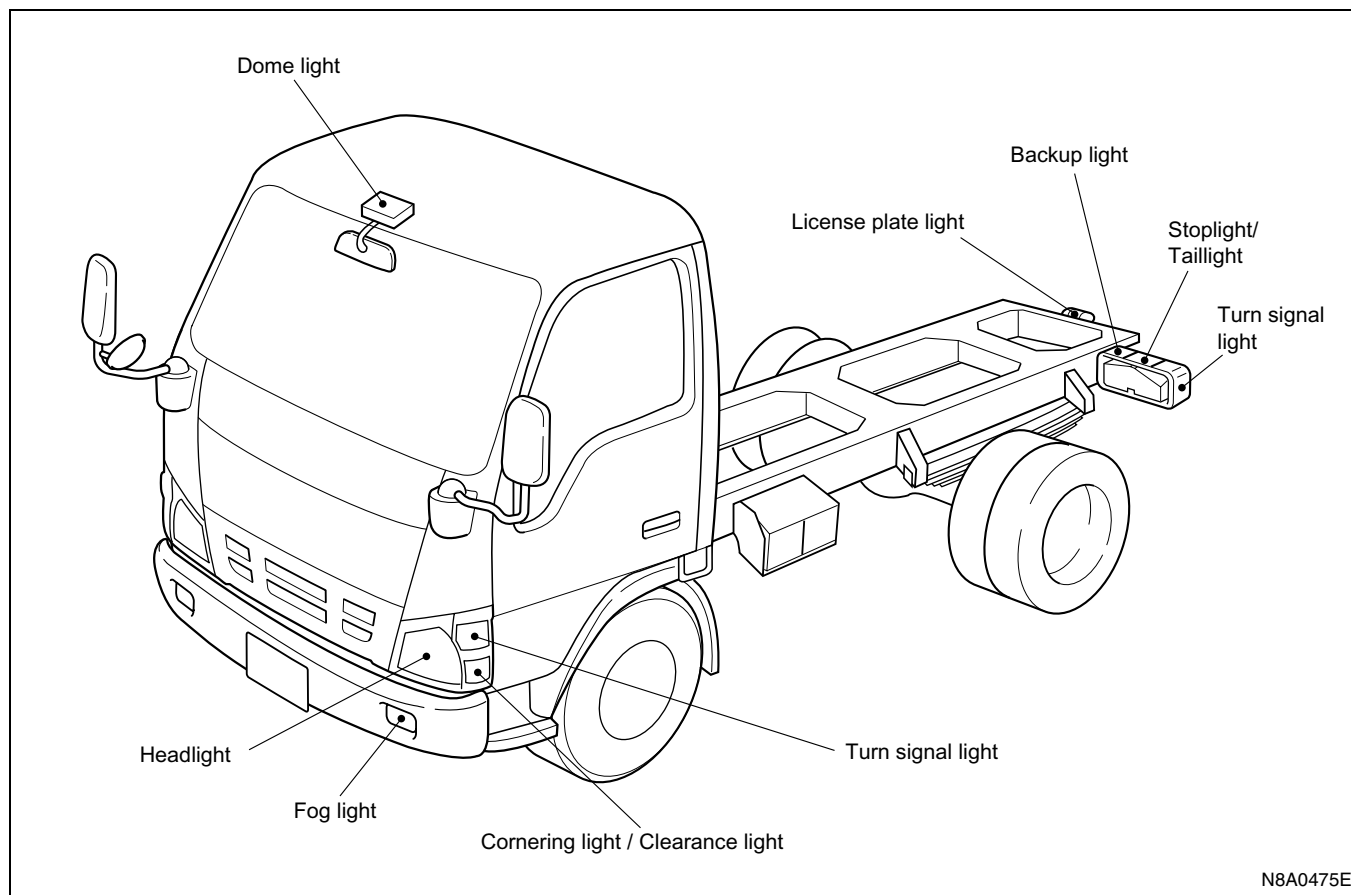
N8A0430E

Connector Symbol

Connector Symbol	Harness name	Connector Symbol	Harness name
B	Body harness	L	Dome Light harness
D	Door harness	N	Floor harness (LH & RH)
E	Engine harness	P	Battery harness
H	For joint between harnesses	R	Rear body harness
J	Front frame & Rear frame harness		

MAIN DATA AND SPECIFICATIONS

Bulb Specifications



Light Name		Rated Power	No. of Bulb	Lens Color	Remarks
Halogen Headlight		60 W / 55 W	2	Clear	12 V
		75 W / 70 W	2		24 V
Front combination light	Turn signal light	21 W	2	Amber	12 V, 24 V
	Cornering light / Clearance light	21 W / 5 W	2	Clear	12 V, 24 V
Fog light	Front	55 W	2	Clear	12 V
		70 W			24 V
	Rear	21 W	1	Red	12 V, 24 V
Rear combination light	Stoplight / Taillight	21 W / 5 W	2	Red	12 V, 24 V
	Turn signal light	21 W	2	Amber	12 V, 24 V
	Backup light	21 W	2	Clear	12 V, 24 V
License plate light		5 W	1	Clear	12 V, 24 V
Dome light		10 W	1	White	12 V, 24 V
Roof marker light		5 W	2	White	24 V
Side turn signal light		21 W	2	Amber	24 V

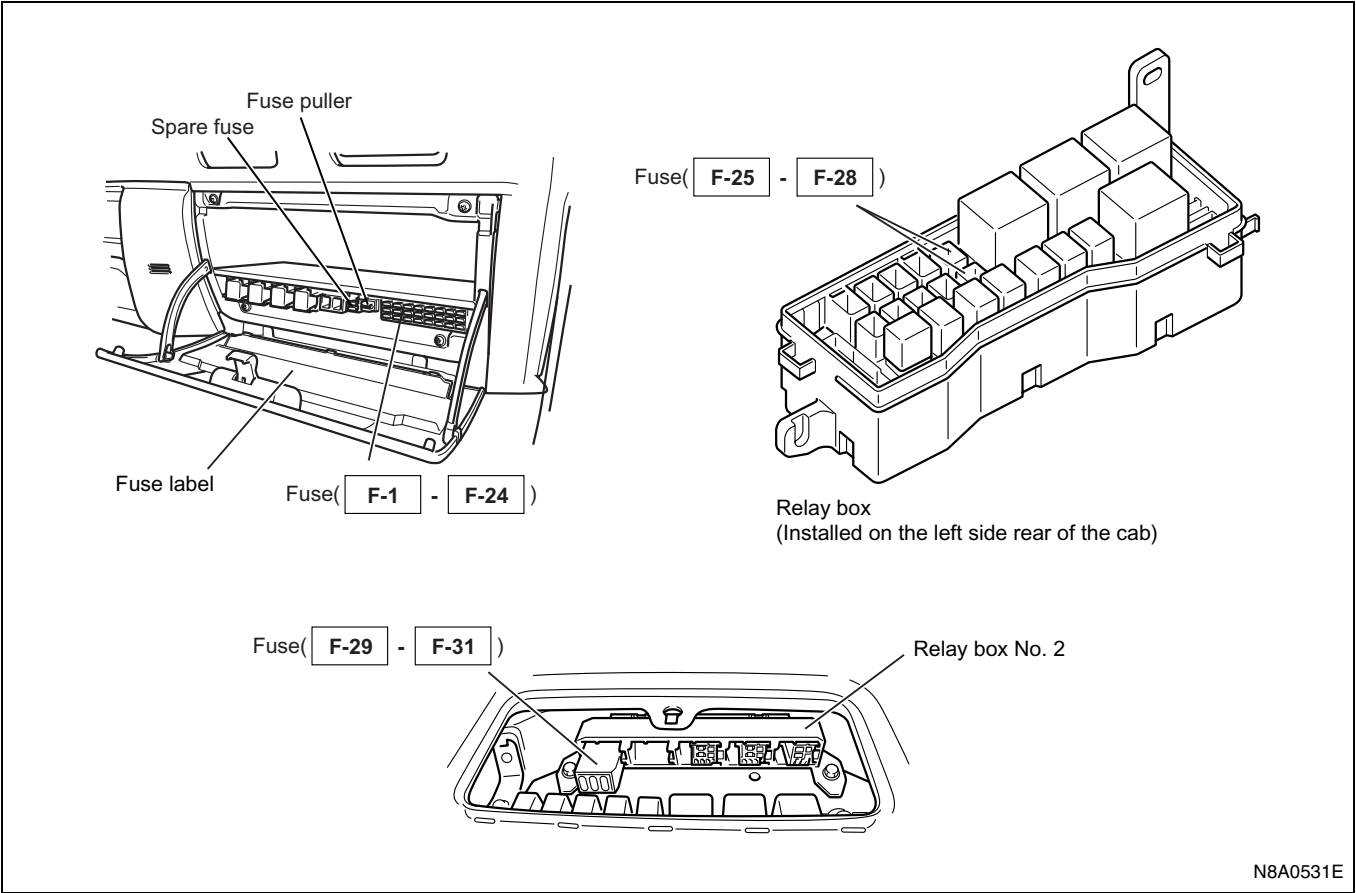
Light Name		Rated Power		No. of Bulb	Remarks
		Except 4HK1-TC	4HK1-TC		
Indicator / Warning Light (In the meter assembly)	Glow	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Engine oil pressure	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Fuel sedimenter	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Brake fluid level / Parking brake	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Charge	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Exhaust brake	2 W	—	1	12 V
	High beam	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Turn signal	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Fuel level	2 W	—	1	12 V
		1.8 W	1.8 W		24 V
	Seat belt	2 W	—	1	12 V
		1.8 W	1.8 W		24 V
	4WD	1.8 W	1.8 W	1	24 V
	Rear fog	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Brake booster	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	ABS	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Check engine	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	P.T.O.	1.4 W	—	1	12 V
		1.4 W	1.8 W		24 V
	Smoother	—	LED	1	24 V
	1st start	—	LED	1	24 V
	ECONO	—	LED	1	24 V
	ASR	—	1.8 W	1	24 V

8-24 CAB AND CHASSIS ELECTRICAL

Light Name			Rated Power		No. of Bulb	Remarks	
			Except 4HK1-TC	4HK1-TC			
Illumination	Illumination light for meter assembly		3.4 W		1	12 V	
			3 W			24 V	
	Hazard warning Switch		2 W		1	12 V	
			1.8 W			24 V	
	Dome light switch		2 W		1	12 V	
			1.8 W			24 V	
	Front fog light switch		2 W		1	12 V	
			1.8 W			24 V	
	Rear fog light switch	For indicator	60 mA		1	12 V	
		For illumination	60 mA		1		
	Cigar lighter			1.4 W		1	12 V
				1.8 W			24 V
	Heater bezel			1.4 W		1	
	Ashtray			1.4 W		1	

Fuse and Fusible Link Location

Fuse and Circuit Breaker



N8A0531E

Fuse Label-for 12 Volt (4JB1)

10 A (1)	AIR CON
15 A (2)	EXH. BRAKE, FUEL HEATER
15 A (3)	REAR HEATER
15 A (4)	AUDIO (B), DOOR LOCK
10 A (5)	STOP LIGHT
10 A (6)	FRT FOG LIGHT, CORNERING LAMP
10 A (7)	TAIL LIGHT
10 A (8)	EGR
10 A (9)	FUEL CUT
15 A (10)	FRONT WIPER & WASHER

10 A (11)	TURN LIGHT
10 A (12)	H/LAMP LEVEL
(13)	—
(14)	—
15 A (15)	AUDIO (IG), CIGAR LIGHTER
10 A (16)	METER
(17)	—
(18)	—
15 A (19)	HORN, HAZARD
10 A (20)	ABS (IG)
15 A (21)	GENERATOR
10 A (22)	STARTER
10 A (23)	HEAD LIGHT RH

8-26 CAB AND CHASSIS ELECTRICAL

10 A (24)	HEAD LIGHT LH
15 A (25)	MARKER LAMP
15 A (26)	COND. FAN
10 A (27)	RR FOG
(28)	—

Fuse Label-for 12 Volt (4HG1 / 4HE1)

10 A (1)	AIR CON
15 A (2)	EXH. BRAKE
(3)	—
15 A (4)	AUDIO (B), DOOR LOCK
10 A (5)	STOP LIGHT
(6)	—
10 A (7)	TAIL LIGHT
10 A (8)	FRT FOG LIGHT, CORNERING LAMP
10 A (9)	ENG.(IG)
15 A (10)	FRONT WIPER & WASHER
10 A (11)	TURN LIGHT
(12)	—
10 A (13)	ENG. STOP
(14)	—
15 A (15)	AUDIO (IG), CIGAR LIGHTER
10 A (16)	METER
(17)	—
(18)	—
15 A (19)	ENG.(B)
15 A (20)	HORN, HAZARD
(21)	—
10 A (22)	STARTER

10 A (23)	HEAD LIGHT RH
10 A (24)	HEAD LIGHT LH
15 A (25)	MARKER LAMP
(26)	—
10 A (27)	RR FOG
(28)	—

Fuse Label-for 12 Volt (4JH1)

10 A (1)	AIR CON
15 A (2)	FUEL HEATER
15 A (3)	REAR HEATER
15 A (4)	AUDIO (B), DOOR LOCK
10 A (5)	STOP LIGHT
10 A (6)	FRT FOG LIGHT, CORNERING LAMP
10 A (7)	TAIL LIGHT
15 A (8)	ENG.(B1)
15 A (9)	ENG.(B2)
15 A (10)	FRONT WIPER & WASHER
10 A (11)	TURN LIGHT
10 A (12)	H/LAMP LEVEL
(13)	—
(14)	—
15 A (15)	AUDIO (IG), CIGAR LIGHTER
10 A (16)	METER
(17)	—
(18)	—
15 A (19)	HORN, HAZARD
10 A (20)	ABS (IG)

(21)	—
10 A (22)	STARTER
10 A (23)	HEAD LIGHT RH
10 A (24)	HEAD LIGHT LH
15 A (25)	MARKER LAMP
15 A (26)	COND. FAN
10 A (27)	RR FOG
(28)	—

Fuse Label-for 24 Volt (4HF1 / 4HG1 / 4HE1)

15 A (1)	HEATER, AIR CON
10 A (2)	EXH. BRAKE, FUEL HEATER
15 A (3)	REAR HEATER
15 A (4)	AUDIO (B), DOOR LOCK
10 A (5)	STOP LIGHT
20 A (6)	POWER WINDOW
10 A (7)	TAIL LIGHT
10 A (8)	FRT FOG LIGHT, CORNERING LAMP
10 A (9)	ENG. (IG)
	FUEL CUT
15 A (10)	FRONT WIPER & WASHER
10 A (11)	TURN LIGHT
10 A (12)	H/LAMP LEVEL
10 A (13)	ENG. STOP
(14)	—
15 A (15)	AUDIO (IG), CIGAR LIGHTER
10 A (16)	METER
(17)	—

15 A (18)	GENERATOR
15 A (19)	ENG. (B)
15 A (20)	HORN, HAZARD
10 A (21)	ABS (IG)
10 A (22)	STARTER
10 A (23)	HEAD LIGHT RH
10 A (24)	HEAD LIGHT LH
15 A (25)	MARKER LAMP
15 A (26)	COND. FAN
10 A (27)	RR FOG
(28)	—
20 A (29)	PTO
10 A (30)	PTO
10 A (31)	PTO

Fuse Label-for 24 Volt (4HK1)

15 A (1)	HEATER, AIR CON
10 A (2)	FUEL HEATER
15 A (3)	REAR HEATER
15 A (4)	AUDIO (B), DOOR LOCK
10 A (5)	STOP LIGHT
20 A (6)	POWER WINDOW
10 A (7)	TAIL LIGHT
10 A (8)	FRT FOG LIGHT
10 A (9)	ENG. (IG)
15 A (10)	FRONT WIPER & WASHER

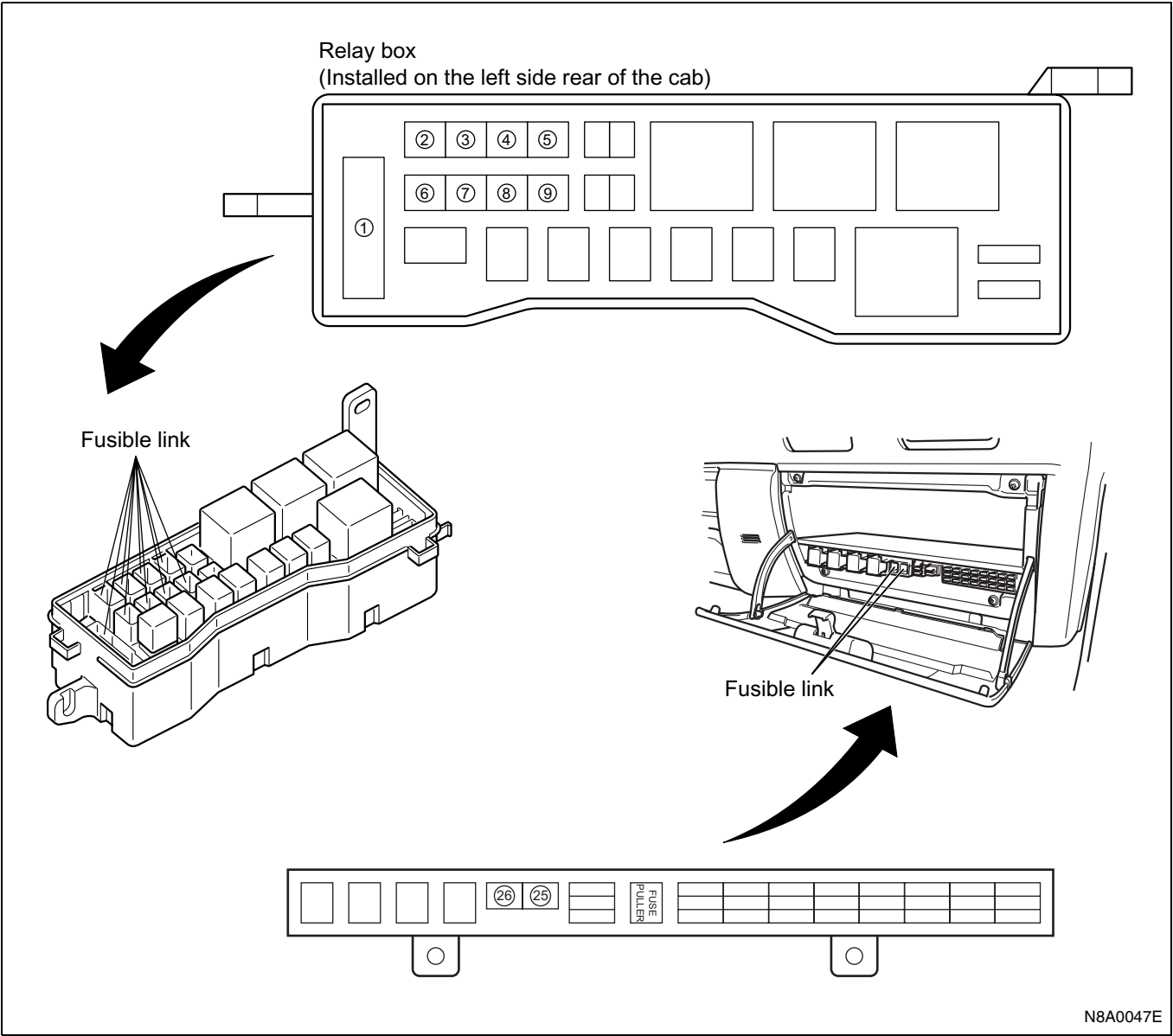
8-28 CAB AND CHASSIS ELECTRICAL

10 A (11)	TURN LIGHT
10 A (12)	H/LAMP LEVEL
10 A (13)	NEES (B)
(14)	—
15 A (15)	AUDIO (IG), CIGAR LIGHTER
10 A (16)	METER
10 A (17)	NEES (IG)
	HSA
10 A (18)	SRS
10 A (19)	ENG. (BACK UP) HSA
15 A (20)	HORN, HAZARD
10 A (21)	ABS (IG)
10 A (22)	STARTER
10 A (23)	HEAD LIGHT RH
10 A (24)	HEAD LIGHT LH
15 A (25)	MARKER LAMP
15 A (26)	COND. FAN
10 A (27)	RR FOG
10 A (28)	ECM. ENG.

Notice:

The fuse numbers (1) — (31) indicated on the fuse labels are expressed as F-1 — F-31 in the circuit diagrams of this manual.

Fusible Link



N8A0047E

For 12 Volt (4JB1)

100 A (1)	MAIN
50 A (2)	KEY
60 A (3)	GLOW
30 A (4)	HEAD LAMP
(5)	—
(6)	—
(7)	—
60 A (8)	STARTER

60 A (9)	ABS
30 A (25)	HEATER
30 A (26)	POWER WINDOW

For 12 Volt (4HG1 / 4HE1)

100 A (1)	MAIN
50 A (2)	KEY
60 A (3)	GLOW

8-30 CAB AND CHASSIS ELECTRICAL

30 A (4)	HEAD LAMP
(5)	—
(6)	—
(7)	—
60 A (8)	STARTER
(9)	—
30 A (25)	HEATER
30 A (26)	POWER WINDOW

For 12 Volt (4JH1)

100 A (1)	MAIN
50 A (2)	KEY
60 A (3)	GLOW
30 A (4)	HEAD LAMP
(5)	—
(6)	—
(7)	—
60 A (8)	STARTER
60 A (9)	ABS
30 A (25)	HEATER
30 A (26)	POWER WINDOW

For 24 Volt (4HF1 / 4HG1 / 4HE1)

100 A / 120 A (1)	MAIN
40 A (2)	KEY
60 A (3)	GLOW
30 A (4)	HEAD LAMP
(5)	—
(6)	—

(7)	—
60 A (8)	STARTER
40 A (9)	ABS

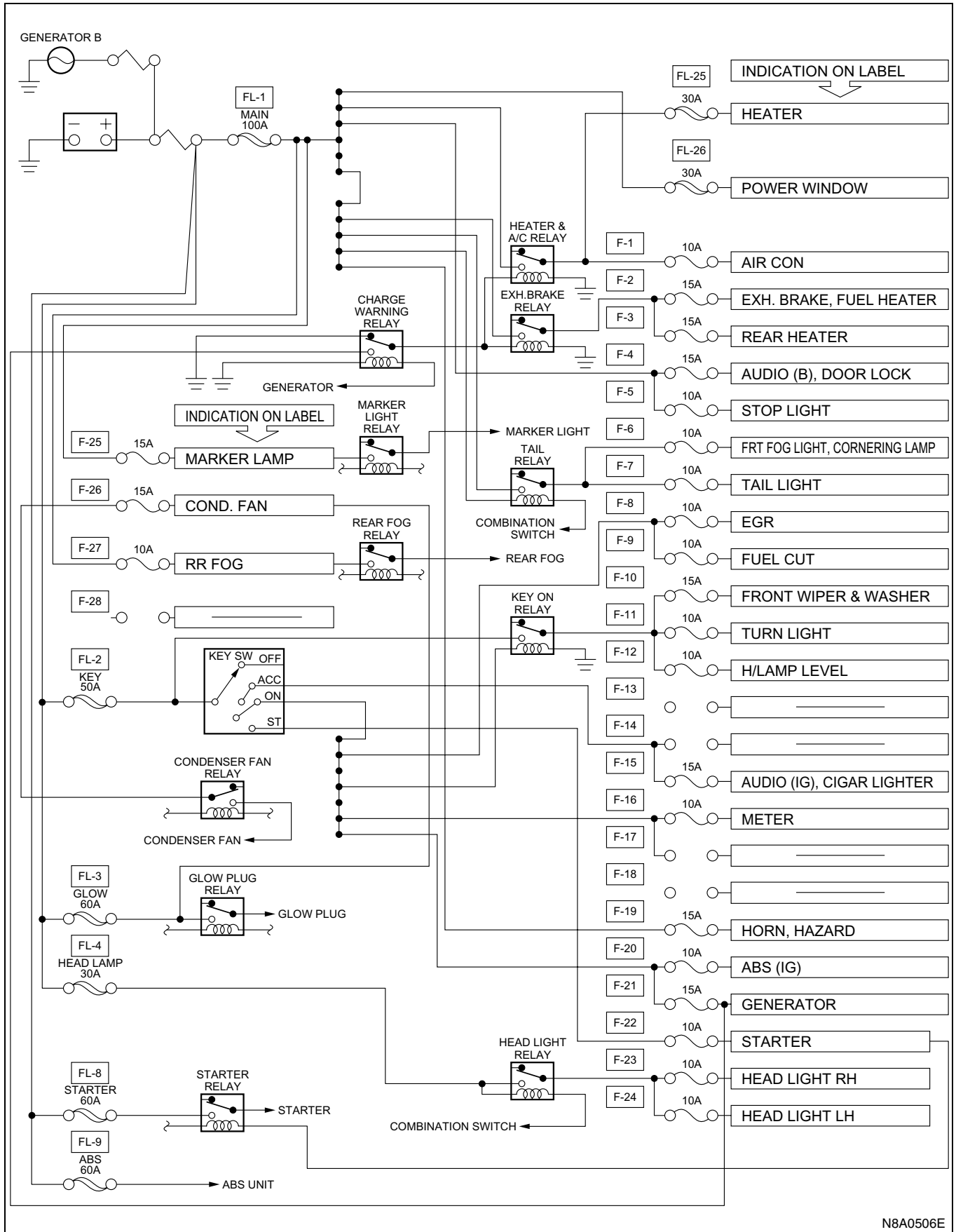
For 24 Volt (4HK1)

100 A / 120 A (1)	MAIN
40 A (2)	KEY
60 A (3)	GLOW
30 A (4)	HEAD LAMP
40 A (5)	ECM. ENG.
60 A (6)	CERAMIC HEATER
60 A (7)	NEES
60 A (8)	STARTER
40 A (9)	ABS

Notice:

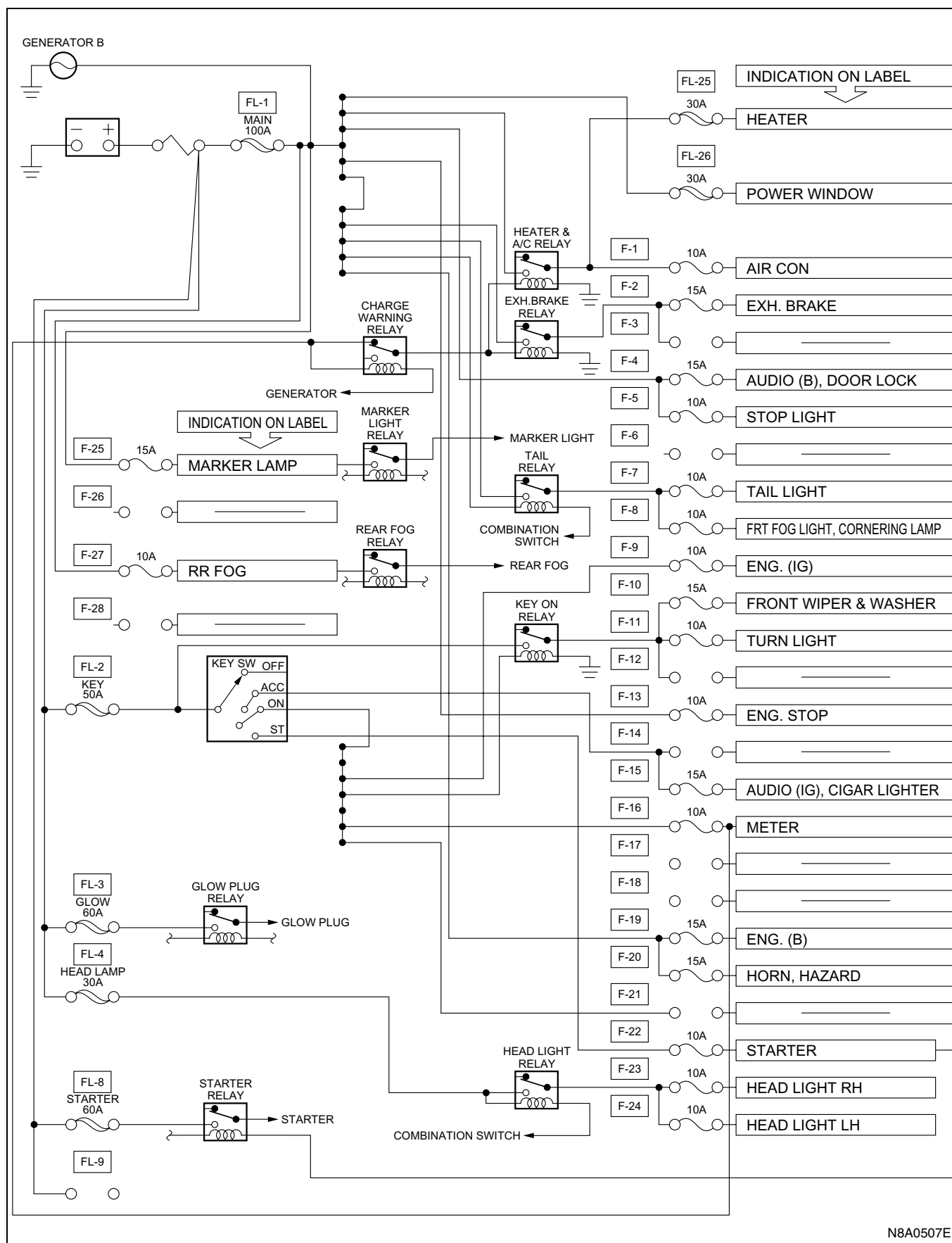
The fusible link numbers (1) — (26) are expressed as FL-1 — FL-26 in the circuit diagrams of this manual.

Fuse Block Circuit For 12 Volt-4JB1 Engine



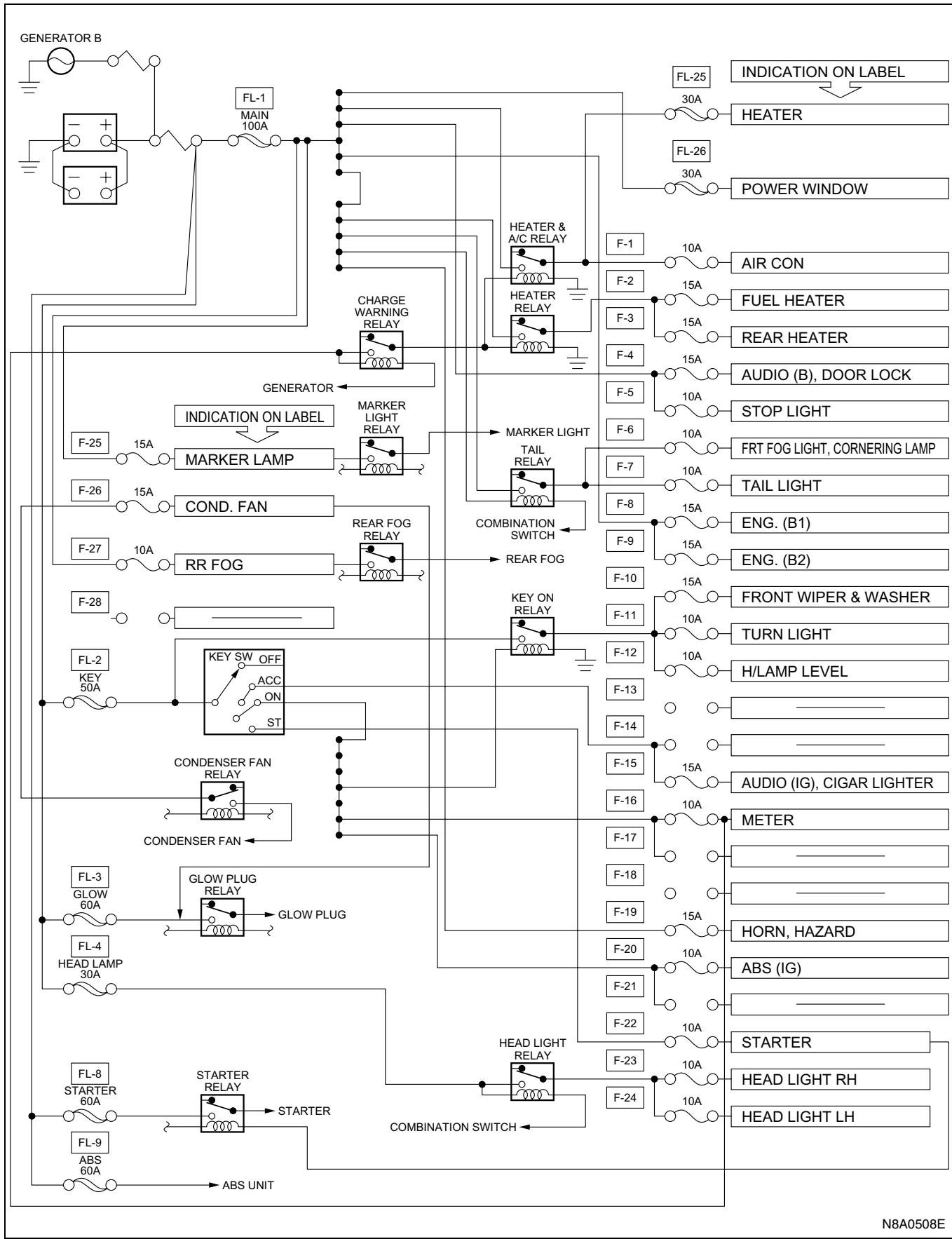
8-32 CAB AND CHASSIS ELECTRICAL

For 12 Volt-4HG1 / 4HE1 Engine



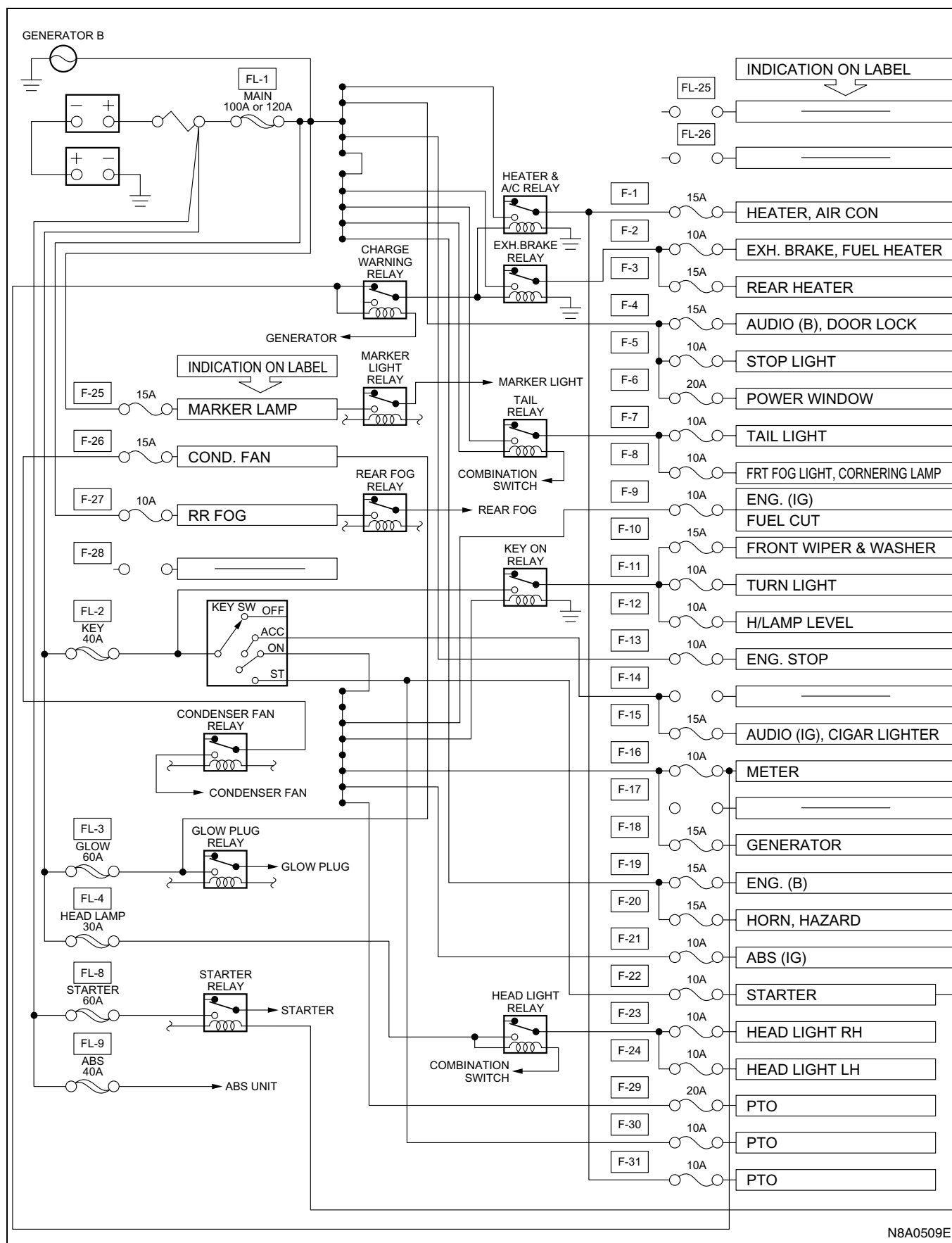
N8A0507E

For 12 Volt-4JH1 Engine



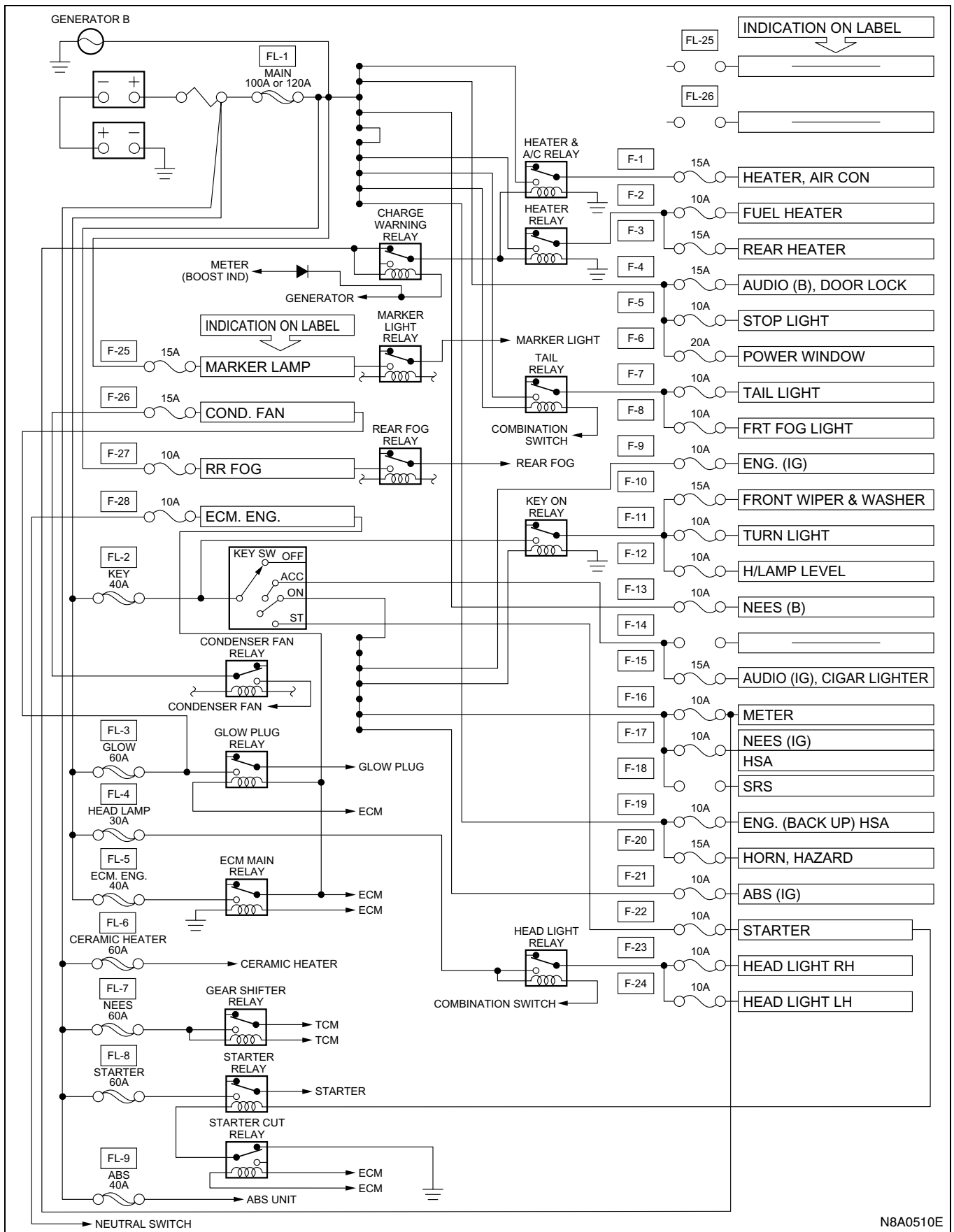
8-34 CAB AND CHASSIS ELECTRICAL

For 24 Volt-4HF1 / 4HG1 / 4HE1 Engine



N8A0509E

For 24 Volt-4HK1 Engine



N8A0510E

Reference Table of Fuse and Circuit Breaker**Fuse****12 Volt 4JB1 Engine**

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-1	10 A	AIR CON	A/C switch, A/C thermo relay, Pressure switch, Magnetic clutch, VSV: FICD, Electronic thermostat
F-2	15 A	EXH. BRAKE, FUEL HEATER	Exhaust brake switch, Exhaust brake control relay, Exhaust brake magnetic valve, Clutch switch, Accel switch, Fuel heater
F-3	15 A	REAR HEATER	Rear heater, Rear heater switch
F-4	15 A	AUDIO (B), DOOR LOCK	Radio & clock, Dome light switch, Dome light, Door switch (RH & LH), Door lock switch, Door lock actuator, Door lock controller, Speedometer, Key cylinder switch, Key remind buzzer
F-5	10 A	STOP LIGHT	Stoplight switch, Stoplight
F-6	10 A	FRT FOG LIGHT, CORNERING LAMP	Fog light switch, Fog light, Lighting switch, Cornering light relay, Cornering light, Cornering light switch
F-7	10 A	TAIL LIGHT	Tail relay, Illumination light(s), Clearance light(s), Tail light(s)
F-8	10 A	EGR	ECM ignition
F-9	10 A	FUEL CUT	Fuel cut solenoid
F-10	15 A	FRONT WIPER & WASHER	Wiper & Washer switch, Wiper motor, Washer motor, Intermit-tent relay
F-11	10 A	TURN LIGHT	Flasher unit, Front turn signal light, Rear turn signal light, Turn signal light switch, Hazard warning switch
F-12	10 A	H/LAMP LEVEL	Headlight leveling switch, Headlight leveling motor (actuator)
F-13	—	—	—
F-14	—	—	—
F-15	15 A	AUDIO (IG), CIGAR LIGHTER	Radio, Cigar lighter
F-16	10 A	METER	Exhaust brake control relay, CSD Relay, Key remind buzzer, Backup light switch, Backup light, Neutral switch, Starter relay, QOS-II controller, QOS-III controller, Glow relay, Glow-1 relay, Glow-2 relay, Glow indicator (Meter), Coolant temperature gauge, Thermo unit, Vehicle speed sensor (Installed on the meter assembly & Transmission), Meter assembly, Power window relay, Cornering light relay
F-17	—	—	—
F-18	—	—	—
F-19	15 A	HORN, HAZARD	Horn, Horn relay, Horn switch, Flasher unit, Hazard warning switch
F-20	10 A	ABS (IG)	ABS
F-21	15 A	GENERATOR	Generator
F-22	10 A	STARTER	Starter relay, QOS-II controller, QOS-III controller
F-23	10 A	HEAD LIGHT RH	Headlight (RH), Dimmer relay, High beam indicator light
F-24	10 A	HEAD LIGHT LH	Headlight (LH), Dimmer relay
F-25	15 A	MARKER LAMP	Marker light, Marker light relay
F-26	15 A	COND. FAN	Condenser fan
F-27	10 A	RR FOG	Rear fog light switch, Rear fog light relay

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-28	—	—	—

12 Volt 4HG1 / 4HE1 Engine

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-1	10 A	AIR CON	A/C switch, A/C thermo relay, Pressure switch, Magnetic clutch, VSV: FICD, Electronic thermostat
F-2	15 A	EXH. BRAKE	Exhaust brake switch, Exhaust brake control relay, Exhaust brake magnetic valve, Clutch switch, Accel switch
F-3	—	—	—
F-4	15 A	AUDIO (B), DOOR LOCK	Radio & clock, Dome light switch, Dome light, Door switch (RH & LH), Door lock switch, Door lock actuator, Door lock controller, Speedometer, Key cylinder switch, Key remind buzzer
F-5	10 A	STOP LIGHT	Stoplight switch, Stoplight
F-6	—	—	—
F-7	10 A	TAIL LIGHT	Tail relay, Illumination light(s), Clearance light(s), Tail light(s)
F-8	10 A	FRT FOG LIGHT, CORNERING LAMP	Fog light switch, Fog light, Lighting switch, Cornering light relay, Cornering light, Cornering light switch
F-9	10 A	ENG. (IG)	ECM ignition
F-10	15 A	FRONT WIPER & WASHER	Wiper & Washer switch, Wiper motor, Washer motor, Intermit-tent relay
F-11	10 A	TURN LIGHT	Flasher unit, Front turn signal light, Rear turn signal light, Turn signal light switch, Hazard warning switch
F-12	—	—	—
F-13	10 A	ENG. STOP	Engine stop motor
F-14	—	—	—
F-15	15 A	AUDIO (IG), CIGAR LIGHTER	Radio, Cigar lighter
F-16	10 A	METER	Exhaust brake control relay, CSD Relay, Key remind buzzer, Backup light switch, Backup light, Inhibitor switch, Neutral switch, Starter relay, QOS-II controller, QOS-III controller, Glow relay, Glow-1 relay, Glow-2 relay, Glow indicator (Meter), Coolant temperature gauge, Thermo unit, Vehicle speed sensor (Installed on the meter assembly & Transmission), Meter assembly, Power window relay, Cornering light relay
F-17	—	—	—
F-18	—	—	—
F-19	15 A	ENG. (B)	ECM battery
F-20	15 A	HORN, HAZARD	Horn, Horn relay, Horn switch, Flasher unit, Hazard warning switch
F-21	—	—	—
F-22	10 A	STARTER	Starter relay, Inhibitor switch, QOS-II controller, QOS-III controller
F-23	10 A	HEAD LIGHT RH	Headlight (RH), Dimmer relay, High beam indicator light
F-24	10 A	HEAD LIGHT LH	Headlight (LH), Dimmer relay
F-25	15 A	MARKER LAMP	Marker light, Marker light relay

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Fuse No.	Capacity	Indication on label	Main parts (Load)
F-26	—	—	—
F-27	10 A	RR FOG	Rear fog light switch, Rear fog light relay
F-28	—	—	—

12 Volt 4JH1 Engine

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-1	10 A	AIR CON	A/C switch, A/C thermo relay, Pressure switch, Magnetic clutch, VSV: FICD, Electronic thermostat
F-2	15 A	FUEL HEATER	Fuel heater
F-3	15 A	REAR HEATER	Rear heater, Rear heater switch
F-4	15 A	AUDIO (B), DOOR LOCK	Radio & clock, Dome light switch, Dome light, Door switch (RH & LH), Door lock switch, Door lock actuator, Door lock controller, Speedometer, Key cylinder switch, Key remind buzzer
F-5	10 A	STOP LIGHT	Stoplight switch, Stoplight
F-6	10 A	FRT FOG LIGHT, CORNERING LAMP	Fog light switch, Fog light, Lighting switch, Cornering light relay, Cornering light, Cornering light switch
F-7	10 A	TAIL LIGHT	Tail relay, Illumination light(s), Clearance light(s), Tail light(s)
F-8	15 A	ENG. (B1)	ECM battery
F-9	15 A	ENG. (B2)	ECM battery
F-10	15 A	FRONT WIPER & WASHER	Wiper & Washer switch, Wiper motor, Washer motor, Intermittent relay
F-11	10 A	TURN LIGHT	Flasher unit, Front turn signal light, Rear turn signal light, Turn signal light switch, Hazard warning switch
F-12	10 A	H/LAMP LEVEL	Headlight leveling switch, Headlight leveling motor (actuator)
F-13	—	—	—
F-14	—	—	—
F-15	15 A	AUDIO (IG), CIGAR LIGHTER	Radio, Cigar lighter
F-16	10 A	METER	Exhaust brake control relay, CSD Relay, Key remind buzzer, Backup light switch, Backup light, Neutral switch, Starter relay, QOS-II controller, QOS-III controller, Glow relay, Glow-1 relay, Glow-2 relay, Glow indicator (Meter), Coolant temperature gauge, Thermo unit, Vehicle speed sensor (Installed on the meter assembly & Transmission), Meter assembly, Power window relay, Cornering light relay
F-17	—	—	—
F-18	—	—	—
F-19	15 A	HORN, HAZARD	Horn, Horn relay, Horn switch, Flasher unit, Hazard warning switch
F-20	10 A	ABS (IG)	ABS
F-21	—	—	—
F-22	10 A	STARTER	Starter relay, QOS-II controller, QOS-III controller
F-23	10 A	HEAD LIGHT RH	Headlight (RH), Dimmer relay, High beam indicator light
F-24	10 A	HEAD LIGHT LH	Headlight (LH), Dimmer relay
F-25	15 A	MARKER LAMP	Marker light, Marker light relay

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-26	15 A	COND. FAN	Condenser fan
F-27	10 A	RR FOG	Rear fog light switch, Rear fog light relay
F-28	—	—	—

24 Volt 4HF1 / 4HG1 / 4HE1 Engine

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-1	15 A	HEATER, AIR CON	Blower motor, Blower resistor, Fan switch, A/C switch, A/C thermo relay, Pressure switch, A/C cut relay, Thermo switch (A/C cut), VSV: FICD, Electronic thermostat
F-2	10 A	EXH. BRAKE, FUEL HEATER	Exhaust brake switch, Exhaust brake control relay, Exhaust brake magnetic valve, Clutch switch, Accel switch, Fuel heater
F-3	15 A	REAR HEATER	Rear heater, Rear heater switch
F-4	15 A	AUDIO (B), DOOR LOCK	Radio & clock, Dome light switch, Dome light, Door switch (RH & LH), Door lock switch, Door lock actuator, Door lock controller, Speedometer, Key cylinder switch, Key remind buzzer
F-5	10 A	STOP LIGHT	Stoplight switch, Stoplight
F-6	20 A	POWER WINDOW	Power window
F-7	10 A	TAIL LIGHT	Tail relay, Illumination light(s), Clearance light(s), Tail light(s)
F-8	10 A	FRT FOG LIGHT, CORNERING LAMP	Fog light switch, Fog light, Lighting switch, Cornering light relay, Cornering light, Cornering light switch
F-9	10 A	ENG. (IG)	ECM ignition (EXCEPT 4HF1-2)
		FUEL CUT	Fuel cut solenoid (4HF1-2)
F-10	15 A	FRONT WIPER & WASHER	Wiper & Washer switch, Wiper motor, Washer motor, Intermit-tent relay
F-11	10 A	TURN LIGHT	Flasher unit, Front turn signal light, Rear turn signal light, Turn signal light switch, Hazard warning switch
F-12	10 A	H/LAMP LEVEL	Headlight leveling switch, Headlight leveling motor (actuator)
F-13	10 A	ENG. STOP	Engine stop motor
F-14	—	—	—
F-15	15 A	AUDIO (IG), CIGAR LIGHTER	Radio, Cigar lighter
F-16	10 A	METER	Exhaust brake control relay, CSD Relay, Key remind buzzer, Backup light switch, Backup light, Neutral switch, Starter relay, QOS-II controller, QOS-III controller, Glow relay, Glow-1 relay, Glow-2 relay, Glow indicator (Meter), Coolant temperature gauge, Thermo unit, Vehicle speed sensor (Installed on the meter assembly & Transmission), Meter assembly, Power window relay, Cornering light relay
F-17	—	—	—
F-18	15 A	GENERATOR	Generator
F-19	15 A	ENG. (B)	ECM battery (4HG1-T)
F-20	15 A	HORN, HAZARD	Horn, Horn relay, Horn switch, Flasher unit, Hazard warning switch
F-21	10 A	ABS (IG)	ABS
F-22	10 A	STARTER	Starter relay, QOS-II controller, QOS-III controller

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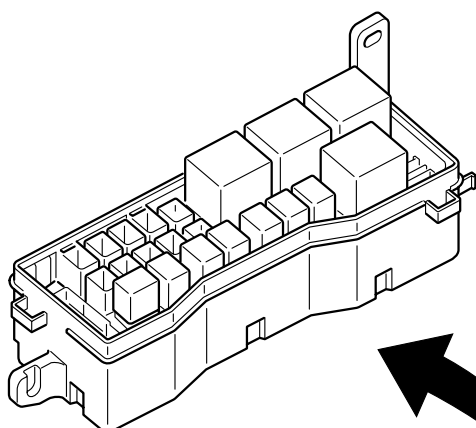
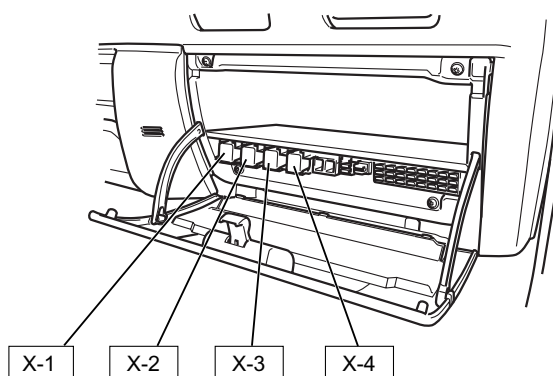
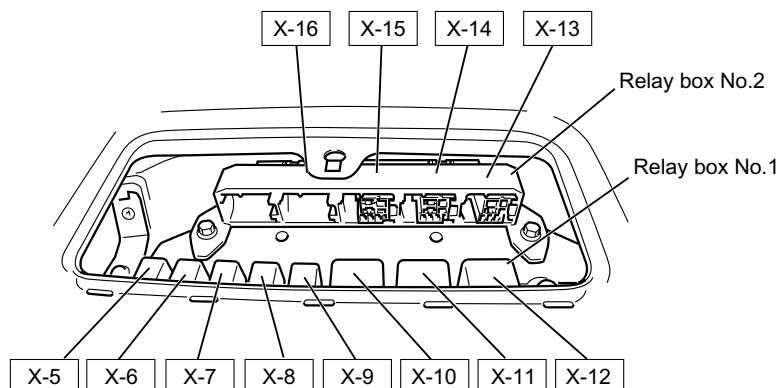
Fuse No.	Capacity	Indication on label	Main parts (Load)
F-23	10 A	HEAD LIGHT RH	Headlight (RH), Dimmer relay, High beam indicator light
F-24	10 A	HEAD LIGHT LH	Headlight (LH), Dimmer relay
F-25	15 A	MARKER LAMP	Marker light, Marker light relay
F-26	15 A	COND. FAN	Condenser fan
F-27	10 A	RR FOG	Rear fog light switch, Rear fog light relay
F-28	—	—	—
F-29	20 A	PTO	PTO main relay (Electronic control type PTO)
F-30	10 A	PTO	PTO cut relay (Electronic control type PTO)
F-31	10 A	PTO	PTO cut relay (Electronic control type PTO)

24 Volt 4HK1 Engine

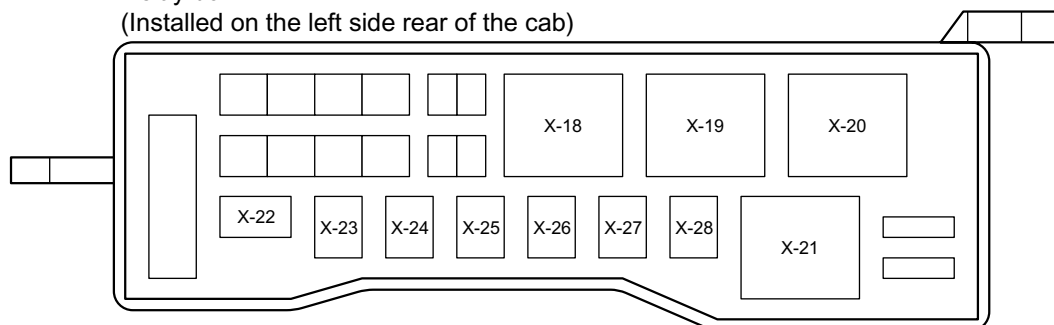
Fuse No.	Capacity	Indication on label	Main parts (Load)
F-1	15 A	HEATER, AIR CON	Blower motor, Blower resistor, Fan switch, A/C switch, A/C thermo relay, Pressure switch, VSV: FICD, Electronic thermostat, A/C compressor, A/C thermo relay, Condenser fan, ECM (A/C compressor SIG.)
F-2	10 A	FUEL HEATER	Exhaust brake magnetic valve, Clutch switch, Accel switch, Fuel heater, VSV: Intake throttle, ABS (Exhaust brake SIG.), Ceramic heater relay
F-3	15 A	REAR HEATER	Rear heater, Rear heater switch
F-4	15 A	AUDIO (B), DOOR LOCK	Radio & clock, Dome light switch, Dome light, Door switch (RH & LH), Door lock switch, Door lock actuator, Door lock controller, Speedometer, Key cylinder switch, Key remind buzzer, Side turn signal light(s)
F-5	10 A	STOP LIGHT	Stoplight switch, Stoplight, ABS (Stop on SIG.), ECM (brake on SIG.)
F-6	20 A	POWER WINDOW	Power window
F-7	10 A	TAIL LIGHT	Tail relay, Illumination light(s), Clearance light(s), Tail light(s), Roof marker light, License light(s), Marker light relay
F-8	10 A	FRT FOG LIGHT	Fog light switch, Fog light, Lighting switch, Cornering light relay, Cornering light, Cornering light switch
F-9	10 A	ENG. (IG)	ECM (IG SIG.), Starter cut relay, ECM (Exhaust brake SIG.), Exhaust brake indicator, ECM (brake off SIG.), ECM (clutch on SIG.), ALDL connector
F-10	15 A	FRONT WIPER & WASHER	Wiper & Washer switch, Wiper motor, Washer motor, Intermit-tent relay
F-11	10 A	TURN LIGHT	Flasher unit, Front turn signal light, Rear turn signal light, Turn signal light switch, Hazard warning switch, Side turn signal light relay
F-12	10 A	H/LAMP LEVEL	Headlight leveling switch, Headlight leveling motor (actuator)
F-13	10 A	NEES (B)	Smoother
F-14	—	—	—
F-15	15 A	AUDIO (IG), CIGAR LIGHTER	Radio, Cigar lighter, Digital clock

Fuse No.	Capacity	Indication on label	Main parts (Load)
F-16	10 A	METER	CSD Relay, Key remind buzzer, Backup light switch, Backup light, Neutral switch, Starter relay, QOS-II controller, Glow relay, Glow indicator (Meter), Coolant temperature gauge, Thermo unit, Vehicle speed sensor (Installed on the meter assembly & Transmission), Meter assembly, Power window relay, Cornering light relay, Backup buzzer, ABS indicator relay, Charge relay, Heater A/C relay, VSV: 2WD (4WD), VSV: 4WD (4WD), 4WD relay
F-17	10 A	NEES (IG)	Smoother (IGN SIG.)
		HSA	—
F-18	—	SRS	—
F-19	10 A	ENG. (BACK UP) HSA	ECM (Back up)
F-20	15 A	HORN, HAZARD	Horn, Horn relay, Horn switch, Flasher unit, Hazard warning switch, Turn light(s), Side turn signal light relay
F-21	10 A	ABS (IG)	ABS (IGN SIG.)
F-22	10 A	STARTER	Starter relay, QOS-II controller
F-23	10 A	HEAD LIGHT RH	Headlight (RH), Dimmer relay, High beam indicator light
F-24	10 A	HEAD LIGHT LH	Headlight (LH), Dimmer relay
F-25	15 A	MARKER LAMP	Marker light, Marker light relay
F-26	15 A	COND. FAN	Condenser fan
F-27	10 A	RR FOG	Rear fog light switch, Rear fog light relay
F-28	10 A	ECM. ENG.	ECM

Relay Location



Relay box
(Installed on the left side rear of the cab)



Relay List

○: Standard, □: Option

		X-1		X-2	X-3	X-4	X-5		X-6
		Charge warning	Key ON	Horn	Lamp	Tail	ABS IND.	Smoother main	Dimmer
12 V	NHR55	—	○	○	○	○	—	—	○
	NKR55	—	○	○	○	○	—	—	○
	NKR69	—	○	○	○	○	—	—	○
	NPR71	—	○	○	○	○	—	—	○
	NKR77	—	○	○	○	○	□	—	○
	NPR77	—	○	○	○	○	□	—	○
	NKR77 for Taiwan	—	○	○	○	○	—	—	○
24 V	NKR66	○	—	○	○	○	—	—	○
	NPR66	○	—	○	○	○	□	—	○
	NQR66	○	—	○	○	○	□	—	○
	NPR70	○	—	○	○	○	—	—	○
	NQR70	○	—	○	○	○	—	—	○
	NKR71	○	—	○	○	○	—	—	○
	NQR71 with turbocharger	○	—	○	○	○	□	—	○
	NPS71	○	—	○	○	○	—	—	○
	NPR71	○	—	○	○	○	—	—	○
	NQR71 w/o turbocharger	○	—	○	○	○	—	—	○
	NPR75	○	—	○	○	○	—	□	○
	NQR75	○	—	○	○	○	—	□	○

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		X-7	X-8		X-9	X-10	X-11		X-12
		Power window	Exh. brake	Heater	Corner-ing lamp	Thermo A/C	Charge warning	Key ON	Heater & A/C
12 V	NHR55	☐	☐	—	○	☐	○	—	○
	NKR55	☐	☐	—	○	☐	○	—	○
	NKR69	☐	☐	—	○	☐	○	—	○
	NPR71	☐	○	—	○	☐	○	—	○
	NKR77	☐	—	—	☐	☐	○	—	○
	NPR77	☐	—	—	☐	☐	○	—	○
	NKR77 for Taiwan	☐	—	—	○	☐	○	—	○
24 V	NKR66	☐	☐	—	○	☐	—	○	○
	NPR66	☐	○	—	○	☐	—	○	○
	NQR66	☐	○	—	○	☐	—	○	○
	NPR70	☐	○	—	○	☐	—	○	○
	NQR70	☐	○	—	○	☐	—	○	○
	NKR71	☐	☐	—	○	☐	—	○	○
	NQR71 with turbocharger	☐	○	—	○	☐	—	○	○
	NPS71	☐	○	—	○	☐	—	○	○
	NPR71	☐	○	—	○	☐	—	○	○
	NQR71 w/o turbocharger	☐	○	—	○	☐	—	○	○
	NPR75	☐	—	○	☐*	☐	—	○	○
	NQR75	☐	—	○	☐*	☐	—	○	○

*: Except EC / Turkey

		X-13		X-14				X-15	X-16
		Heater	Buzzer cancel	ECM	PTO main	Timing	Smoother emergency	PTO solenoid, M/T	PTO cut
12 V	NHR55	—	—	—	—	—	—	—	—
	NKR55	—	—	—	—	—	—	—	—
	NKR69	—	—	—	—	—	—	—	—
	NPR71	—	—	—	—	—	—	—	—
	NKR77	○	—	○	—	—	—	—	—
	NPR77	○	—	○	—	—	—	—	—
	NKR77 for Taiwan	○	—	○	—	—	—	—	—
24 V	NKR66	—	—	—	—	—	—	—	—
	NPR66	—	□	—	—	—	—	—	—
	NQR66	—	□	—	—	—	—	—	—
	NPR70	—	□	—	—	○	—	—	—
	NQR70	—	□	—	—	○	—	—	—
	NKR71	—	—	—	—	—	—	—	—
	NQR71 with turbocharger	—	□	—	—	—	—	—	—
	NPS71	—	—	—	□	—	—	□	□
	NPR71	—	□	—	—	—	—	—	—
	NQR71 w/o turbocharger	—	□	—	—	—	—	—	—
	NPR75	—	□	○	—	—	□	—	—
	NQR75	—	□	○	—	—	□	—	—

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		X-18	X-19		X-20	X-21	X-22	X-23	X-24
		ECM main	Gear shifter	Glow 2	Glow plug	Starter	Marker lamp	Rear fog	A/C COMP
12 V	NHR55	—	—	—	○	○	—	—	—
	NKR55	—	—	—	○	○	—	□	—
	NKR69	—	—	○	○	○	—	—	—
	NPR71	—	—	—	○	○	—	—	—
	NKR77	—	—	—	○	○	□ ^{*1}	□ ^{*1}	□
	NPR77	—	—	—	○	○	□ ^{*1}	□ ^{*1}	□
	NKR77 for Taiwan	—	—	—	○	○	—	—	□
24 V	NKR66	—	—	—	○	○	—	—	—
	NPR66	—	—	—	○	○	□ ^{*2}	□ ^{*2}	—
	NQR66	—	—	—	○	○	—	—	—
	NPR70	—	—	—	○	○	—	—	—
	NQR70	—	—	—	○	○	—	—	—
	NKR71	—	—	—	○	○	—	—	—
	NQR71 with turbocharger	—	—	—	○	○	□ ^{*2}	□ ^{*2}	—
	NPS71	—	—	—	○	○	—	—	—
	NPR71	—	—	—	○	○	—	—	—
	NQR71 w/o turbocharger	—	—	—	○	○	—	—	—
	NPR75	○	□	—	○	○	□ ^{*3}	□ ^{*3}	—
	NQR75	○	□	—	○	○	□ ^{*3}	□ ^{*3}	—

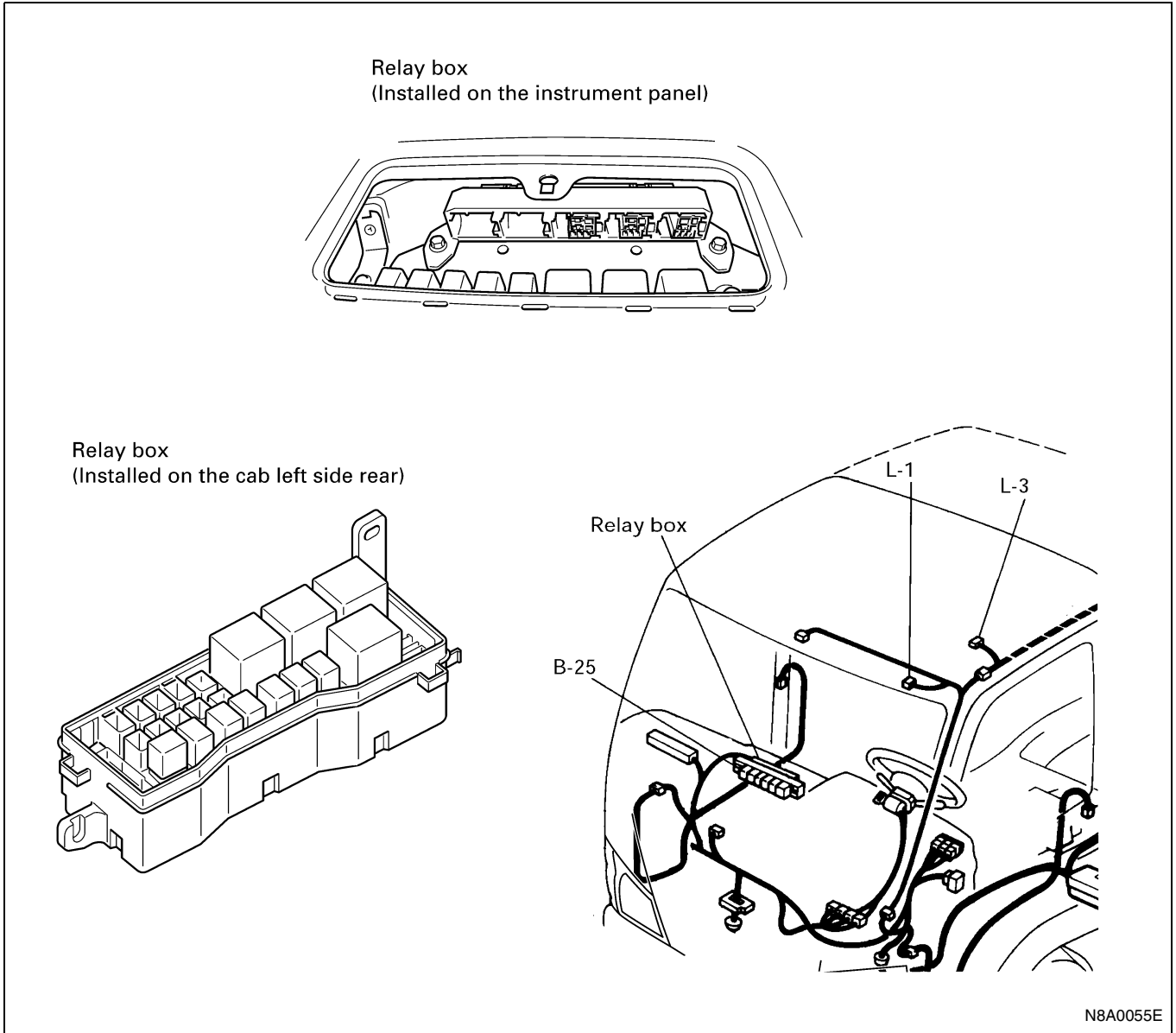
*1 : For EC

*2 : For Turkey

*3 : For EC / Turkey

		X-24	X-25	X-26			X-27	X-28
		4WD ind. lamp	Exh. brake control	CSD	A/C ON SIGNAL	Starter cut	Con-denser fan	Exh. brake cut
12V	NHR55	—	□	○	—	—	—	—
	NKR55	—	□	○	—	—	—	—
	NKR69	—	□	—	—	—	—	—
	NPR71	—	○	—	—	—	—	—
	NKR77	—	—	—	□	—	—	—
	NPR77	—	—	—	□	—	—	—
	NKR77 for Taiwan	—	—	—	□	—	□	—
24V	NKR66	—	□	—	—	—	—	—
	NPR66	—	○	—	—	—	—	□
	NQR66	—	○	—	—	—	—	□
	NPR70	—	○	—	—	—	□	—
	NQR70	—	○	—	—	—	□	—
	NKR71	—	□	—	—	—	—	—
	NQR71 with turbocharger	—	○	—	—	—	—	□
	NPS71	○	○	—	—	—	—	—
	NPR71	—	○	—	—	—	—	□
	NQR71 w/o turbocharger	—	○	—	—	—	—	—
	NPR75	—	—	—	—	○	○	—
	NQR75	—	—	—	—	○	○	—

Diode Location



Connector No.	B-17	B-18	B-25	J-23	L-1	L-3
Usage	A/C Door switch	Lighting	QOS-III (Except GCC and Taiwan)	VSV: FICD (Except GCC and Taiwan)	Dome light	Dome light (Except Tai- wan)

Reference Table of Grounding Point

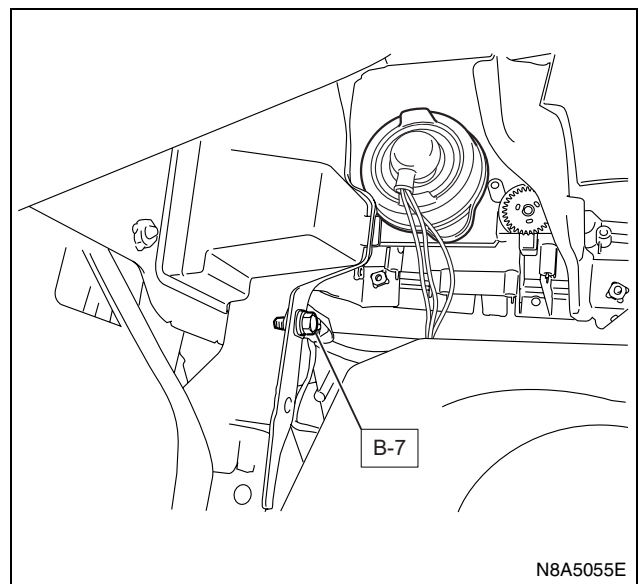
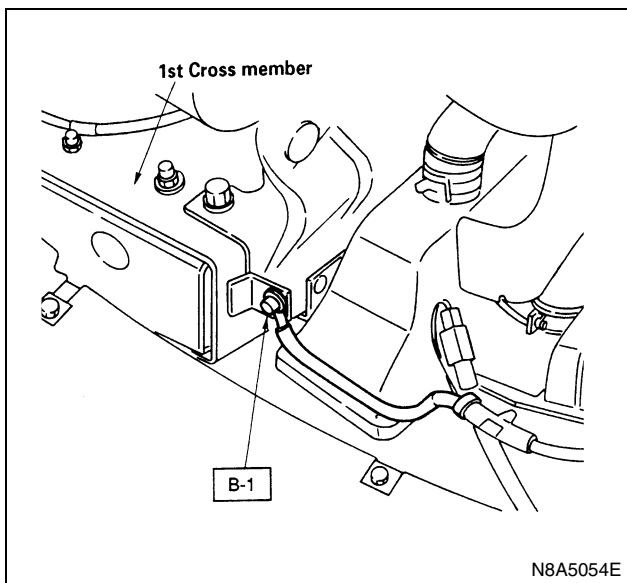
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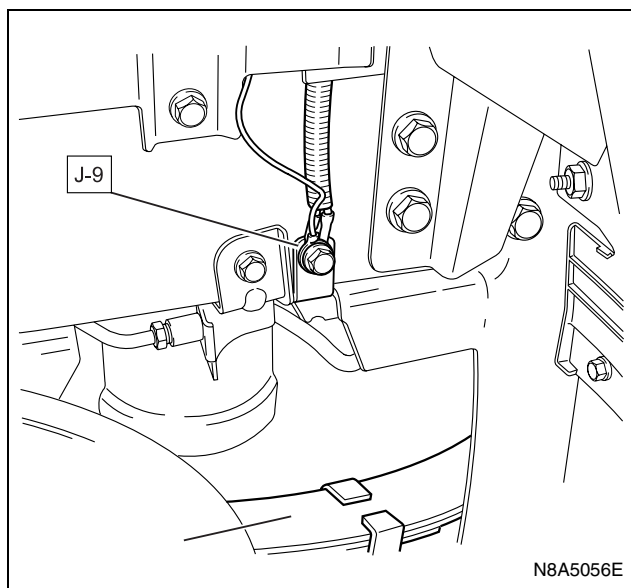
Abnormal phenomena of electrical components are considered resulted from defective grounding.

In repair, be sure to inspect grounding points and to tighten all fastening parts surrounding the grounding points.

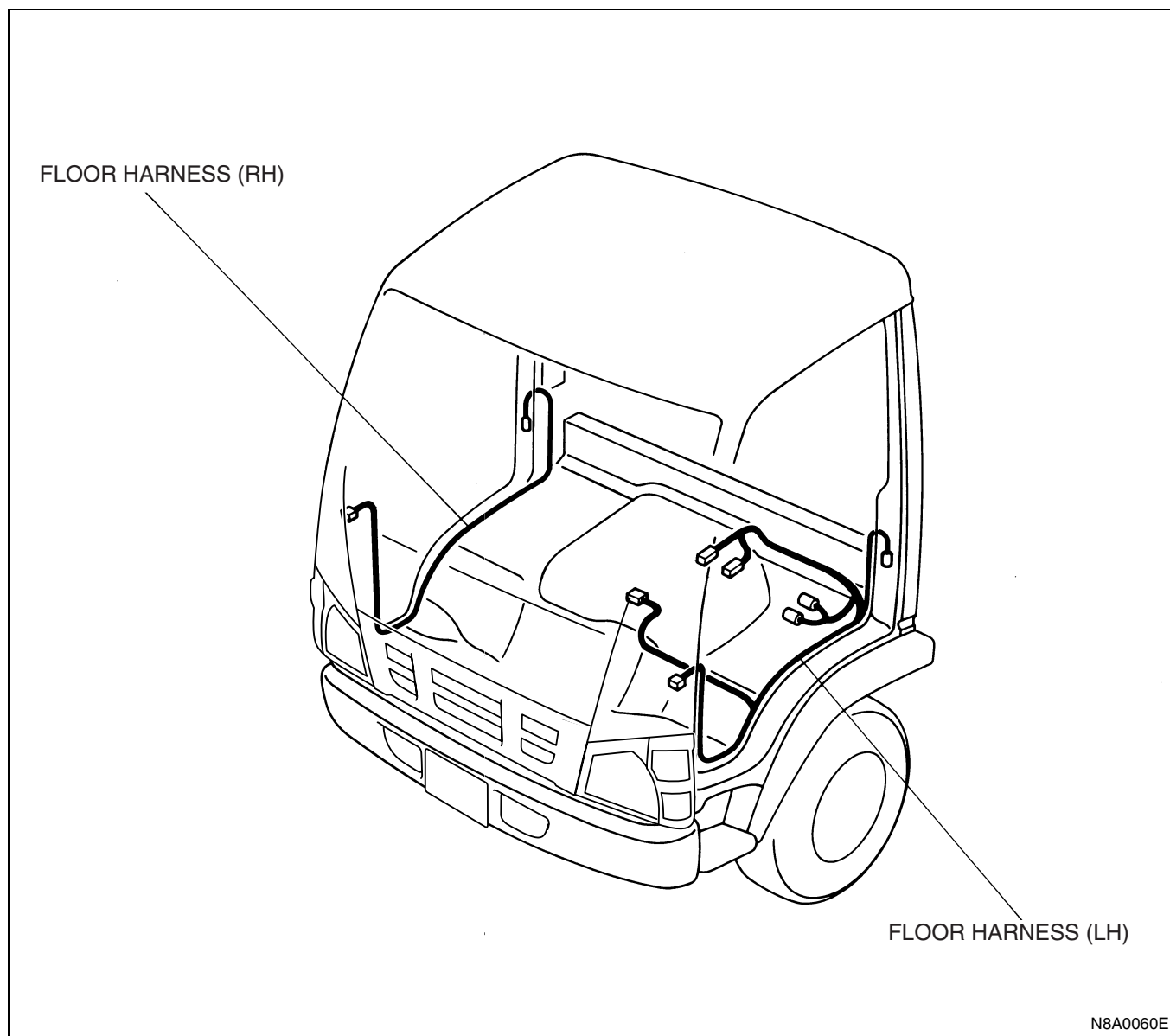
Connector No.	Cable harness name	Location	Main parts (Load)
B-1	Body harness	Frame-LH (FRT)	Vehicle speed sensor, QOS-III control unit, Turn signal indicator light, Meter, High beam indicator light, PTO lever, TCM
B-7		Headlight bracket-LH	Charge relay, Exhaust brake relay, QOS-II control unit, QOS-III control unit, Dome light switch, Key remind and back up buzzer, Meter, Brake fluid switch, Tail relay, Cornering light switch, Cornering light, Cornering light relay, Fog light switch, Fog light, Dimmer relay, Door lock switch, Door lock relay, Power window switch (RH), Power window relay, Stoplight switch, Mirror switch, Wiper motor, Washer motor intermittent relay, Radio, Cigar lighter, Heater & A/C relay, Fan switch, Horn relay, Rear heater switch, Rear heater, Radio & clock, Cigar lighter, Fan switch, Blower resistor, A/C switch, Blower motor, Electronic thermostat, Accel switch, Door lock switch, Door lock controller, Headlight leveling switch, Headlight leveling motor, Power window relay, Power window switch, QOS-III control unit, Ceramic heater relay, Emergency relay, Select switch, Emergency adjust switch, PTO-Smoother switch
J-9	Frame front harness	Frame-LH (CTR)	Marker light relay, Marker light, Water sedimenter switch, Fuel tank unit, Starter relay, Neutral switch, Fuel heater, Pressure switch, A/C thermo relay, VSV: FICD, Exhaust brake control relay, Exhaust brake magnetic valve, Accel switch, Clutch switch, VSV: intake throttle, Engine stop motor, ECM, ECM main relay, Starter cut relay, Shift 1,3,5 solenoid, Shift 2,4,R solenoid, Select solenoid License plate light, Taillight, Rear fog light, Rear turn signal light, Stoplight, Stoplight switch, Backup light

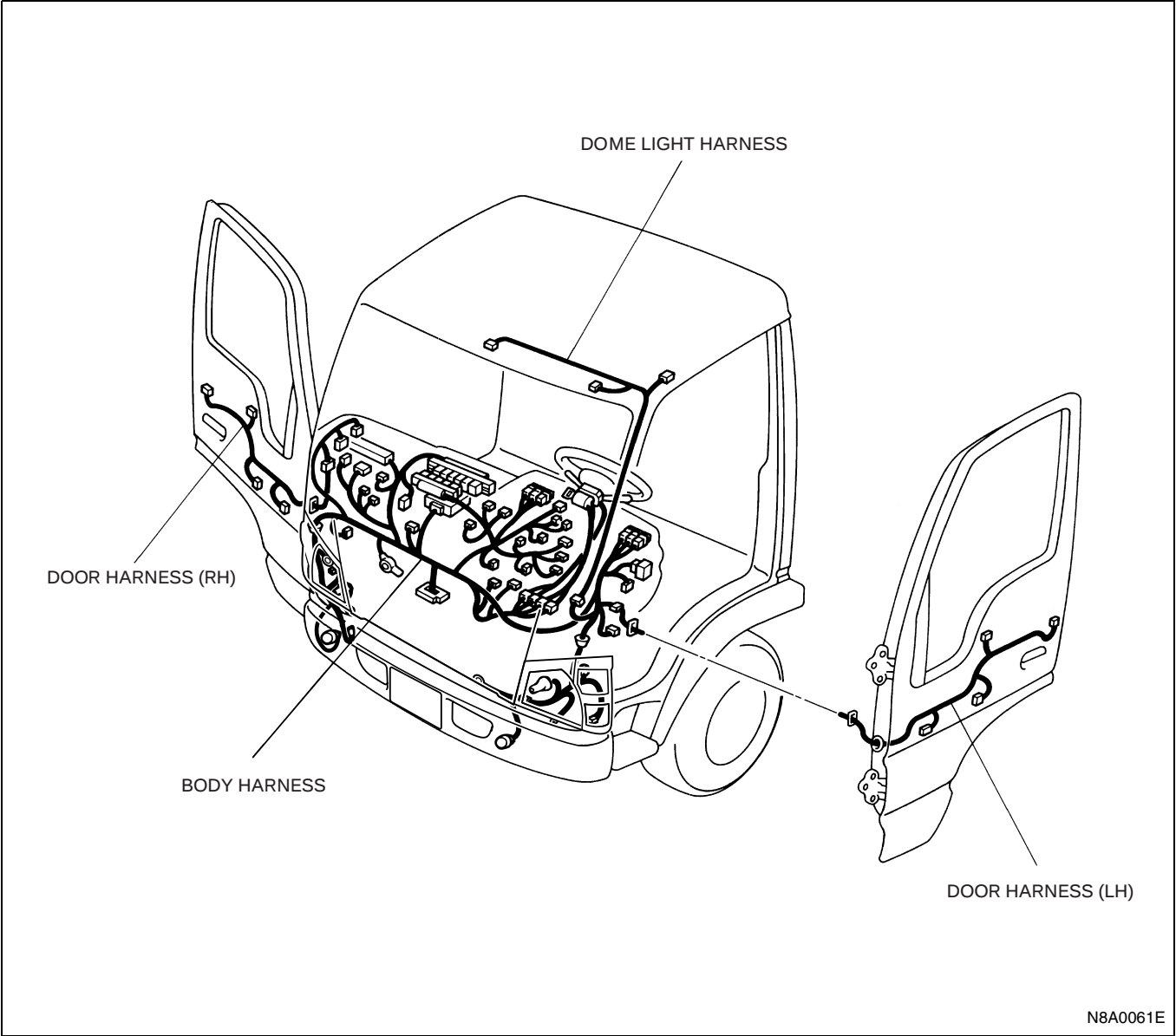
Grounding Point Location



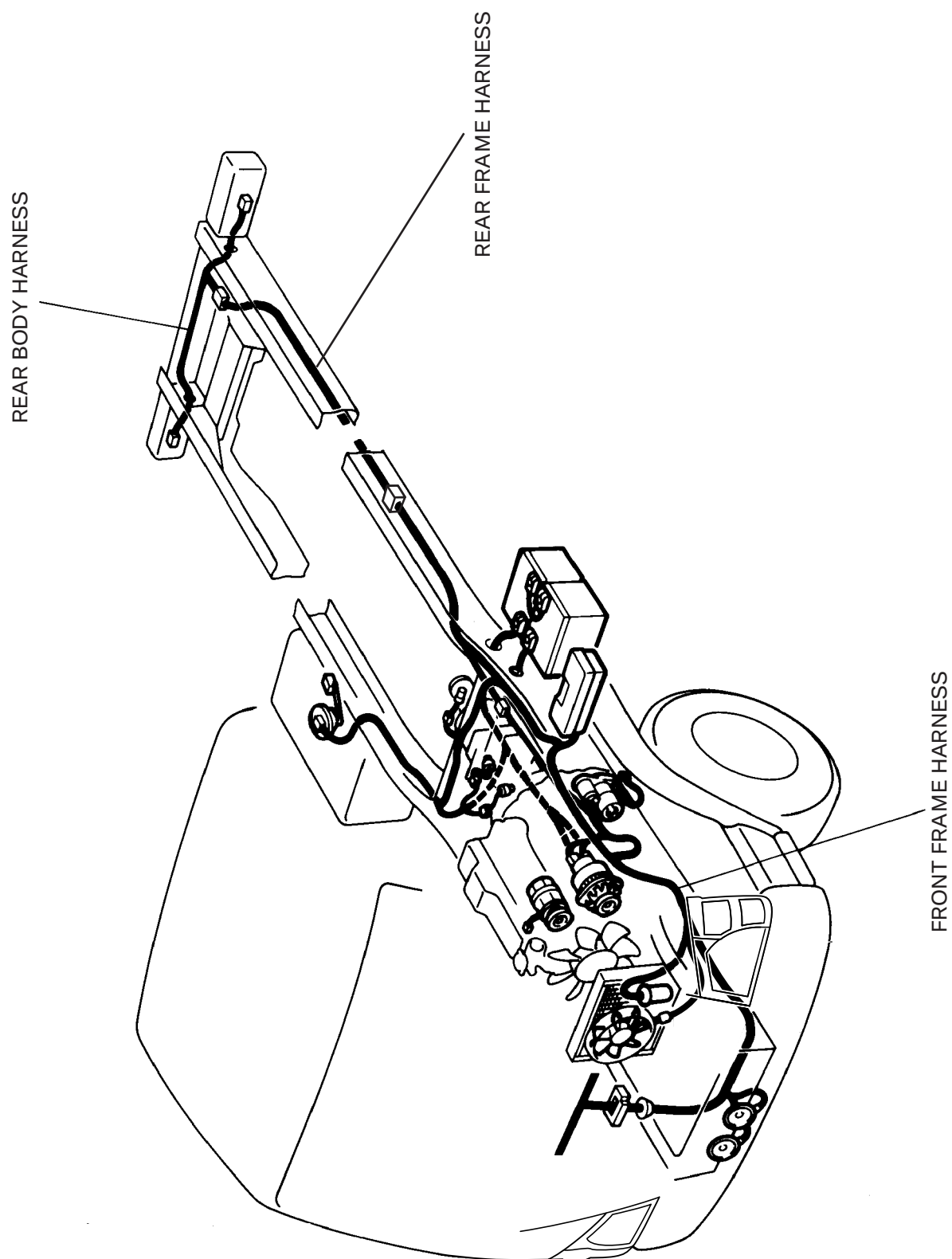


Cable Harness Routing

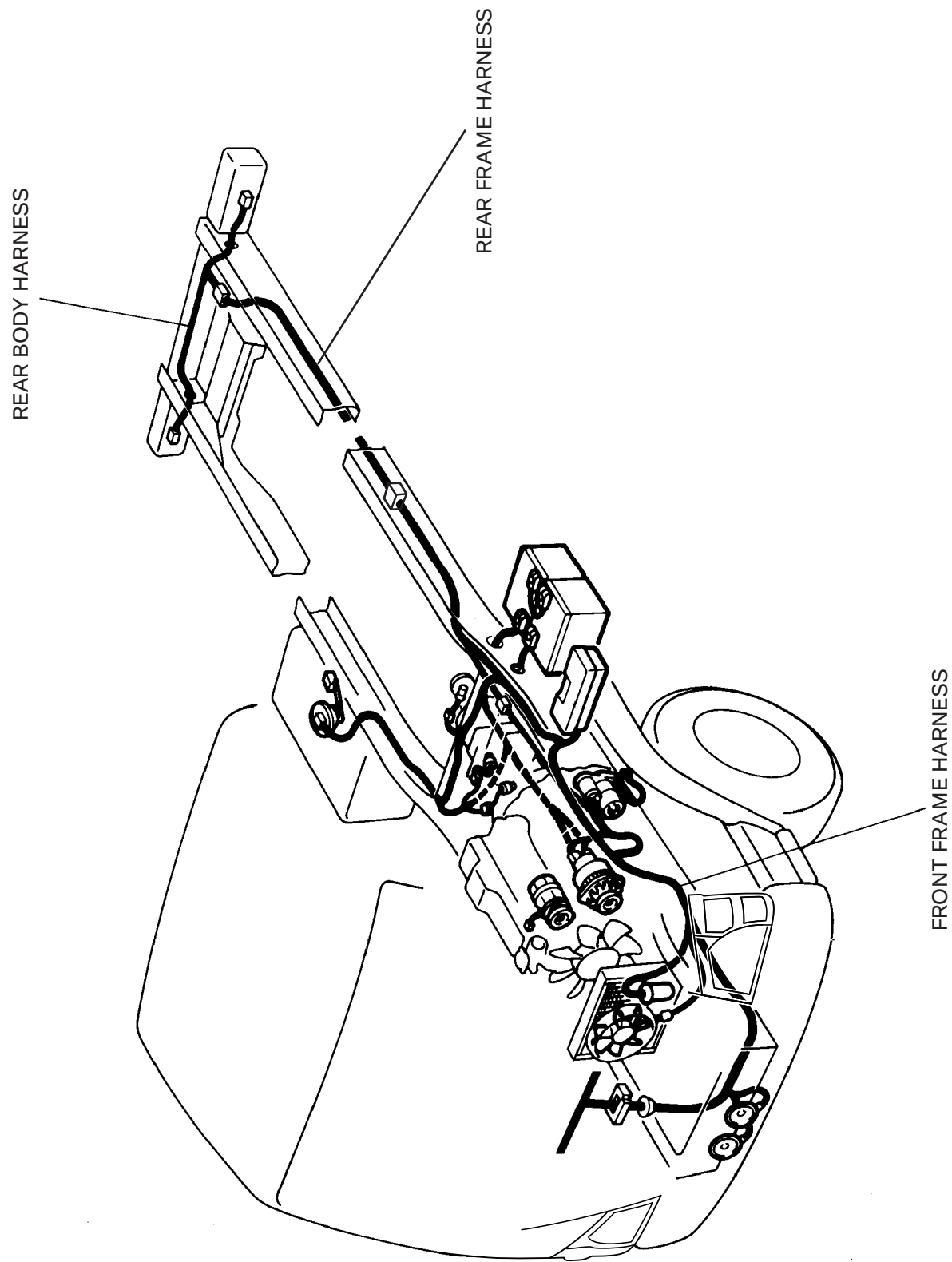




For Taiwan



For GCC



SYSTEM REPAIR

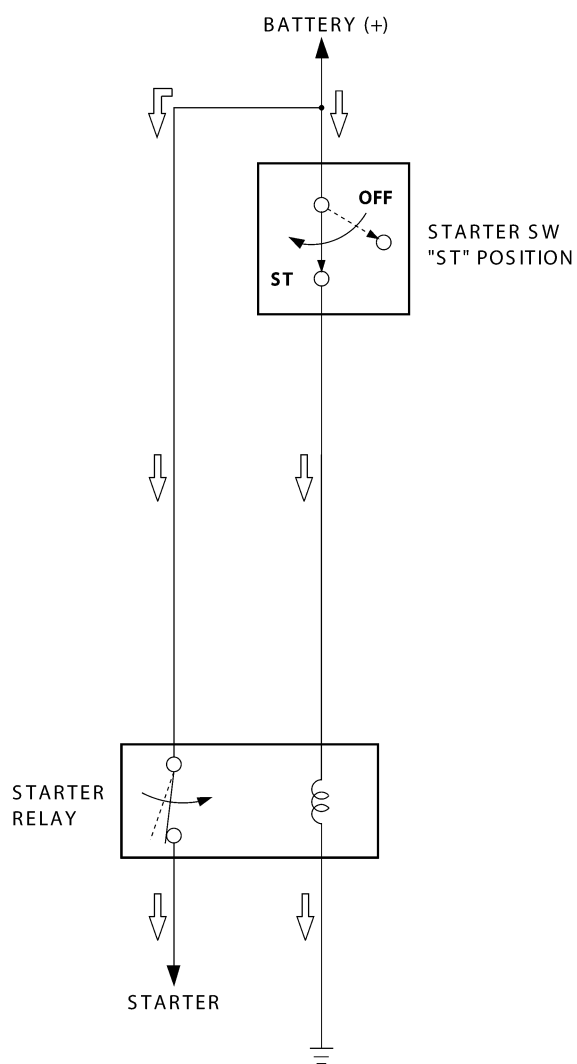
Start and Charging

General Description

The system consists of the starter switch, starter, AC generator, starter relay, charge relay and heater and A/C relay. When the starter SW is set to the "ST" position, the battery voltage is applied to the starter solenoid coil through the starter relay to start the starter.

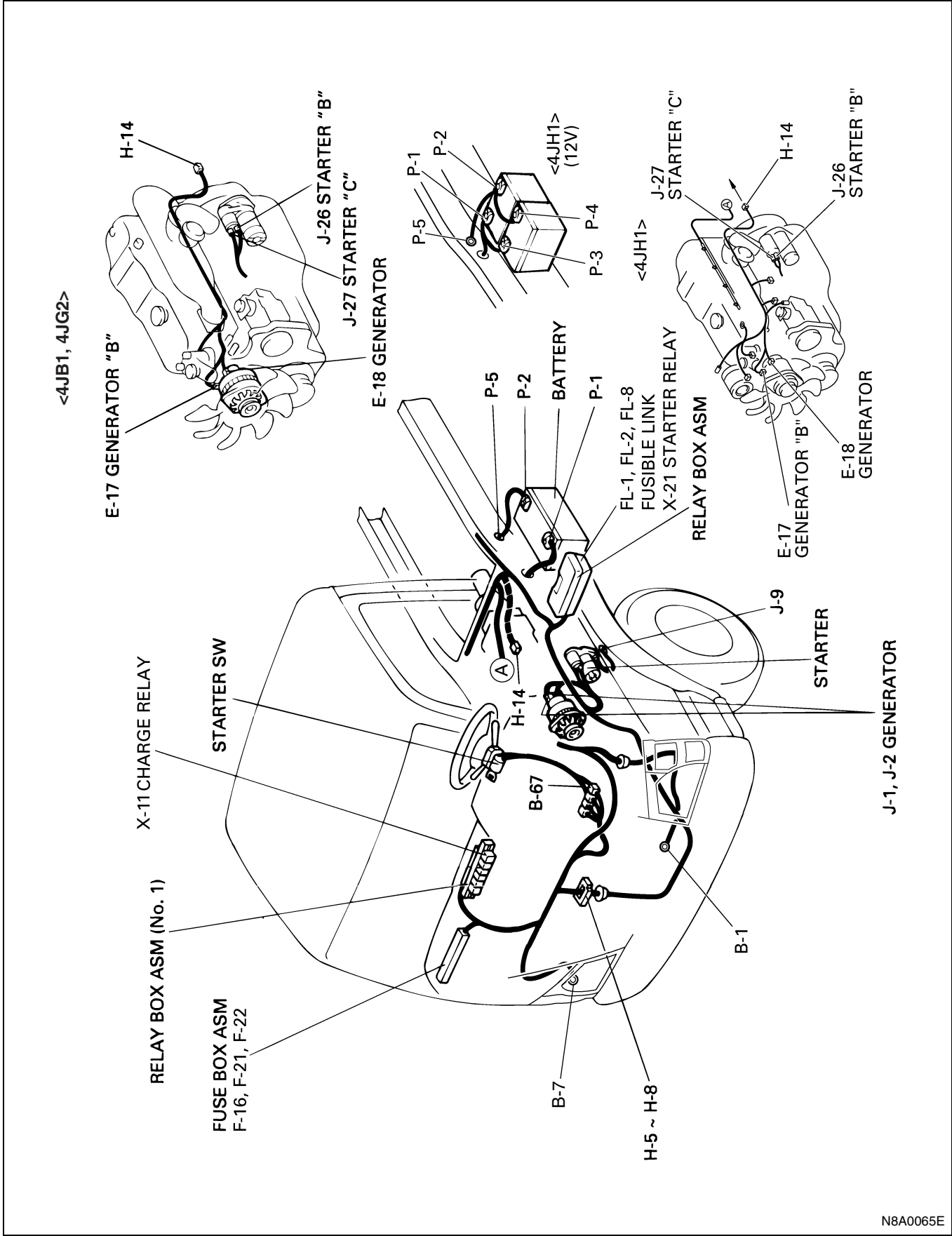
- On the 4HK1 engine, the function that ECM controls STARTER RELAY is added.

Starting Circuit

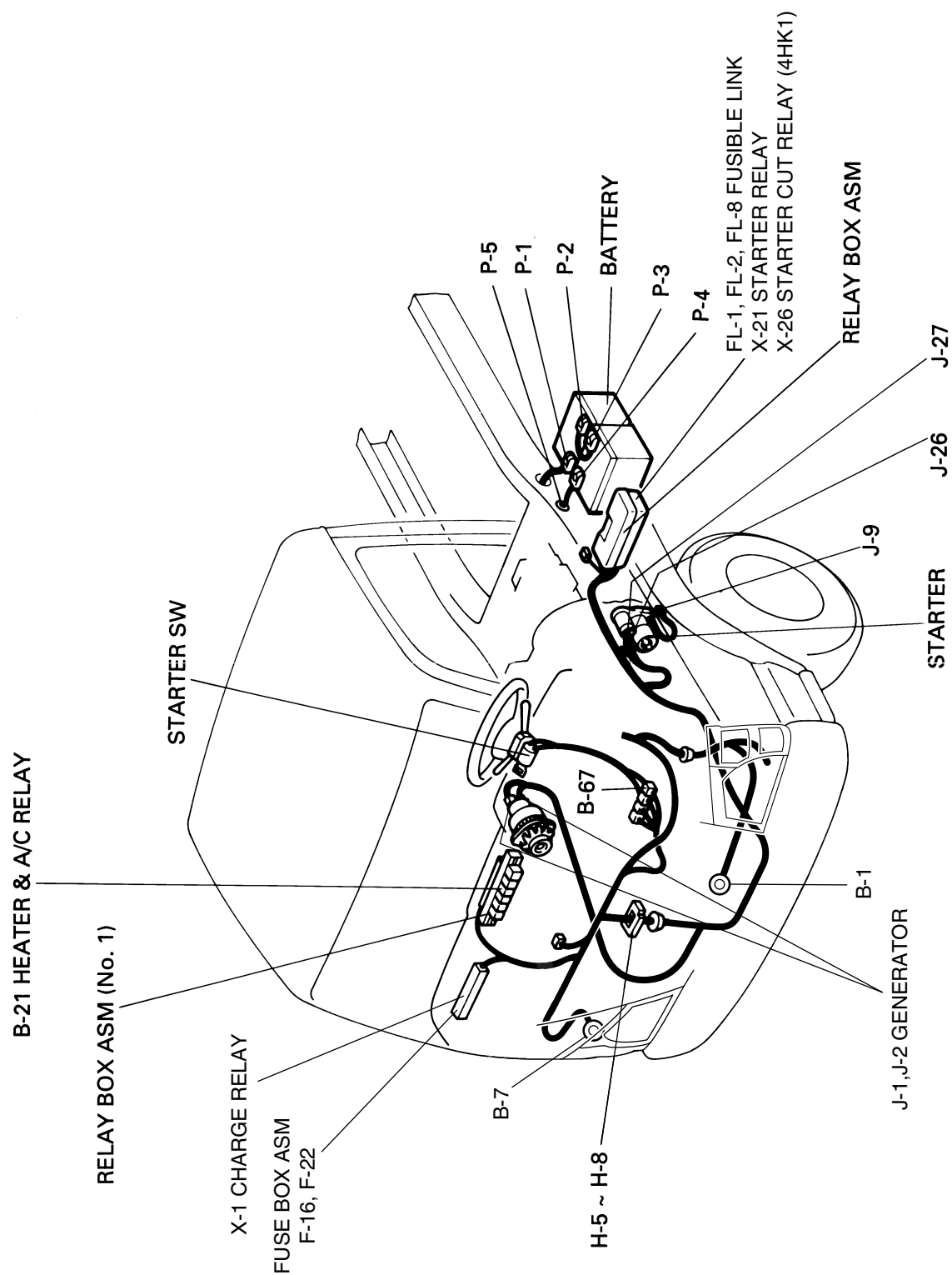


N8A0064E

Parts Location
For 12 Volt

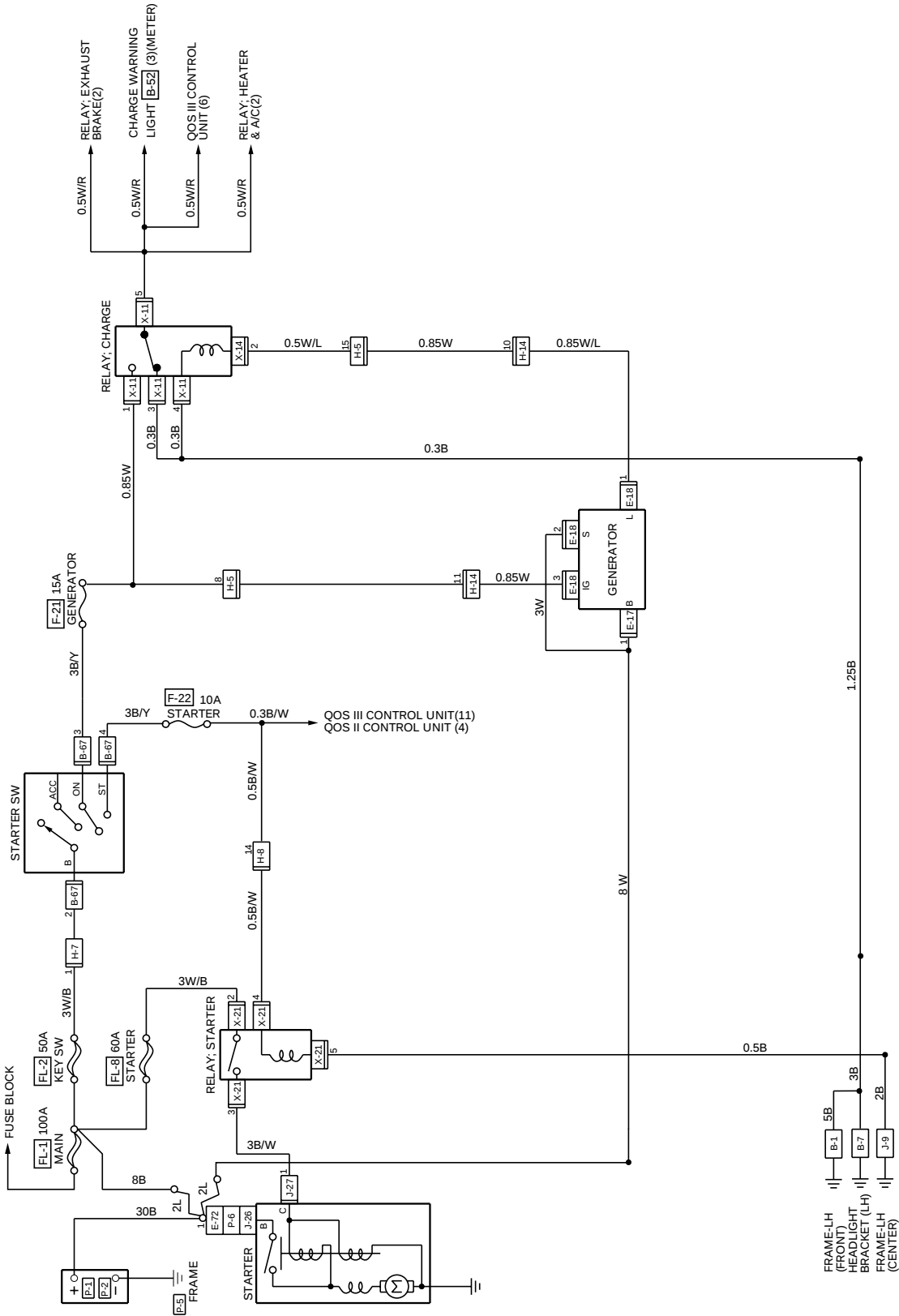


For 24 Volt



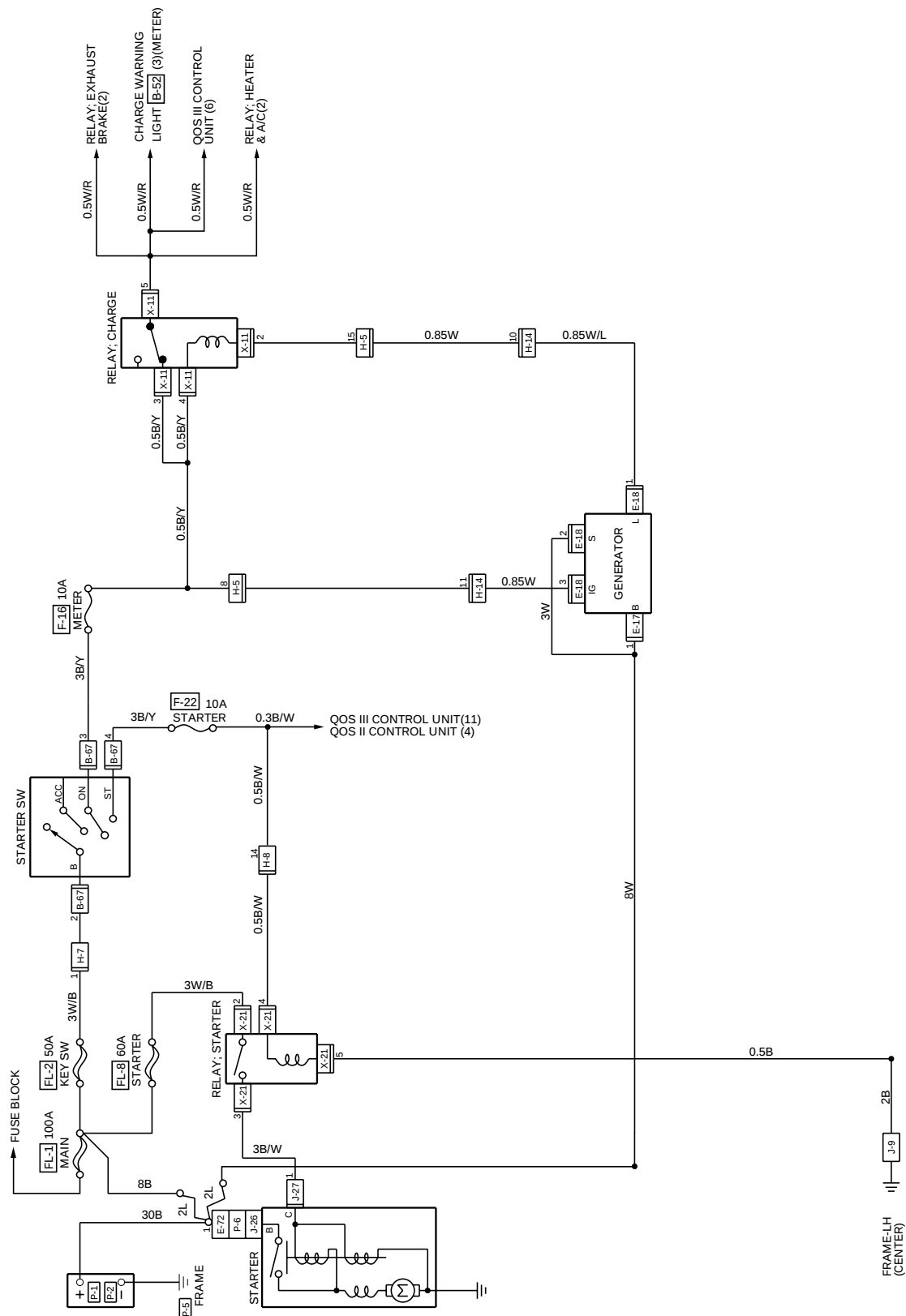
Circuit Diagram

For 4JB1, 4JB1-TC, 4JG2 Engine & 12 Volt



8-58 CAB AND CHASSIS ELECTRICAL

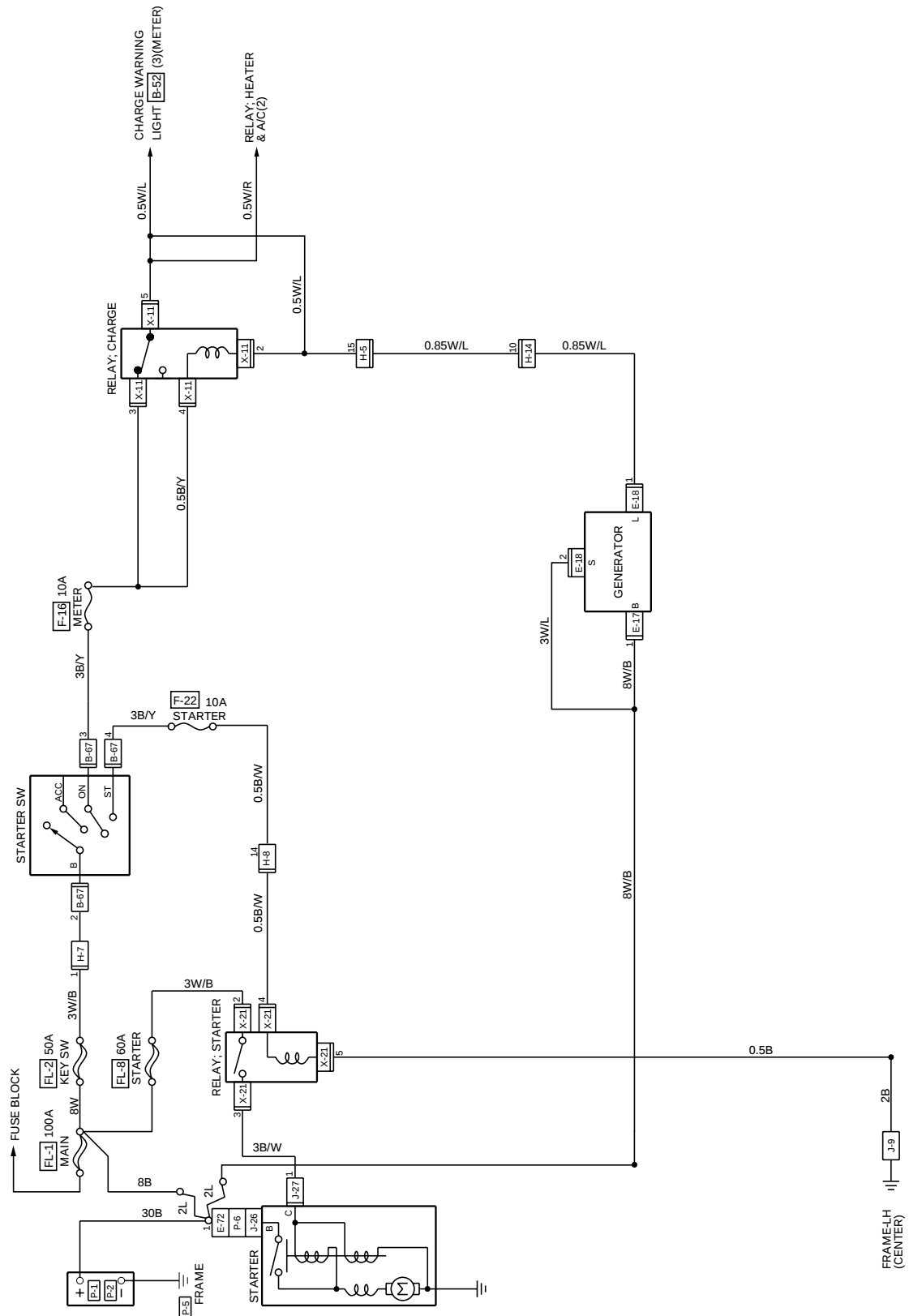
For 4HG1-T Engine & 12 Volt



N8A0068E

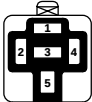
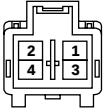
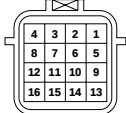
8-60 CAB AND CHASSIS ELECTRICAL

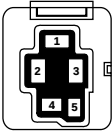
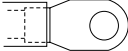
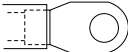
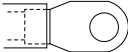
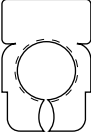
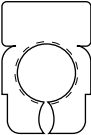
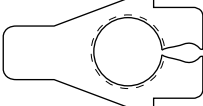
For 4JH1 Engine, NKR77 for Taiwan



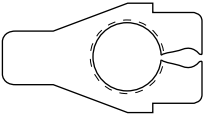
N8A0379E

Connector List
For 12 Volt

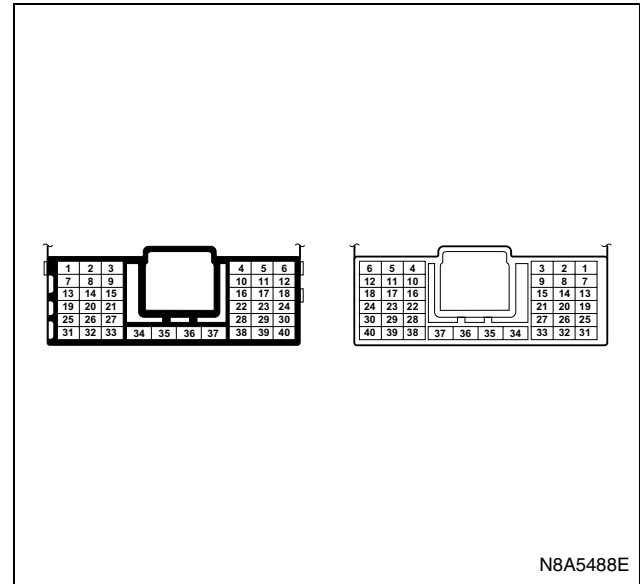
No.	Connector Face
X-11	 005-001
B-67	 004-001
B-67	 004-002
E-17	 001-001
E-18	 004-003
E-18 (4JH1)	 002-003
H-14	 016-001
H-14	 016-002

No.	Connector Face
X-21	 005-003
E-17 (4JH1)	 000-002
J-26	 000-002
P-6	 000-002
J-27	 001-002
P-1	 000-004
P-4	 000-004
P-2	 000-006

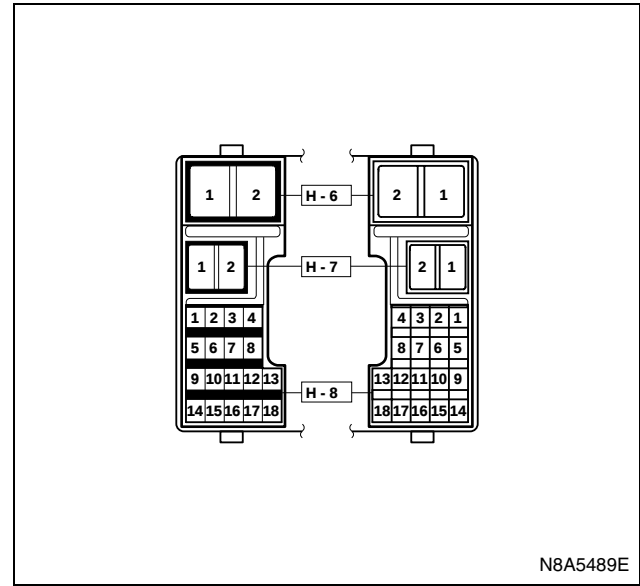
8-62 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
P-3 (4JH1)	 000-006
P-5	 000-007

H-5

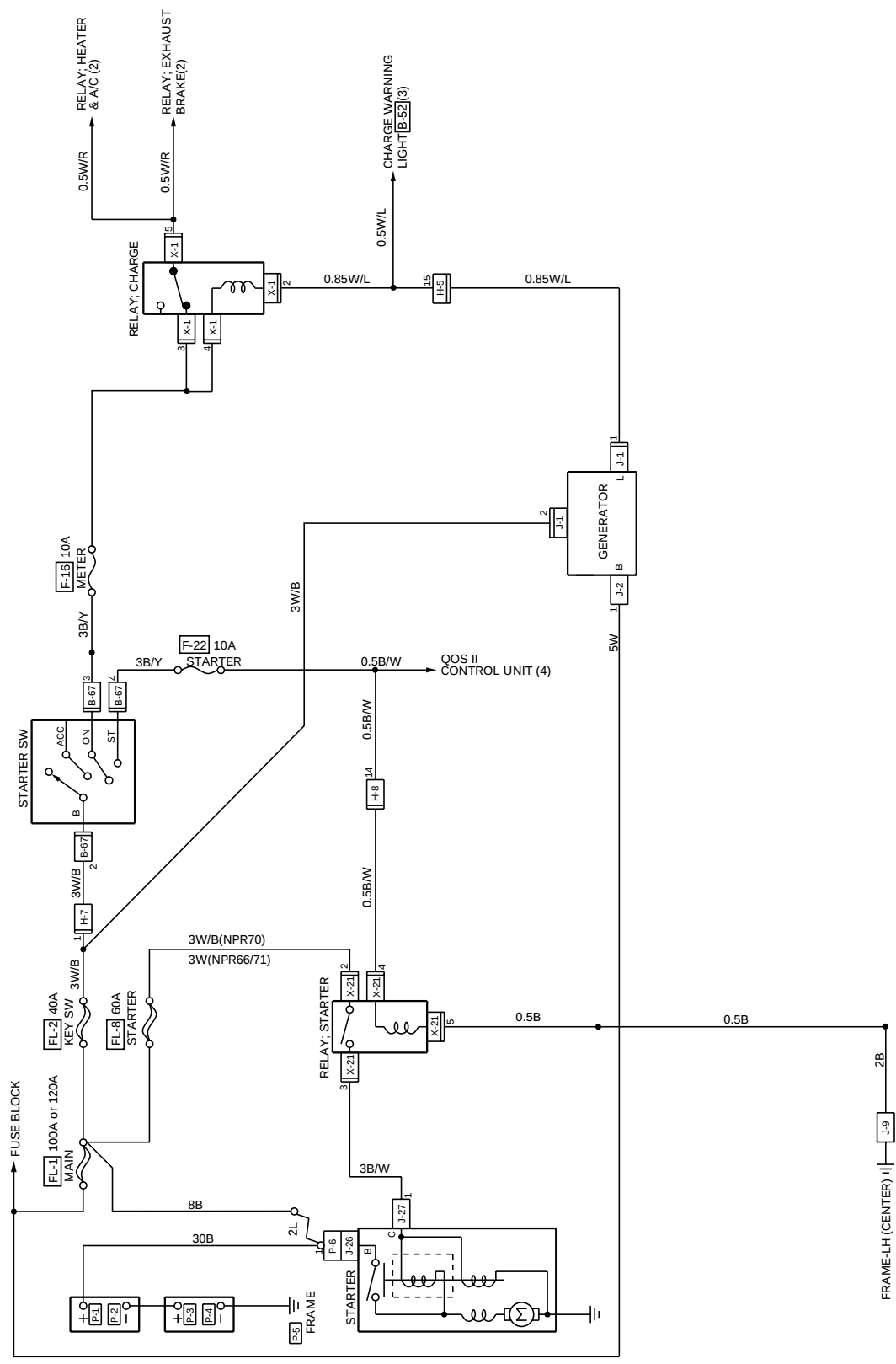


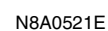
H-6, H-7, H-8



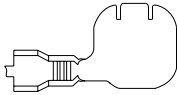
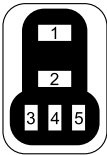
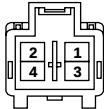
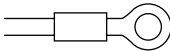
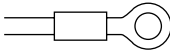
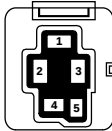
Circuit Diagram

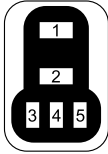
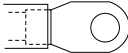
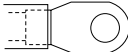
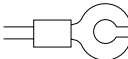
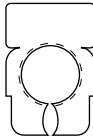
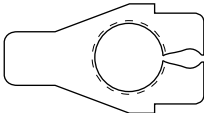
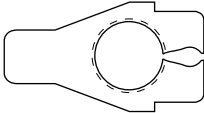
4H Type Engine & 24 Volt (Except 4HK1 Engine)



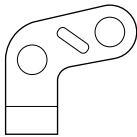


Connector List
For 24 Volt

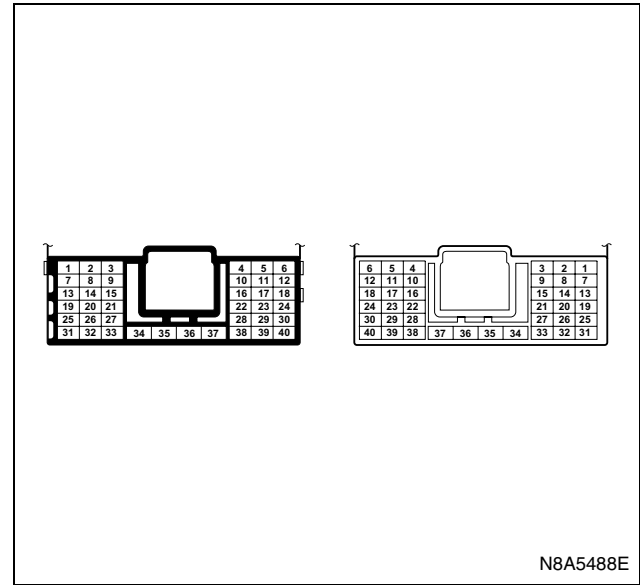
No.	Connector Face
B-7	 000-012
X-1	 005-006
B-67	 004-001
B-67	 004-002
J-1	 002-003
J-2	 000-001
J-9	 000-001
X-21	 005-003

No.	Connector Face
X-26 (N*R 75)	 005-006
J-26	 000-002
P-5	 000-002
J-27	 000-009
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006

8-66 CAB AND CHASSIS ELECTRICAL

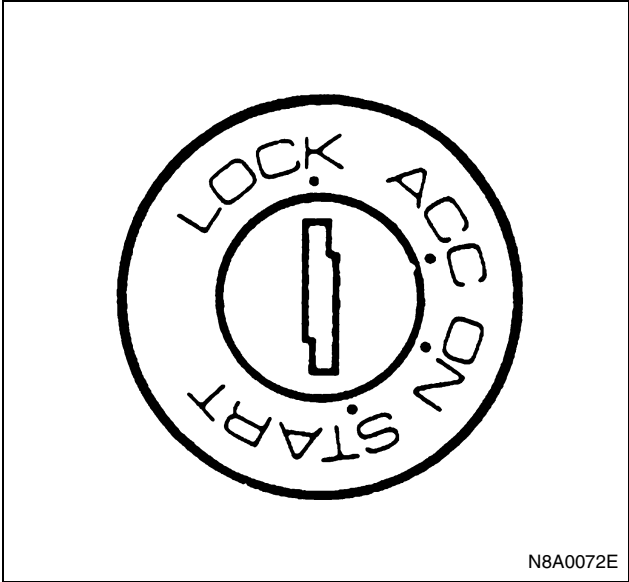
No.	Connector Face
P-6 (N*R 66)	 000-008

H-5

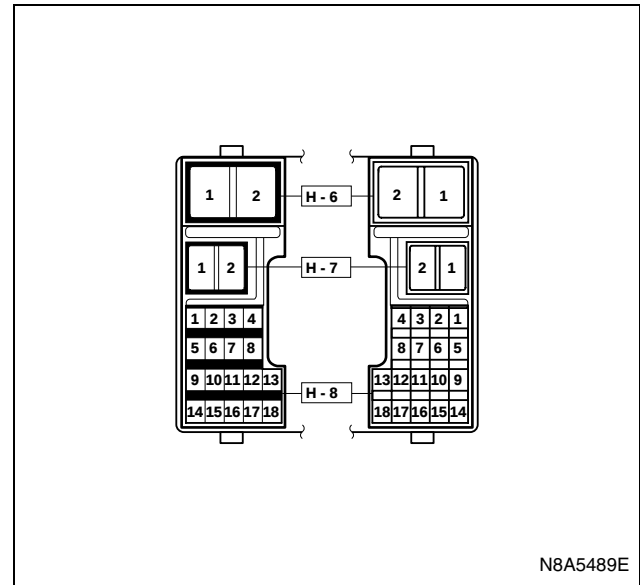


Starter Switch

The starter switch positions are LOCK, ACC, ON and START. Turning the starter key to these positions a circuit for starting the engine, the operation of accessories, or stop the engine.



H-6, H-7, H-8



Inspection

Check the continuity between the starter switch connector terminals.
Repair or replace the switch when the result of inspection is found abnormal.

B-67
Switch side

B-68
Switch side

Connector No.		B-67				B-68				
		1	2	3	4	1	2	4	5	6
Starter SW key position	Terminal No.	ACC	B	ON	ST	B1	P1	P2	W	W
	Removed									
Inserted	LOCK					○—○				
	ACC	○—○				○—○				
	ON	○—○—○				○—○—○			○—○	
	START		○—○—○			○—○—○				

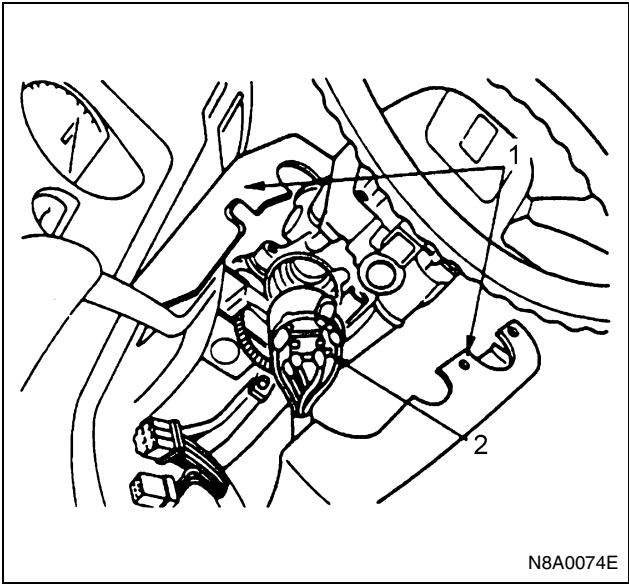
N8A0073E

Removal

Preparation:

Disconnect the battery ground cable.

- Steering Cowl
Remove four screws and take off the steering cowl.
- Starter Switch
 - Disconnect the connector.
 - Remove the screw.



QOS (Quick On Start) II System (4HF1 and 4JB1 Engine Model)**General Description**

The circuit consists of starter switch, QOSII control unit, glow relay, thermo switch, glow plug, fuel cut solenoid, CSD relay, CSD solenoid and glow indicator light.

The QOS-II controller controls glow plug relay by the ON or OFF signal of QOS thermo switch.

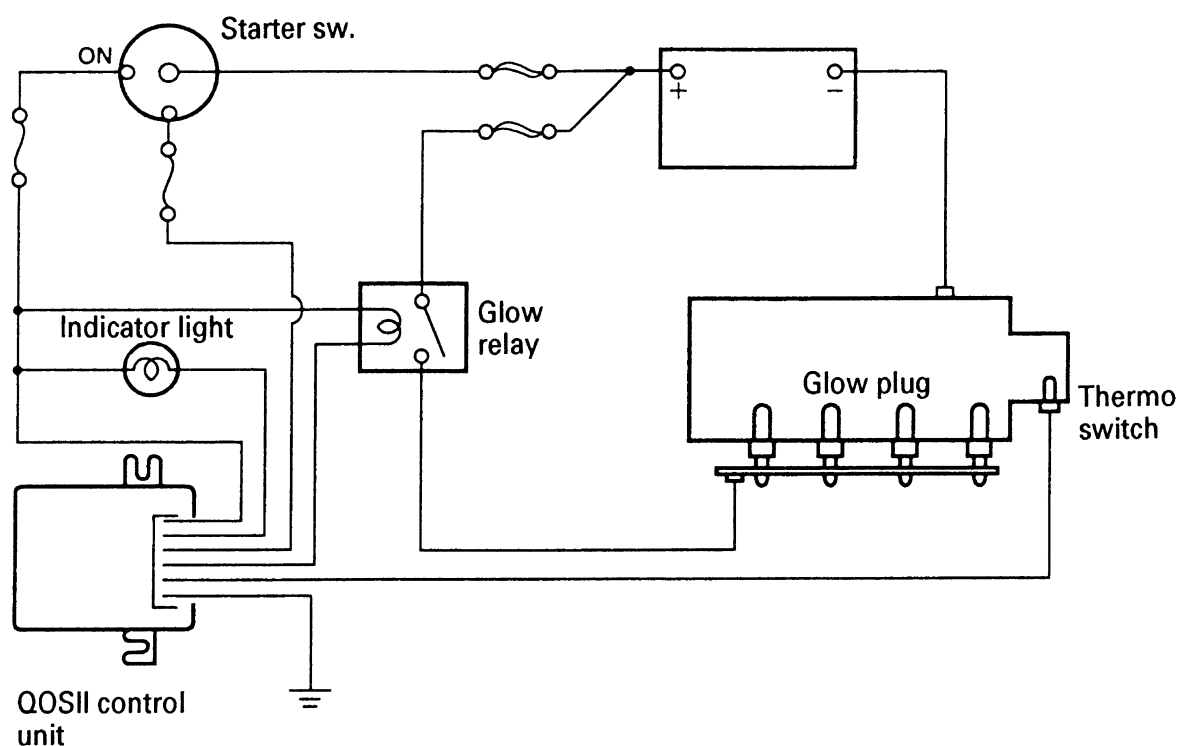
Immediately when the starter switch turns "ON", the glow plug relay indicator light turns on to start preheating.

The engine should be started after the indicator light is off. However, the glow plug relay keeps preheating for a fixed period even after the indicator light turns off. When the fixed time is over, QOS-II controller performs to switch the glow plug relay off to stop preheating.

For details, refer to "PREHEATING SYSTEM".

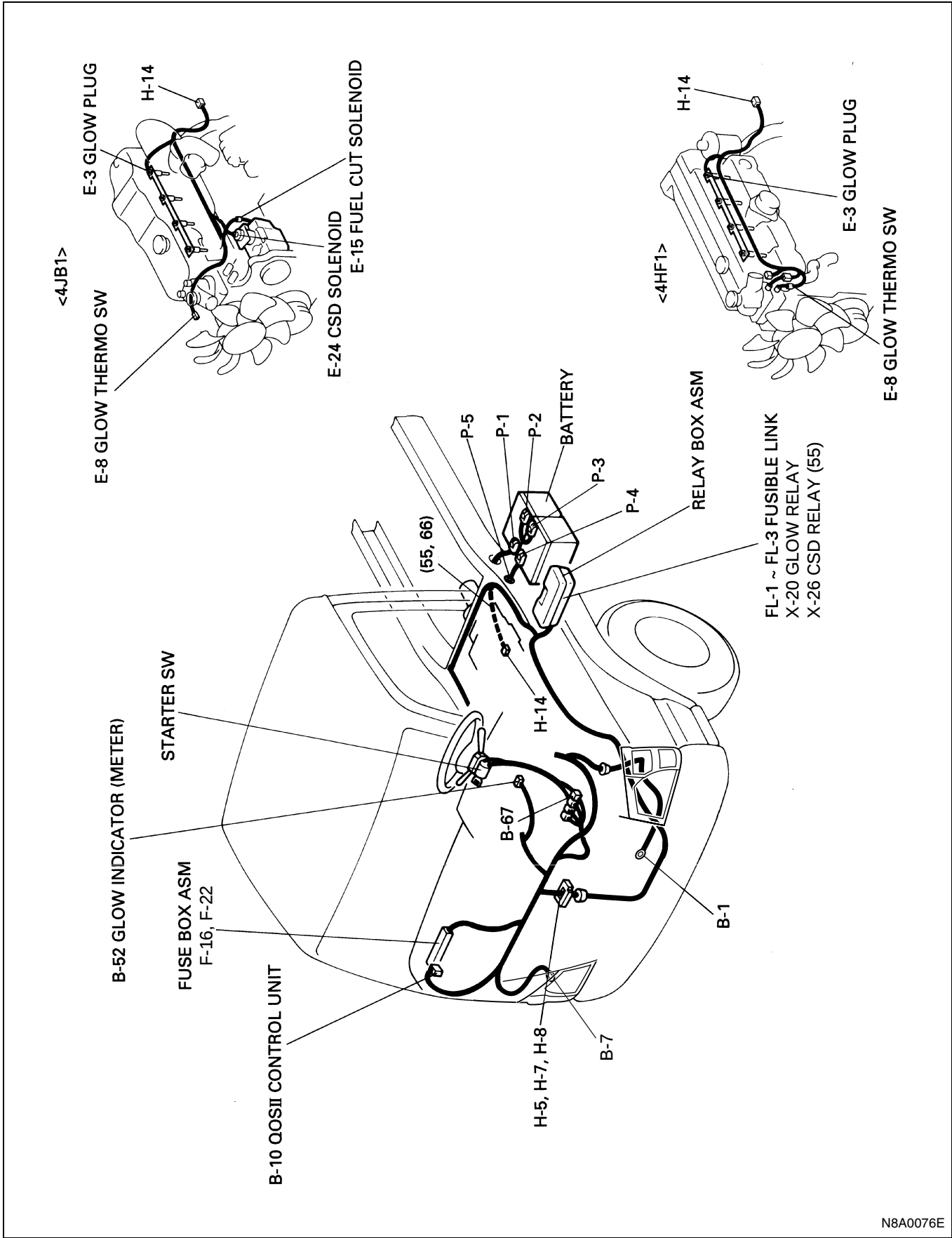
System Circuit

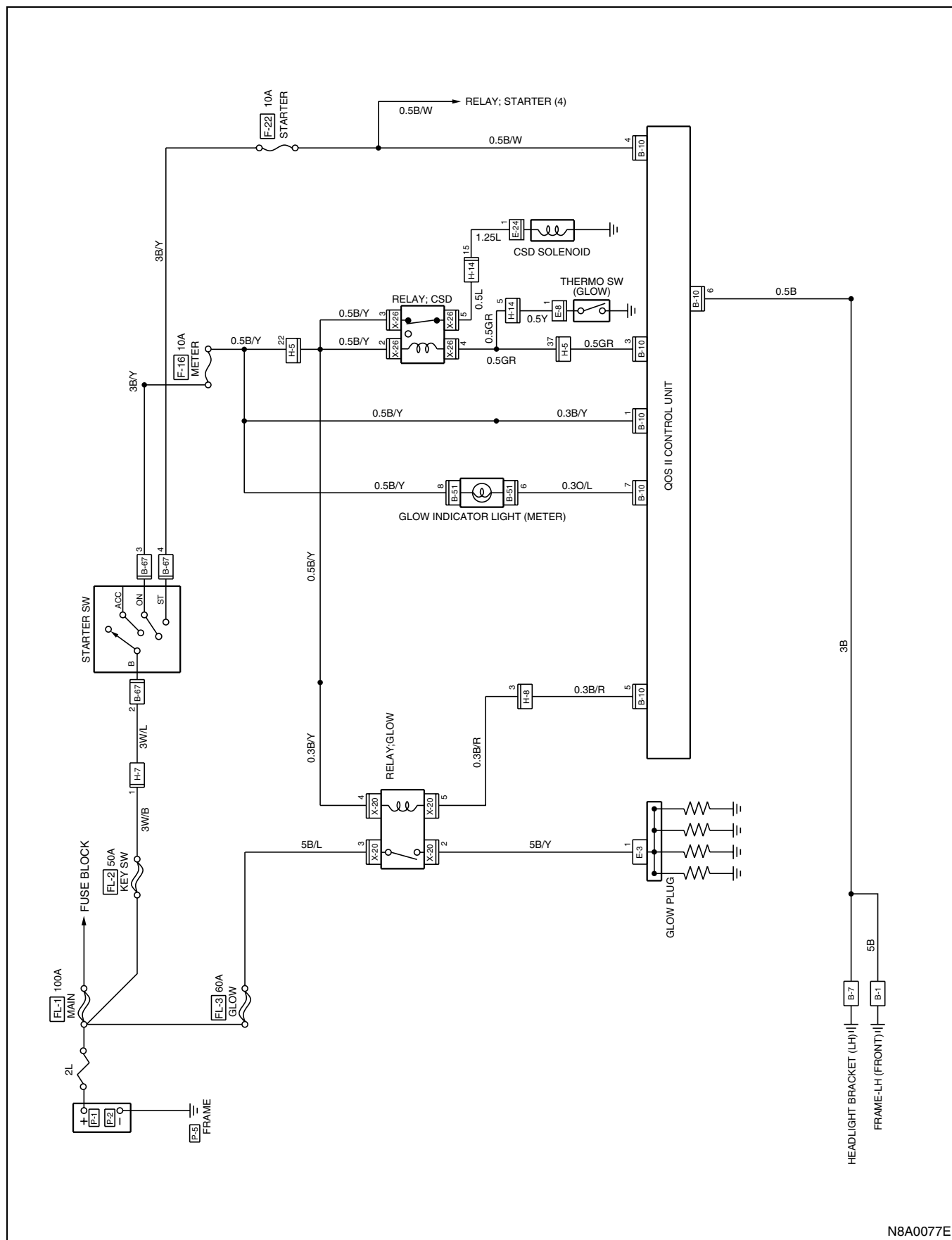
This illustration is based on N*R 66-55.



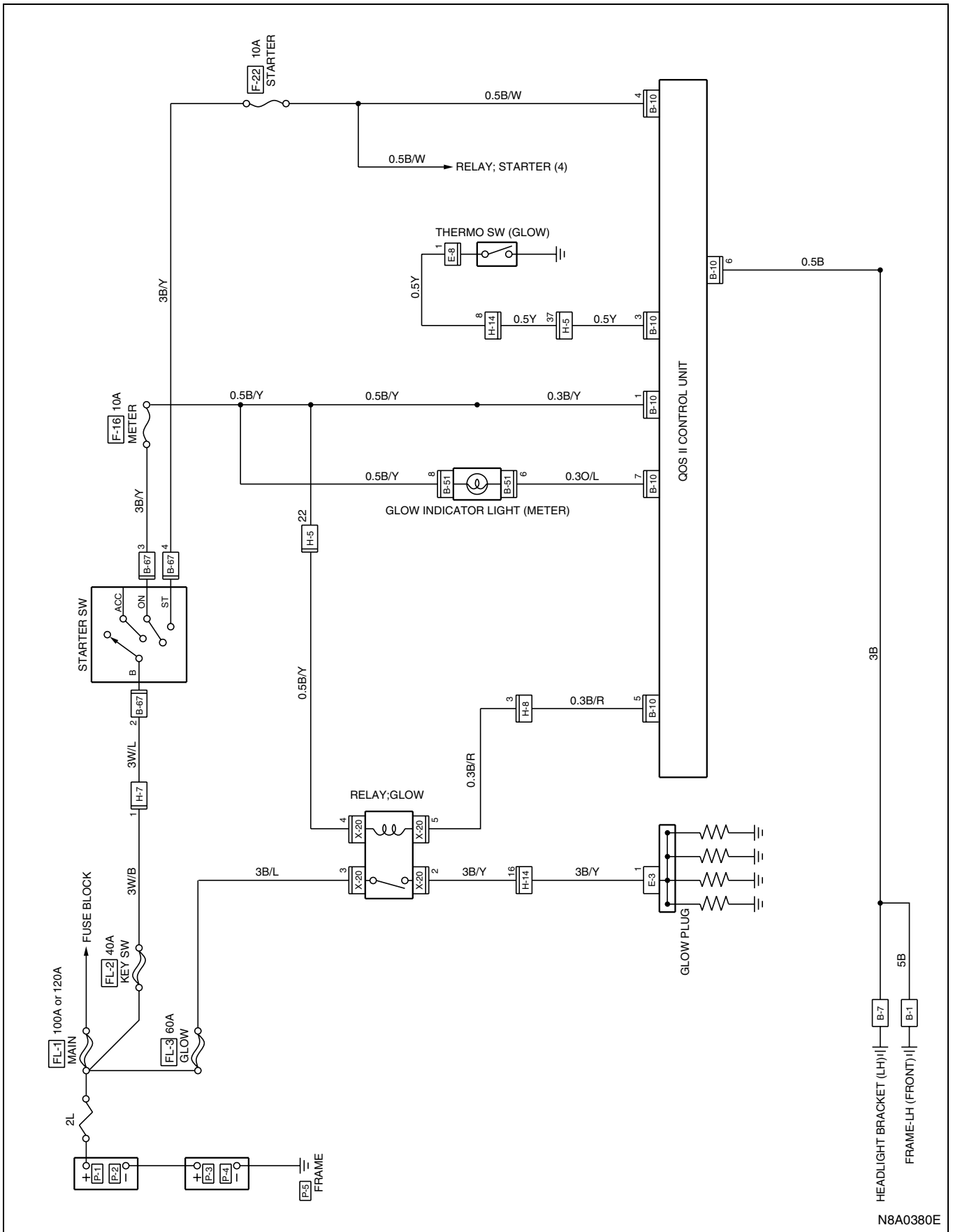
N8A0075E

Parts Location



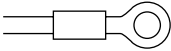
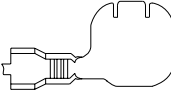
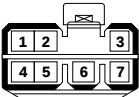
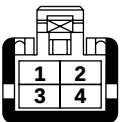
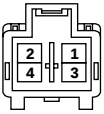
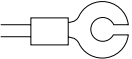
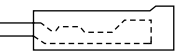


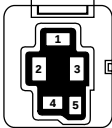
NKR66, NPR66, NQR66

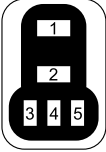
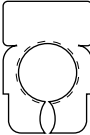
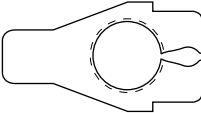
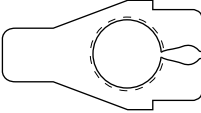
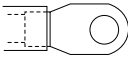


8-72 CAB AND CHASSIS ELECTRICAL

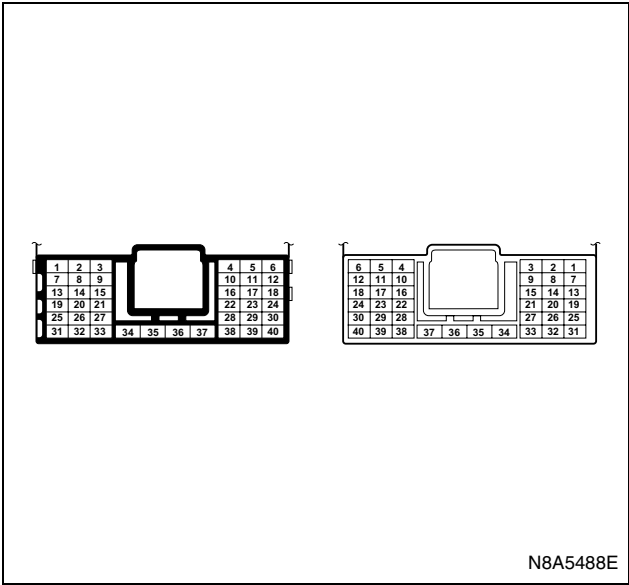
Connector List

No.	Connector Face
B-1	 000-001
B-7	 000-012
B-10	 007-001
B-51	 014-001
B-67	 004-001
B-67	 004-002
E-3	 000-009
E-8	 000-010

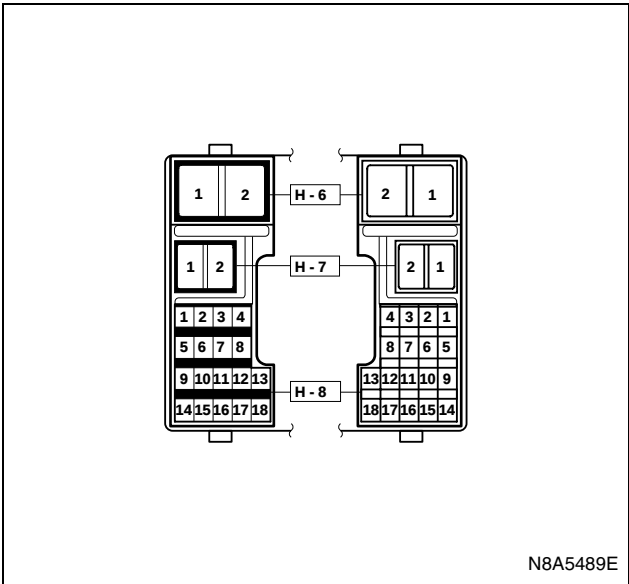
No.	Connector Face
E-8	 000-011
E-15	 001-002
E-15	 001-003
E-24	 001-002
E-24	 001-003
H-14 (4H/ 4JH1 type ENGIN E)	 016-003
H-14 (4H/ 4JH1 type ENGIN E)	 016-004
X-20	 005-003

No.	Connector Face
X-26	 005-006
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006
P-5	 000-002
H-14 (4J type ENGINE) (Except 4JH1)	 016-001
H-14 (4J type ENGINE) (Except 4JH1)	 016-002

H-5



H-7, H-8

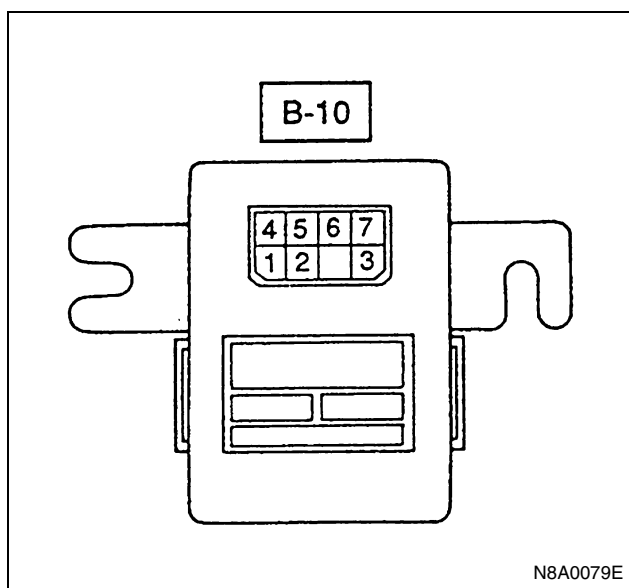


Starter Switch

Refer to “START AND CHARGING” in this section.

Glow Indicator Light Thermo Switch

Refer to “METER AND WARNING/INDICATOR LIGHT” in this section.

QOSII Control Unit

Terminal No.	Connected to
1	Starter switch (ON)
2	—
3	Thermo switch
4	Starter switch (ST)
5	Glow relay
6	Ground
7	Glow indicator (Meter)

Exhaust Brake System**General Description**

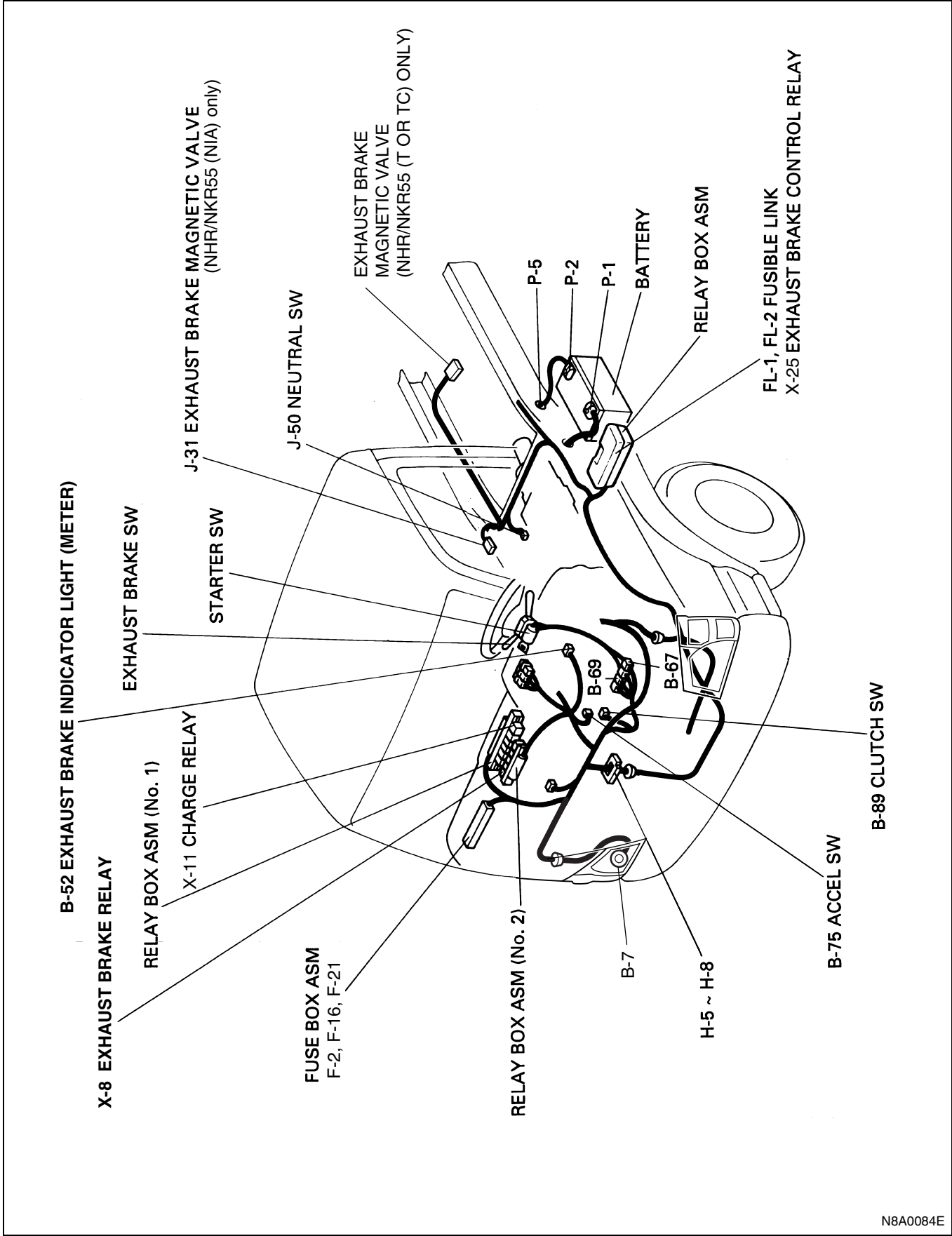
This circuit consists of starter switch, exhaust brake switch (combination switch), accelerator switch, clutch switch, vacuum switching valve, neutral switch and relay.

Exhaust brake is a system to increase exhaust pressure by means of squeezing exhaust gas from engine and exert engine brake.

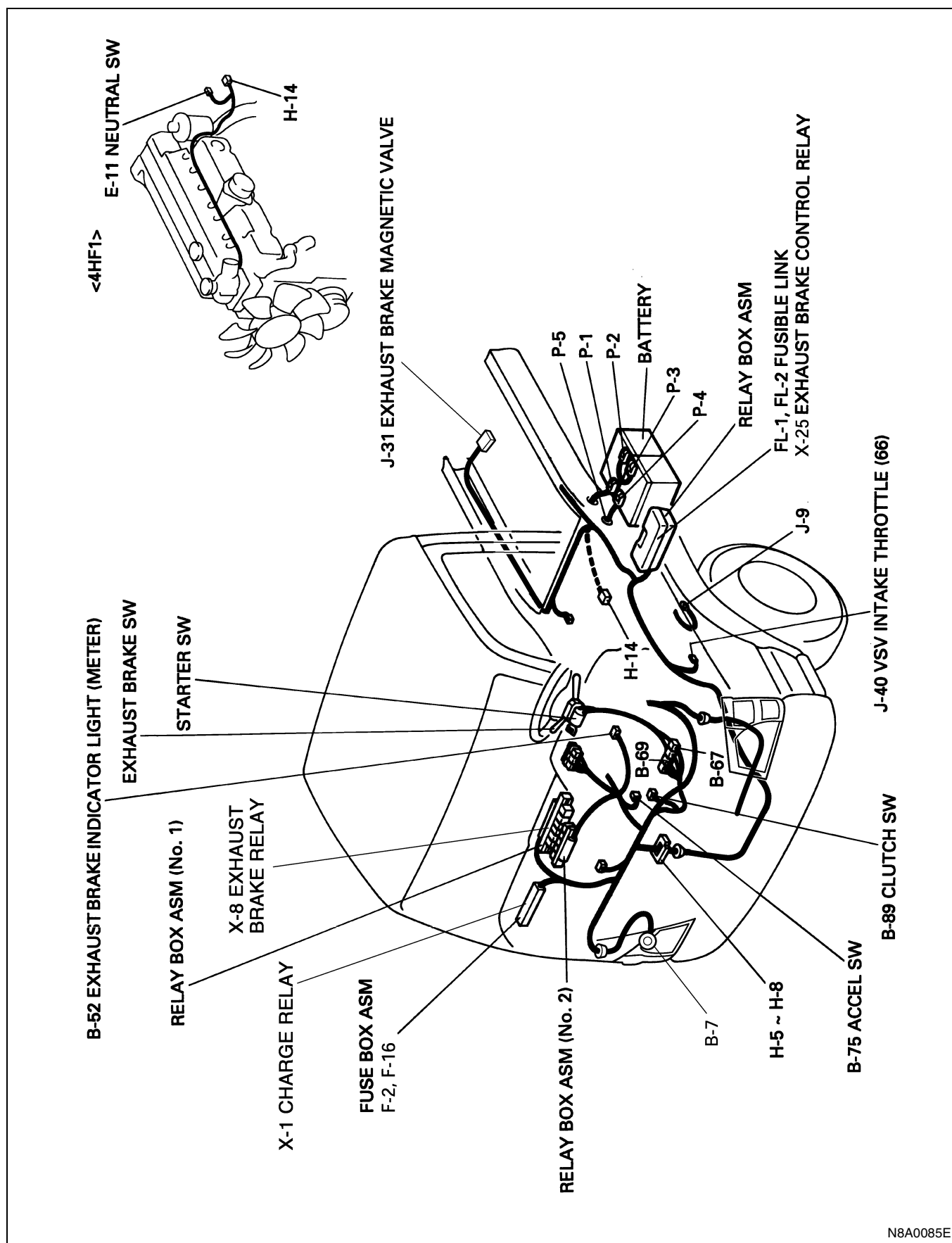
Turn the exhaust brake SW on, and the exhaust brake valve starts to work by the function of the magnetic valve to enable the exhaust brake to operate, when the exhaust brake indicator light will be on.

When either the accelerator pedal or the clutch pedal is depressed while driving, the switch of the depressed pedal will turn off, subsequently the exhaust braking will stop working.

Parts Location
NHR55, NKR55

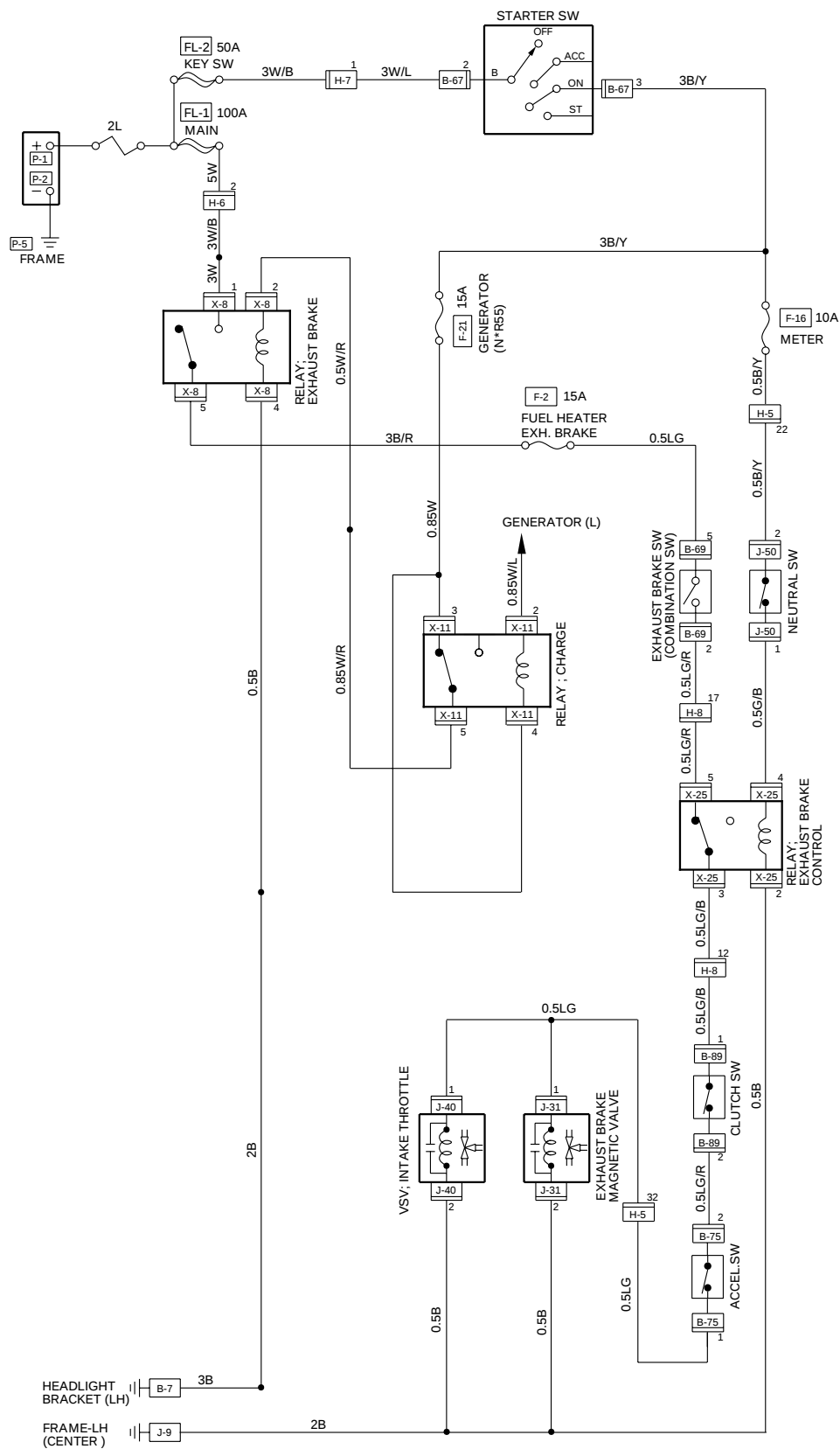


NKR66, NPR66, NQR66



Circuit Diagram

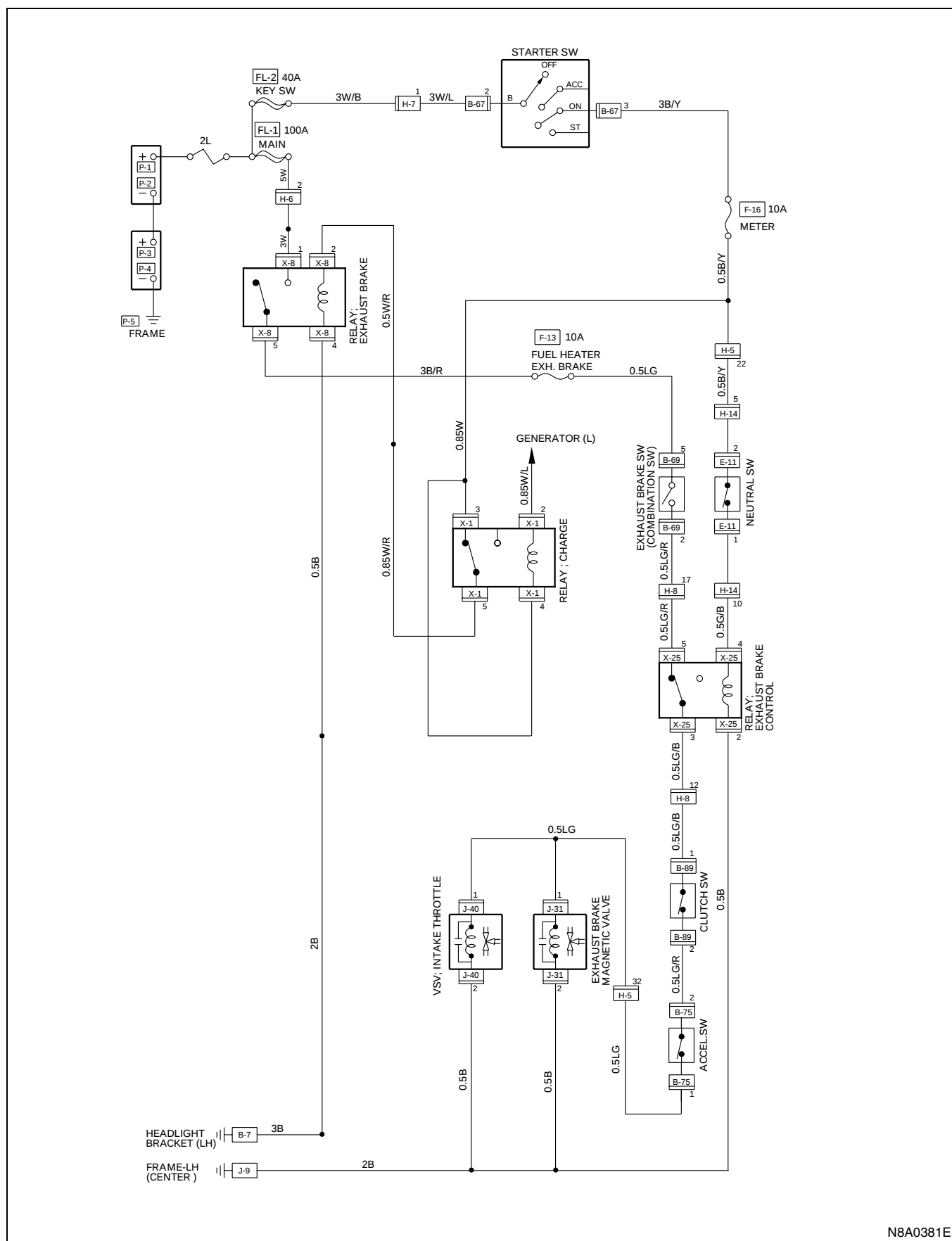
NHR55, NKR55



N8A0086E

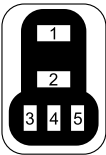
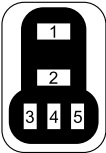
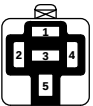
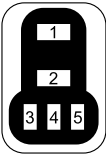
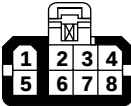
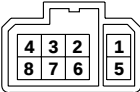
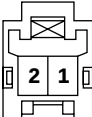
8-78 CAB AND CHASSIS ELECTRICAL

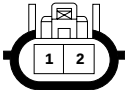
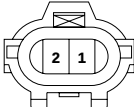
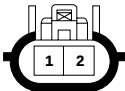
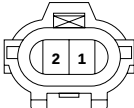
NKR66, NPR66, NQR66



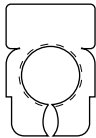
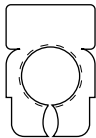
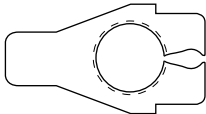
N8A0381E

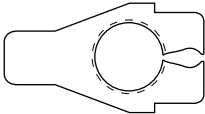
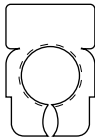
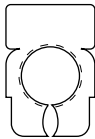
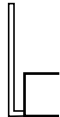
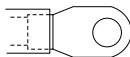
Connector List

No.	Connector Face
X-1	 005-006
X-8	 005-006
X-11	 005-001
X-25	 005-006
B-69	 008-001
B-69	 008-002
B-75	 002-022
B-75	 002-023

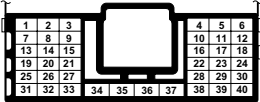
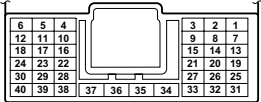
No.	Connector Face
B-89	 002-009
B-89	 002-010
E-11	 002-001
E-11	 002-002
J-50	 002-001
J-50	 002-002
H-14	 016-003
H-14	 016-004

8-80 CAB AND CHASSIS ELECTRICAL

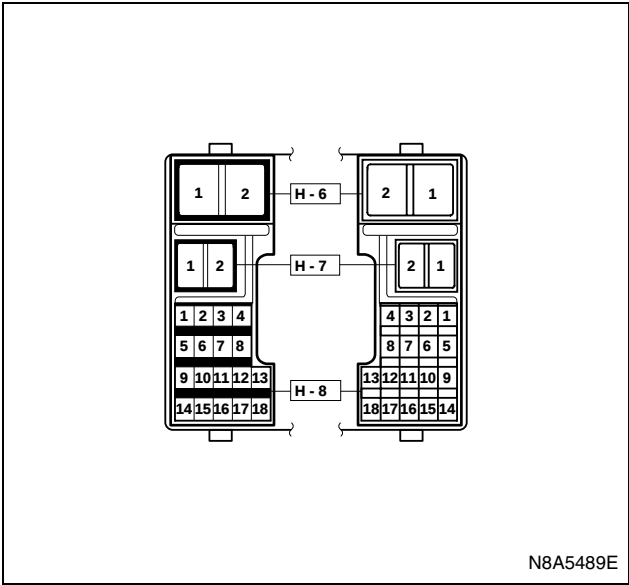
No.	Connector Face
J-31	 002-011
J-31	 002-012
J-40	 002-014
P-1 (12 V)	 000-003
P-1 (12 V)	 000-004
P-2	 000-003
P-2	 000-004
P-2 (24 V)	 000-006

No.	Connector Face
P-3	 000-006
P-1 (24 V)	 000-004
P-4	 000-004
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002

H-5

	
N8A5488E	

H-6, H-7, H-8



Neutral Switch

Refer to “START AND CHARGING” in this section.

Starter Relay

Refer to “START AND CHARGING” in this section.

Charge Relay

Refer to “START AND CHARGING” in this section.

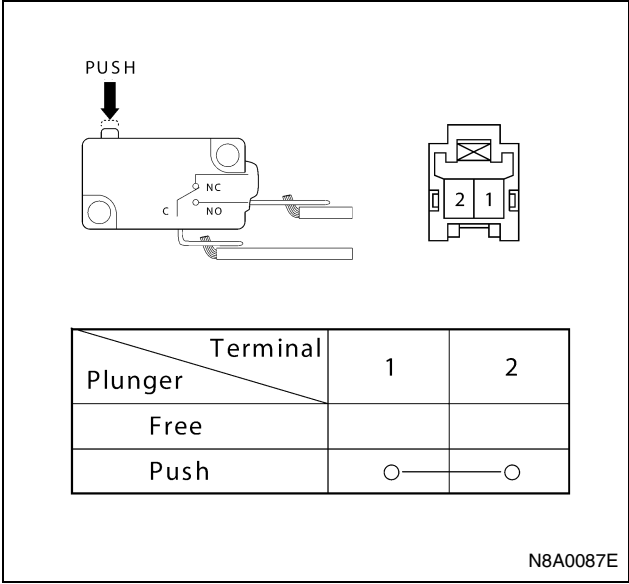
Starter Switch

Refer to “START AND CHARGING” in this section.

Accel Switch

Inspection

1. Check the continuity between the switch connector terminals.
2. Check to see if switch plunger operates smoothly. Repair or replace the accel switch when result of inspection is found abnormal.

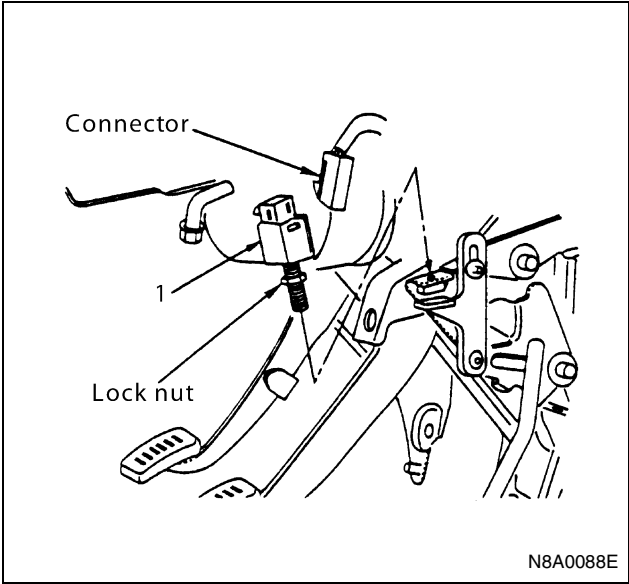


Removal

Preparation:

Disconnect the battery ground cable.

1. Accel Switch
 - 1) Disconnect the connector.
 - 2) Remove the two screws.



Installation

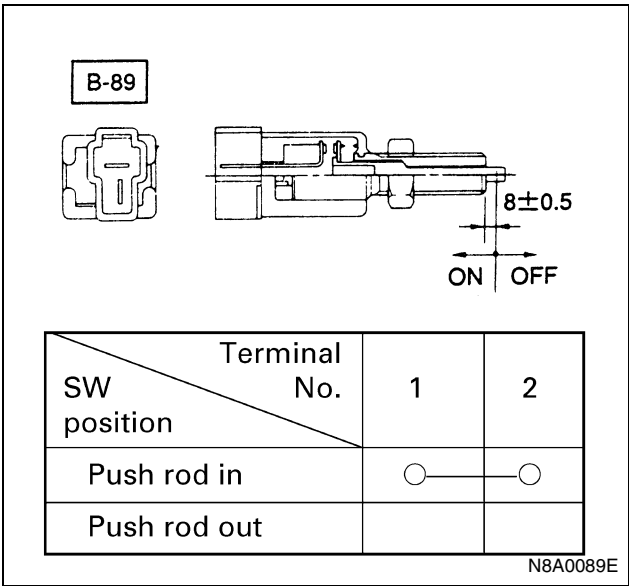
To install, follow the removal steps in the reverse order, noting the following points.

1. Check to see if the accel pedal has been returned by the return spring to the specified position.

Clutch Switch

Inspection

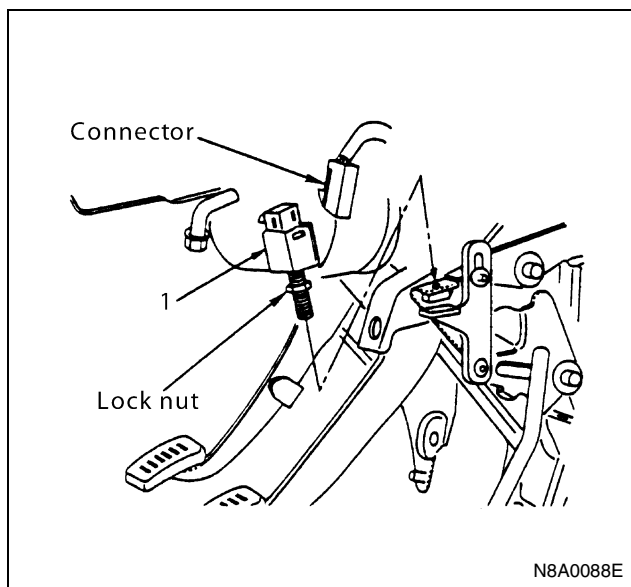
1. Check the continuity between the switch connector terminals.
2. Check to see if switch push rod operates smoothly. Repair or replace the switch when result of inspection is found abnormal.



Removal**Preparation:**

Disconnect the battery ground cable.

1. Clutch Switch
 - 1) Disconnect the connector.
 - 2) Loosen the lock nut of the switch.
 - 3) Remove the switch by turning it.

**Installation**

To install, follow the removal steps in the reverse order, noting the following points.

1. Check to see if the clutch pedal has been returned by the return spring to the specified position.
2. Turn the clutch switch clockwise until the tip of the threaded portion of the switch contacts the pedal arm.
3. Tighten the lock nut to the specified torque.

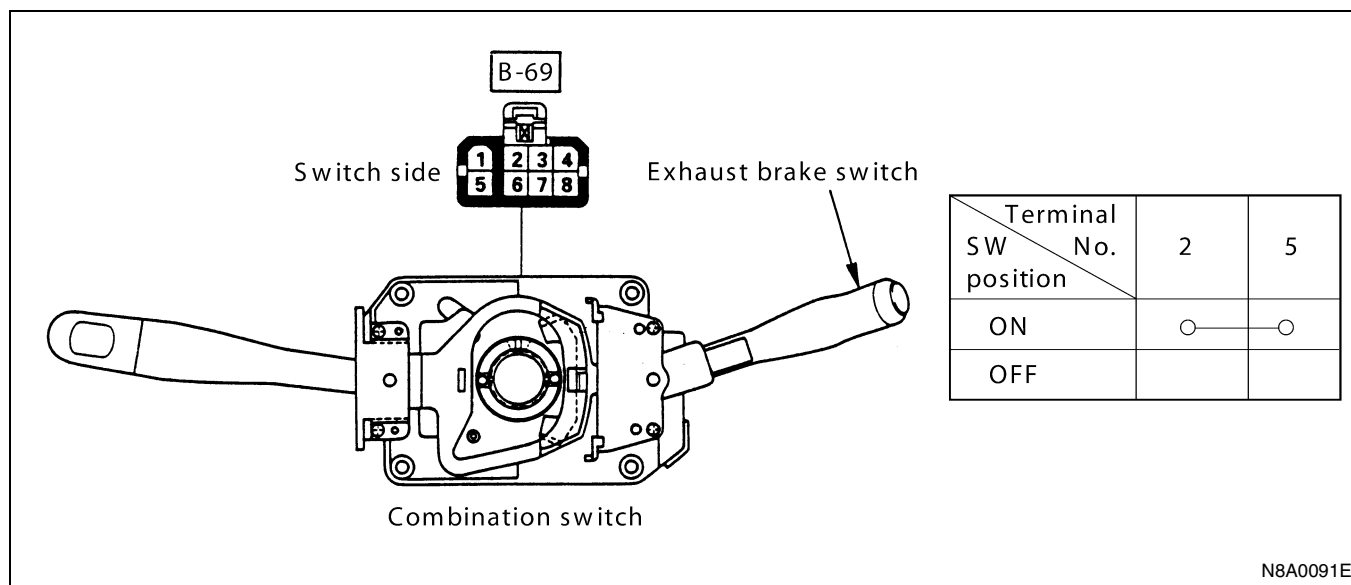
Tighten:

Lock nut to 13 N·m (130 kg·cm / 115 lb·in)

Exhaust Brake Switch**Inspection**

Check the continuity between the terminals of the exhaust brake switch.

Repair or replace the switch when the result of inspection is found abnormal.



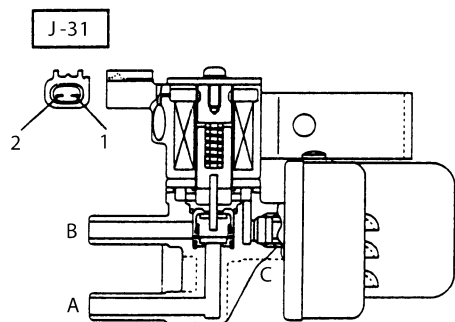
Removal and Installation

Refer to “HEADLIGHT, FOG LIGHT AND CORNERING LIGHT” in this section.

Exhaust Brake Magnetic Valve (4H Series Engine)

Inspection

Connect the magnetic valve connector terminal No. 1 to the battery (+) terminal and terminal No. 2 to the (–) terminal and then check the continuity among each port.



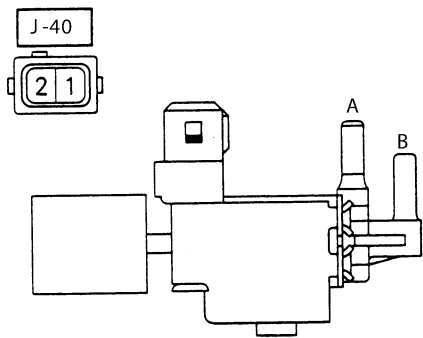
Port	A	B	C
Operation			
When battery voltage applied	○ — ○		
When battery voltage not applied		○ — ○	

N8A0094E

Vacuum Switching Valve: Intake Throttle (4H Series Engine)

Inspection

Connect the magnetic valve connector terminal No. 1 to the battery (+) terminal and terminal No. 2 to the (–) terminal and then check the continuity among each port. Repair or replace the vacuum switching valve when the result of inspection is found abnormal.



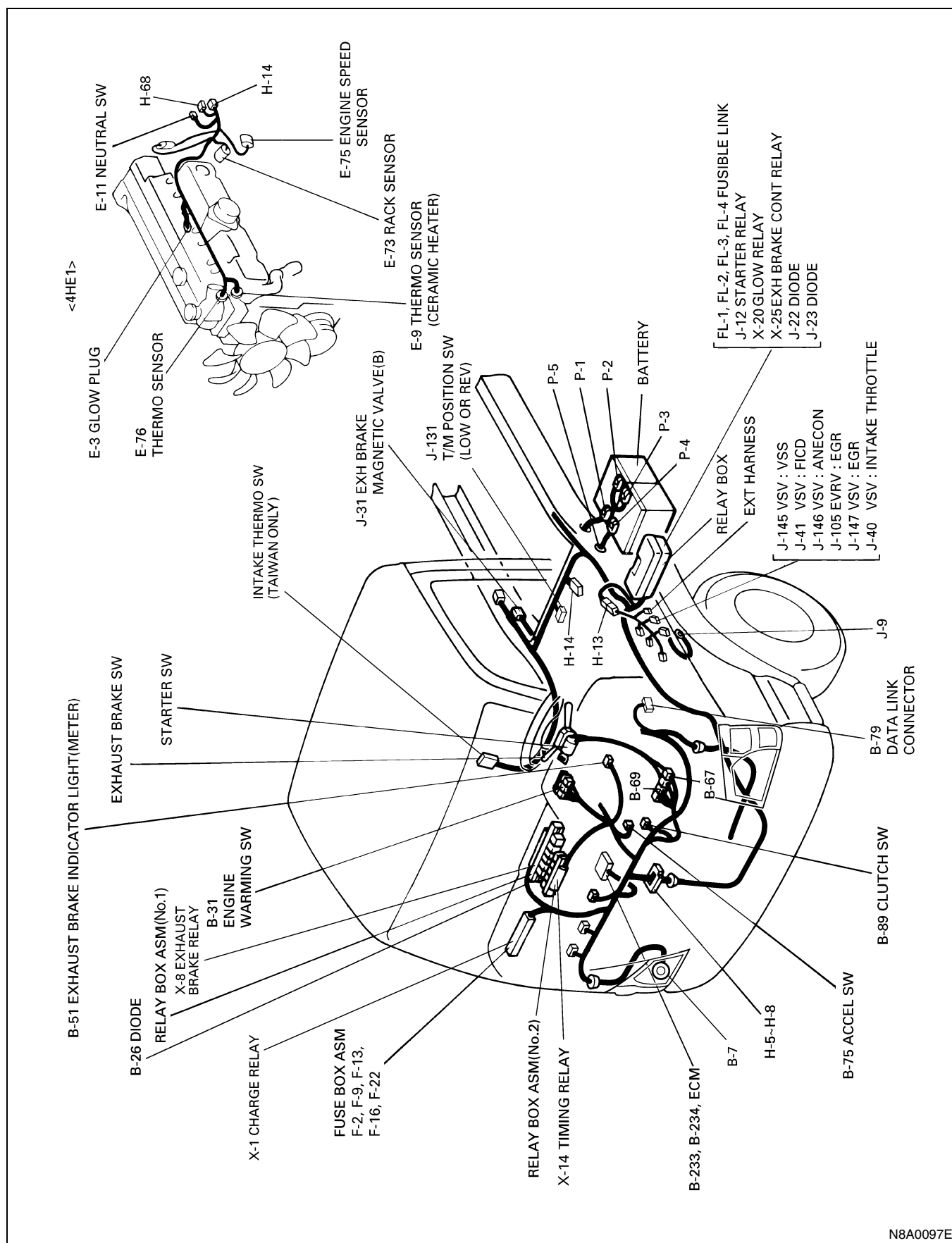
Port	A	B
Operation		
When battery voltage applied	○ — ○	
When battery voltage not applied		

N8A0096E

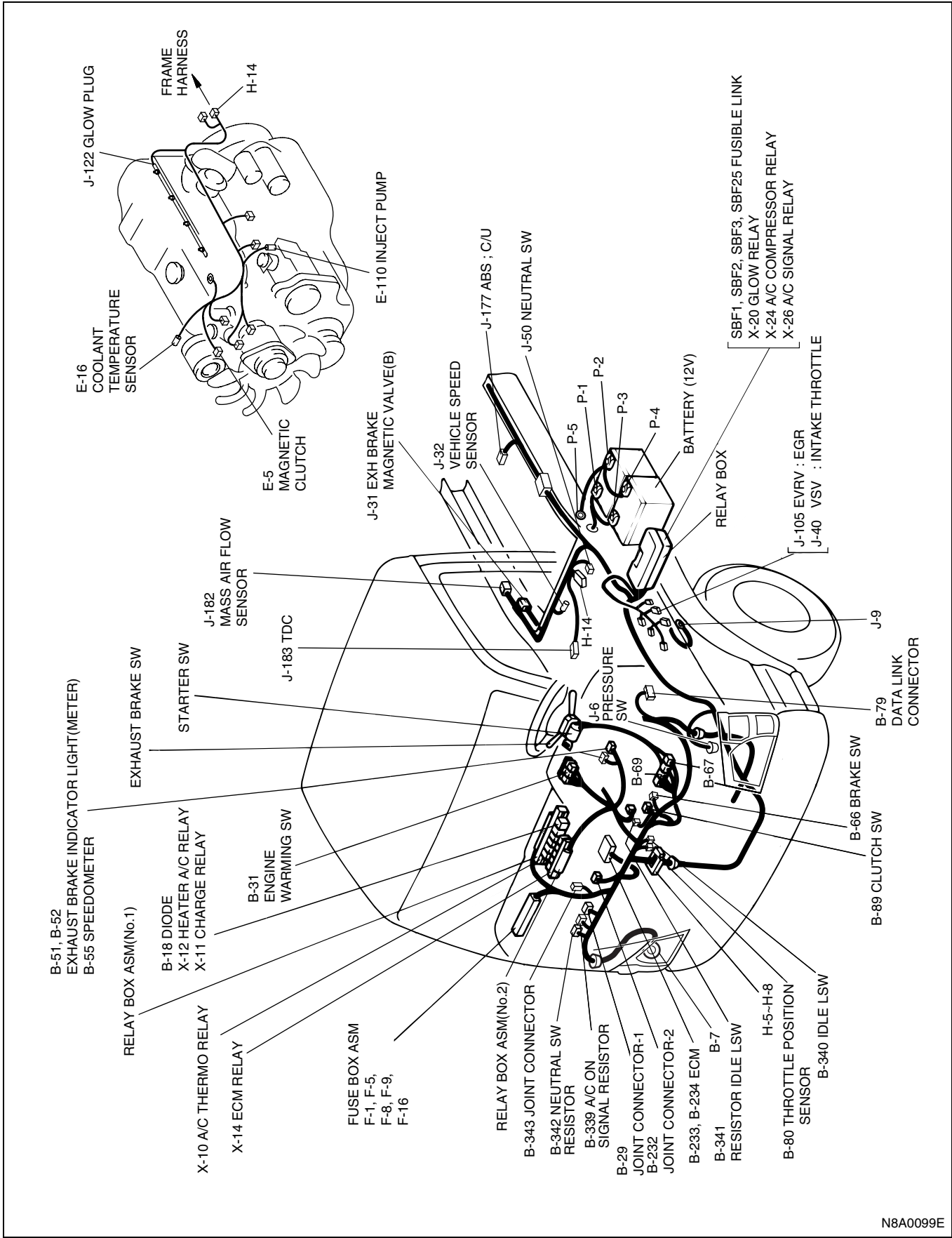
Exhaust Brake System and Engine Control

Parts Location

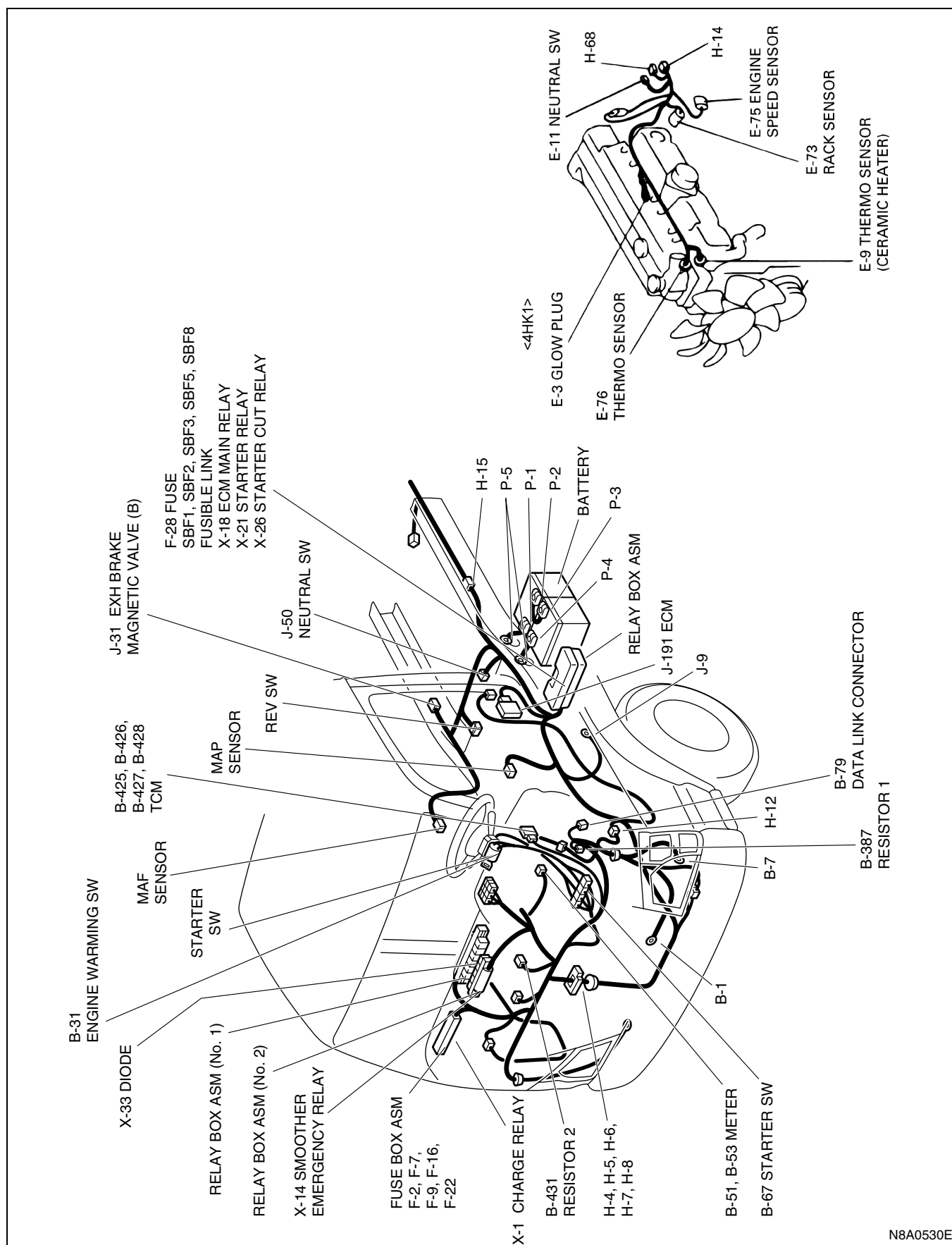
For 4HE1-TC Engine



For 4JH1 Engine

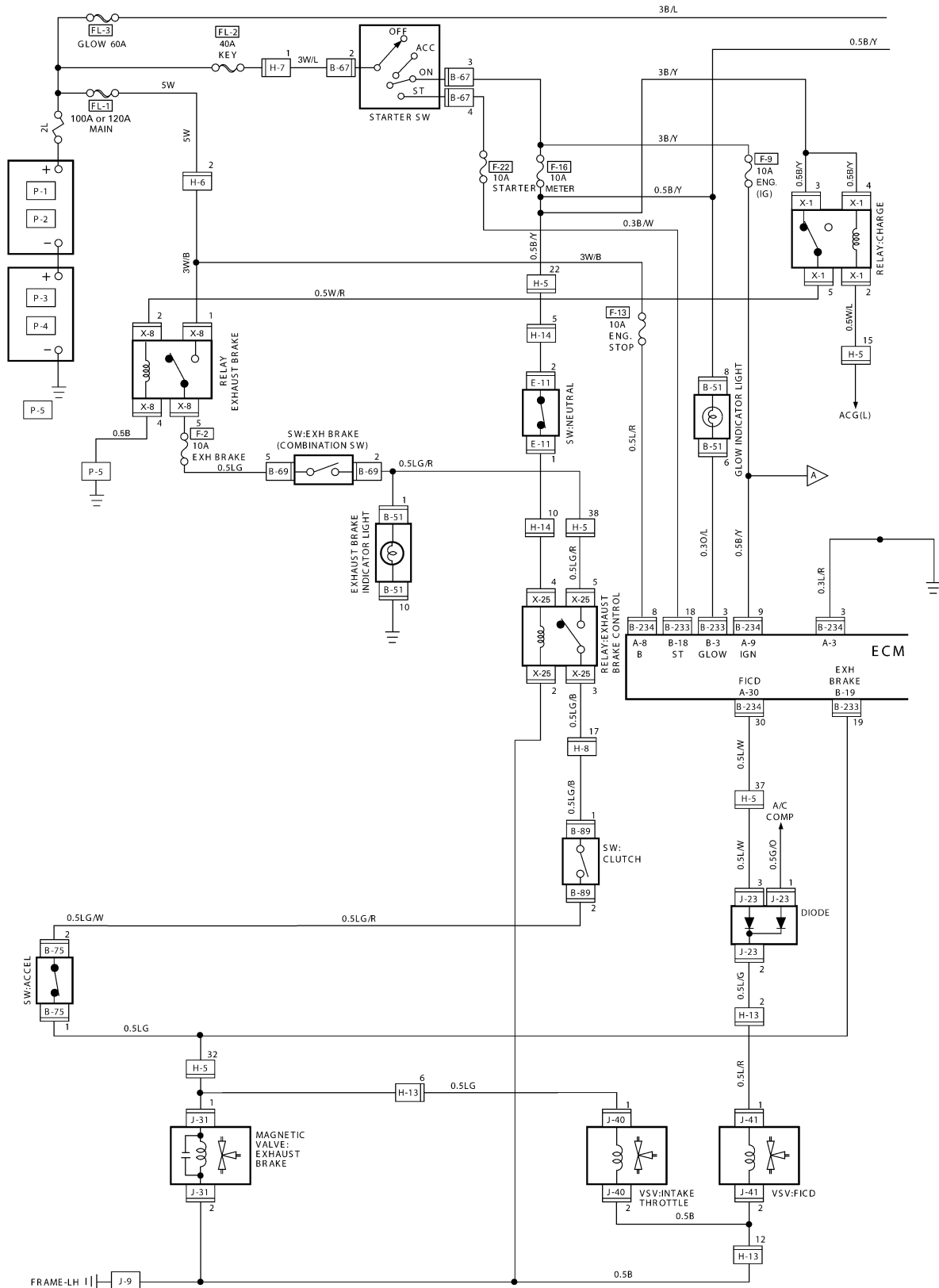


For 4HK1-TC Engine



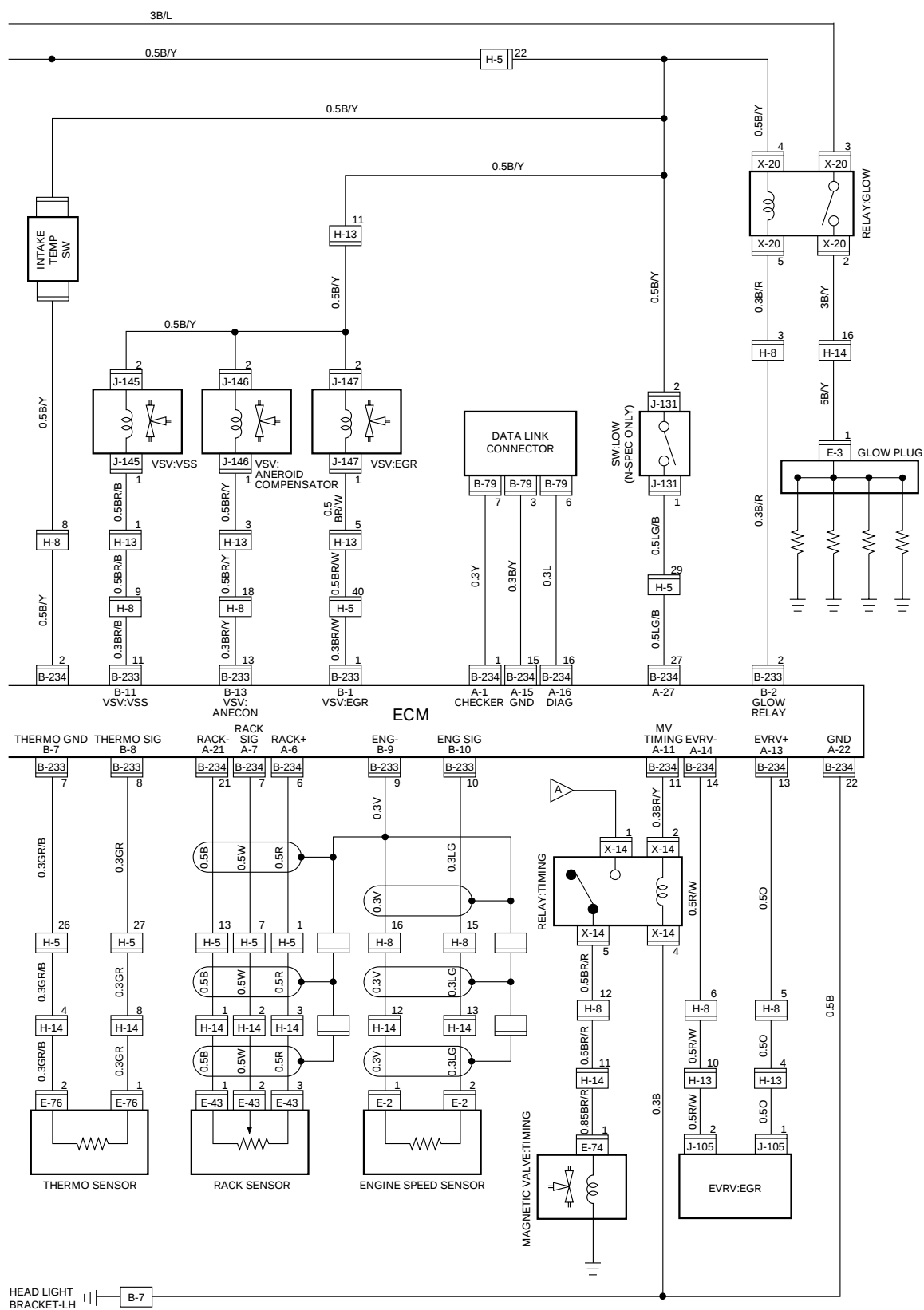
Circuit Diagram

4HE1-TC Engine (1)

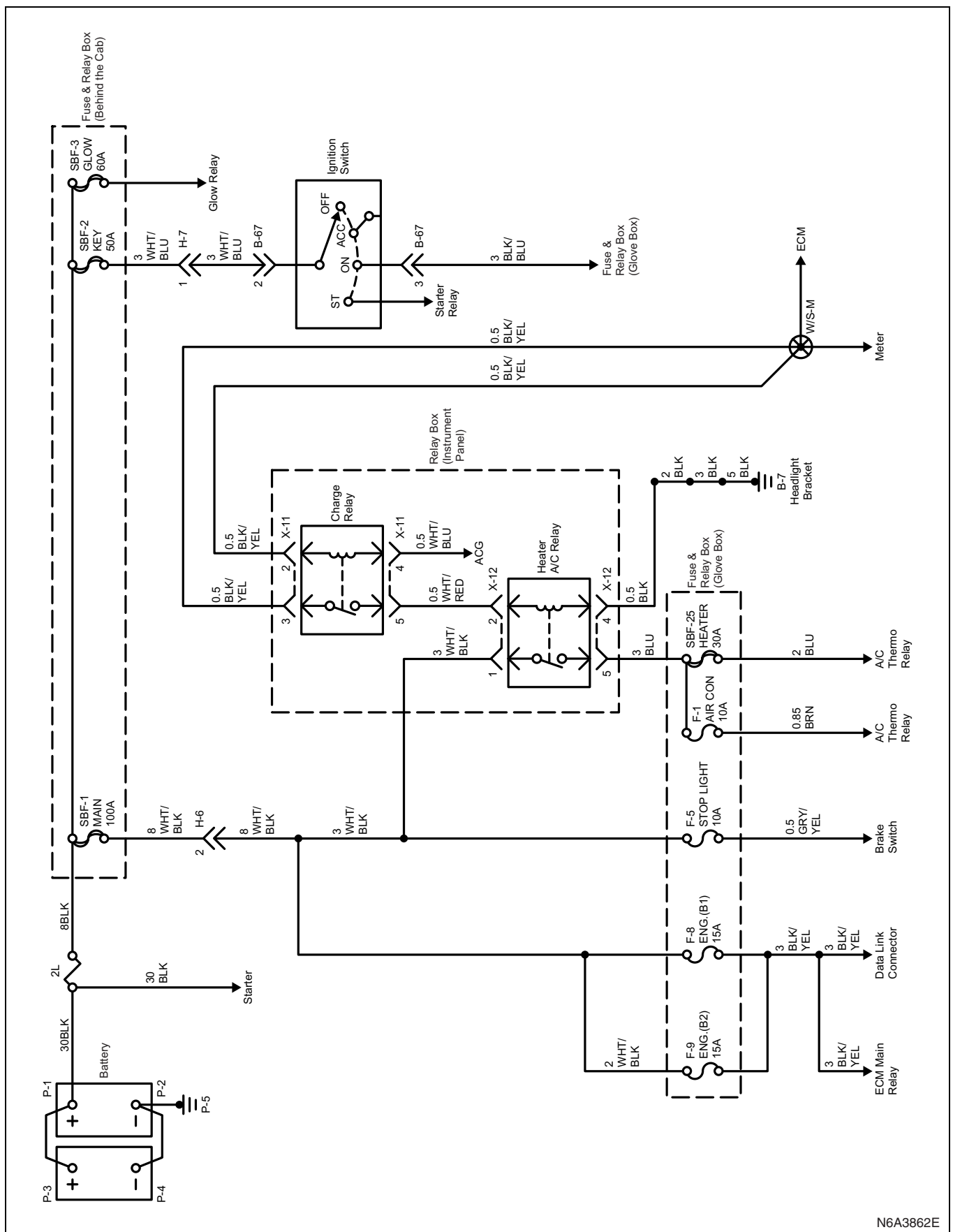


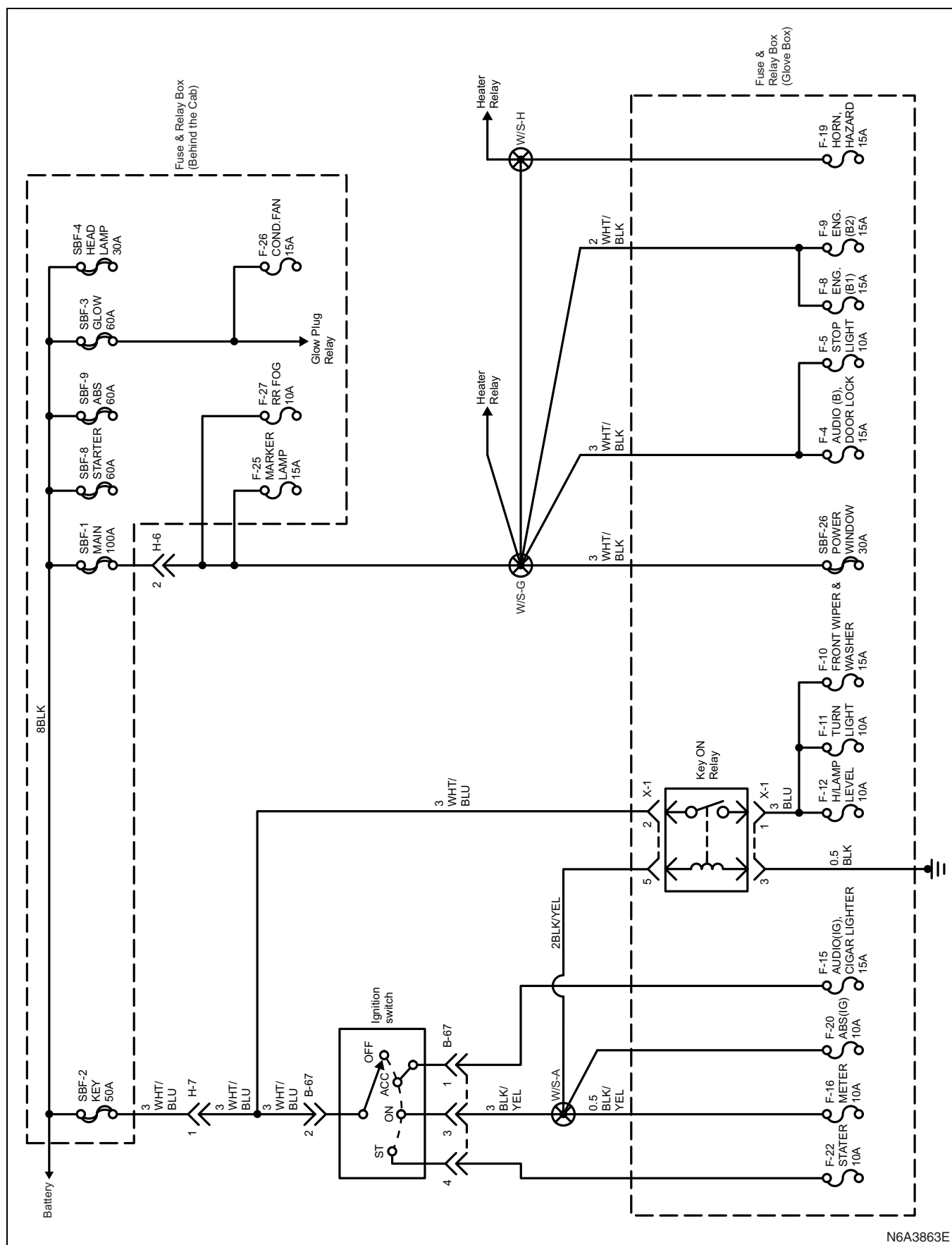
8-88 CAB AND CHASSIS ELECTRICAL

4HE1-TC Engine (2)

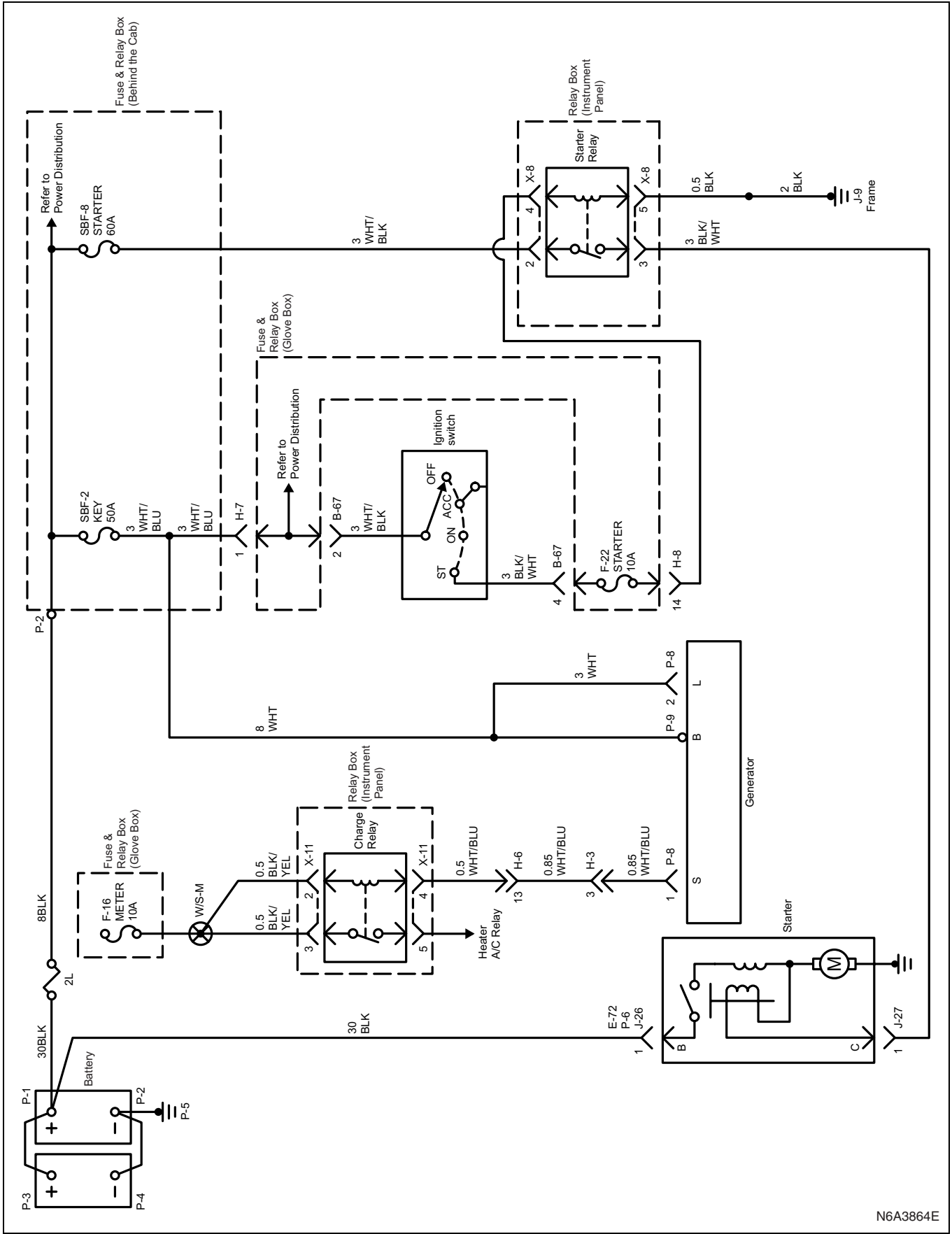


4JH1 Engine (1)

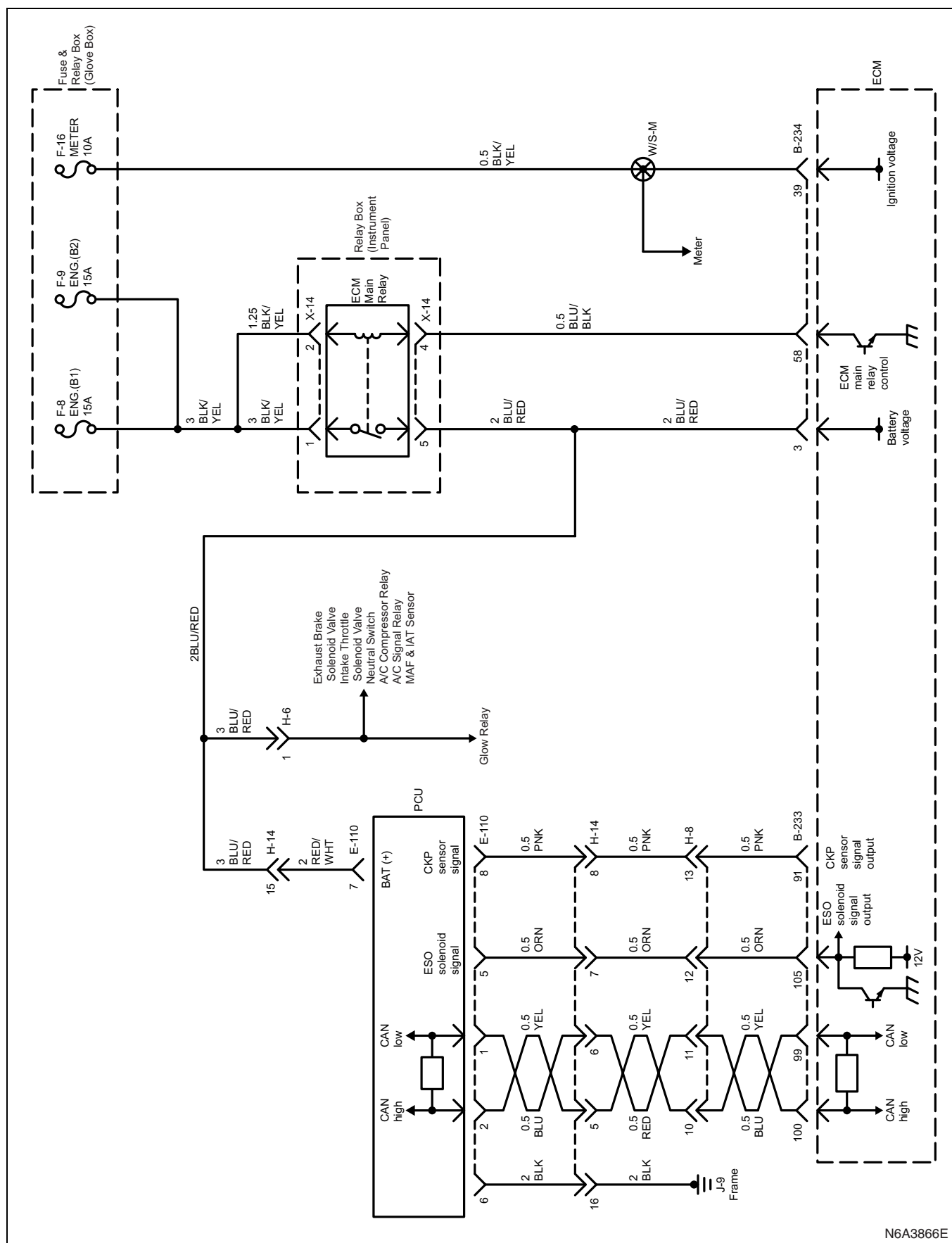




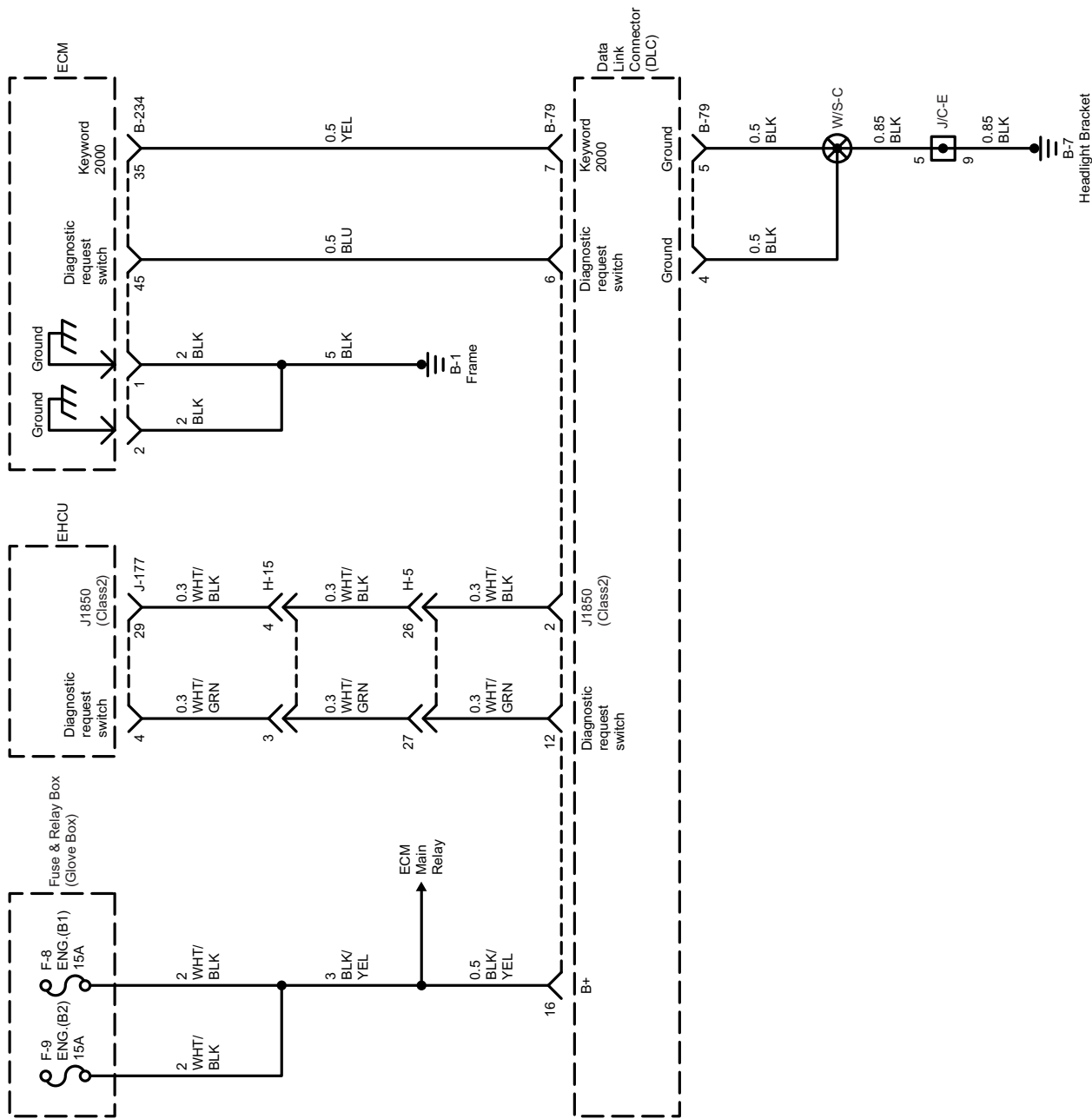
4JH1 Engine (3)



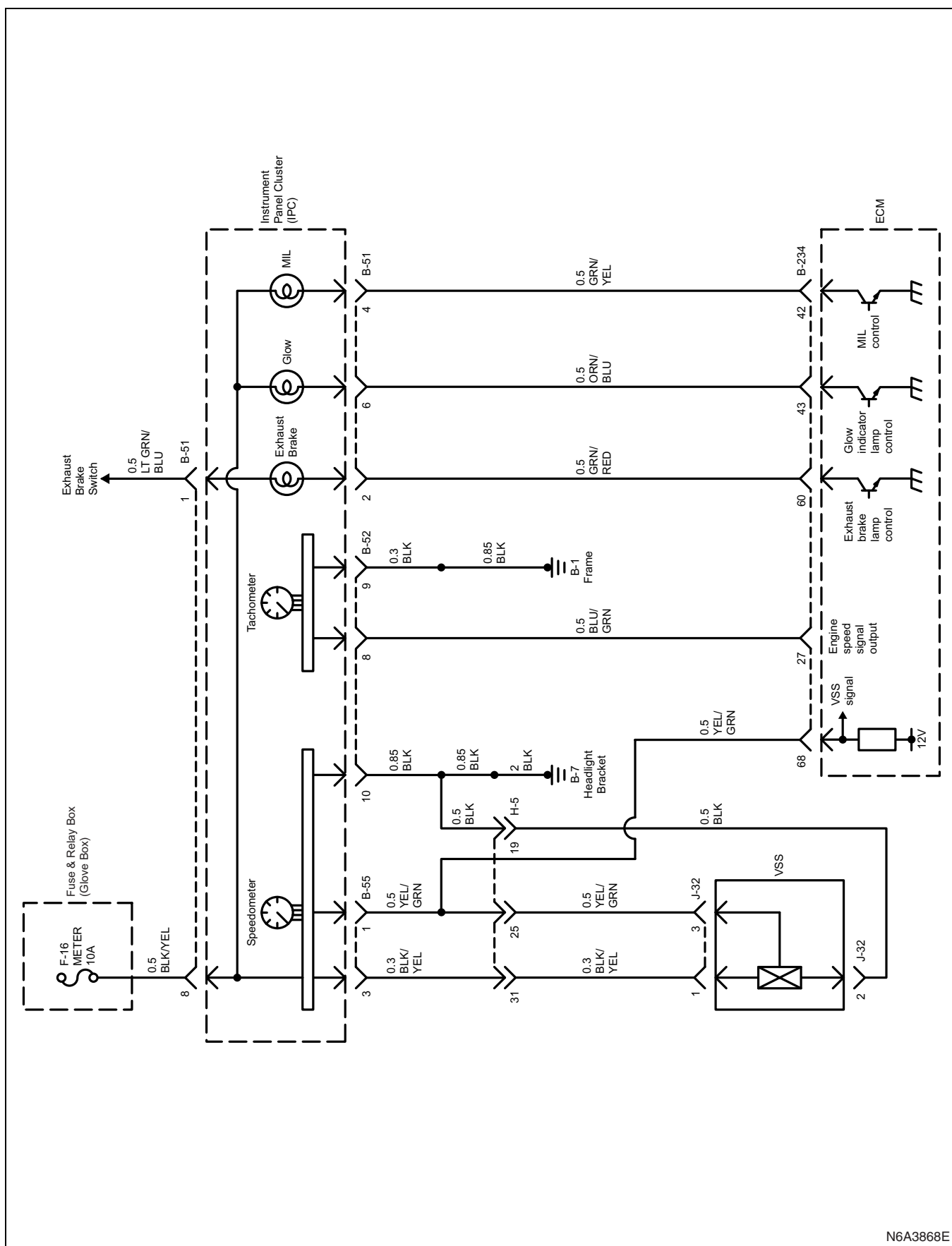
4JH1 Engine (4)



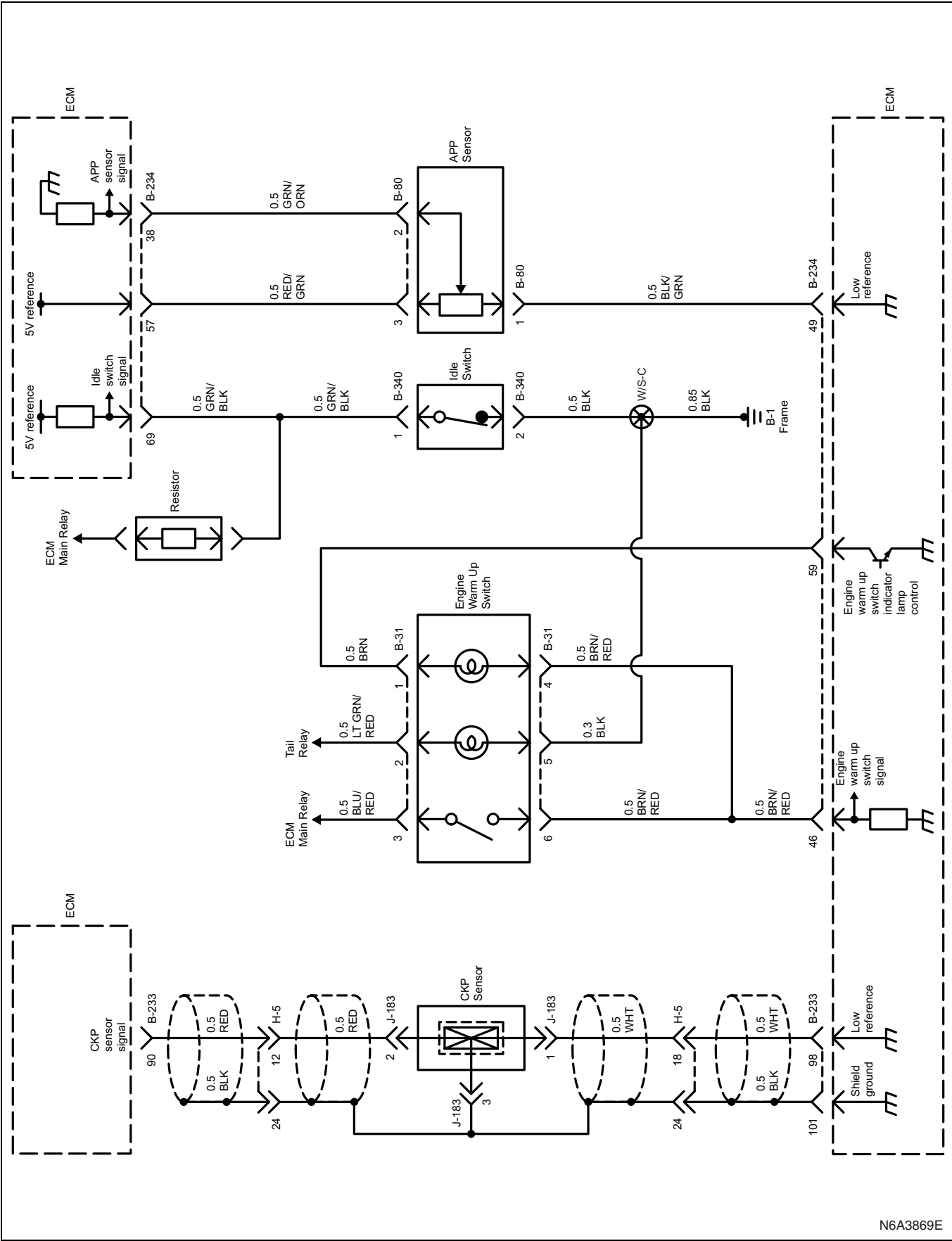
4JH1 Engine (5)

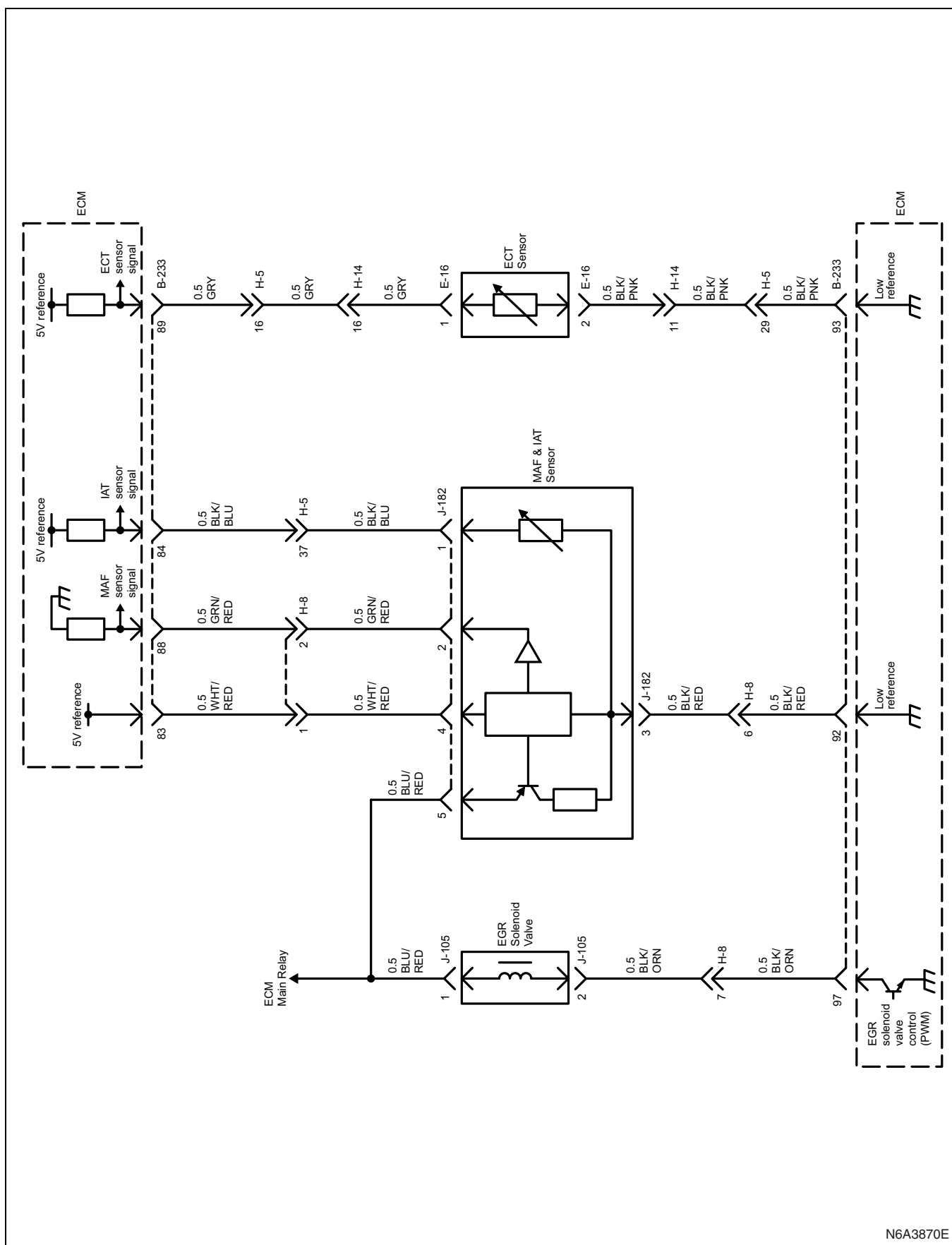


4JH1 Engine (6)

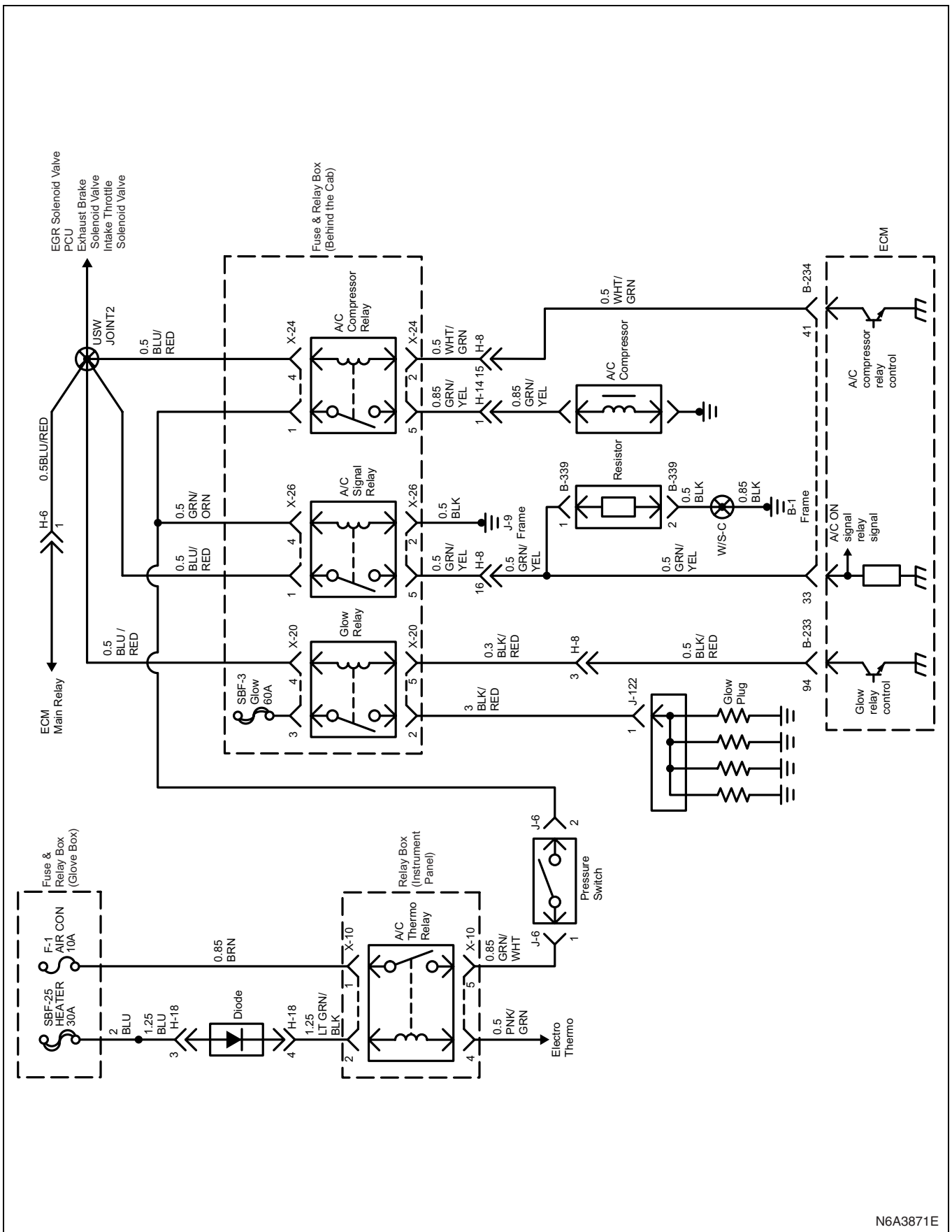


4JH1 Engine (7)

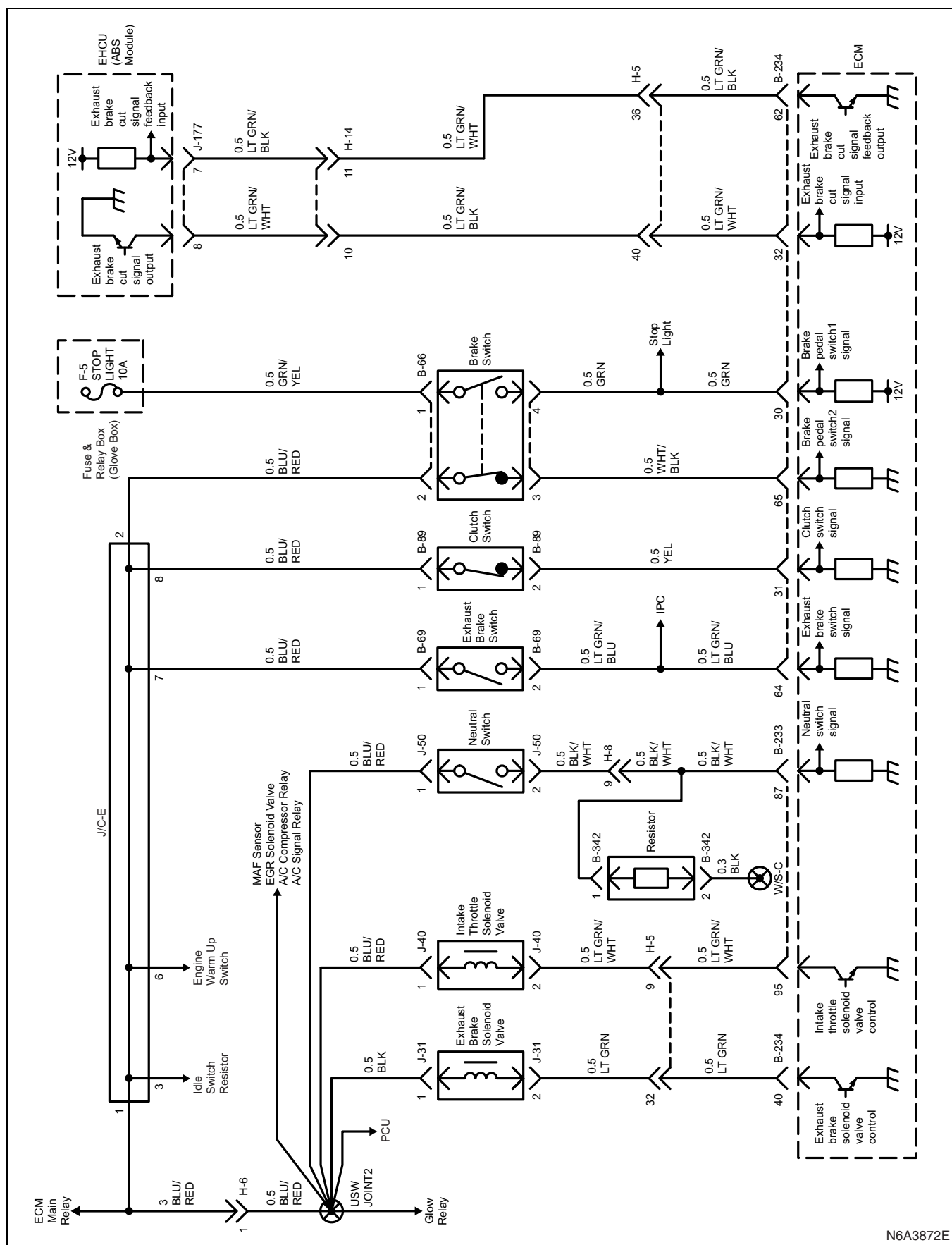




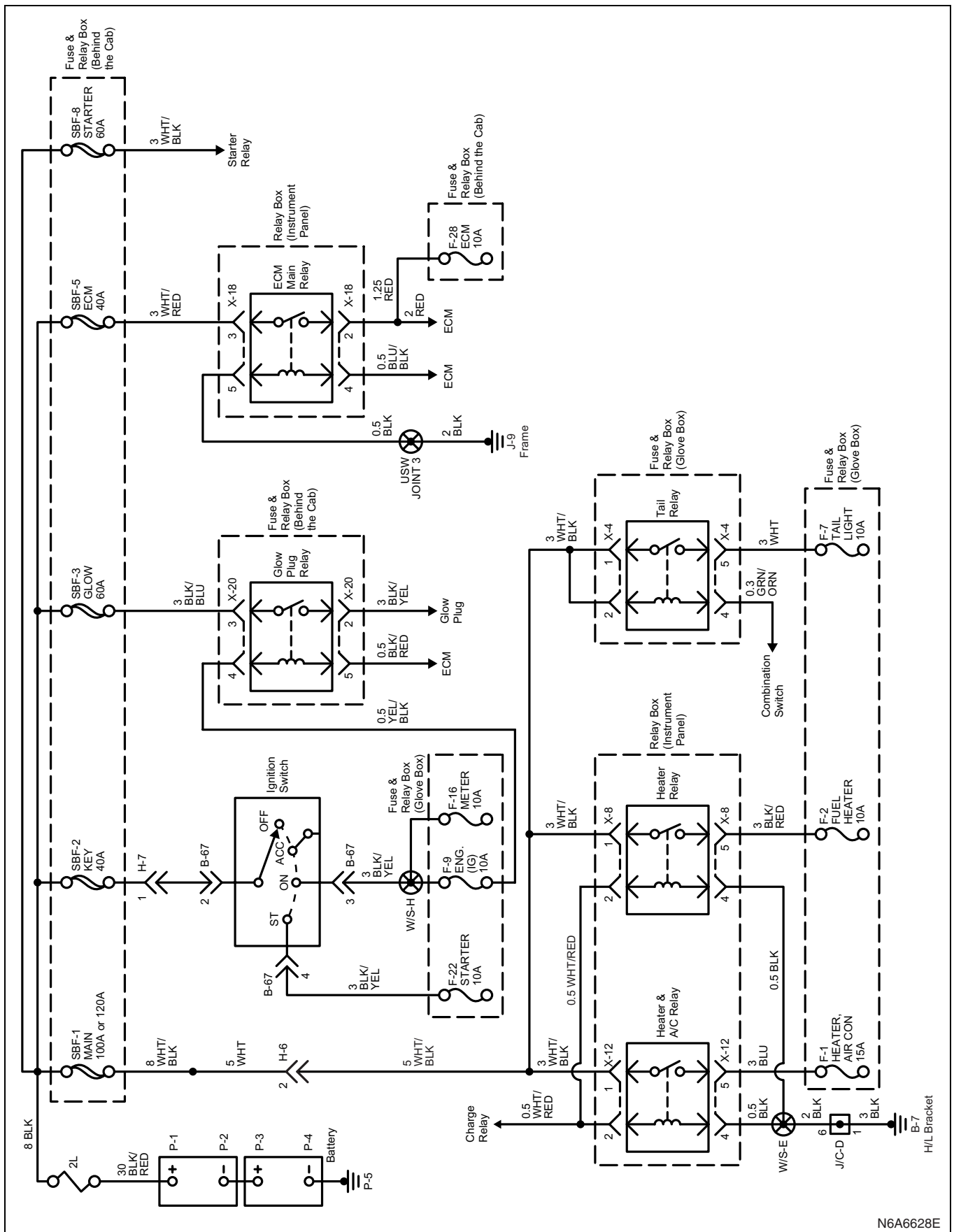
4JH1 Engine (9)



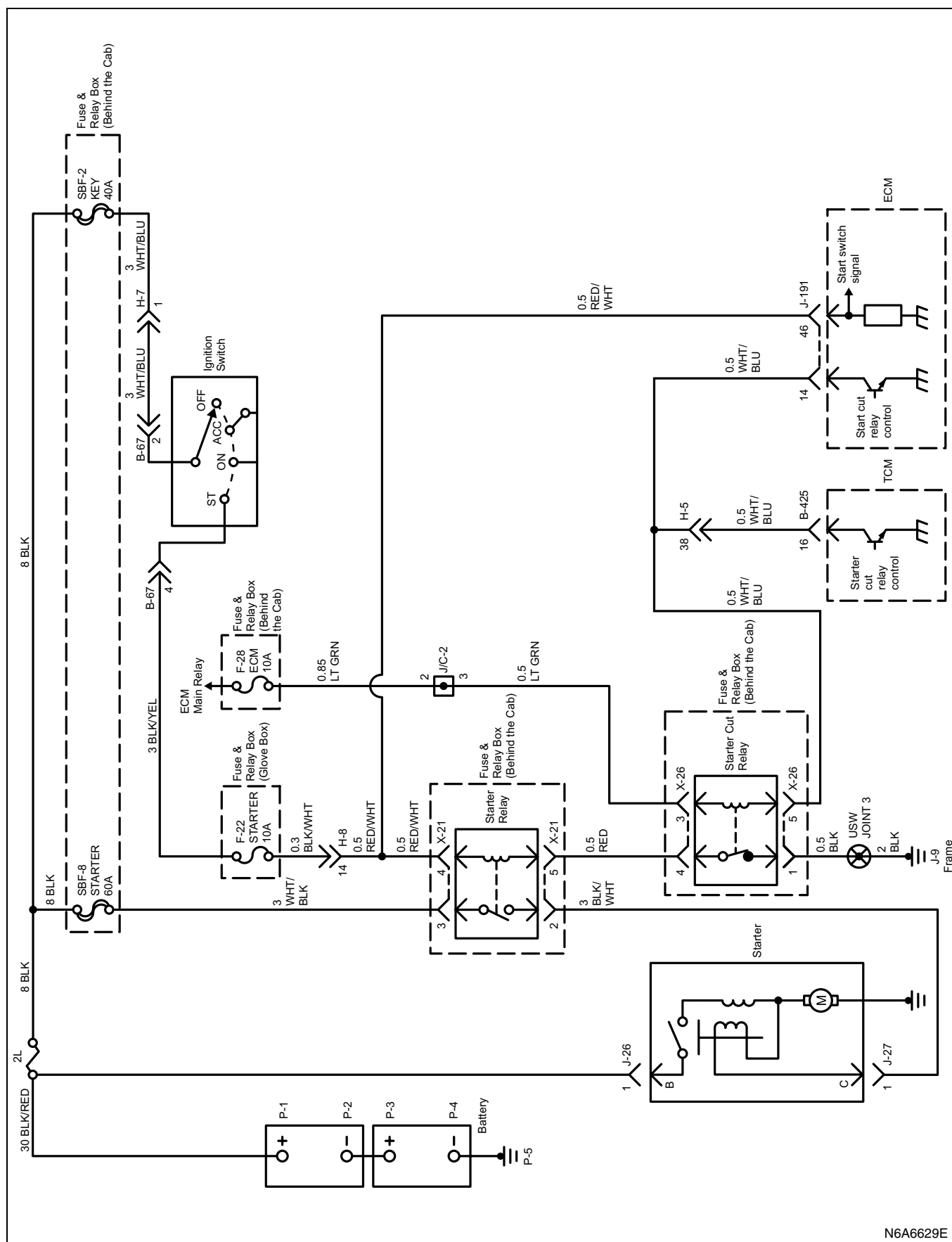
N6A3871E



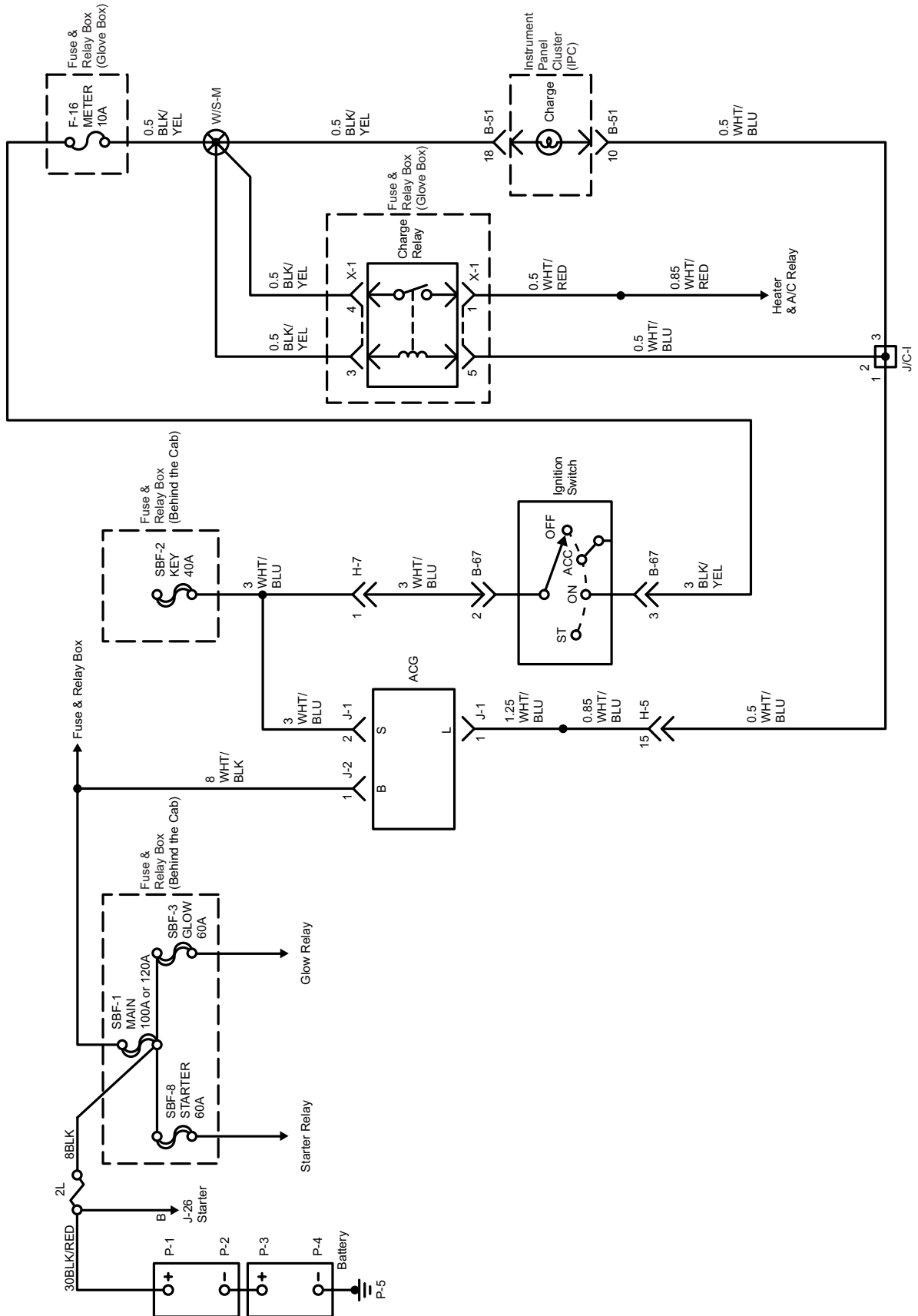
4HK1-TC Engine (1)



N6A6628E

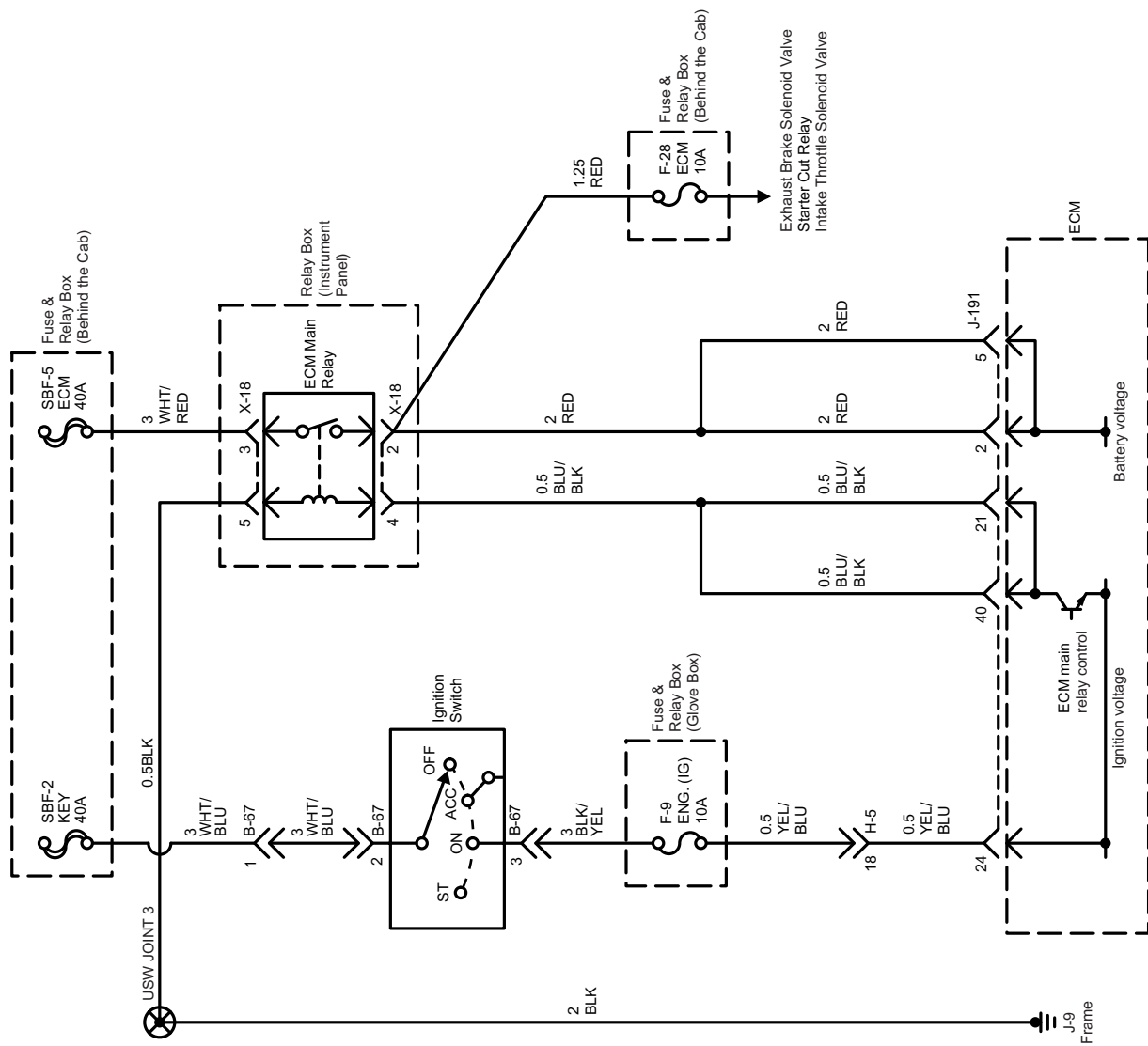


4HK1-TC Engine (3)

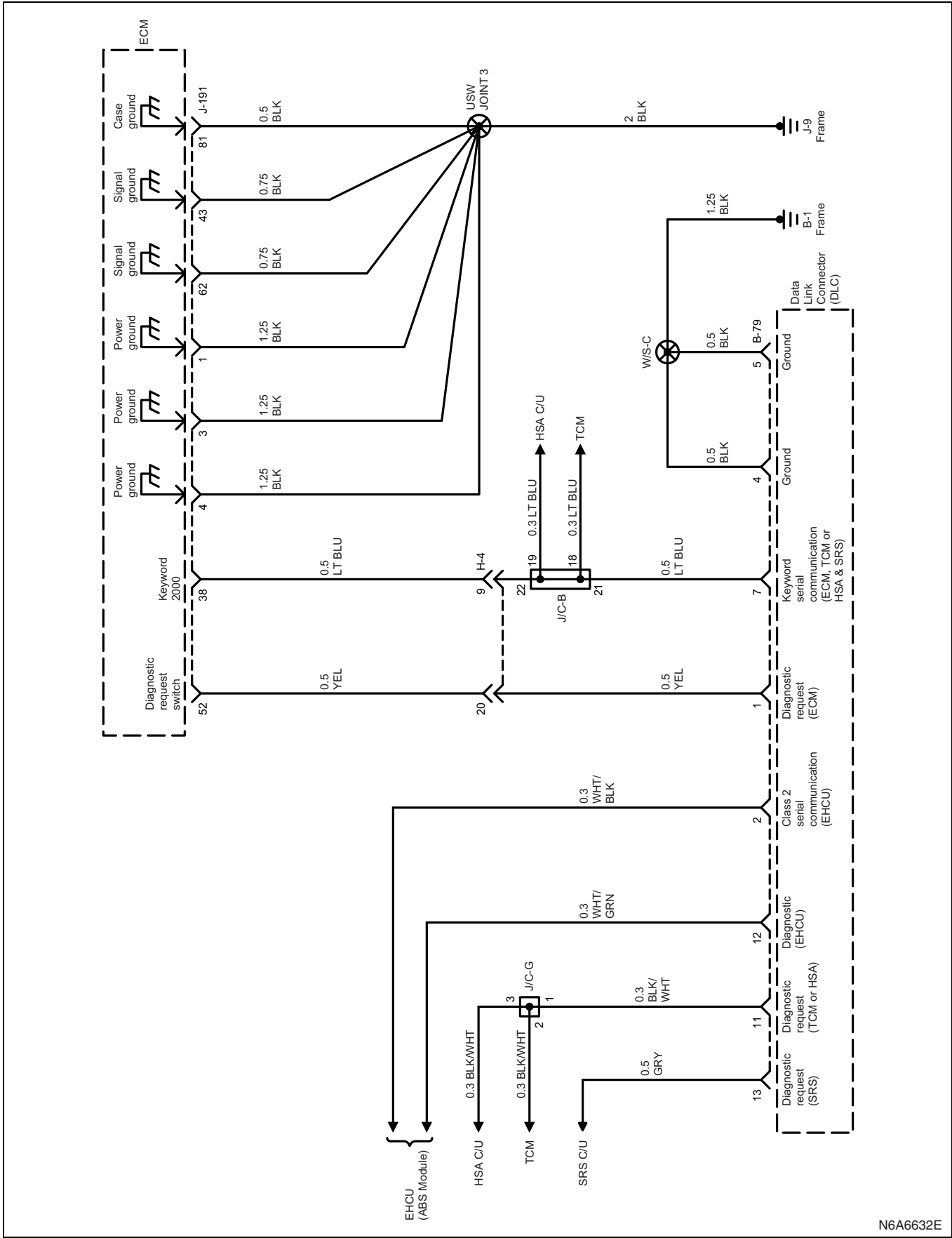


N6A6630E

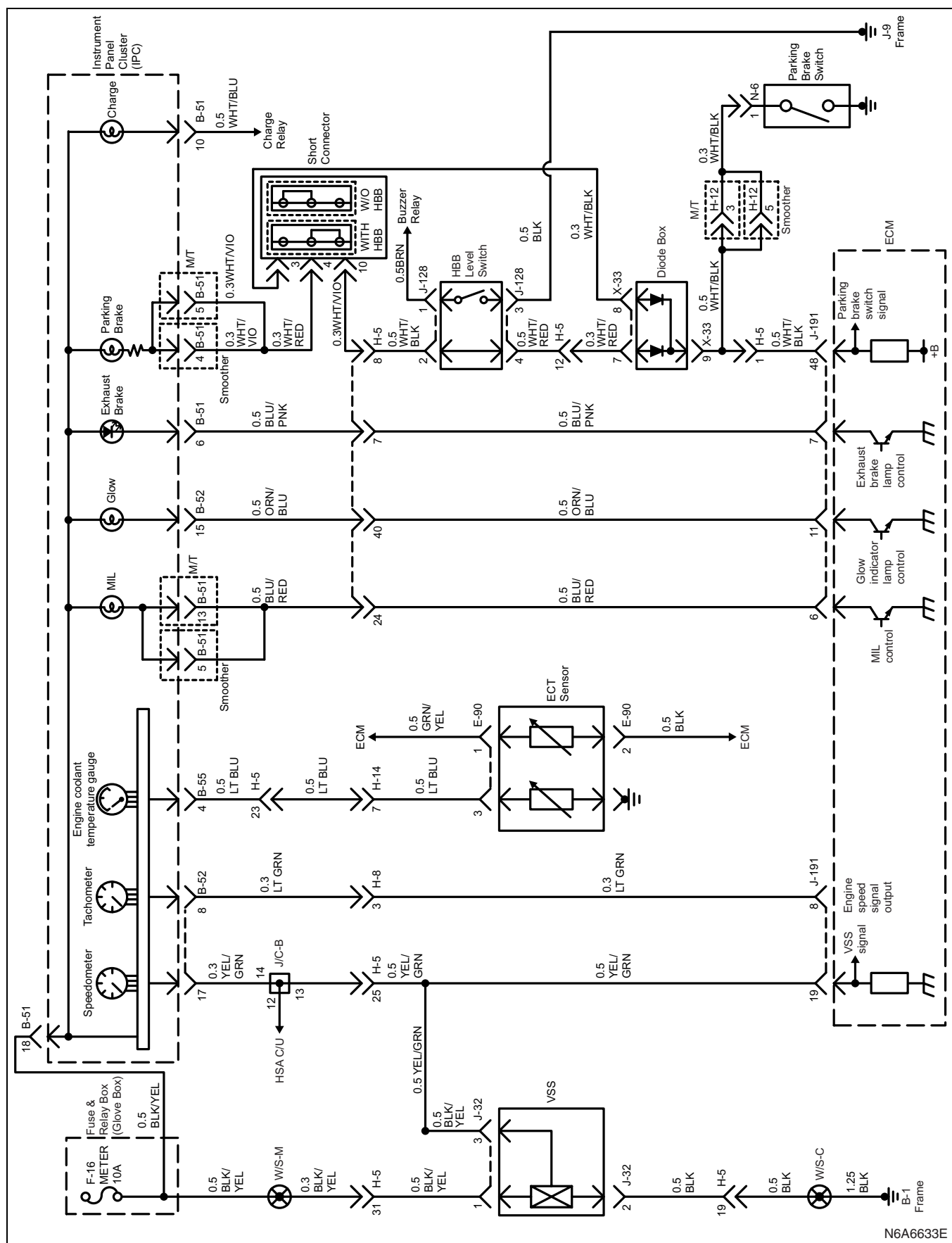
4HK1-TC Engine (4)



4HK1-TC Engine (5)

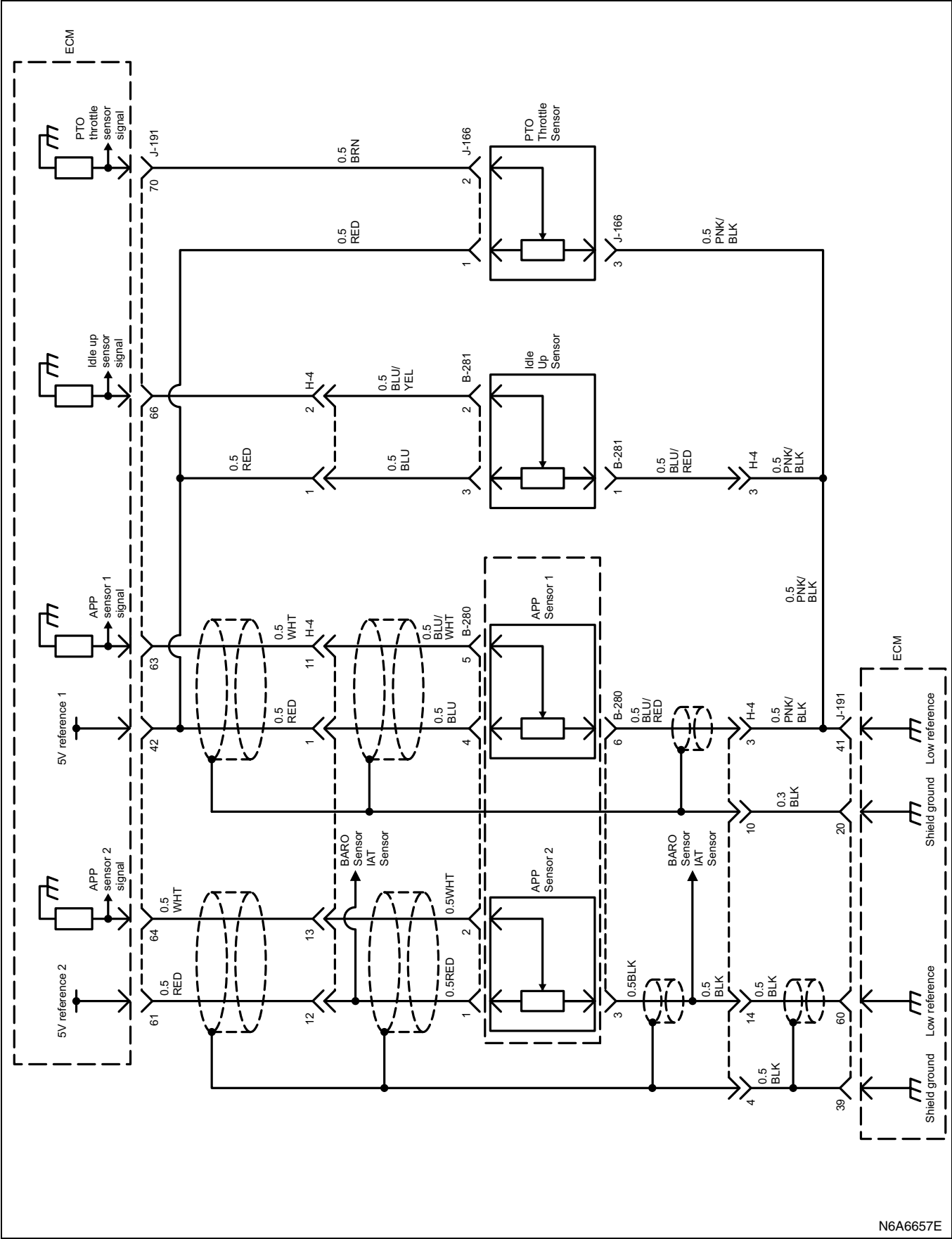


4HK1-TC Engine (6)

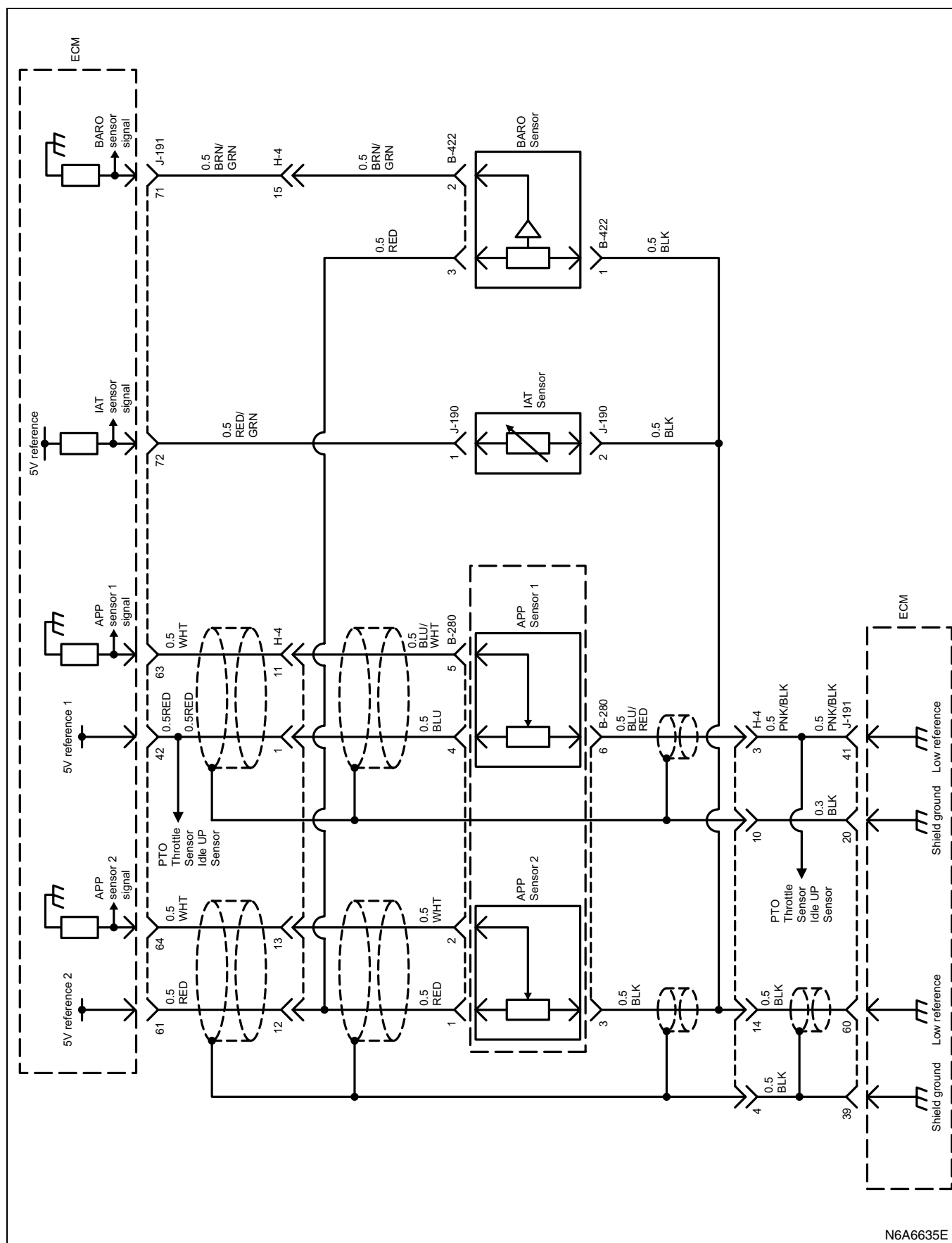


N6A6633E

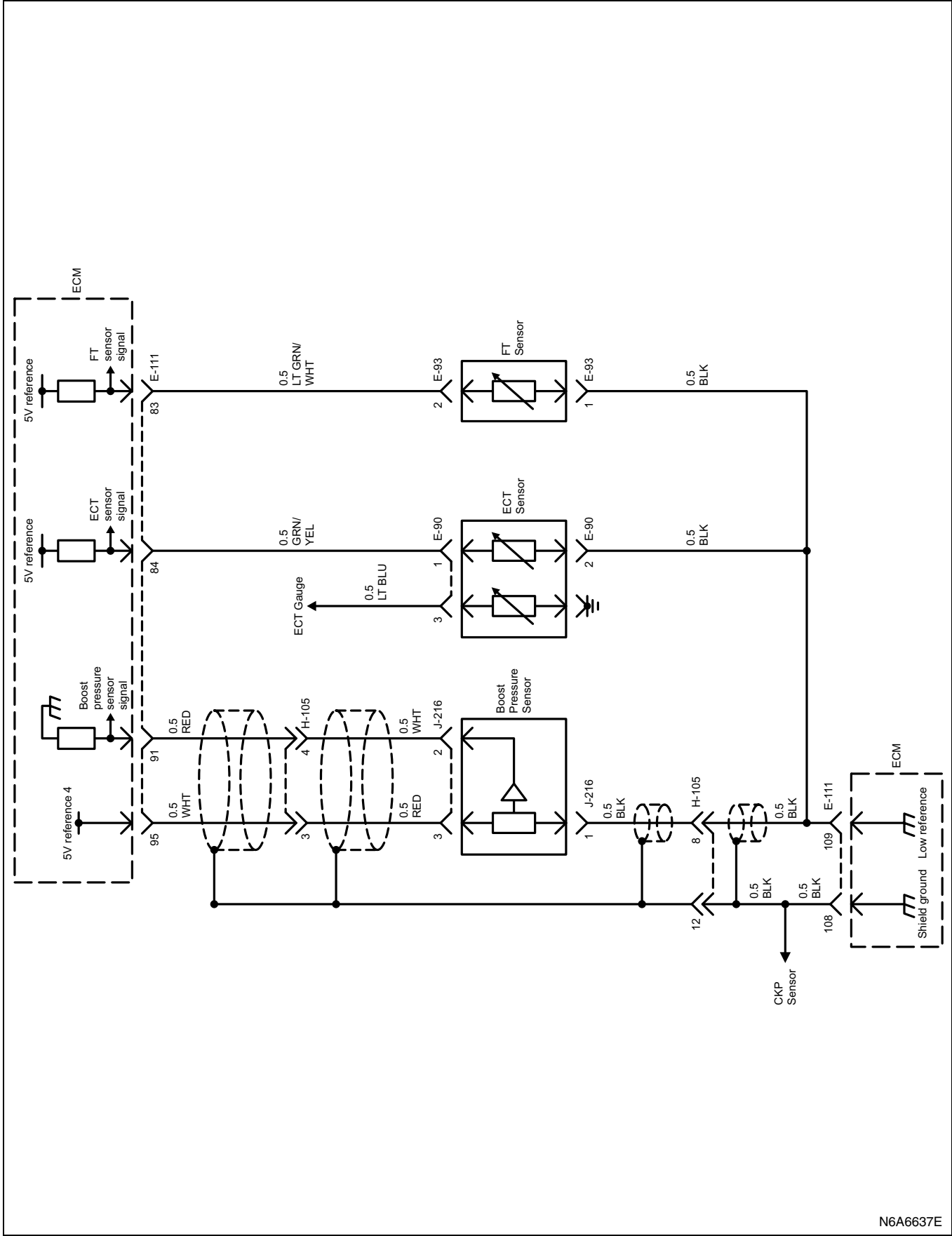
4HK1-TC Engine (7)



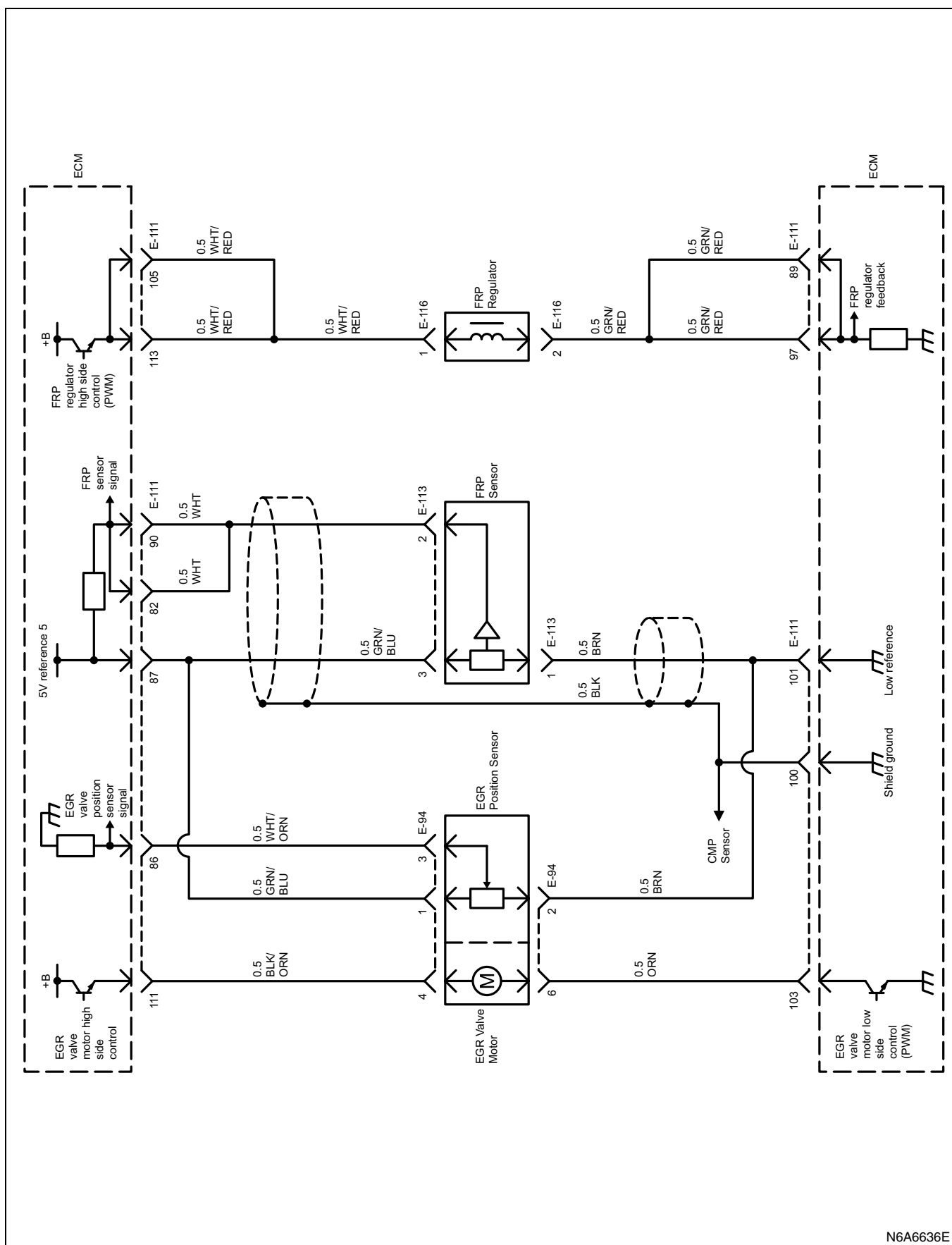
4HK1-TC Engine (8)



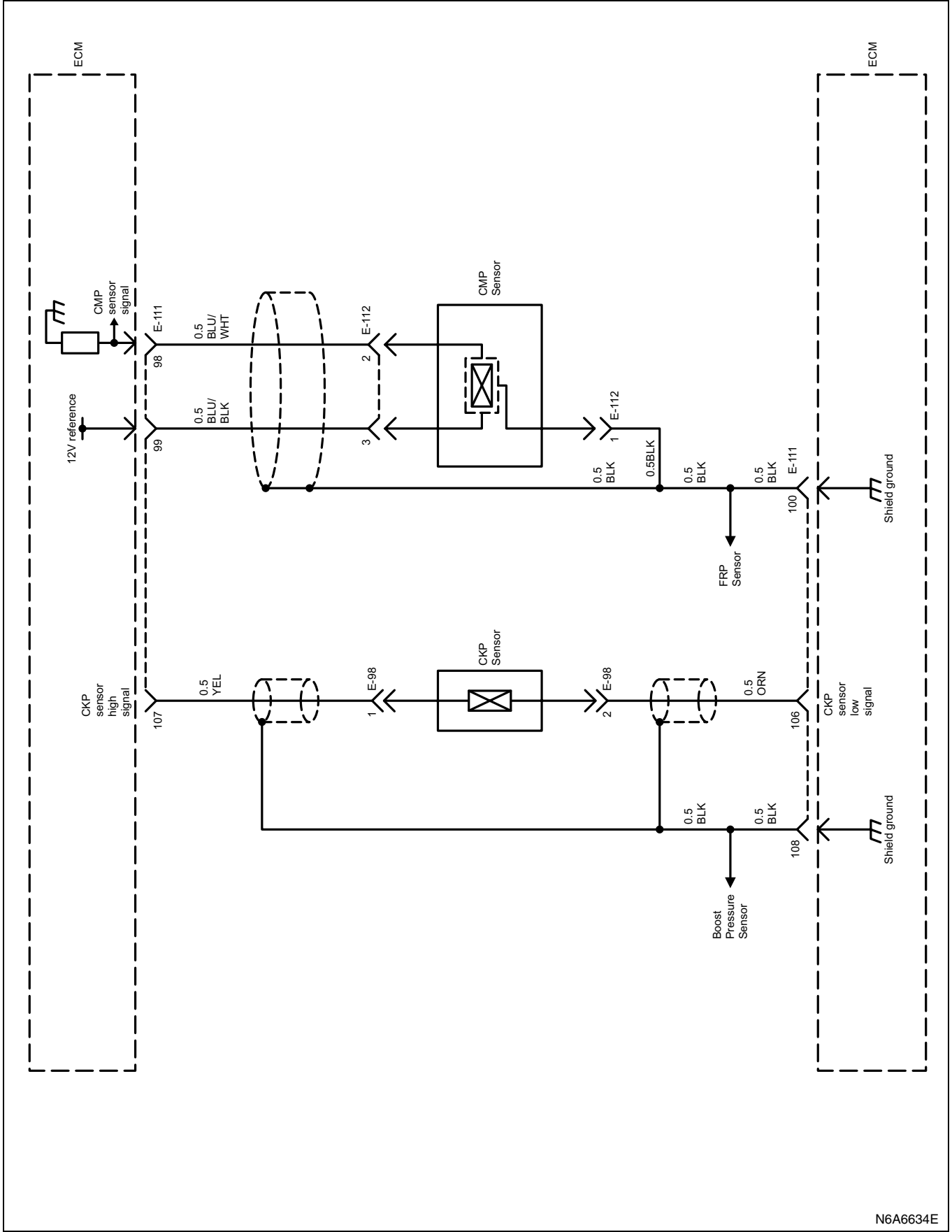
4HK1-TC Engine (9)



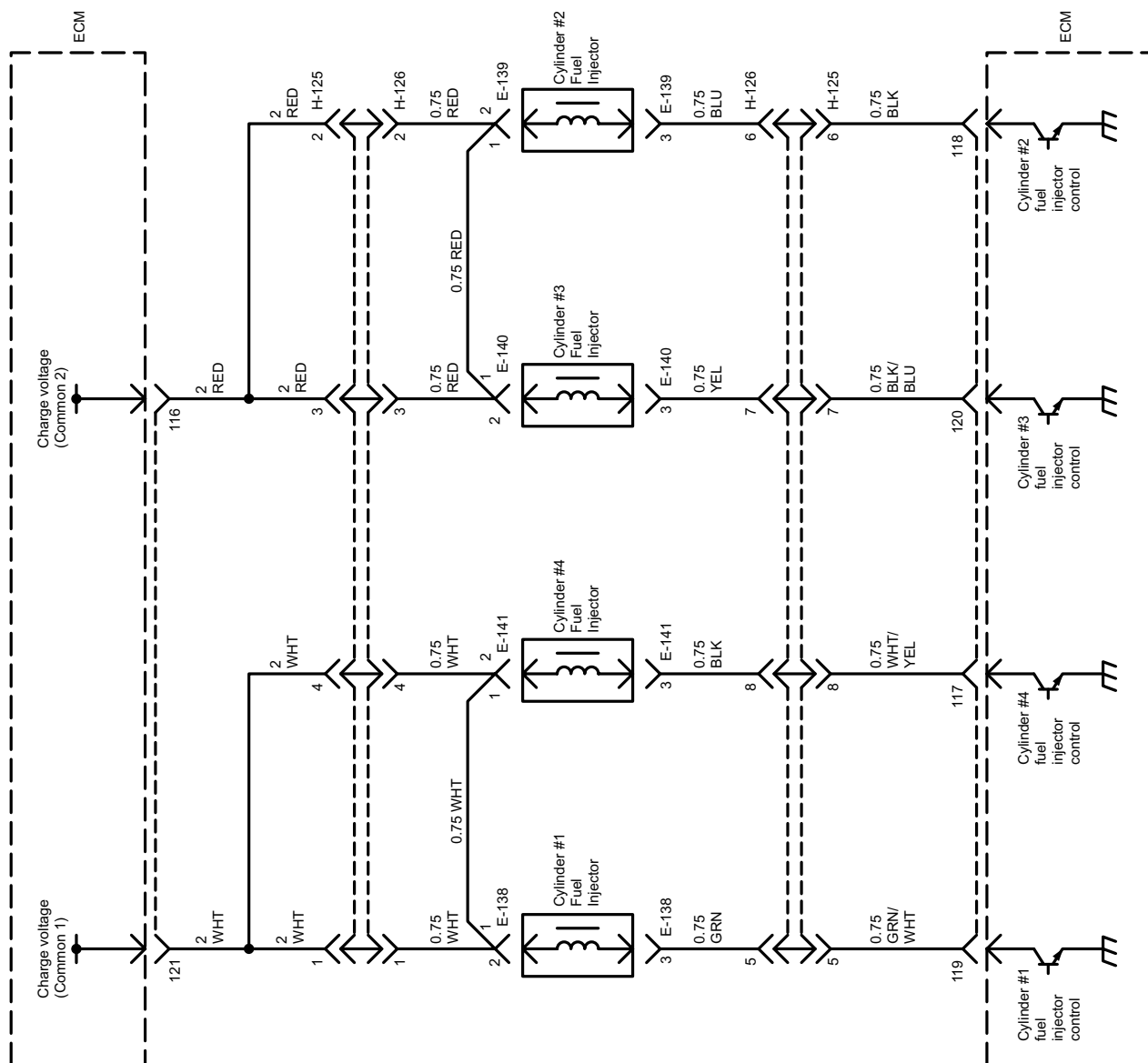
4HK1-TC Engine (10)



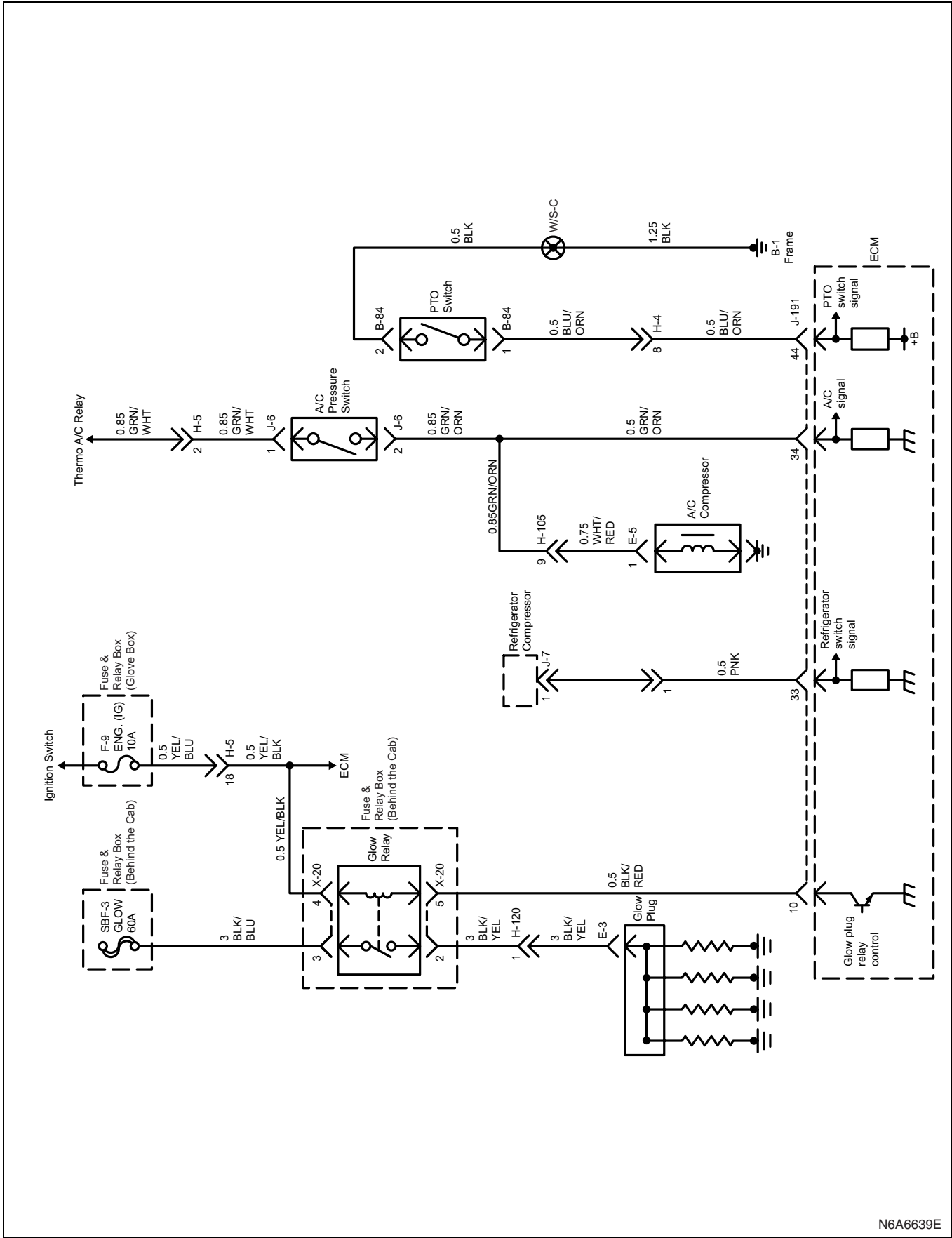
4HK1-TC Engine (11)



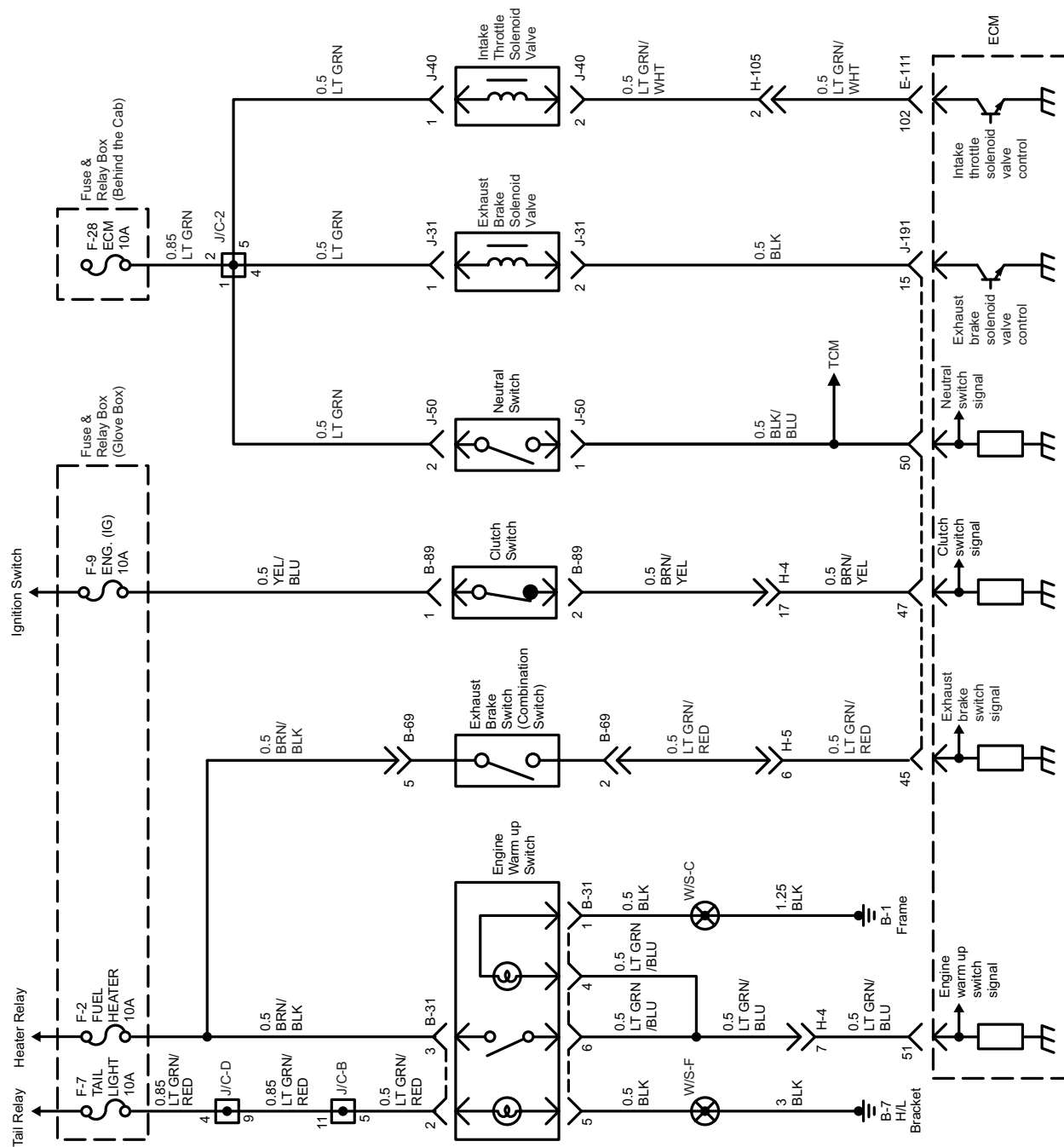
4HK1-TC Engine (12)



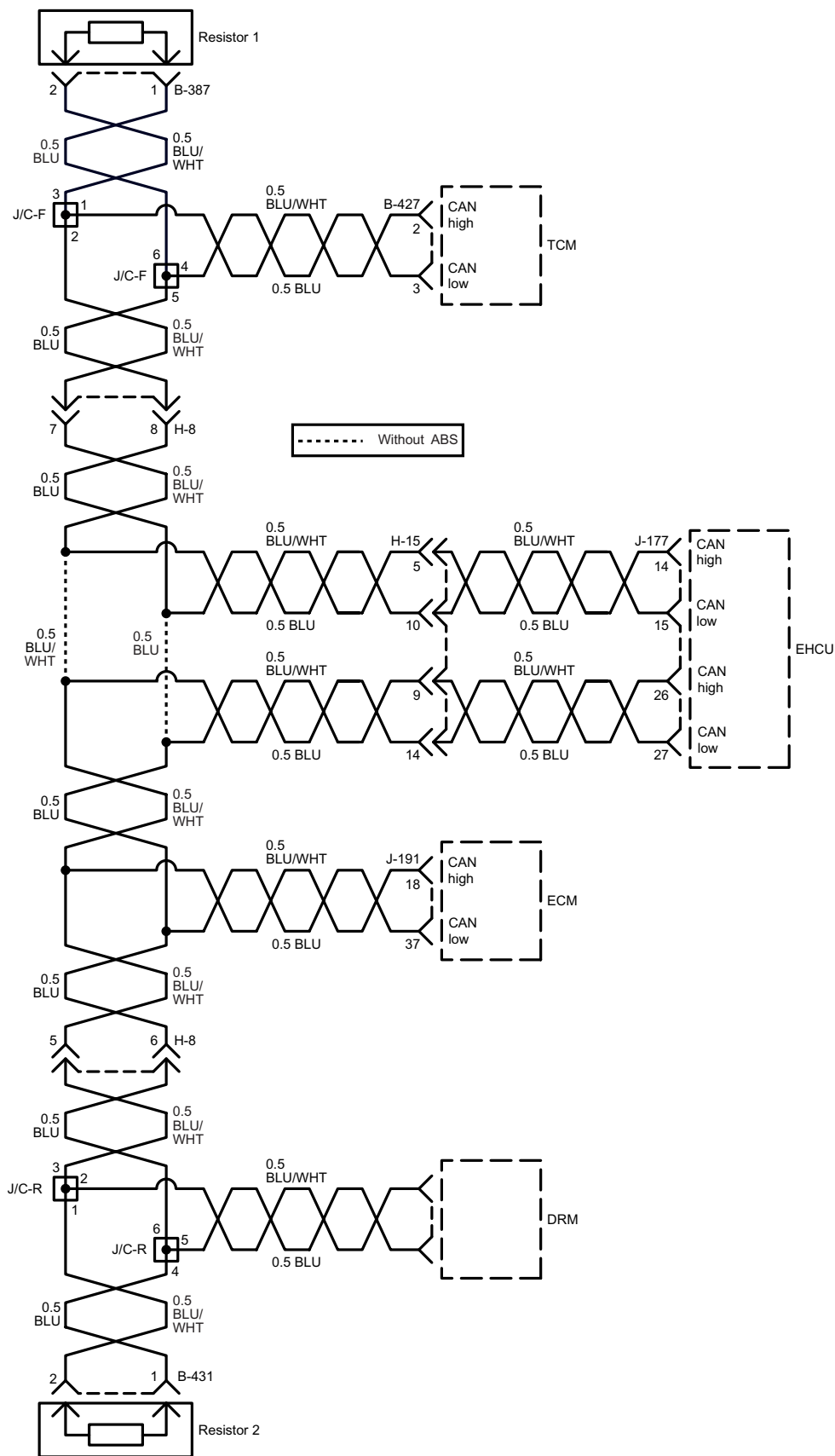
4HK1-TC Engine (13)



4HK1-TC Engine (14)

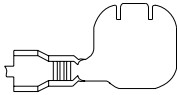
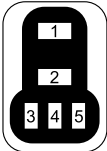
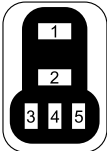
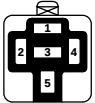
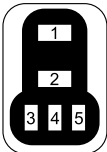
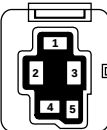
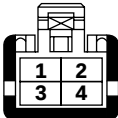
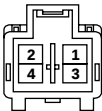


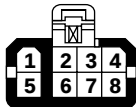
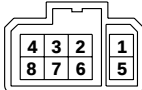
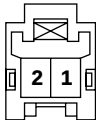
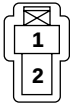
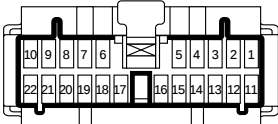
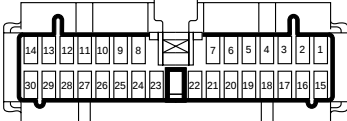
4HK1-TC Engine (15)

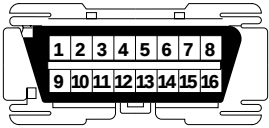
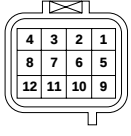
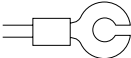


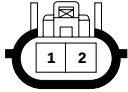
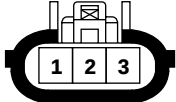
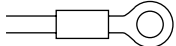
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Connector List For 4HE1-TC Engine

No.	Connector Face
B-7	 000-012
X-1	 005-006
X-8	 005-006
X-14	 005-001
X-25	 005-006
X-20	 005-003
B-67	 004-001
B-67	 004-002

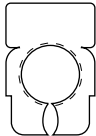
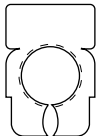
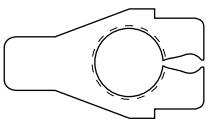
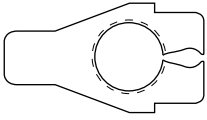
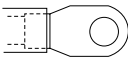
No.	Connector Face
B-69	 008-001
B-69	 008-002
B-75	 002-022
B-75	 002-023
B-89	 002-009
B-89	 002-010
B-233	 022-002
B-234	 030-002

No.	Connector Face
B-79	 016-005
B-51	 014-001
H-14	 016-003
H-14	 016-004
H-13	 012-001
H-13	 012-002
E-2	 002-013
E-3	 000-009

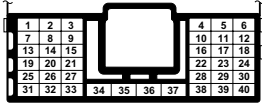
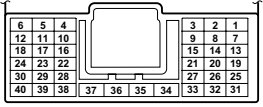
No.	Connector Face
E-11	 002-001
E-43	 003-003
E-74	 001-013
E-76	 003-004
J-9	 000-001
J-23	 004-009
J-31	 002-011
J-31	 002-012

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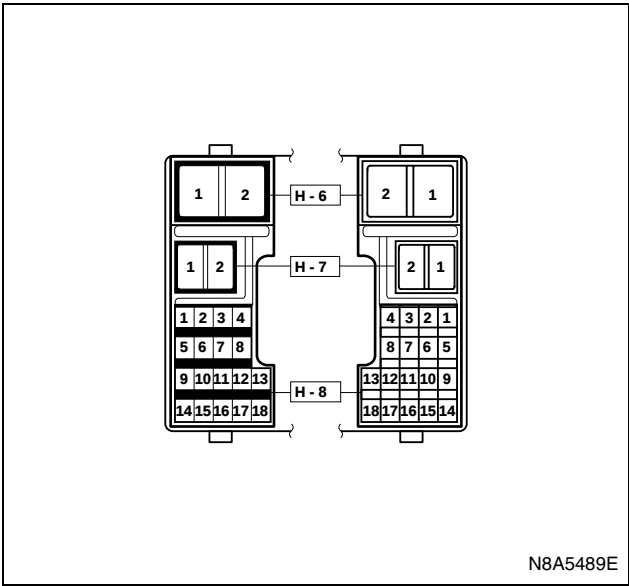
No.	Connector Face
J-131	 002-011
J-131	 002-012
J-145	 002-014
J-146	 002-015
J-41	 002-015
J-40	 002-015
J-105	 002-016
J-147	 002-017

No.	Connector Face
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006
P-5	 000-002

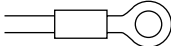
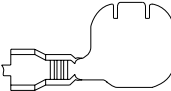
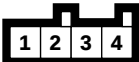
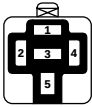
H-5

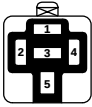
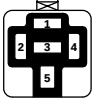
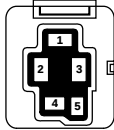
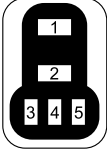
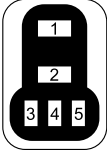
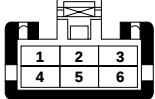
	
N8A5488E	

H-6, H-7, H-8

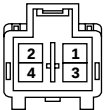
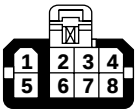
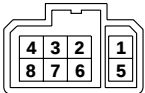
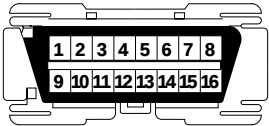
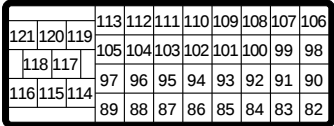
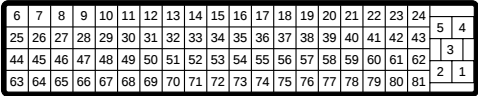


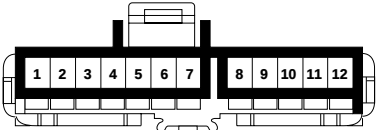
For 4JH1 Engine

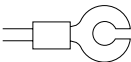
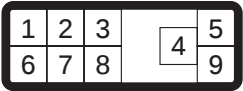
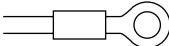
No.	Connector Face
B-1	 000-001
B-7	 000-012
B-18	 004-004
X-10	 005-001
X-11	 005-001

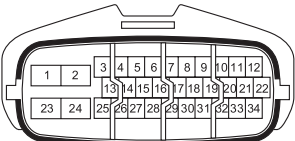
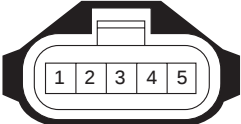
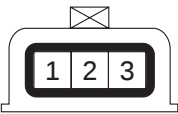
No.	Connector Face
X-12	 005-001
X-14	 005-001
X-20	 005-003
X-24	 005-006
X-26	 005-006
B-31	 006-001
B-66	 004-010
B-339	 004-010

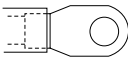
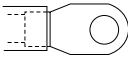
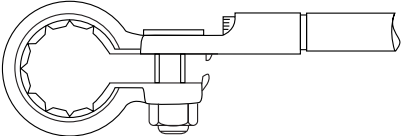
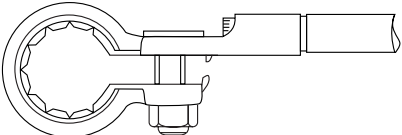
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No.	Connector Face
B-67	 004-001
B-67	 004-002
B-69	 008-001
B-69	 008-002
B-79	 016-005
B-89	 002-019
B-233	 121-002
B-234	 121-001

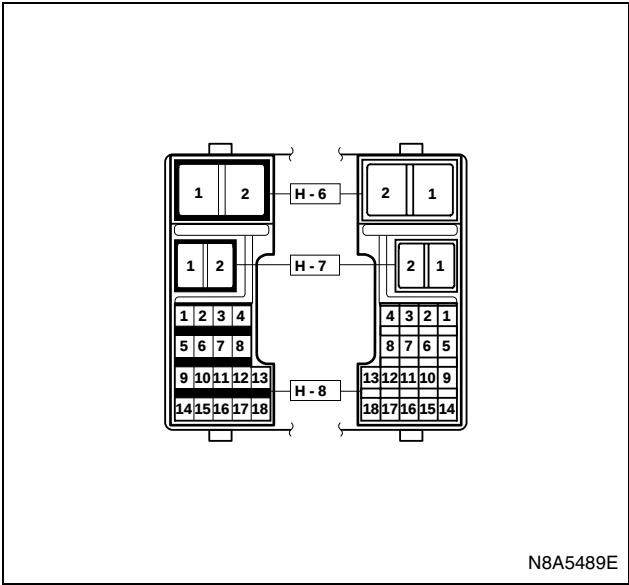
No.	Connector Face
B-340	 002-022
B-341	 002-009
B-342	 002-009
B-51	 014-001
B-52	 012-005
H-14	 016-003
H-14	 016-004
H-15	 008-023

No.	Connector Face
H-15	 008-024
B-80	 003-005
E-5	 000-009
E-16	 002-014
E-110	 009-003
J-6	 004-011
J-9	 000-001
J-31	 002-011

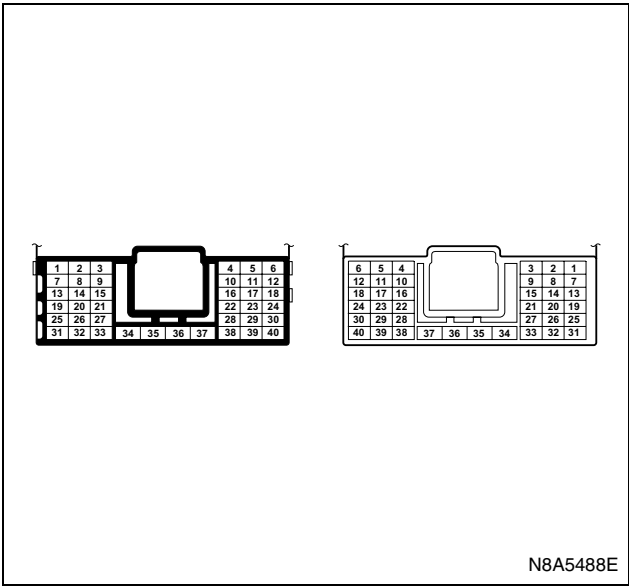
No.	Connector Face
J-31	 002-012
J-32	 003-018
J-40	 002-017
J-50	 002-035
J-122	 001-007
J-177	 034-001
J-182	 005-004
J-183	 003-006

No.	Connector Face
P-1	 000-002
P-2	 000-002
P-4	 000-014
P-3	 000-014
P-5	 000-007

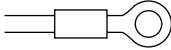
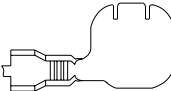
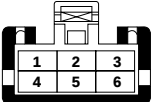
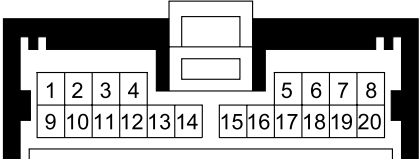
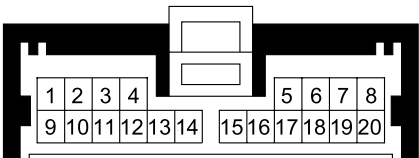
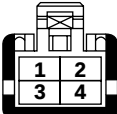
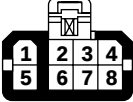
H-6, H-7, H-8

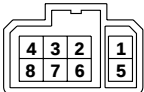
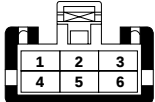
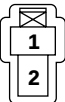
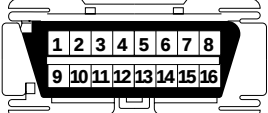
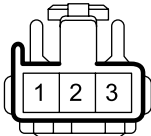
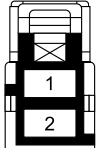


H-5

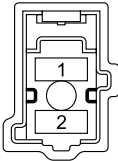
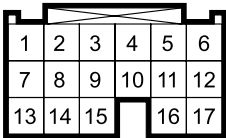
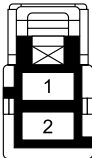
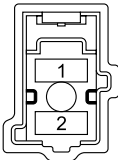
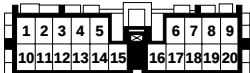
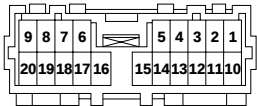
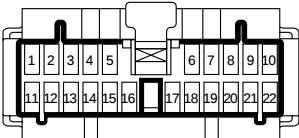


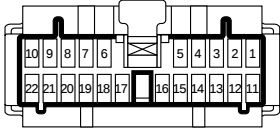
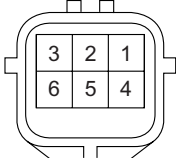
For 4HK1-TC Engine

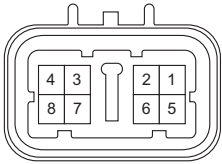
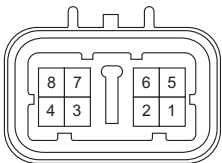
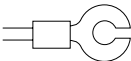
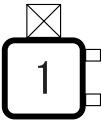
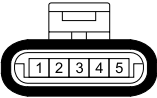
No.	Connector Face
B-1	 000-001
B-7	 000-012
B-31	 006-001
B-51	 020-005
B-52	 020-005
B-67	 004-001
B-67	 004-002
B-69	 008-001

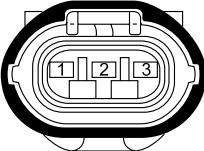
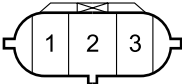
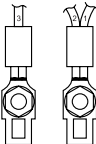
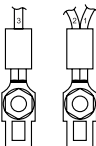
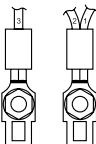
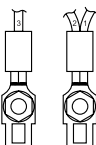
No.	Connector Face
B-69	 008-002
B-84	 006-001
B-89	 002-009
B-89	 002-010
B-79	 016-005
B-280	 003-005
B-281	 003-028
B-387	 002-038

8-122 CAB AND CHASSIS ELECTRICAL

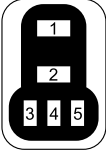
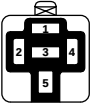
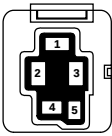
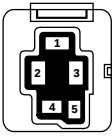
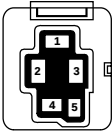
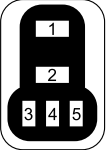
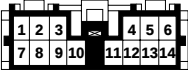
No.	Connector Face
B-387	 002-039
B-422	 002-027
B-427	 017-001
B-431	 002-038
B-431	 002-039
H-4	 020-002
H-4	 020-003
H-12	 022-001

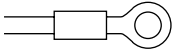
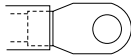
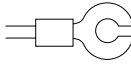
No.	Connector Face
H-12	 022-002
H-15	 016-003
H-15	 016-004
H-105	 006-026
H-105	 006-027
H-120	 001-023
H-120	 001-022
H-125	 008-019

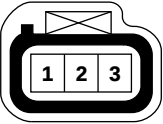
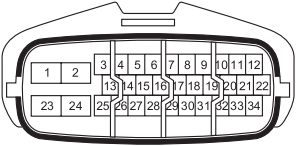
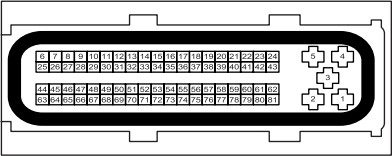
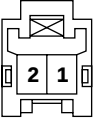
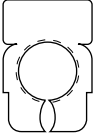
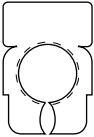
No.	Connector Face
H-125	 008-020
H-126	 008-022
H-126	 008-021
E-3	 000-009
E-5	 001-021
E-90	 003-004
E-93	 002-035
E-94	 005-007

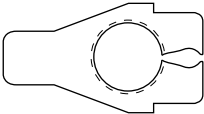
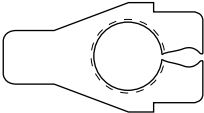
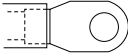
No.	Connector Face
E-98	 002-036
E-112	 003-026
E-113	 003-029
E-116	 002-036
E-138	 003-031
E-139	 003-031
E-140	 003-031
E-141	 003-031

8-124 CAB AND CHASSIS ELECTRICAL

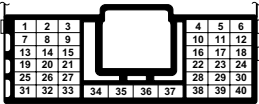
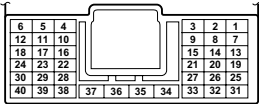
No.	Connector Face
X-1	 005-006
X-11	 005-001
X-18	 005-003
X-20	 005-003
X-21	 005-003
X-26	 005-006
X-33	 014-002
J-1	 002-003

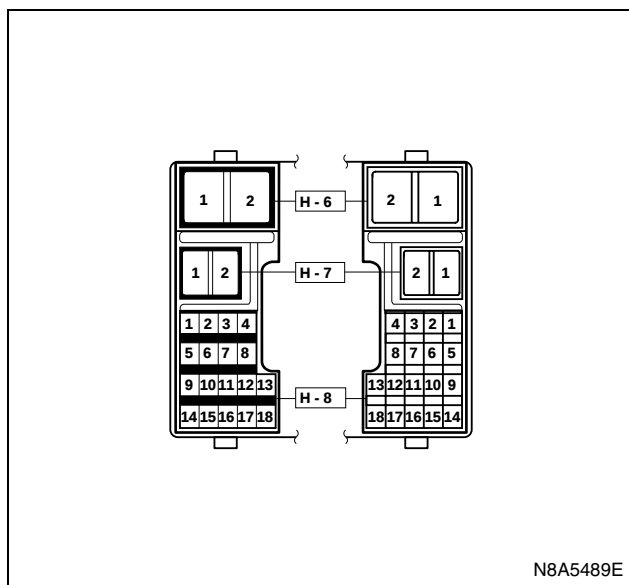
No.	Connector Face
J-2	 000-001
J-6	 002-032
J-26	 000-002
J-27	 000-009
J-31	 002-011
J-31	 002-012
J-32	 003-018
J-40	 002-017

No.	Connector Face
J-50	 002-035
J-166	 003-001
J-177	 034-001
J-191	 081-001
N-6	 002-022
N-6	 002-023
P-1	 000-004
P-4	 000-004

No.	Connector Face
P-2	 000-006
P-3	 000-006
P-5	 000-002

H-5

 
N8A5488E

H-6, H-7, H-8**Engine Stop System****General Description**

The circuit consists of starter switch and engine stop motor.

The engine stop mechanism aims at shut-off of fuel supply.

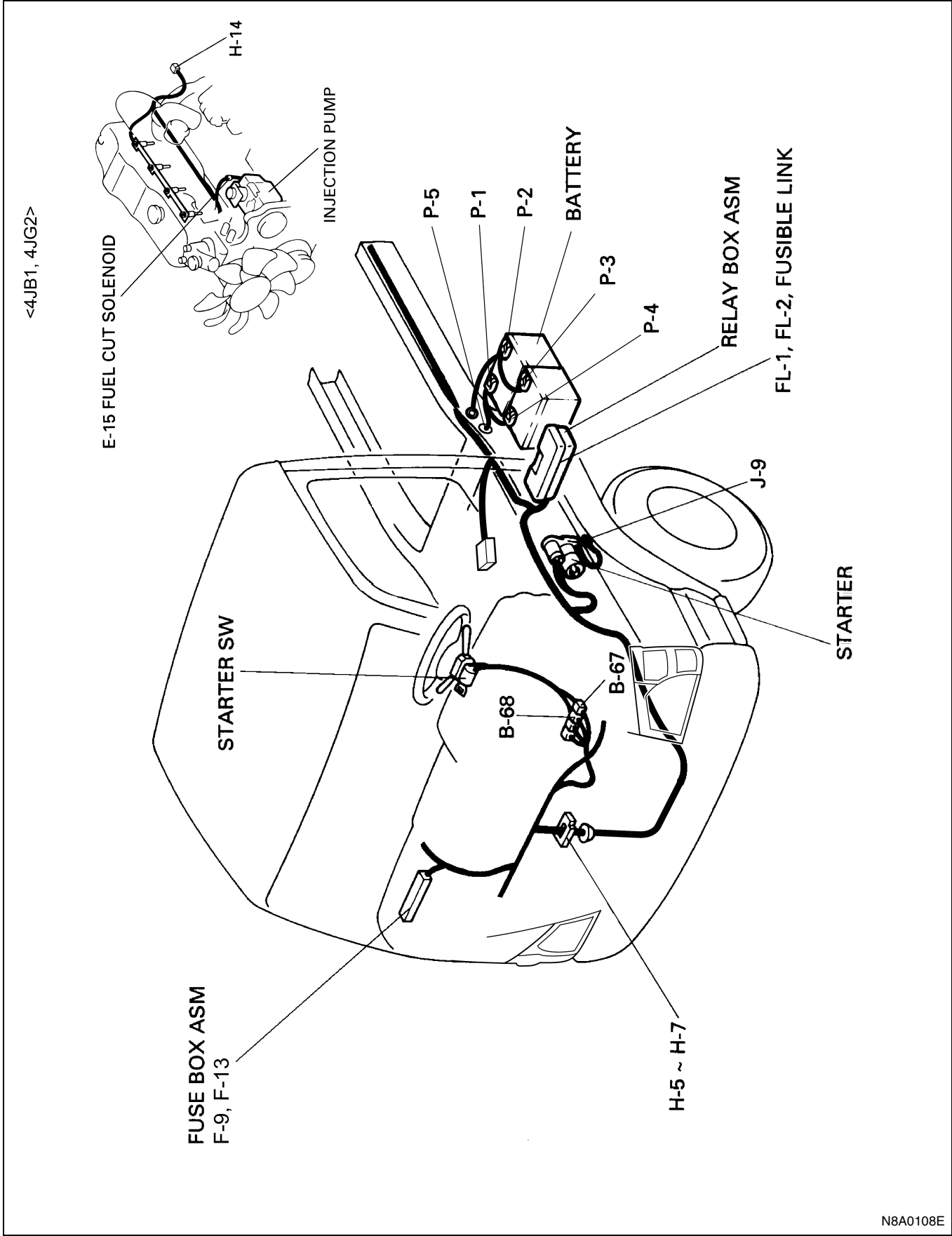
Available are motor type and solenoid type depending on the types of the engine mounted.

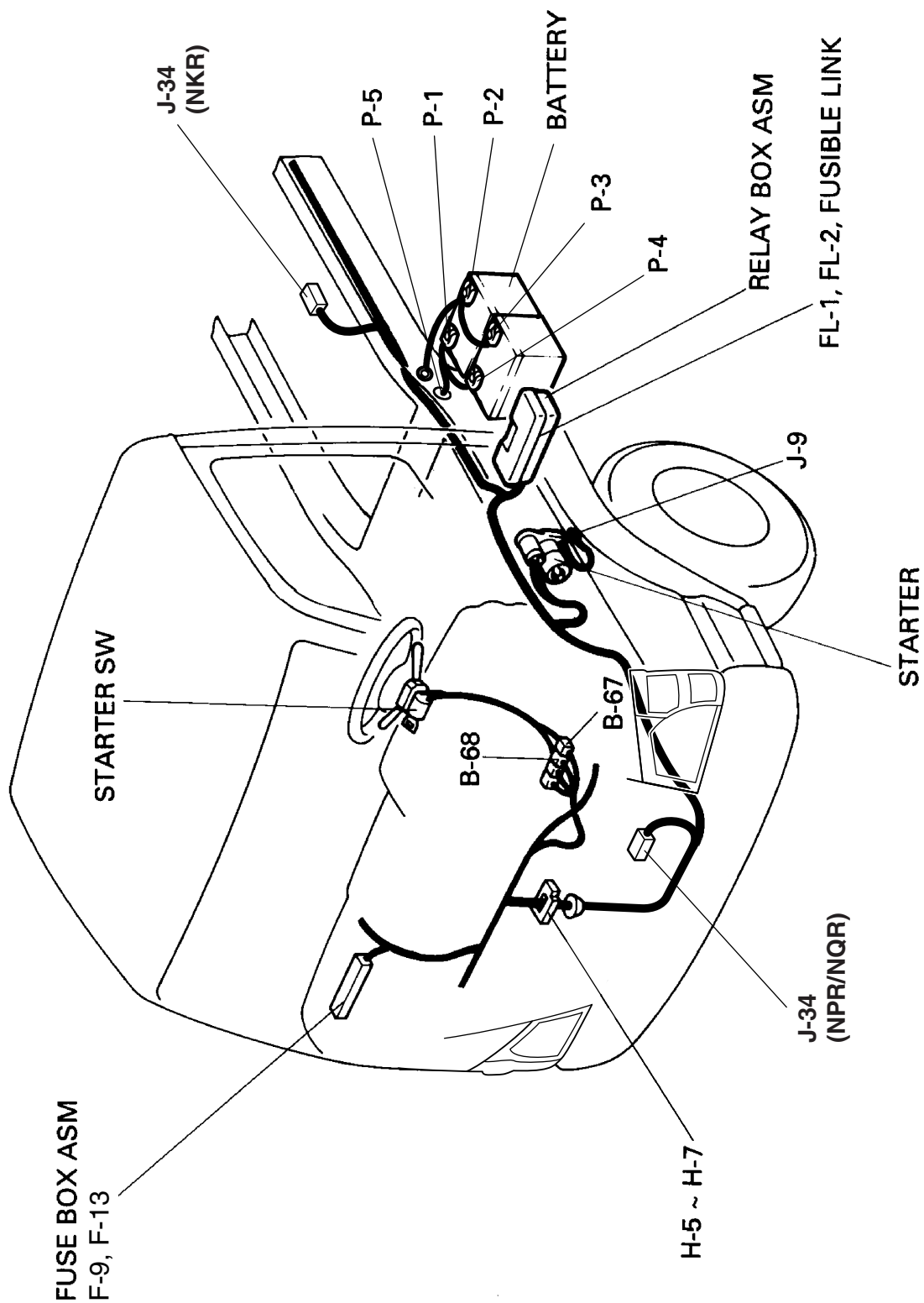
Motor type is forcible pull the injection pump control rack to the direction of fuel supply reduction by means of engine stop motor, thus shutting it off.

Solenoid type is to have the starter switch turn from "ON" position to "OFF", so that the solenoid valve fitted to the injection pump closes to shut off the fuel circuit.

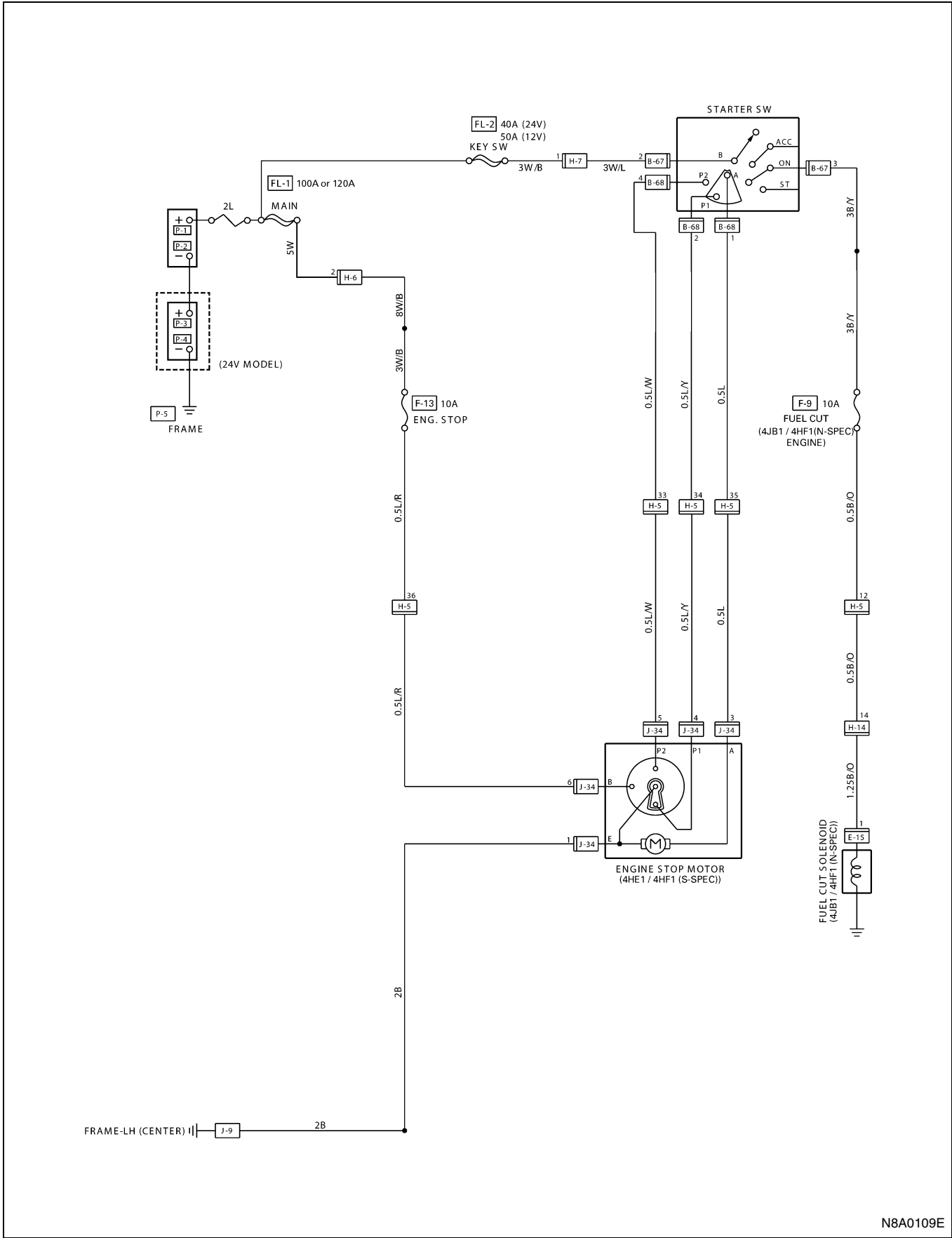
Engine stop system	Engine model
Motor type	4HF1, 4HG1, 4HE1
Solenoid type	4JB1, 4JG2

Parts Location
4JB1 / 4JG2 / 4HG1 (N-Spec) Engine

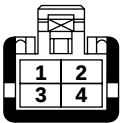
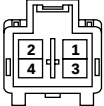
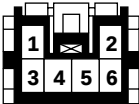
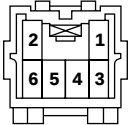
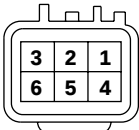
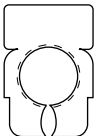
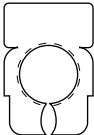


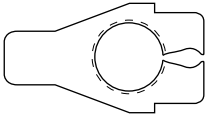
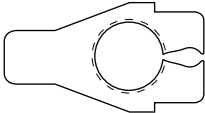
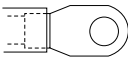
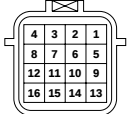


Circuit Diagram

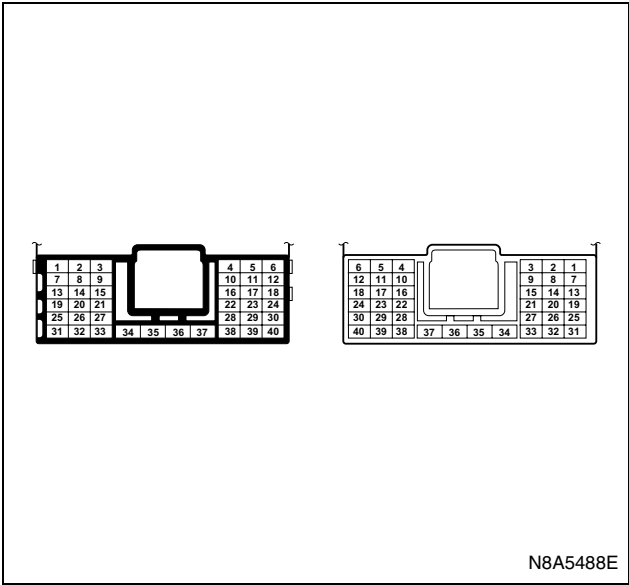


Connector List

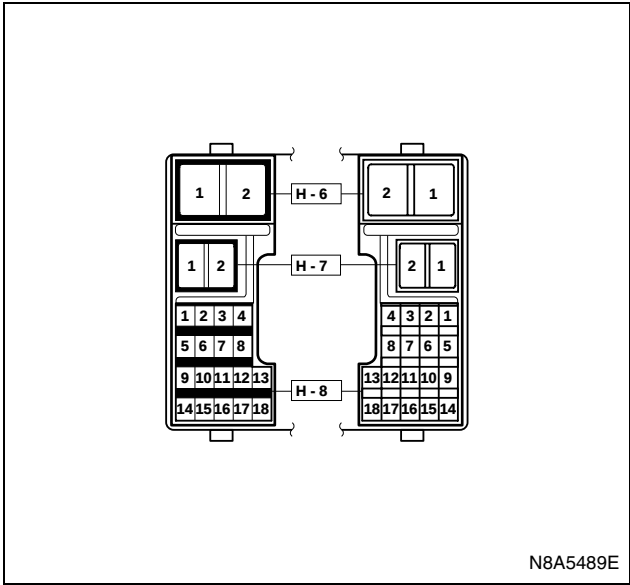
No.	Connector Face
B-67	 004-001
B-67	 004-002
B-68	 006-002
B-68	 006-003
J-34	 006-004
J-34	 006-005
P-1	 000-004
P-4	 000-004

No.	Connector Face
P-2	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002
E-15	 001-002
E-15	 001-003
H-14	 016-001
H-14	 016-002

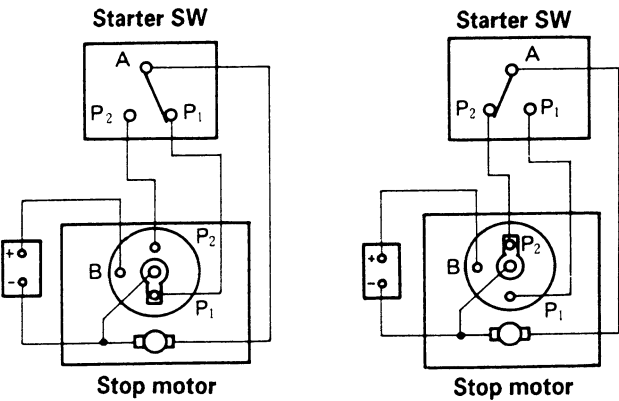
H-5



H-6, H-7



Function of Engine Stop Motor



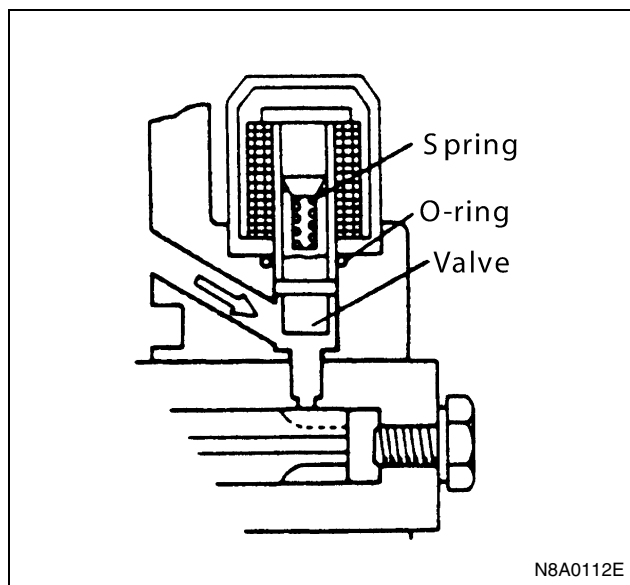
Turn the starter switch from "ACC" position to "ON", and the engine stop motor will turn by 180 degrees (from 0° to 180°) so that the stop motor's electrode will be in potential equal to that of the starter switch for the stop.

Turn the starter switch from "ON" position to "ACC" or "LOCK", and then the stop motor will rotate by 180 degrees (from 180° to 360°) and cease operating.

Starter SW key position	Connector No. Terminal No.	B-68			Stop motor	Stop lever position
		A	P1	P2		
LOCK	1	○	○		0° (360°)	Stop
ACC		○	○			
ACC → ON					0° → 180°	Stop → Run
ON		○		○	180°	Stop
START		○		○		
ON → ACC LOCK					0° → 360°	Stop → Run

Solenoid Type**Starter Switch and Solenoid Valve**

Turn the starter switch from "ON" position to "OFF", and then the solenoid valve fitted to the injection pump closes to cut off the fuel circuit.



Key position	Solenoid valve
LOCK	Close
ACC	
ON	Open
START	

Headlight, Fog Light, Rear Fog Light and Cornering Light

General Description

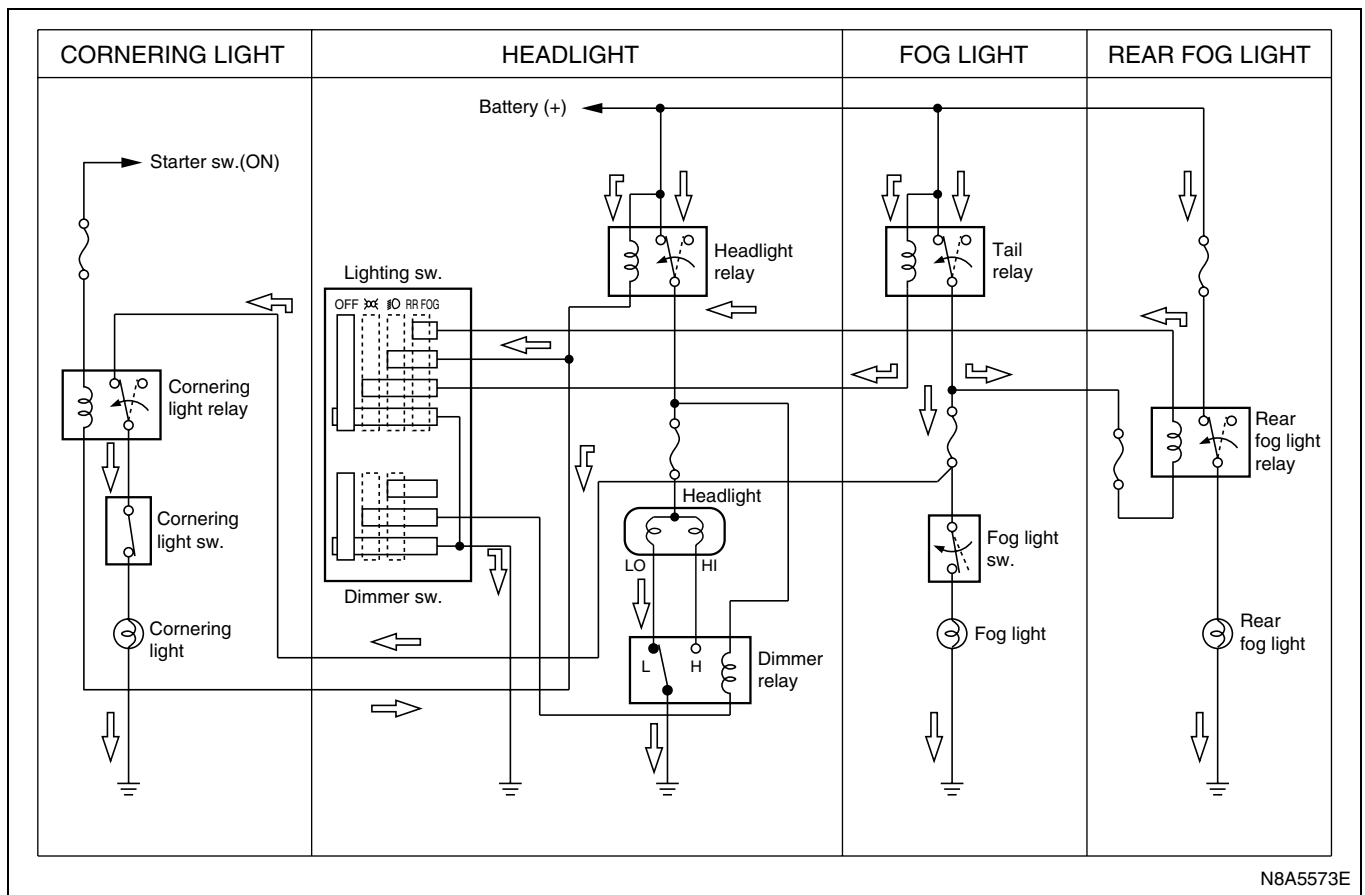
The circuit consists of headlight, fog light, cornering light, starter switch, combination switch (Lighting switch, dimmer / passing switch, cornering light switch), fog light switch, rear fog light switch, rear fog light, high beam indicator light and relay.

When the lighting SW is turned on by setting it at headlight position, the lighting relay is actuated to turn on the headlight. The optical axis of the headlight can be turned up or down by operating the dimmer SW while headlight is on. The passing SW is independent of the lighting SW, and the optical axis of the passing light can be turned up only while the switch lever is pulled up and held in this state.

Fog light turns on by switching it to "ON" position to activate relay only while lighting SW is on. Rear fog light turns on by switching it to "ON" position to activate relay only while lighting SW is at headlight position.

When the headlight is on, turn the turn-signal switch left or right, and then the cornering switch built in the combination switch turns on, followed by the cornering light turning on.

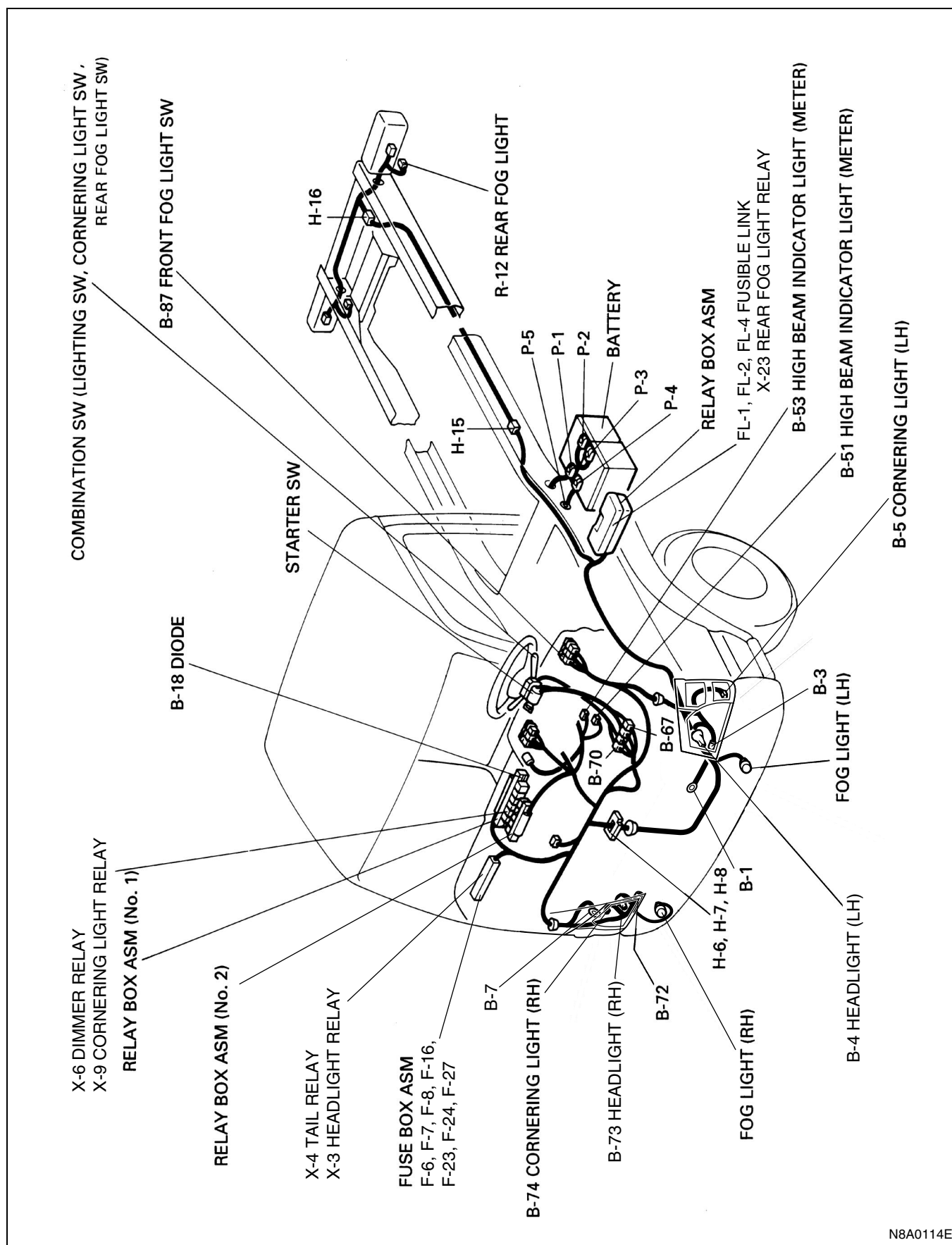
Lighting Circuit



Notice:

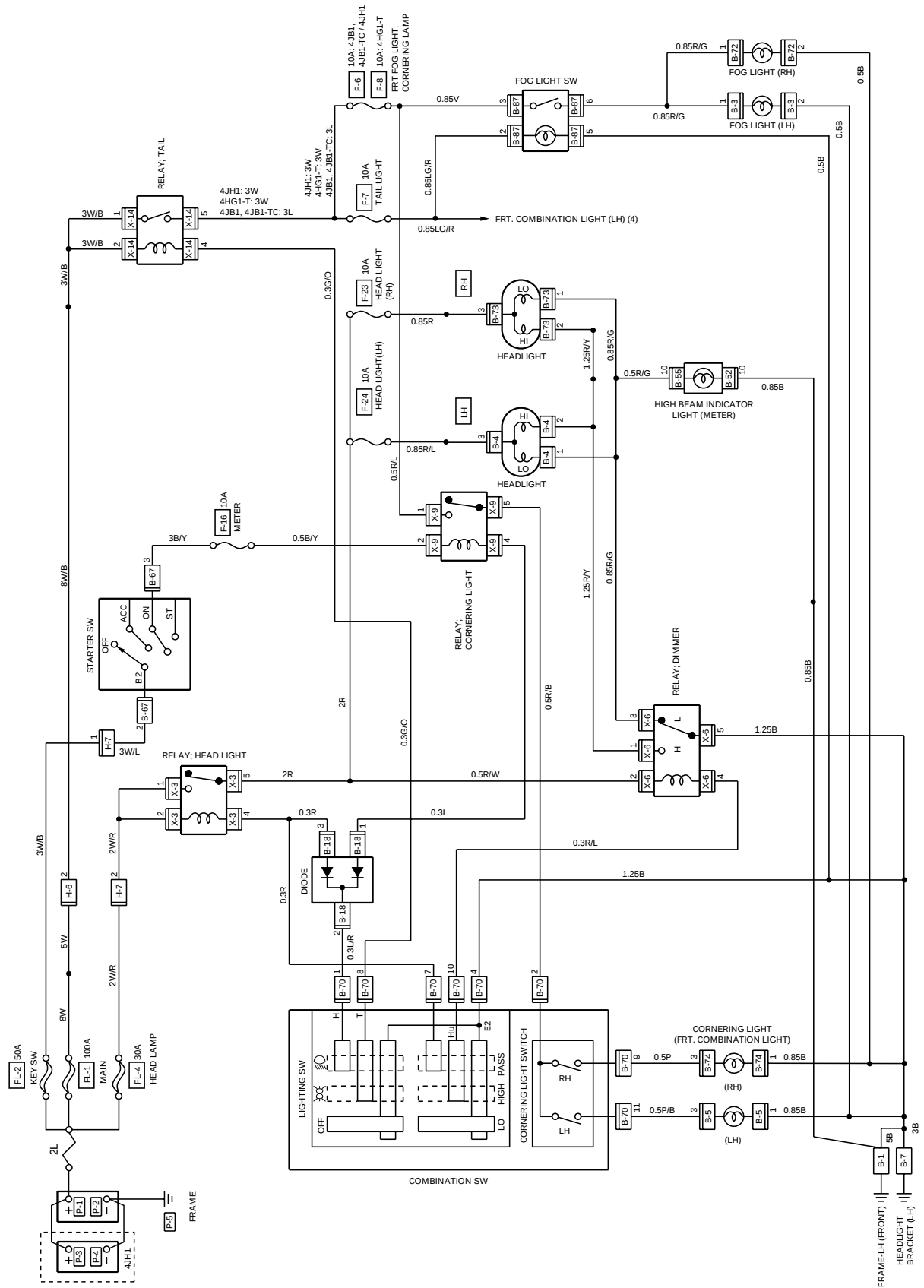
Arrow marks indicate the direction of current.

Parts Location



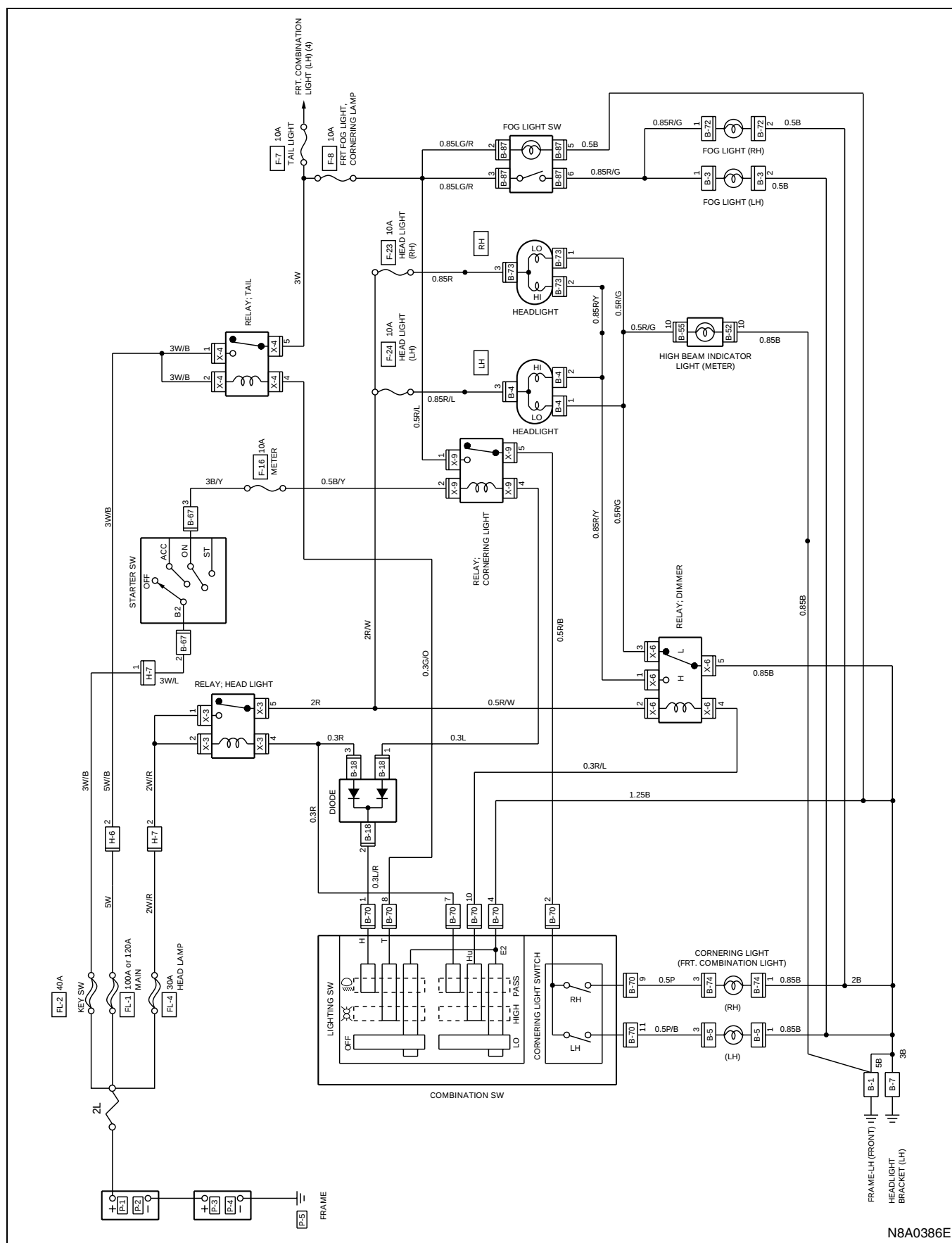
Circuit Diagram

For 12 Volt (Except NKR77 for Taiwan)



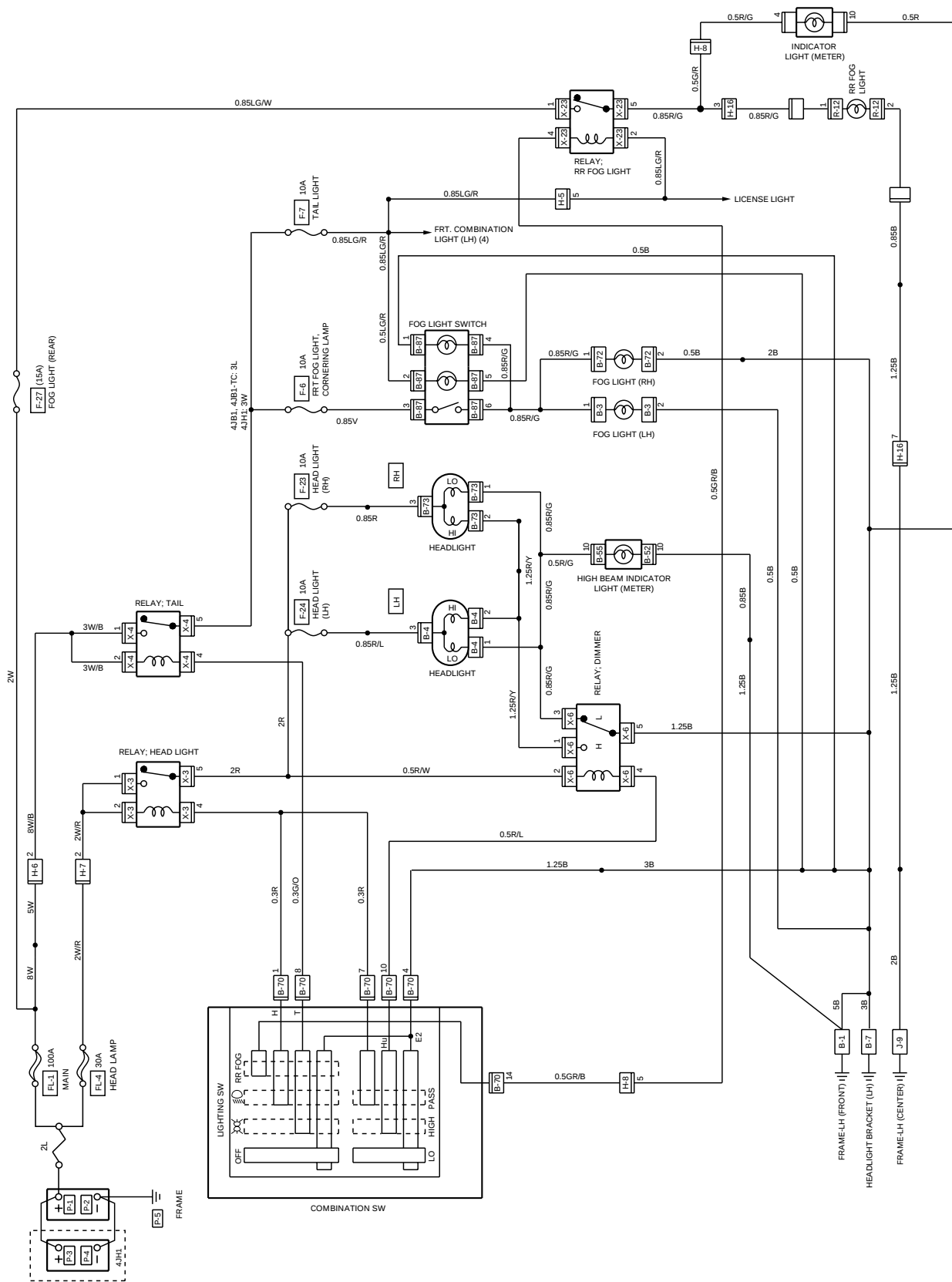
N8A0115E

For 24 Volt



N8A0386E

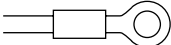
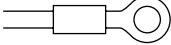
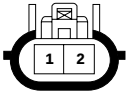
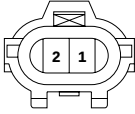
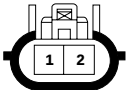
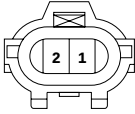
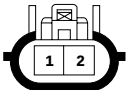
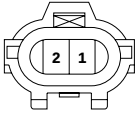
With Rear Fog Light

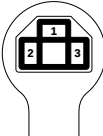
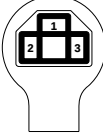
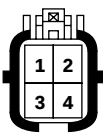
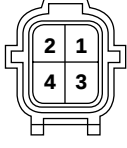
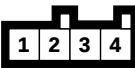
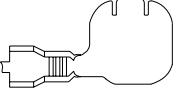


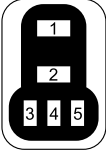
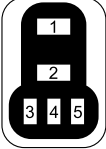
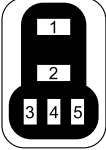
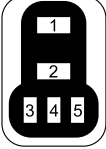
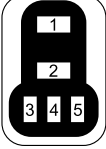
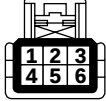
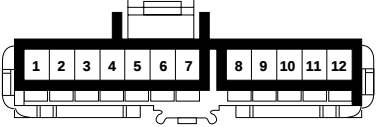
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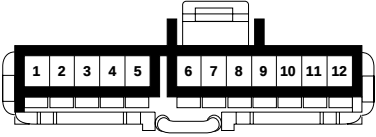
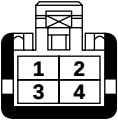
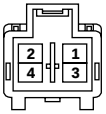
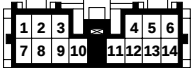
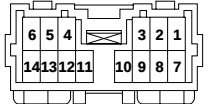
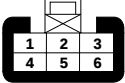
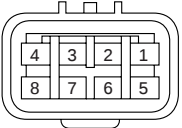
8-138 CAB AND CHASSIS ELECTRICAL

Connector List

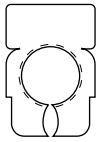
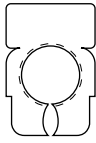
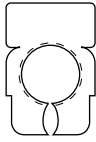
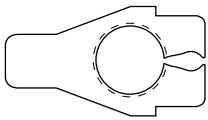
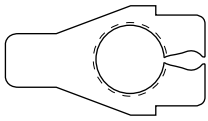
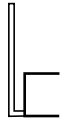
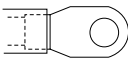
No.	Connector Face
B-1	 000-001
J-61	 000-001
B-3	 002-001
B-3	 002-002
B-72	 002-001
B-72	 002-002
R-12	 002-001
R-12	 002-002

No.	Connector Face
B-4	 003-007
B-73	 003-007
B-5	 004-012
B-5	 004-013
B-74	 004-012
B-74	 004-013
B-18	 004-004
B-7	 000-012

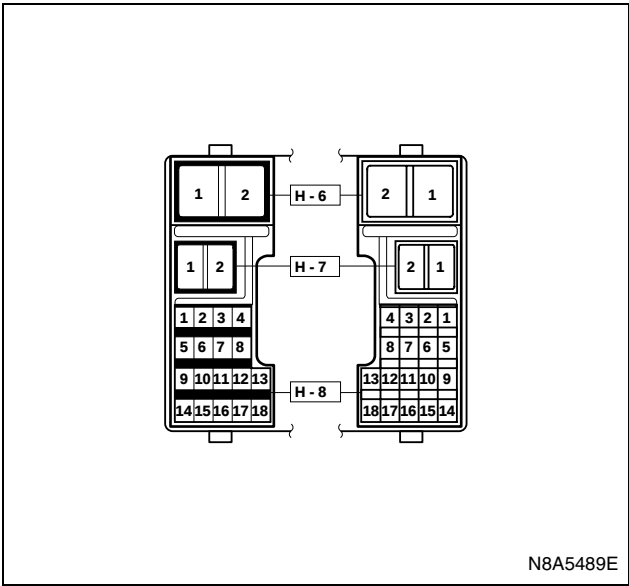
No.	Connector Face
X-3	 005-006
X-4	 005-006
X-6	 005-006
X-9	 005-006
X-23	 005-006
B-153	 006-007
B-154	 000-016
B-52	 012-005

No.	Connector Face
B-55	 012-004
B-67	 004-001
B-67	 004-002
B-70	 014-002
B-70	 014-003
B-87	 006-006
H-16	 008-003
H-16	 008-004

8-140 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002

H-6, H-7, H-8



Diagnosis**Quick Chart for Check Point****1. Headlight**

		Check point										
		Fuse			Fus- ible link	Head- light relay	Light- ing SW	Dim- mer / Pass- ing SW	Dim- mer relay	Headlight bulb		Cable har- ness
		F-6 F-8 (10 A)	F-23 (10 A)	F-24 (10 A)						FL-4 (30A)	LH	
Trouble mode	1-1. Both Head- lights inopera- tive				○ (2)	○ (1)	○ (4)					○ (3)
	1-2. Headlight on the left (or right) side inop- erative		○ (1)	○ ((1))								○ (2)
	1-3. Headlight in low-beam inop- erative								○ (1)			○ (2)
	1-4. Headlight in high-beam inop- erative								○ (1)			○ (2)
	1-5. Headlight on the left (or right) side in low (or high)-beam inoperative									○ (1)	○ ((1))	○ (2)
	1-6. Headlight beam does not change	○ (1)						○ (2)	○ (3)			○ (4)
	1-7. Headlights remain on when the lighting switch turned off					○ (1)	○ (2)					○ (3)
	1-8. Headlights come on with the lighting SW at the clearance light position						○ (1)					

Notice:

Figure in parenthesis “()” indicates the order of inspection.

2. Fog Light

		Check point					
		Fuse F-6 (10 A): 4JH1,4JB1, 4JB1-TC F-8 (10 A): 24V, 4HG1-T (12 V)	Tail-light relay	Fog light SW	Fog light bulb		Cable harness
					LH	RH	
Trouble mode	2-1. Both fog lights inoperative (while lighting switch is on)	○ (1)	○ (2)	○ (3)			○ (4)
	2-2. Fog light on the left (or right) side inoperative (while lighting switch is on)				○ (1)	○ (1)	○ (2)
	2-3. Fog lights remain on		○ (1)	○ (2)			○ (3)

Notice:

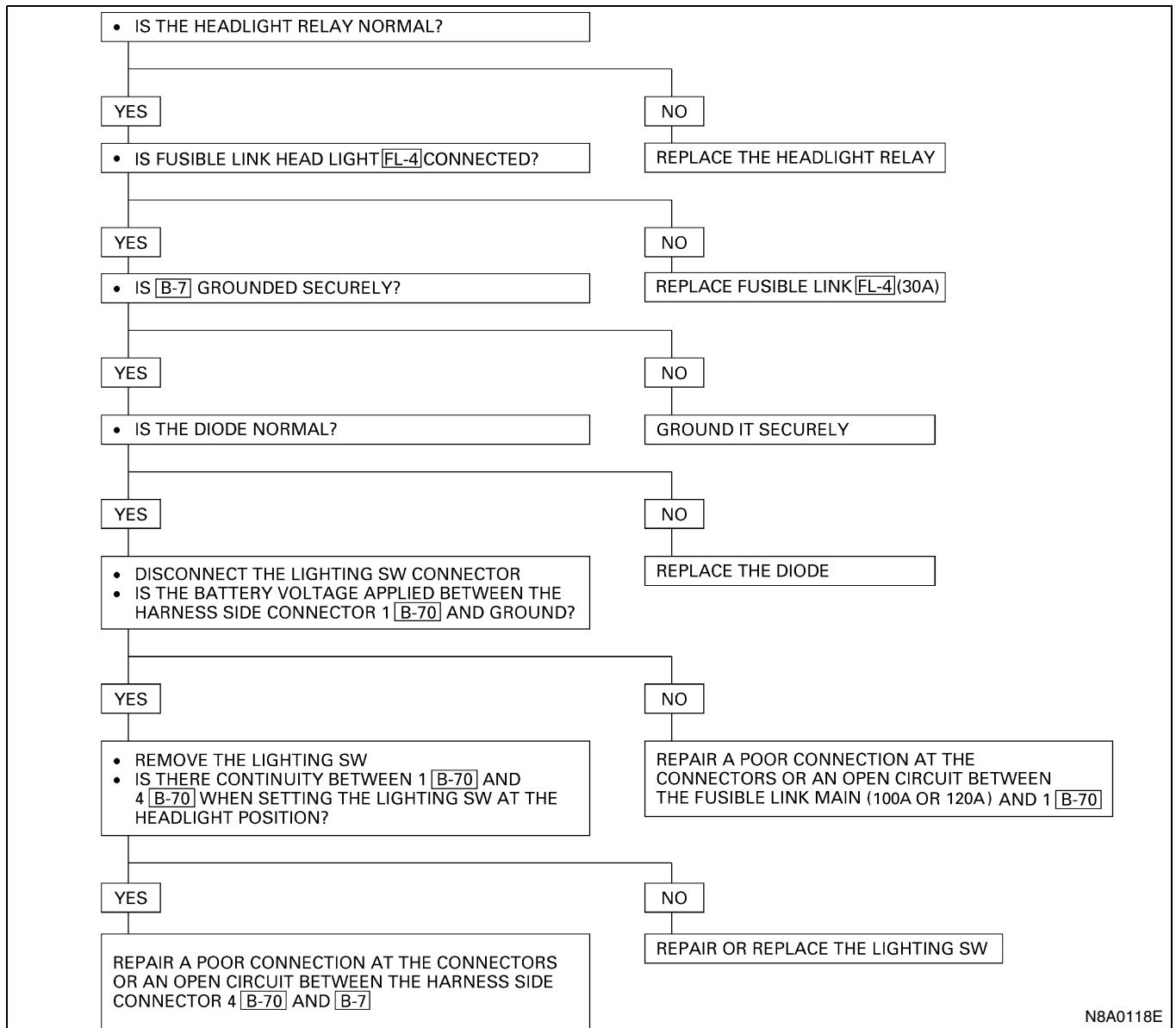
Figure in parenthesis “()” indicates the order of inspection.

3. Cornering Light

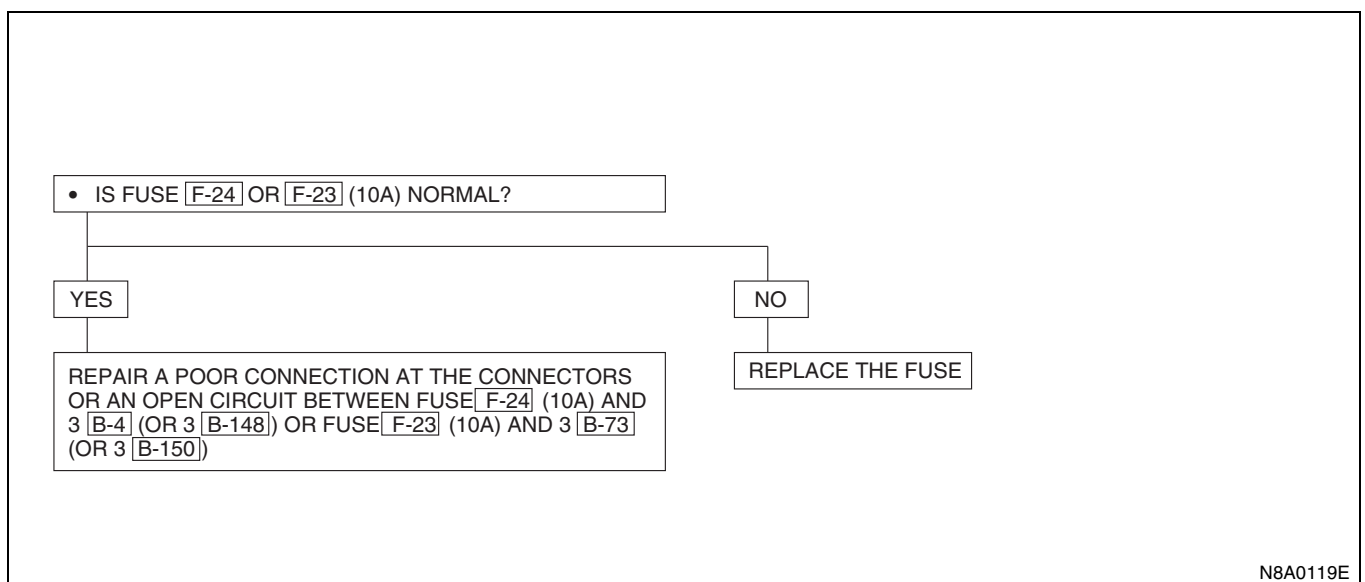
		Check point					
		Fuse		Cornering light SW	Cornering light bulb	Cornering light relay	Cable harness
		F-6 : 4JH1,4JB1,4JB1-TC F-8 : 24V,4HG1-T(12V)	F-16 (10 A)				
Trouble mode	3-1. Both cornering lights inoperative	○ (2)	○ (1)	○ (5)		○ (3)	○ (4)
	3-2. Cornering light on the left (or right) side inoperative			○ (2)	○ (1)		○ (3)
	3-3. Cornering light remains on even when steering wheel is in the straight ahead position			○ (1)			

4. Rear Fog Light

		Check point				
		Fuse F-27 (15 A)	Rear fog light SW	Rear fog light relay	Rear fog light bulb	Cable harness
Trouble mode	4-1. Rear fog light inoperative (while headlight is ON)	○ (2)	○ (4)	○ (3)	○ (1)	○ (5)

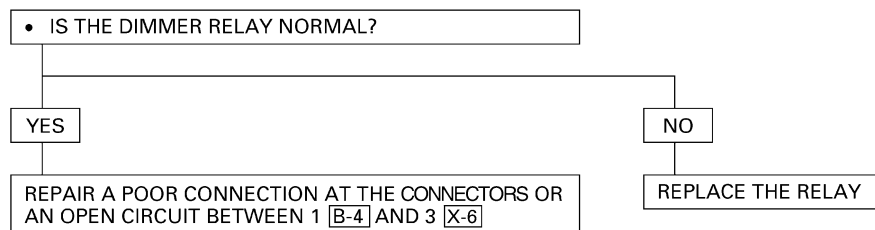
1. Headlight**1-1. Both Headlights Inoperative**

N8A0118E

1-2. Headlight on The Left (or Right) Side Inoperative

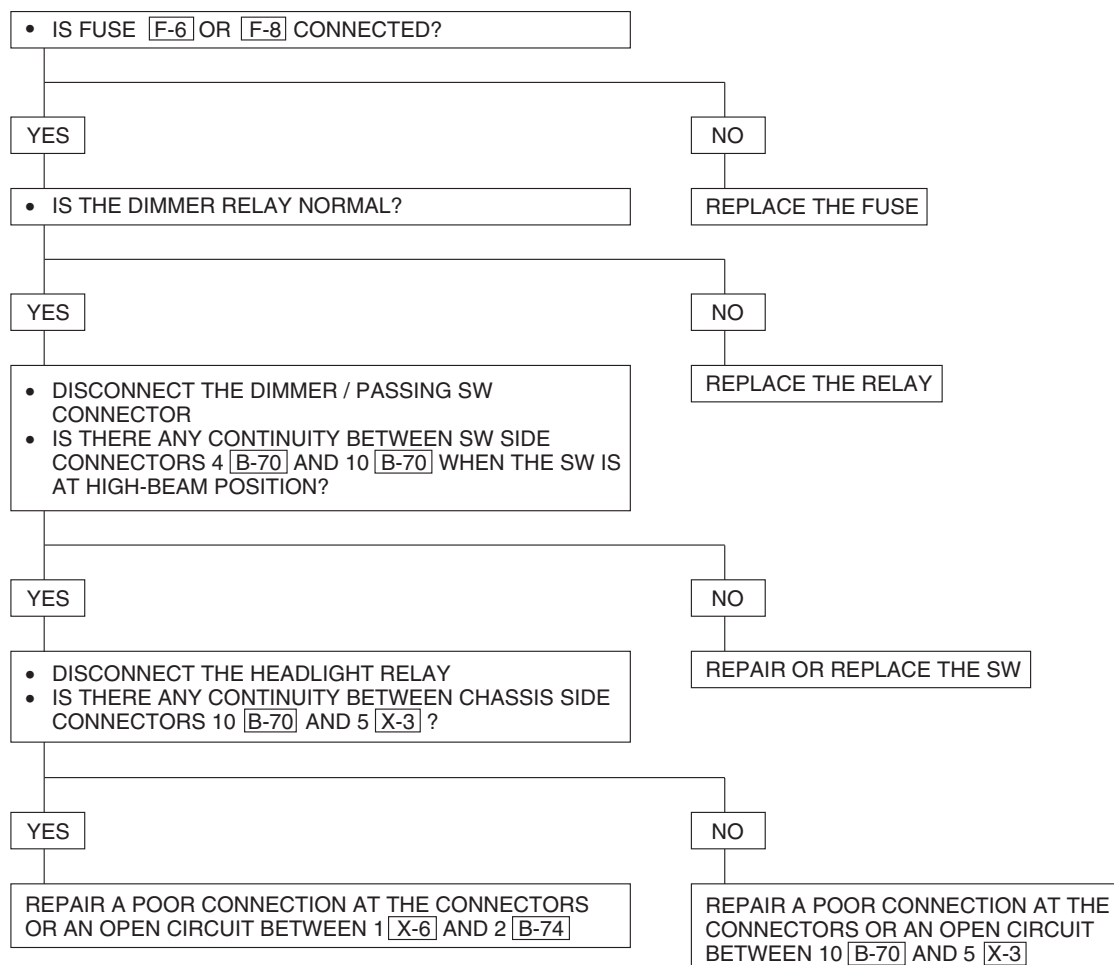
N8A0119E

1-3. Headlight in Low-beam Inoperative

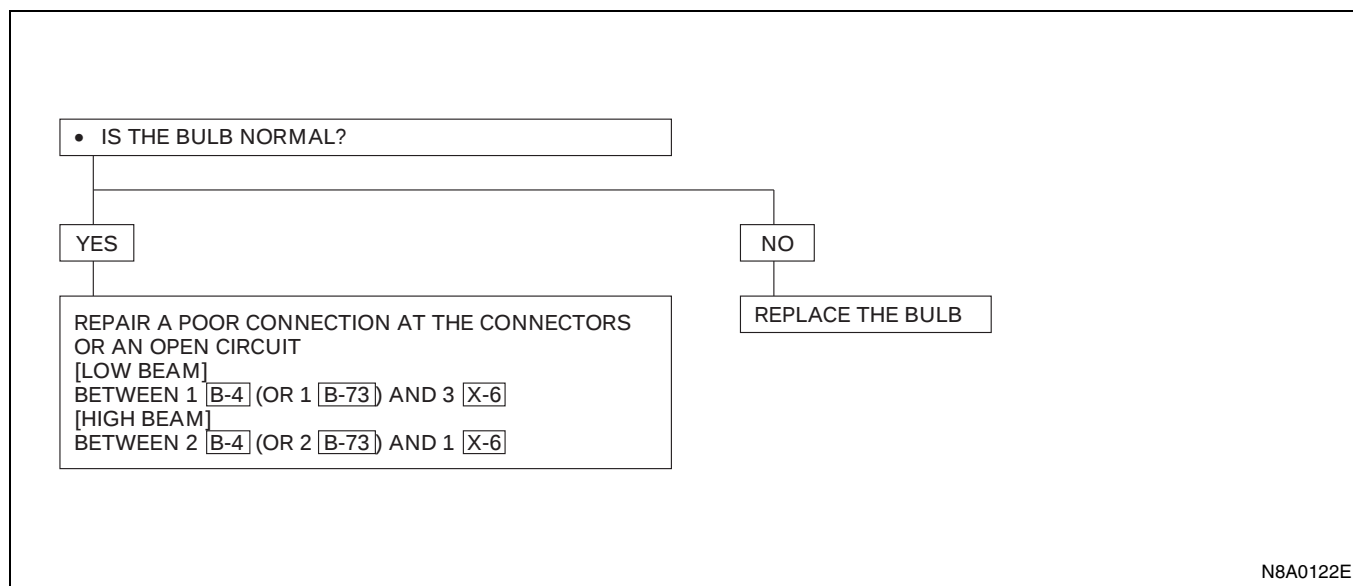
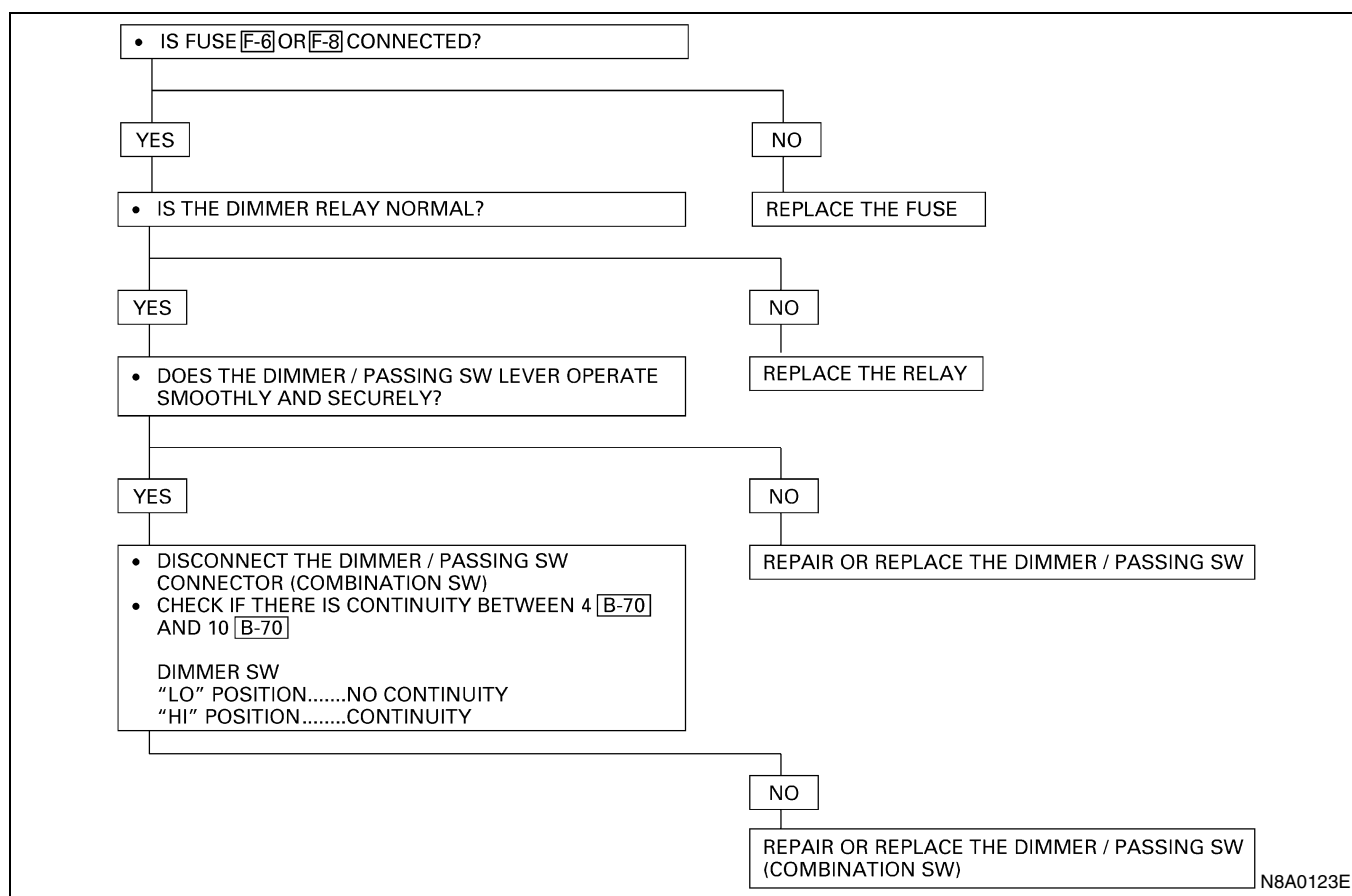


N8A0120E

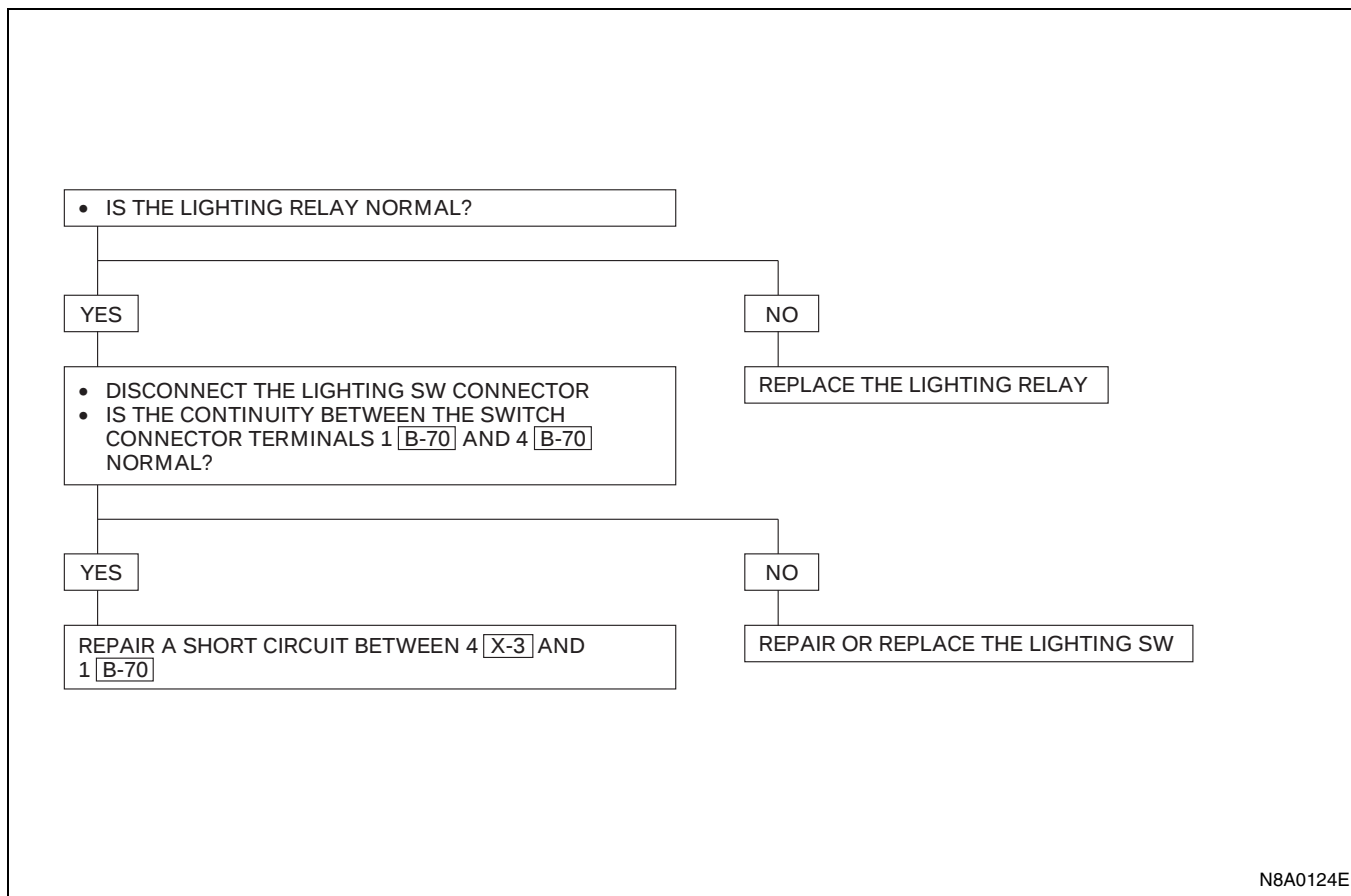
1-4. Headlight in High-beam Inoperative



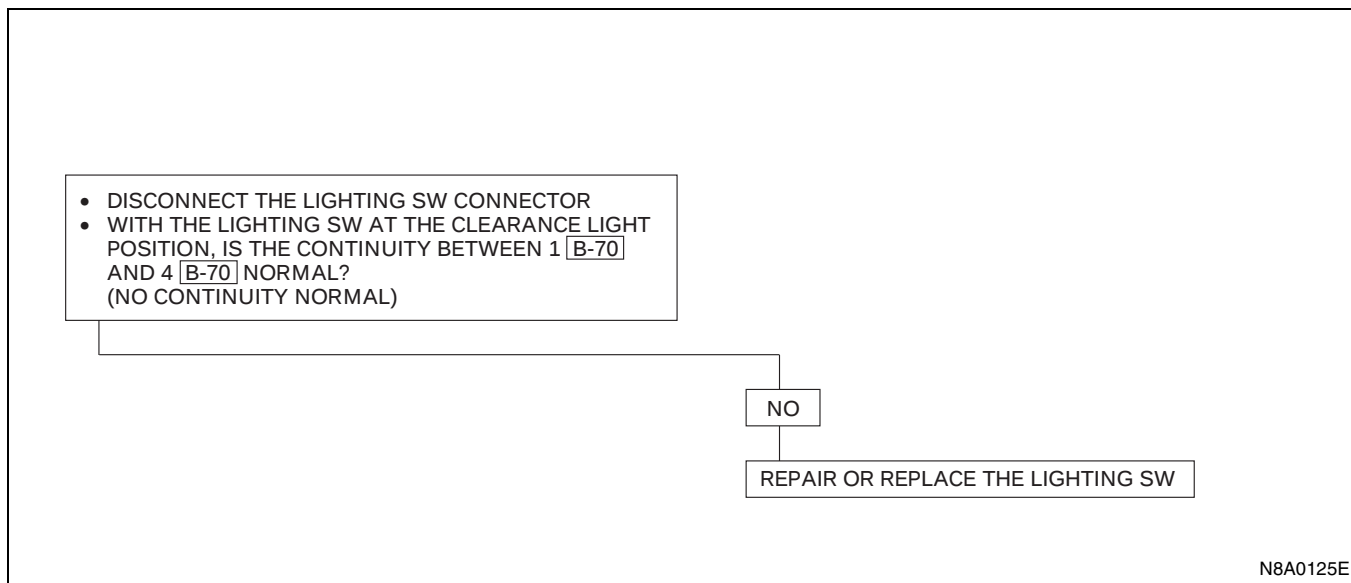
N8A0121E

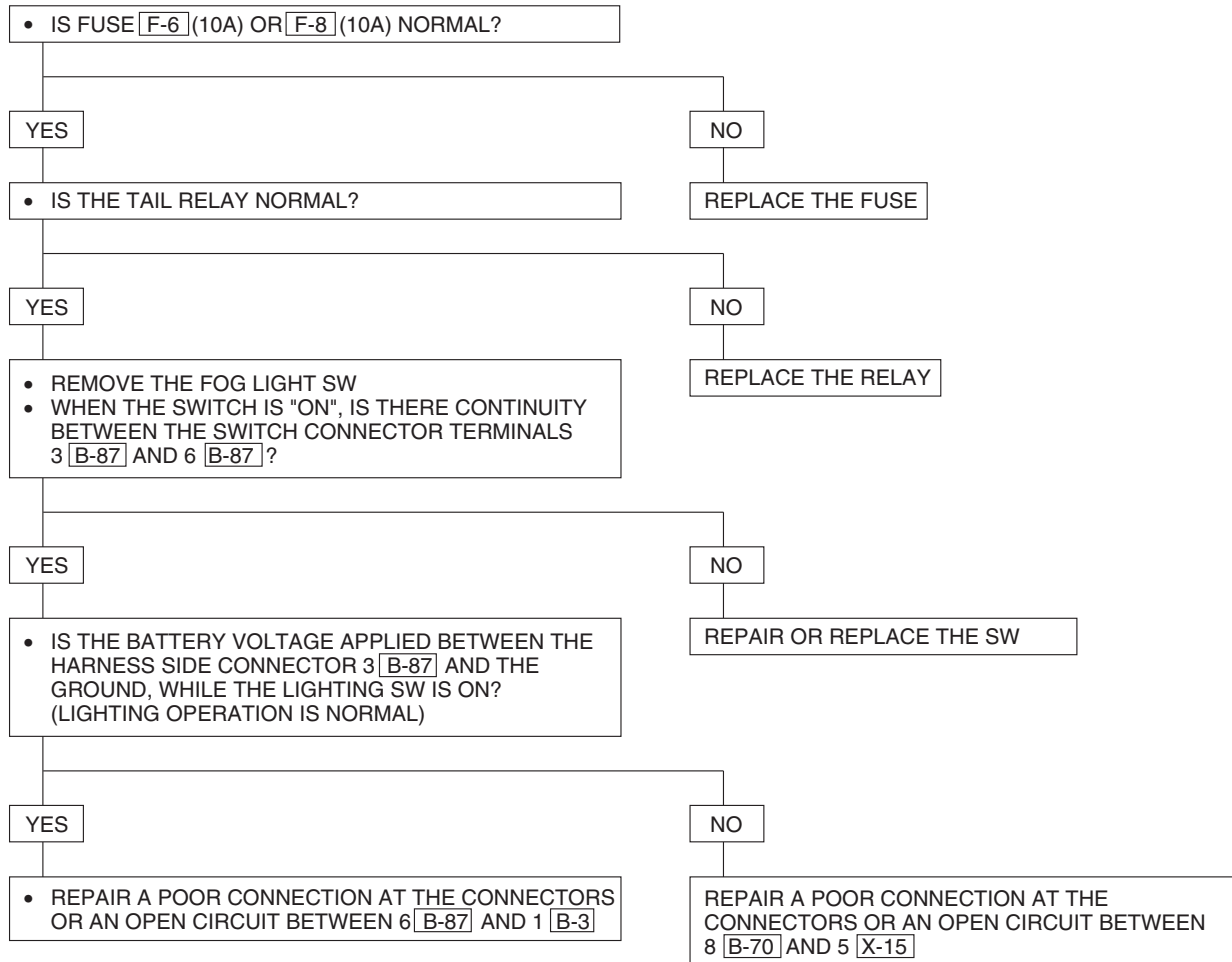
1-5. Headlight on The Left (or Right) Side in Low (or High)-beam Inoperative**1-6. Headlight Beam Does Not Change**

1-7. Headlight Remains On when the Lighting SW is Turned Off

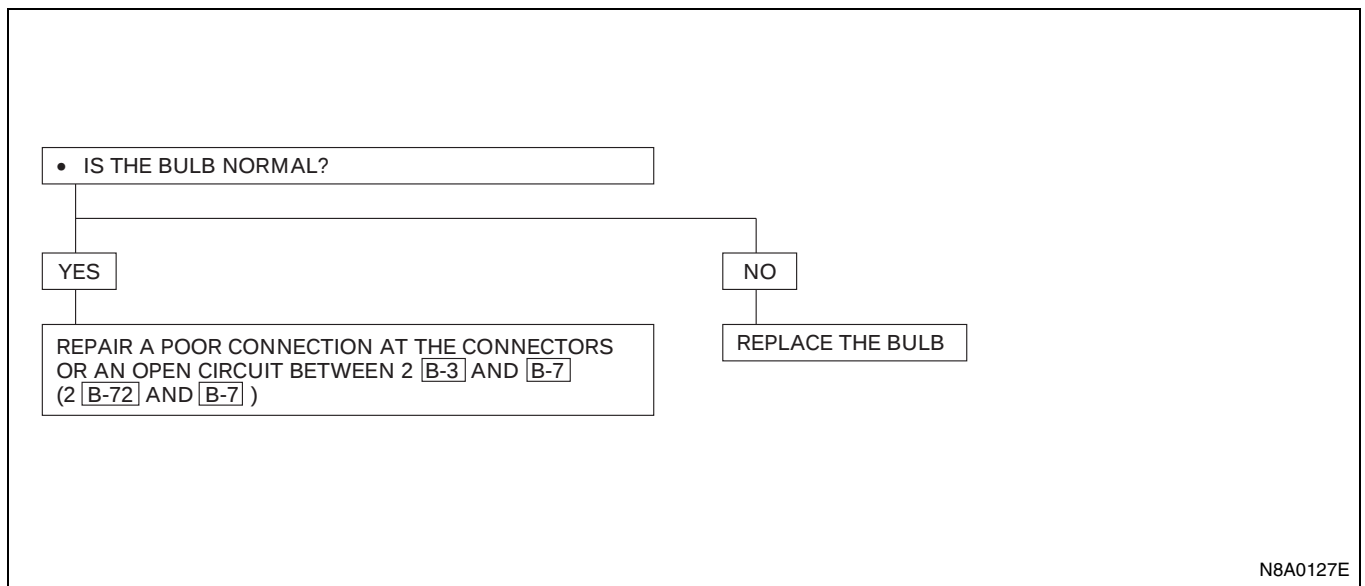


1-8. Headlight Comes On with The Lighting SW at The Clearance Light Position



2. Fog Light**2-1. Both Fog Lights Inoperative (While Lighting Switch is On)**

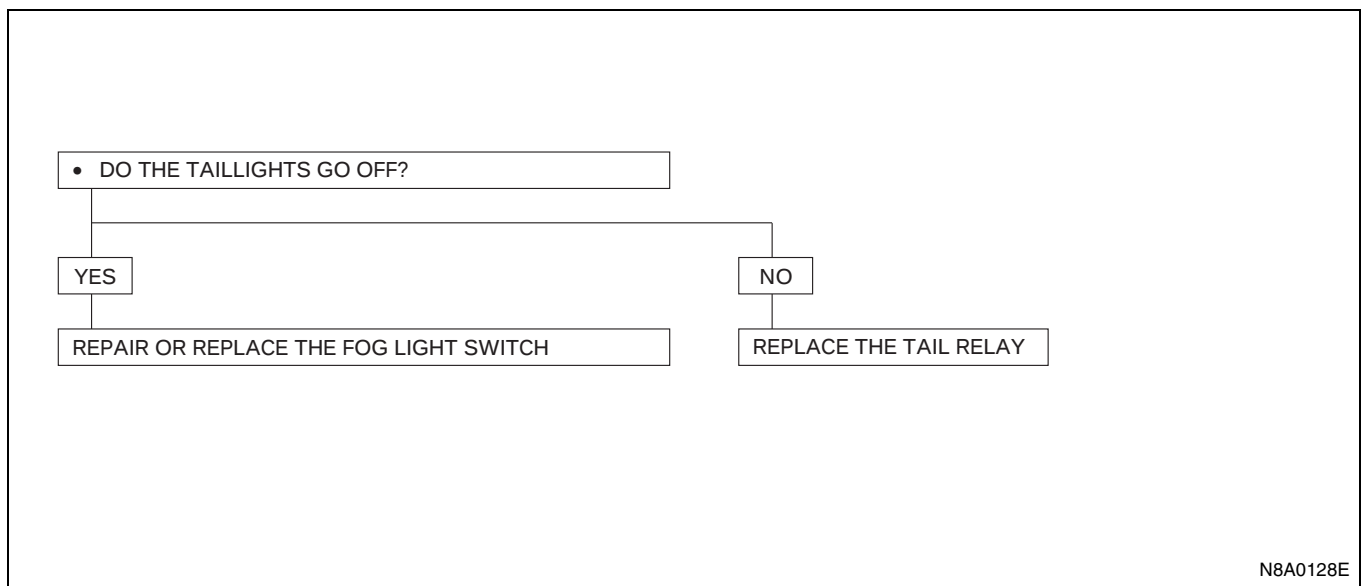
2-2. Fog Light on The Left (or Right) Side Inoperative (While Lighting Switch is On)



Notice:

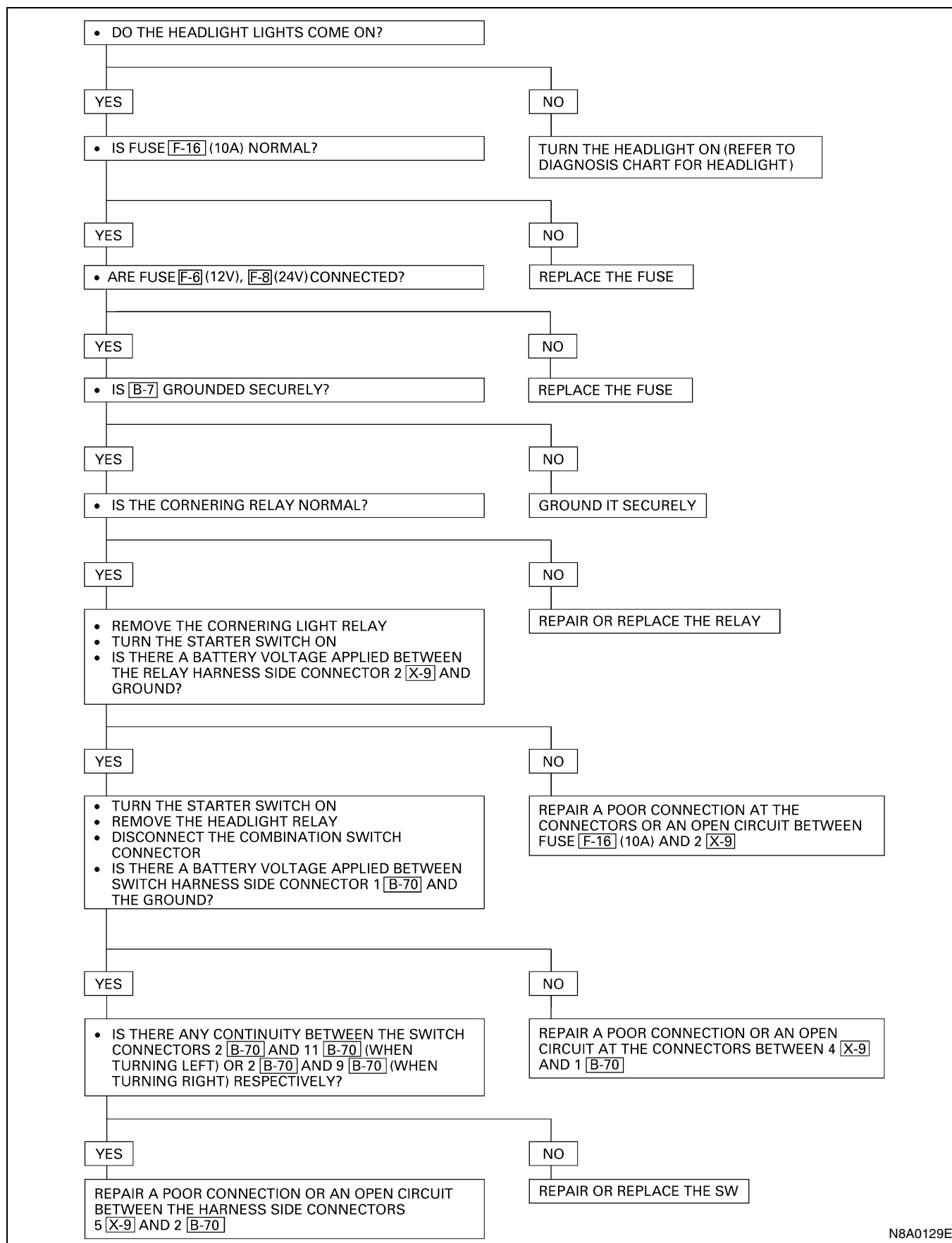
Figures in parenthesis “()” indicate place of inspection for the fog light on the right.

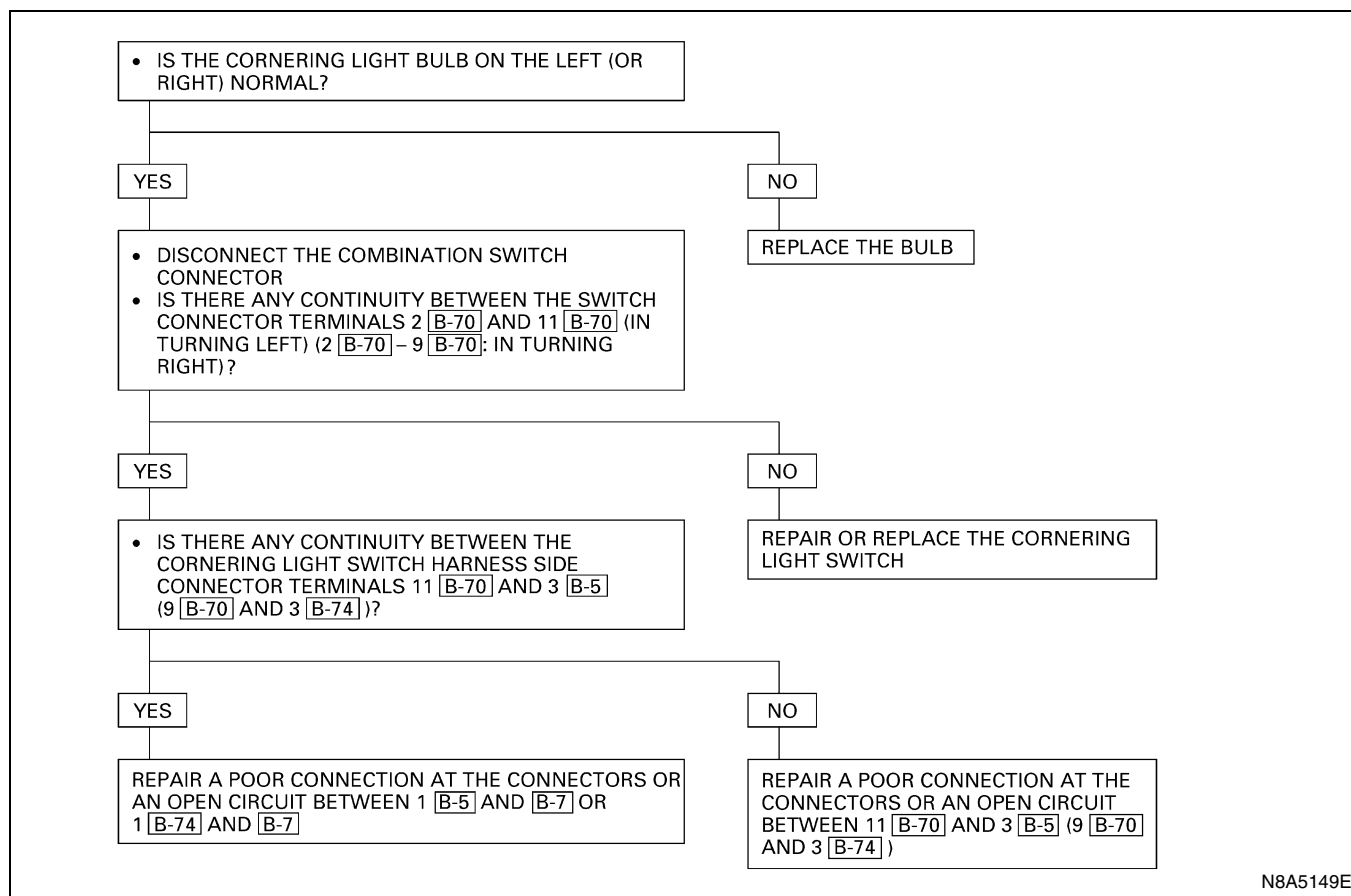
2-3. Fog Light Remains On



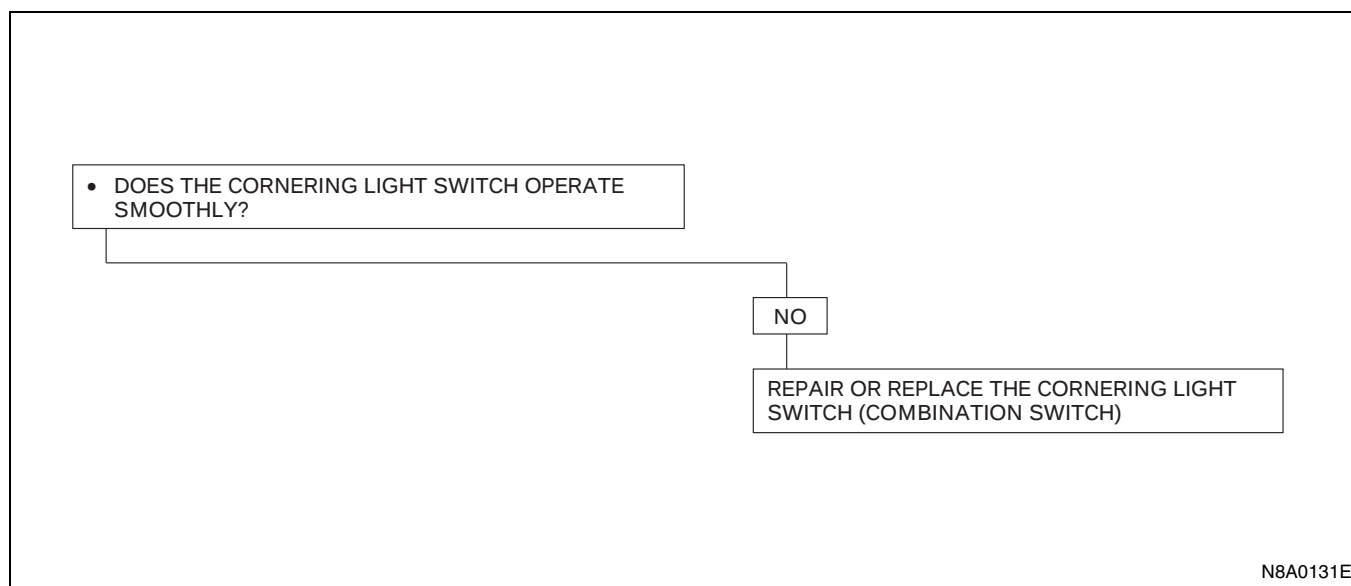
3. Cornering Light

3-1. Both Cornering Lights Inoperative



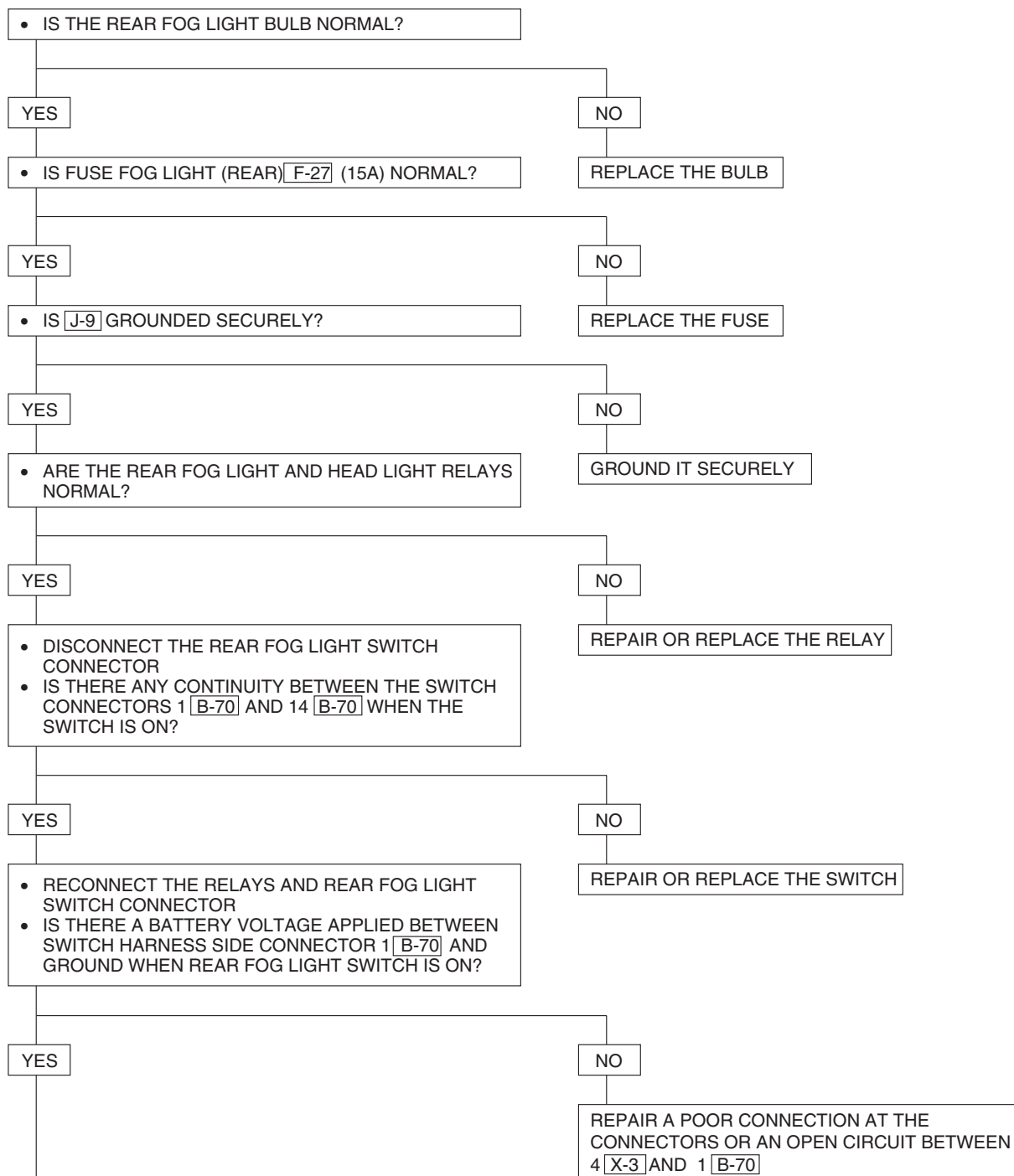
3-2. Cornering Light on The Left (or Right) Side Inoperative**Notice:**

Figures in parenthesis “()” indicate place of inspection for the cornering light on the right.

3-3. Cornering Light Remains on Even when Steering Wheel is in Straight Ahead Position

4. Rear Fog Light

4-1. Rear Fog Light Inoperative (while Headlight is On)



CONTINUED ON THE FOLLOWING PAGE

CONTINUED FROM THE PREVIOUS PAGE

- SET THE REAR FOG LIGHT SWITCH TO ON POSITION
- IS THERE BATTERY VOLTAGE APPLIED BOTH BETWEEN REAR FOG LIGHT RELAY HARNESS SIDE CONNECTOR 4 [X-23] AND GROUND, AND 1 [X-23] AND GROUND?

YES

- DISCONNECT THE REAR FOG LIGHT CONNECTOR
- IS THERE A BATTERY VOLTAGE APPLIED BETWEEN REAR FOG LIGHT HARNESS SIDE CONNECTOR 1 [R-12] AND GROUND WHEN REAR FOG LIGHT SWITCH IS ON?

YES

REPAIR A POOR CONNECTION AT THE CONNECTORS OR AN OPEN CIRCUIT BETWEEN 2 [R-12] AND [J-9] (GROUND)

NO

REPAIR A POOR CONNECTION AT THE CONNECTORS OR AN OPEN CIRCUIT BETWEEN FUSE MARKER LIGHT (15A) AND 1 [X-23] AND 14 [B-70] AND 4 [X-23]

NO

REPAIR A POOR CONNECTION AT THE CONNECTORS OR AN OPEN CIRCUIT BETWEEN 1 [R-12] AND 5 [X-23]

N8A0133E

Starter Switch

Refer to "START AND CHARGING" in this section.

High Beam Indicator Light

Refer to "METER AND WARNING/INDICATOR LIGHT" in this section.

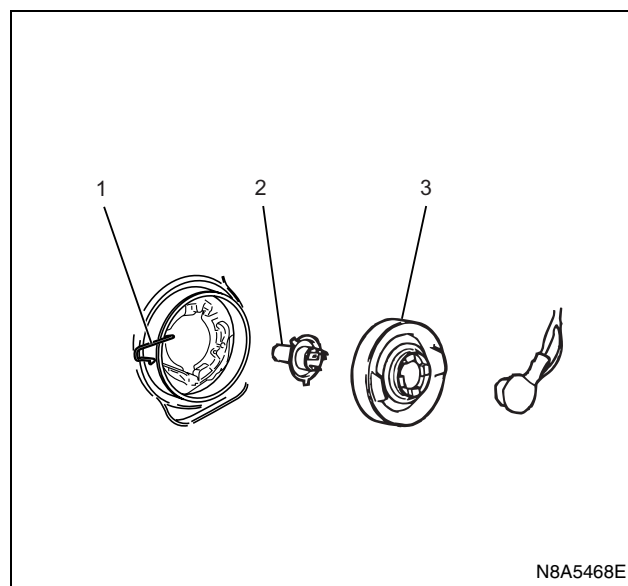
Headlight Bulb Replacement

Removal

1. Remove the battery ground cable at the battery.
2. Remove the headlight assembly. (Refer to 'Headlight Replacement' below.)
3. Remove the headlight bulb.
 - Remove the dust cover (3).
 - Remove the clip (1).
 - Remove the headlight bulb (2).

Caution:

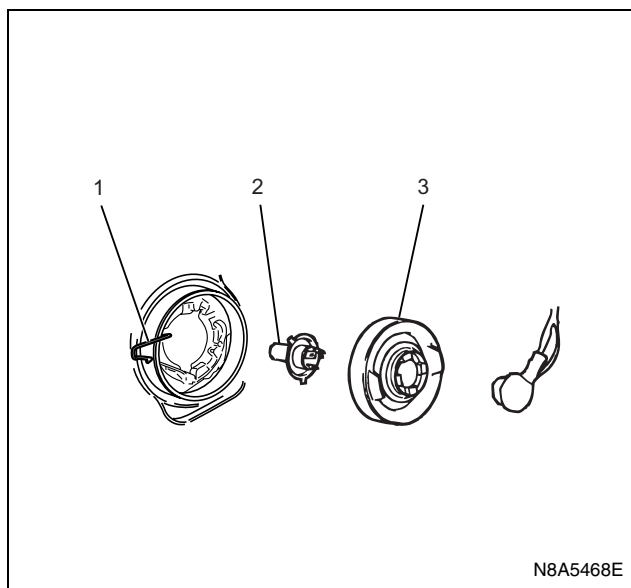
Do not touch the glass portion of the bulb with your fingers.



N8A5468E

Installation

1. Install the headlight bulb.
 - Set the headlight bulb (2).
 - Fix the headlight bulb with clip (1).
 - Install the dust cover (3).
2. Install the headlight assembly. (Refer to 'Headlight Replacement' below.)
3. Connect the battery ground cable at the battery.
4. Check if the light lights.

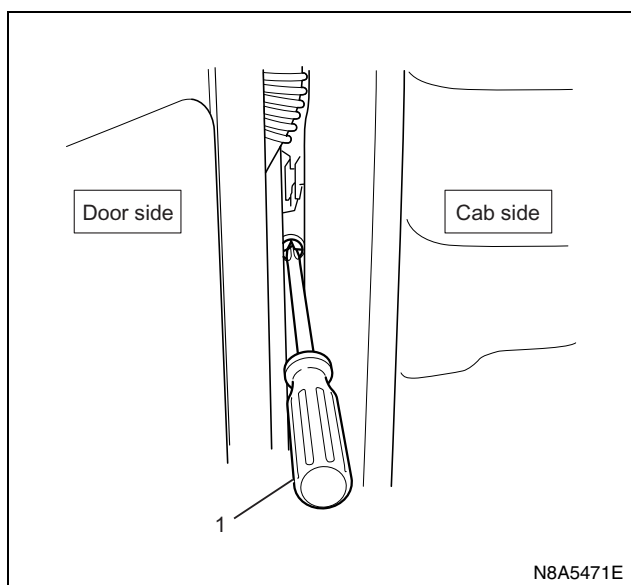
**Caution:**

Do not touch the glass portion of the new bulb with your fingers.

Headlight Replacement**Removal**

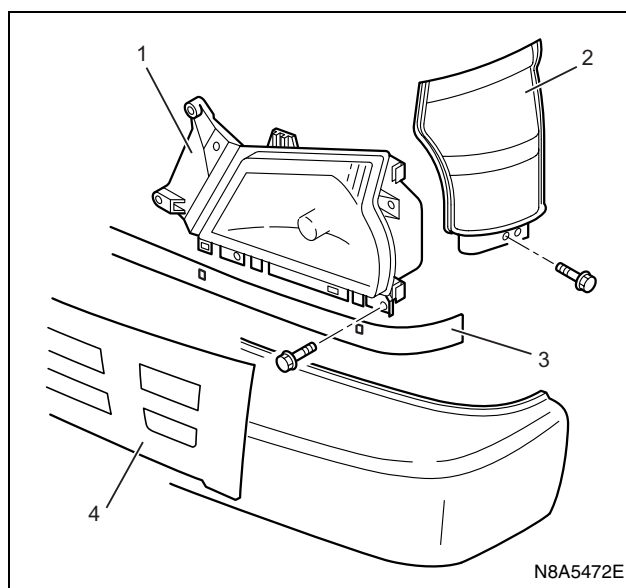
Preparation: Disconnect the battery ground cable.

1. Remove the battery ground cable at the battery.
2. Remove the seal rubber (3).
 - Remove the seal rubber from beneath the headlight.
3. Remove the front combination light (2).
 - Open the cab door. Insert a screwdriver (1) into the space between the cab and the cab door. Use the screwdriver to force out the stud pin at the center of the grommet (the pin securing the front combination light).



- Remove the fixing screw.
- Remove the two catches.

- Remove the front combination light connector.
4. Remove the front grille (4).
 - Remove the bolt at the center of the front grille.
 - Remove the four clips securing the front grille.
 - The grille is secured by 4 clips (2 clips at the inside of each headlight). Pull the grille toward you to remove it.
 5. Remove the front corner panel.
 6. Remove the headlight (1).
 - Remove the four bolts securing the headlight (loosen the fixing bolts at the bottom of the front side panel to create working space).
 - Remove the headlight clips.
 - Remove the headlight connector.

**Installation**

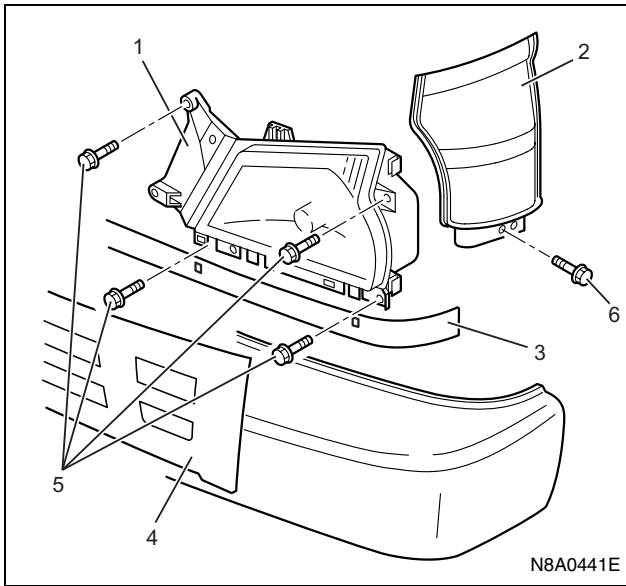
1. Assemble the headlight assembly (1).
 - Connect the connector.
 - Fix it to body panel with four bolts (5).
2. Assemble the front panel side. (Refer to "DOOR" in section 2.)
3. Install the front grille (4).
4. Install the front combination assembly (2).
 - 1) Position it by aligning two pawls with the groove of H/L.
 - 2) Fit the iron PIN in the upper portion by aligning it with the center of corresponding grommet.

Notice:

Push it into securely with a force of approx. 250 N (25 kgf) until click is heard.

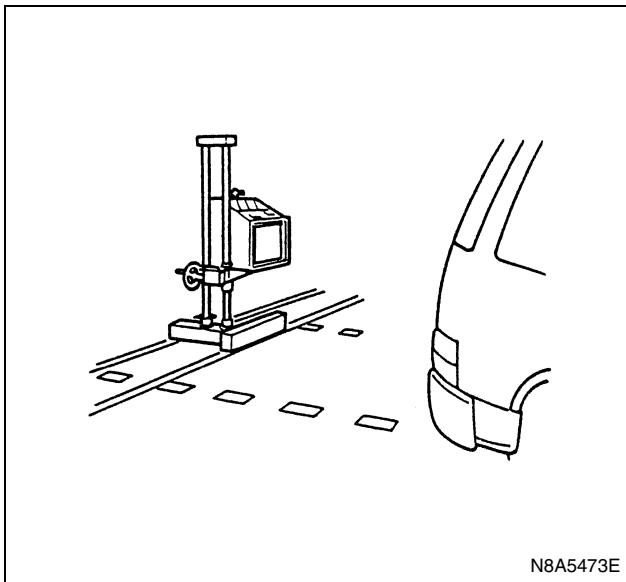
- 3) Pull the front combination light assembly lightly toward the front of vehicle to make sure that the PIN and grommet are engaged securely.
- 4) Tighten one bolt (6) in the lower portion of front combination light assembly.
- 5) Hook the seal rubber (3) on two projections under H/L.

5. Connect the battery ground cable.
6. Check the operation and lighting of each lamp.



Aiming of Headlight

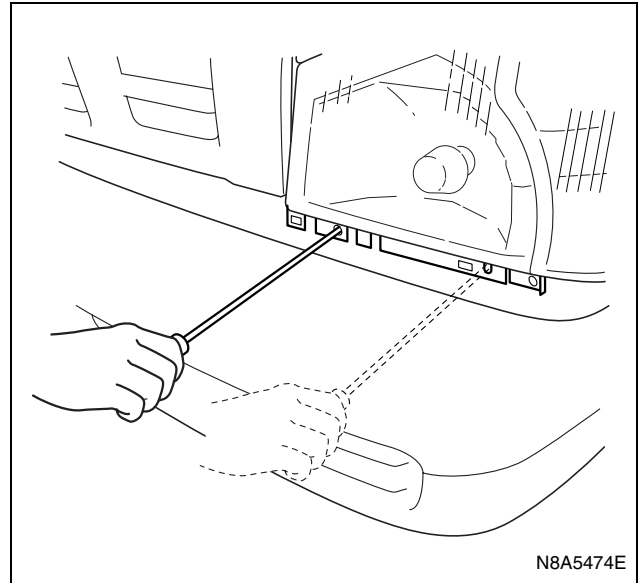
Preparation: Place the unloaded vehicle on a level surface and check to see if the inflation pressure of the tires is correct, the lenses are clean, and the battery is sufficiently charged. Adjust the aim with the headlight tester. When adjusting, follow the procedure of the tester manufacturer's.



Vertical Adjustment

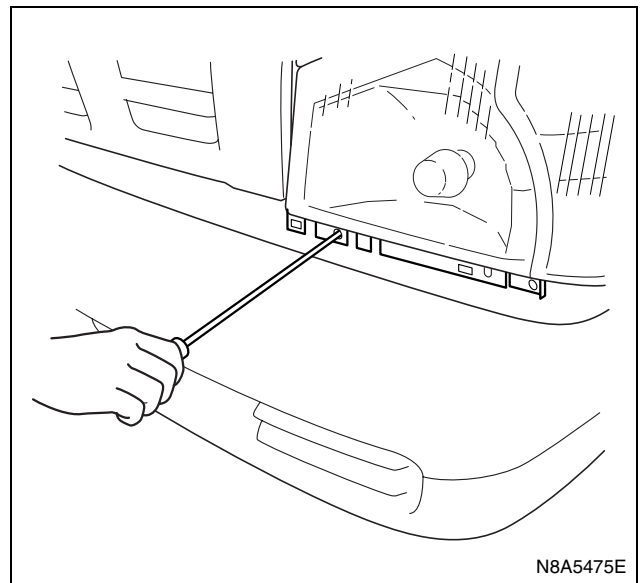
Insert the tip of a screwdriver into the hole beneath the headlight (the shaft of the screwdriver must be slanted up) until contact is made with the head of the adjusting screw. Turn the screw to adjust headlight focus up or down.

Two vertical aim screws should be turned in the same direction at the same time to adjust aiming.



Horizontal Adjustment

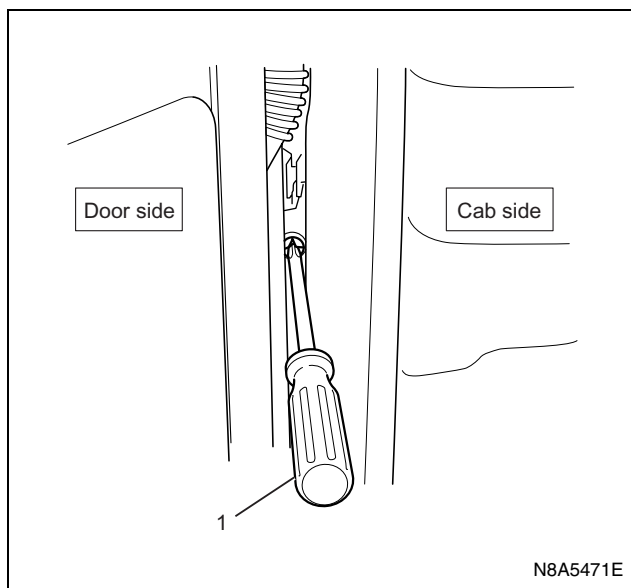
Insert the tip of a screwdriver into the hole beneath the headlight (the shaft of the screwdriver must be slanted up) until contact is made with the head of the adjusting screw. Turn the screw to adjust headlight focus to the left or right.



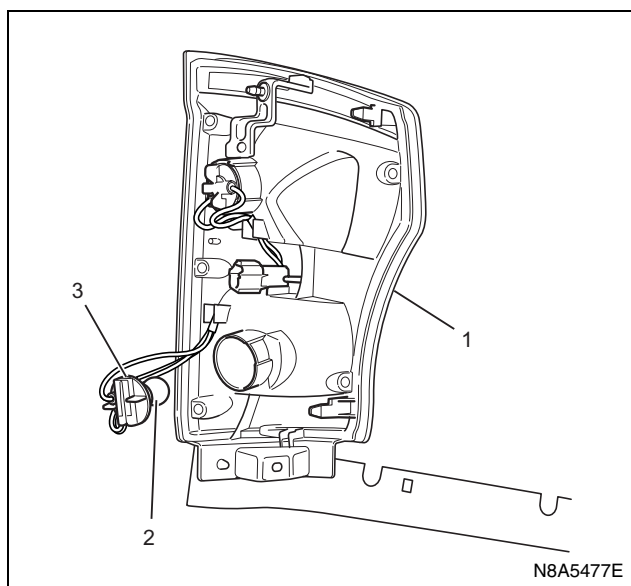
Cornering Light Bulb Replacement

Removal

1. Remove the battery ground cable at the battery.
2. Remove the front combination light.
 - Open the cab door. Insert a screwdriver (1) into the space between the cab and the cab door. Use the screwdriver to force out the stud pin at the center of the grommet (the pin securing the front combination light).



- Remove the fixing screw.
- Remove the two catches.
- Remove the front combination light (1) connector.



3. Remove the cornering light bulb.
 - Turn the cornering / clearance bulb socket (3) to the left to remove it.
 - Press the bulb (2) in and turn it to the left to remove it from the socket.

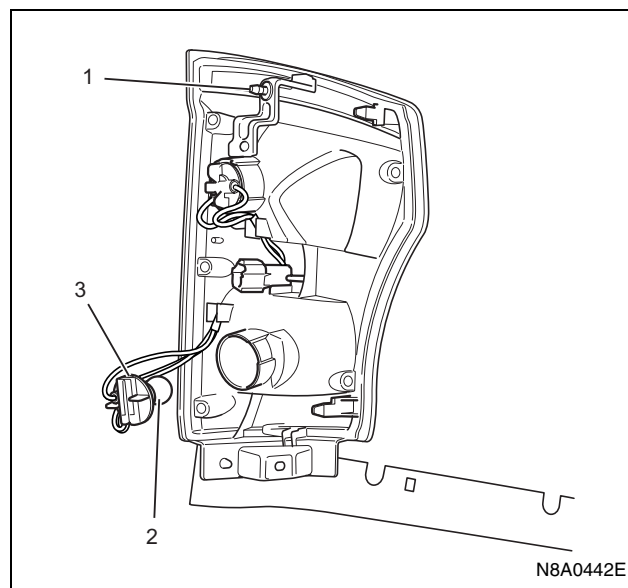
Installation

1. Install the cornering / clearance bulb.
 - While pressing the bulb (2), turn it clockwise to fit.

Notice:

Do not let the glass portion dirty with sebum etc.

- Turn the bulb socket (3) clockwise to fit.



2. Installation procedure of front combination light assembly

- Connect the connector of the front combination light assembly.
- Position it by aligning two pawls with the groove of H/L.
- Fit the iron PIN (1) in the upper portion of the side by aligning it with the center of corresponding grommet.

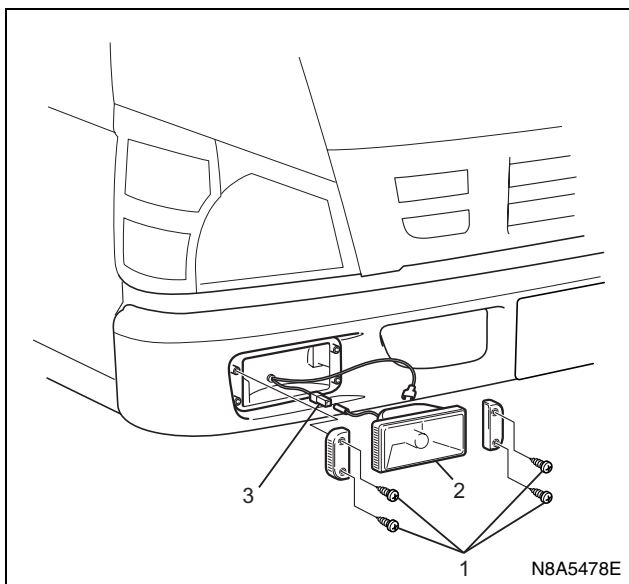
Notice:

Push it into securely with a force of approx. 250 N (25 kgf) until click is heard.

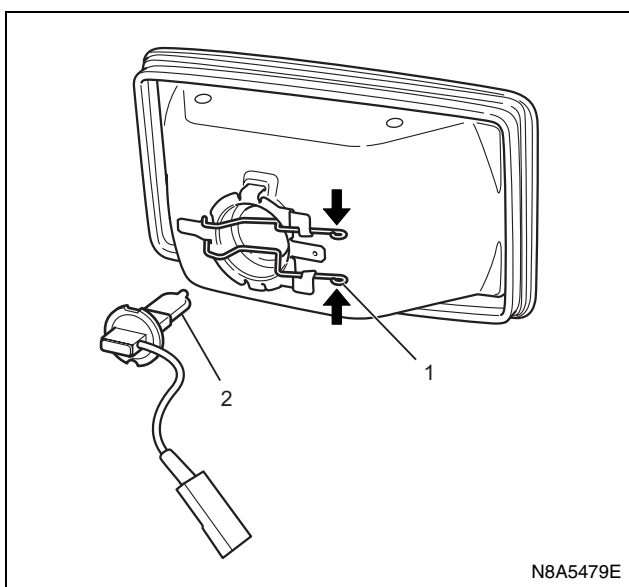
- Pull the front combination light assembly lightly toward the front of vehicle to make sure that the PIN and grommet are engaged securely.
 - Tighten one bolt in the lower portion of front combination light assembly.
3. Hook the seal rubber on two projections under H/L.
 4. Connect the battery ground cable.
 5. Check lighting of each light.

Fog Light Bulb**Removal**

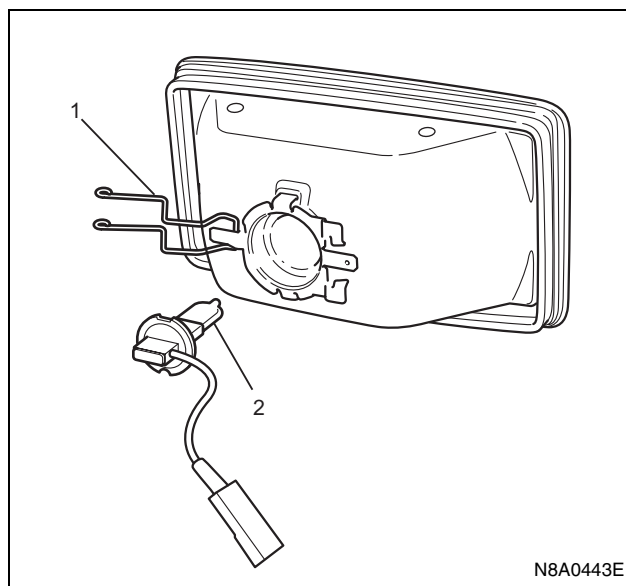
1. Remove the battery ground cable at the battery.
2. Remove the four screws (1) to remove the cover which holds fog light assembly (2).
3. Remove the connector (3).
4. Remove the fog light assembly (2).

**5. Bulb**

- Push the clip (1) inward as arrow to remove.
- Remove the bulb (2).

**Installation**

1. Install the fog light bulb.
 - Set the fog light bulb (2).
 - Hook the clip (1) to secure fog light bulb.

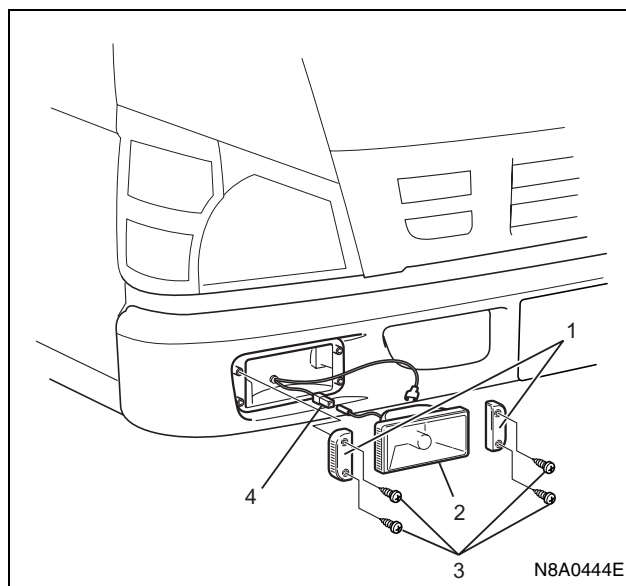


2. Connect the two locations of connector (4).
3. Install the fog light assembly.
 - Hold the fog light (2) with right and left covers (1) and secure it with four screws (3).

Notice:

Make sure that "TOP" mark on the lens comes upside.

4. Connect the battery ground cable.
5. Check lighting.

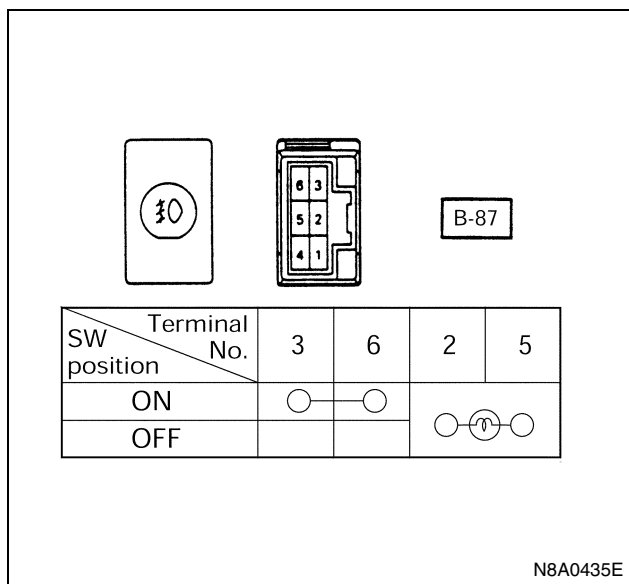


Fog Light Switch

Inspection

Check the continuity between the connector terminals while operating the switch.

Replace the switch when the result of inspection is found abnormal.

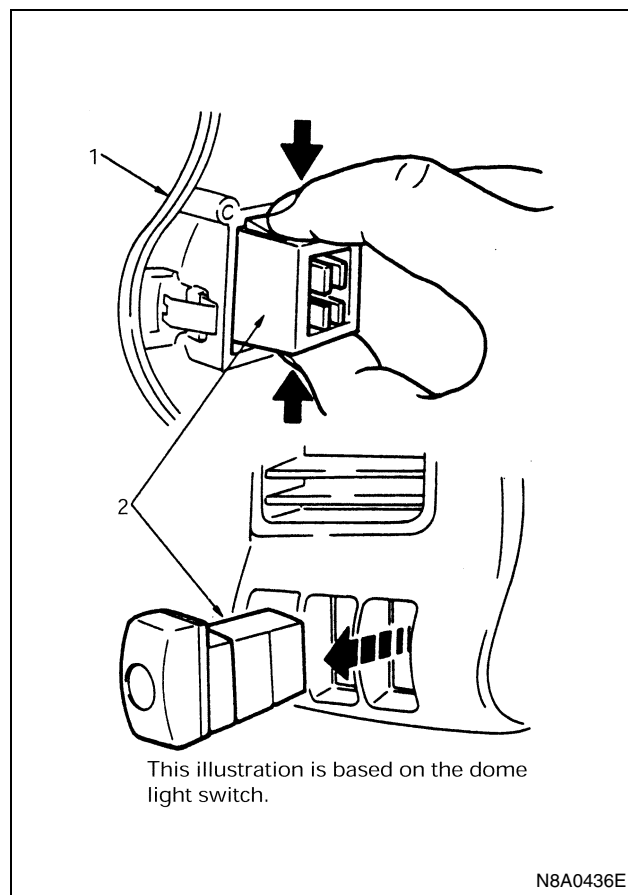


Removal

Preparation:

Disconnect the battery ground cable.

1. Meter Cluster
Refer to "METER AND WARNING/INDICATOR LIGHT" in this section.
2. Fog Light Switch
Release the lock pushing the switch from the back side of the meter cluster.



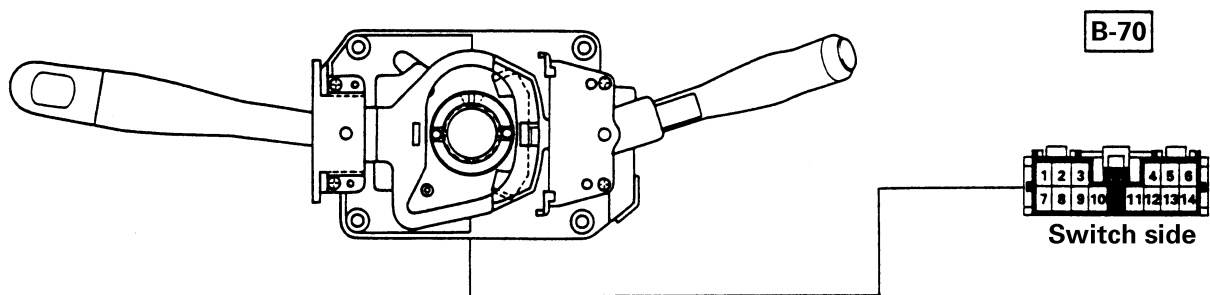
Installation

To install, follow the removal steps in the reverse order.

Combination Switch (Lighting Switch, Dimmer, Passing Switch, Cornering Light Switch and Rear Fog Light Switch)

Inspection

Check the continuity between the connector terminals while operating the switch.
Replace the switch when the result of inspection is found abnormal.



Terminal No.		1	2	4	5	7	8	9	10	11	12	13	14
SW position													
Lighting SW		☐		☐			☐						
				☐			☐						
	REAR FOG SW	☐		☐			☐						☐
	OFF												
Dimmer-passing SW	High beam			☐					☐				
	Passing			☐		☐			☐				
Cornering light SW	Turning left		☐							☐			
	Neutral												
	Turning right		☐					☐					

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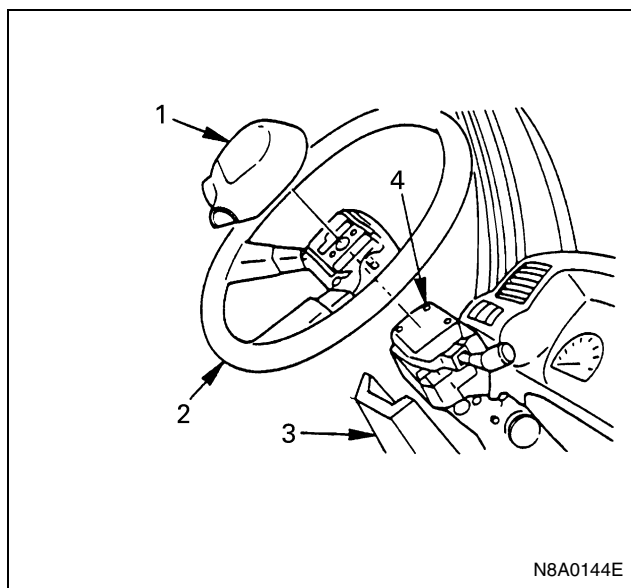
Removal

Preparation:

Disconnect the battery ground cable.

- Horn Pad
 - Hold the horn pad and pull it upward.
- Steering Wheel
 - Remove the steering shaft nut.
 - Remove the steering wheel by using steering wheel remover.
(Refer to Section 3B4 "STEERING COLUMN" for steering wheel removal steps.)
- Steering Cowl
Remove the four screws.

- Combination Switch
 - Remove the four screws.
 - Disconnect the connector.



Installation

To install, follow the removal steps in the reverse order, noting the following point.

1. Tighten the steering shaft nut to the specified torque.

Tighten:

Shaft nut to 49 N·m (5 kg·m / 36 lb·ft)

Headlight Leveling

General Description

The circuit consists of starter SW, headlight leveling SW and headlight leveling actuator.

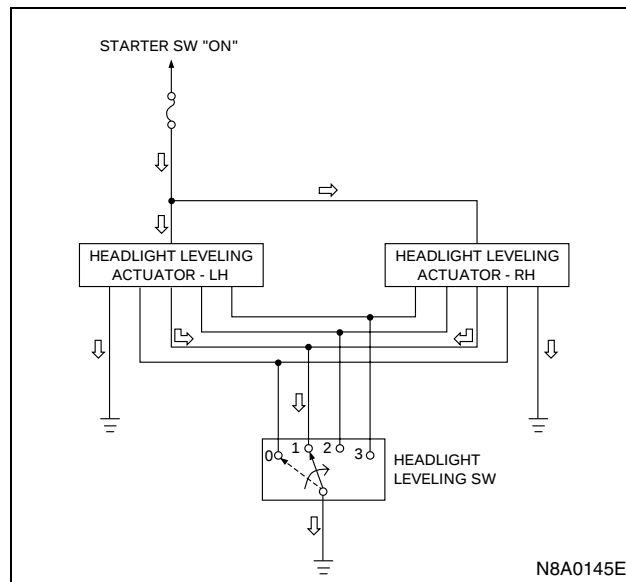
When the headlight leveling SW is operated with the starter SW at ON position, the actuator is operated to change the angle of the optical axis of the headlight.

Operation of The Circuit

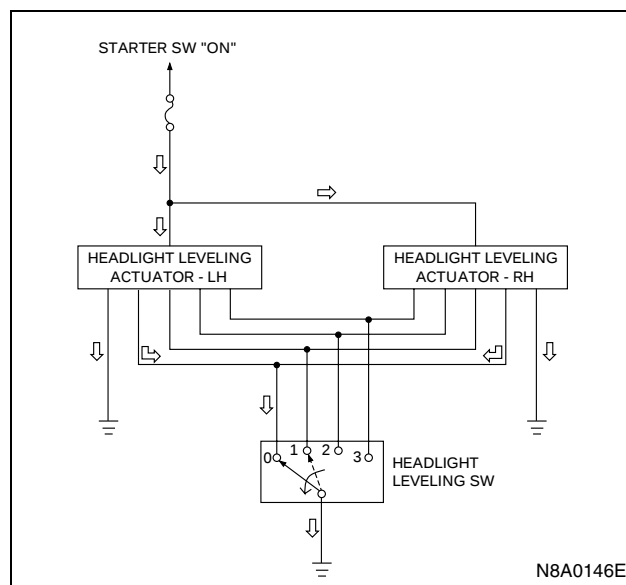
Notice:

Arrow marks indicate the direction of current.

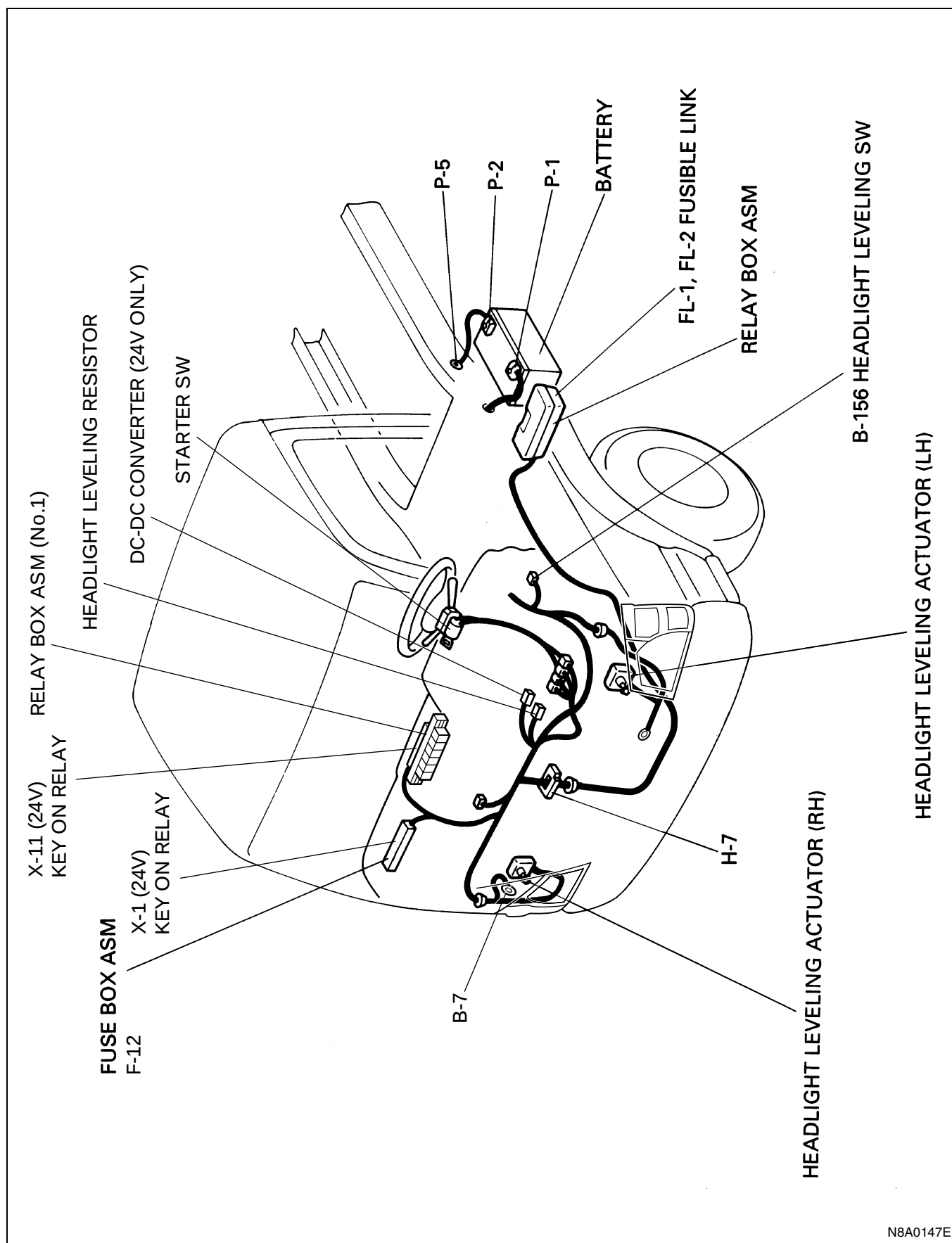
1. When headlight leveling SW is turned to "1" position



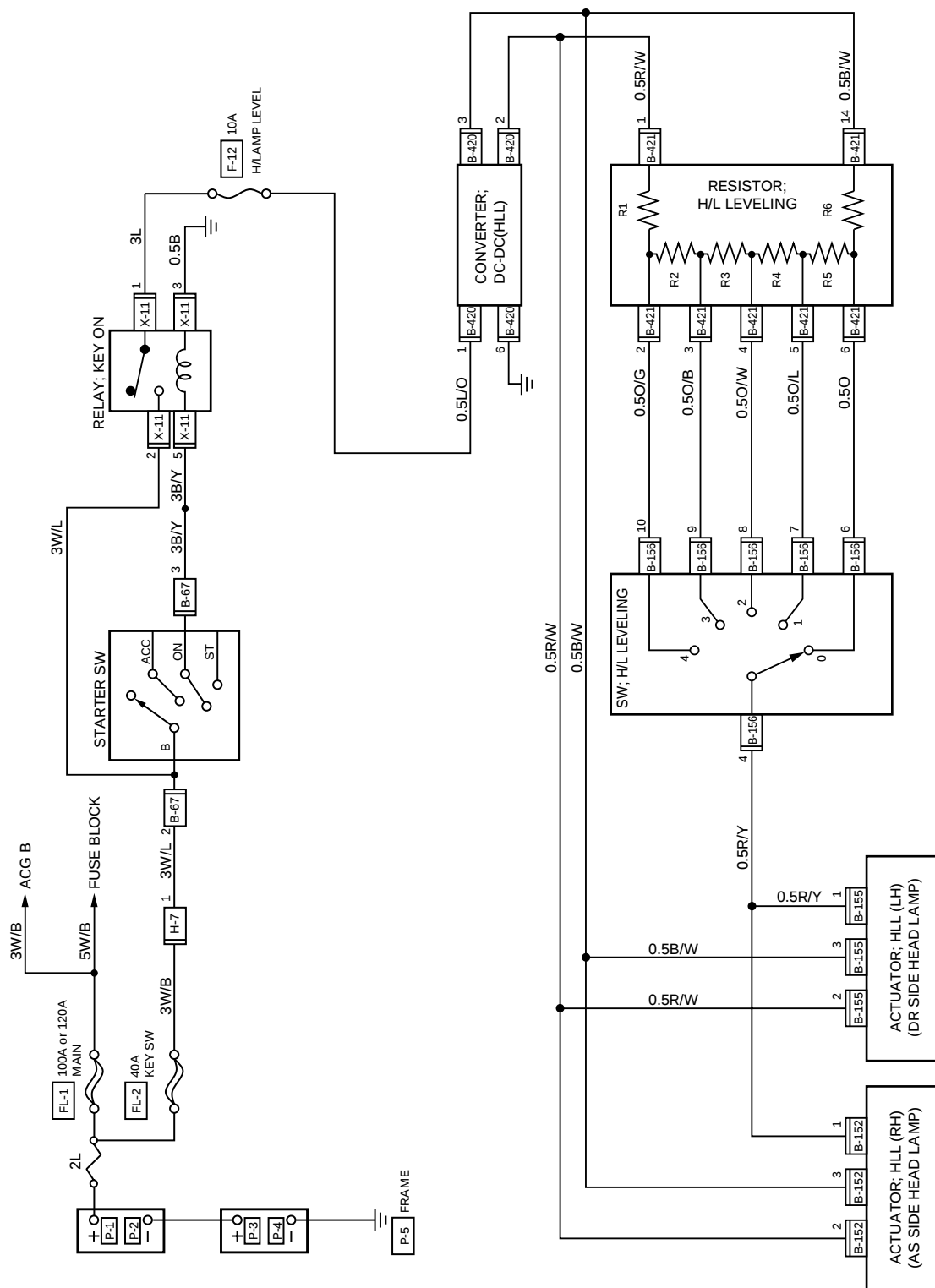
2. When headlight leveling SW is turned to "0" position



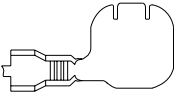
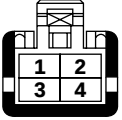
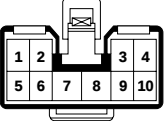
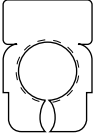
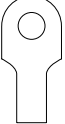
Parts Location

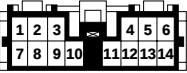
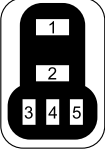
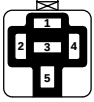


For 24 Volt

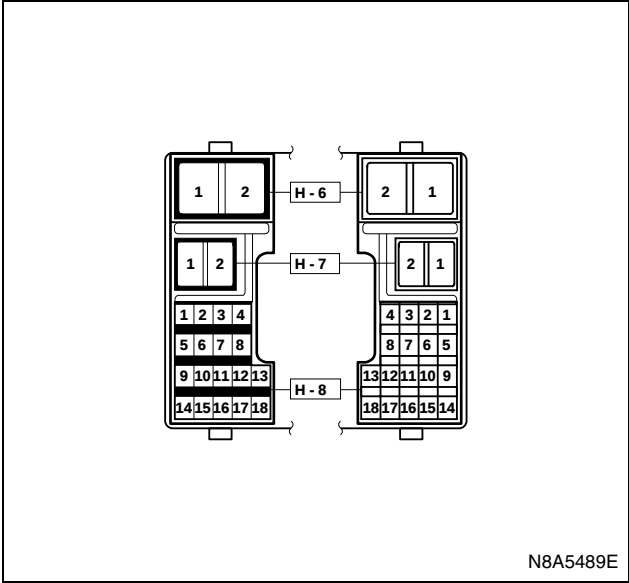


Connector List

No.	Connector Face
B-7	 000-012
B-67	 004-001
B-67	 004-002
B-152	 003-016
B-155	 003-016
B-156	 010-002
P-1	 000-004
P-2	 000-003

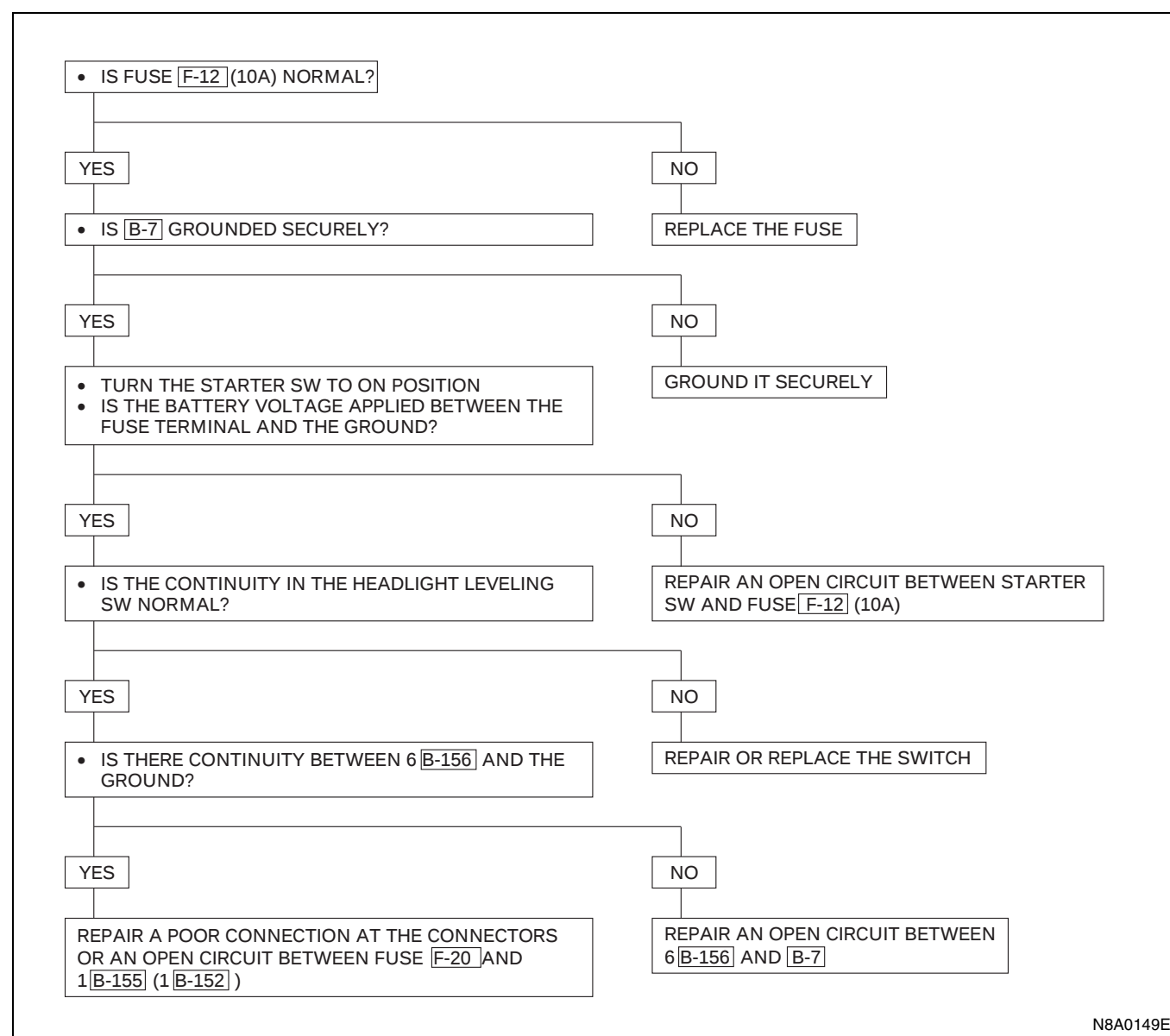
No.	Connector Face
P-5	 000-007
B-420 (24 V)	 006-019
B-421	 014-002
X-1 (12V)	 005-006
X-11 (24 V)	 005-001

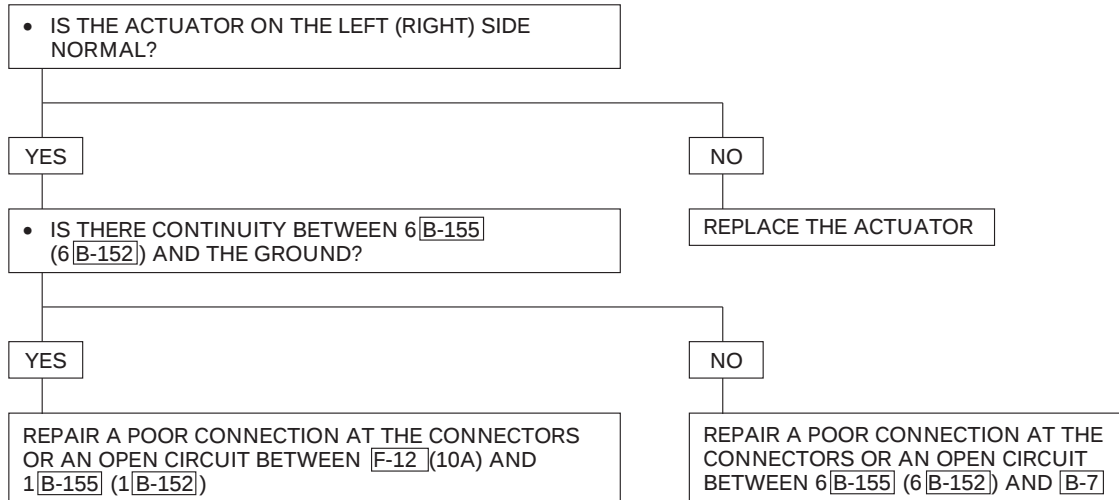
H-7



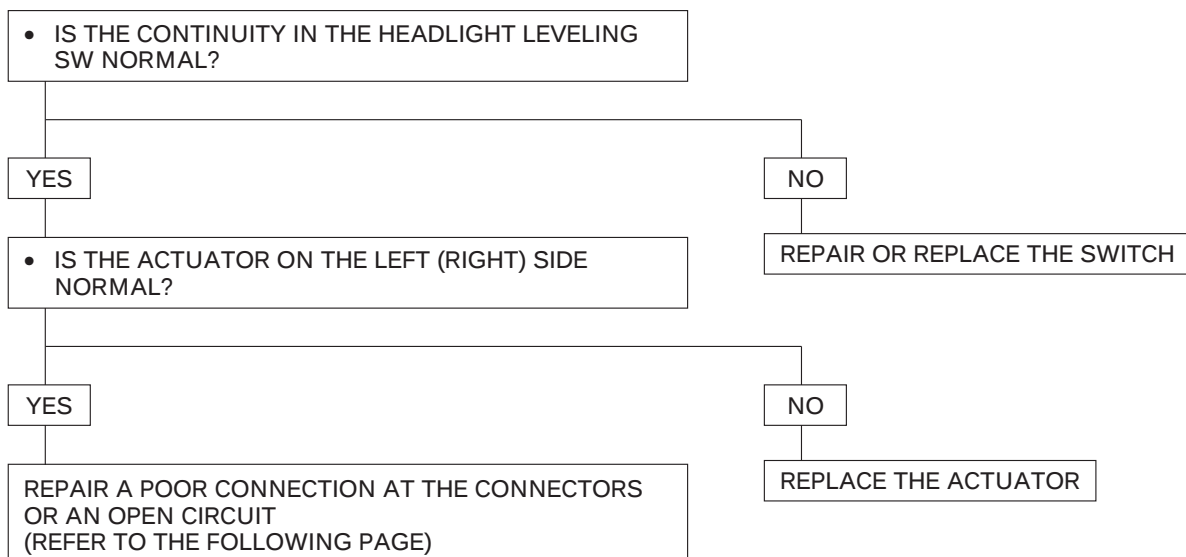
Diagnosis**Quick Chart for Check Points**

		Check point			
		Fuse F-12 (10 A)	Headlight leveling switch	Headlight leveling actuator	Cable harness
Trouble mode	1. Both actuators inoperative	○	○		○
	2. Actuator on the left (right) side inoperative			○	○
	3. When leveling SW is turned to a certain position, actuator inoperative		○	○	○

1. Both Actuators Inoperative

2. Actuator on the Left (Right) Side Inoperative

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3. When Headlight Leveling SW is Turned to A Certain Position, Actuator Inoperative

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Inspect and repair the circuit that is corresponding to the headlight leveling switch position where the actuator becomes inoperative.

Actuator - LH

Headlight leveling SW position	Circuit
1	Between 3 B-156 and 3 B-155
2	Between 2 B-156 and 4 B-155
3	Between 1 B-156 and 5 B-155
0	Between 4 B-156 and 2 B-155

Actuator - RH

Headlight leveling SW position	Circuit
1	Between 3 B-156 and 3 B-152
2	Between 2 B-156 and 4 B-152
3	Between 1 B-156 and 5 B-152
0	Between 4 B-156 and 2 B-152

Starter Switch

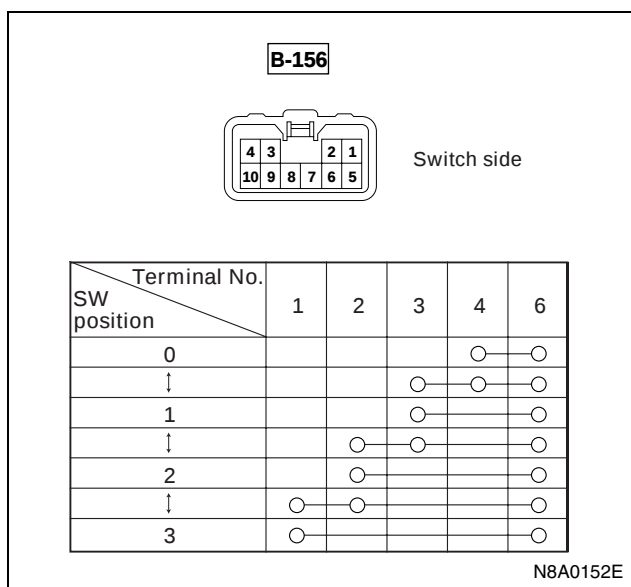
Refer to "START AND CHARGING" in this manual.

Headlight Leveling Switch

Inspection

Check the continuity between the switch connector terminals.

Repair or replace the switch when the result of inspection is found abnormal.

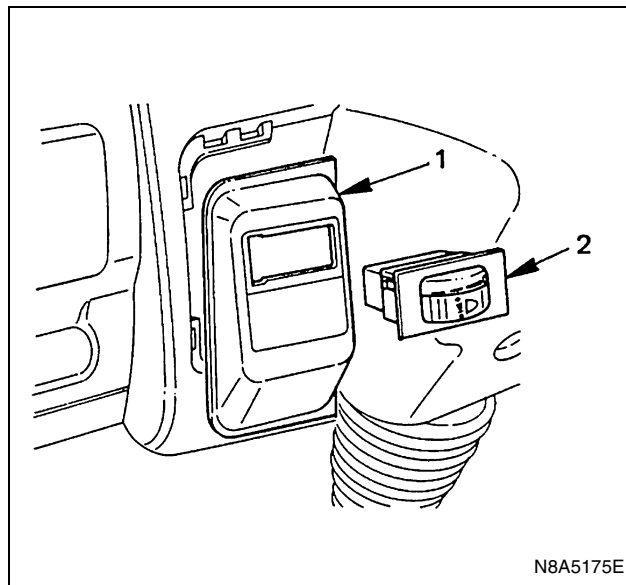


Removal

Preparation:

Disconnect the battery ground cable.

1. Switch Bezel
2. Headlight Leveling Switch
Disconnect the connector.



Installation

To install, follow the removal steps in the reverse order.

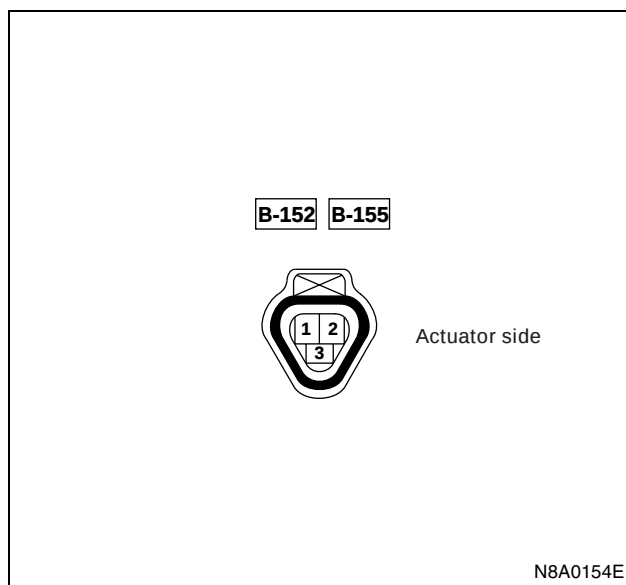
Headlight Leveling Actuator

Inspection

Apply the battery voltage to the connector terminals and check its function.

This actuator has a mechanism that the angle of headlight leveling varies according to input voltage of SIGNAL.

1. Make sure that the voltage specified in table is output to vehicle harness connector which will be connected to actuator.
If the power supply is not 12 V, the SIGNAL output varies in proportion to its voltage.
2. Connect the connector of actuator and vehicle harness connector.
Make sure that the reflector of headlight moves to the position indicated by HEAD LAMP LEVELING SW.



1	2	3
SIGNAL	–	+

		Input signal voltage ratio for SIGNAL when the voltage difference between positive and negative is specified as 100%	–	+
HEAD LAMP POSITION	Position 0	10.0% (1.2 V)	0 V	12 V
	Position 1	23.4% (2.8 V)	0 V	12 V
	Position 2	36.7% (4.4 V)	0 V	12 V
	Position 3	50.0% (6.0 V)	0 V	12 V
	Position 4	63.4% (7.6 V)	0 V	12 V

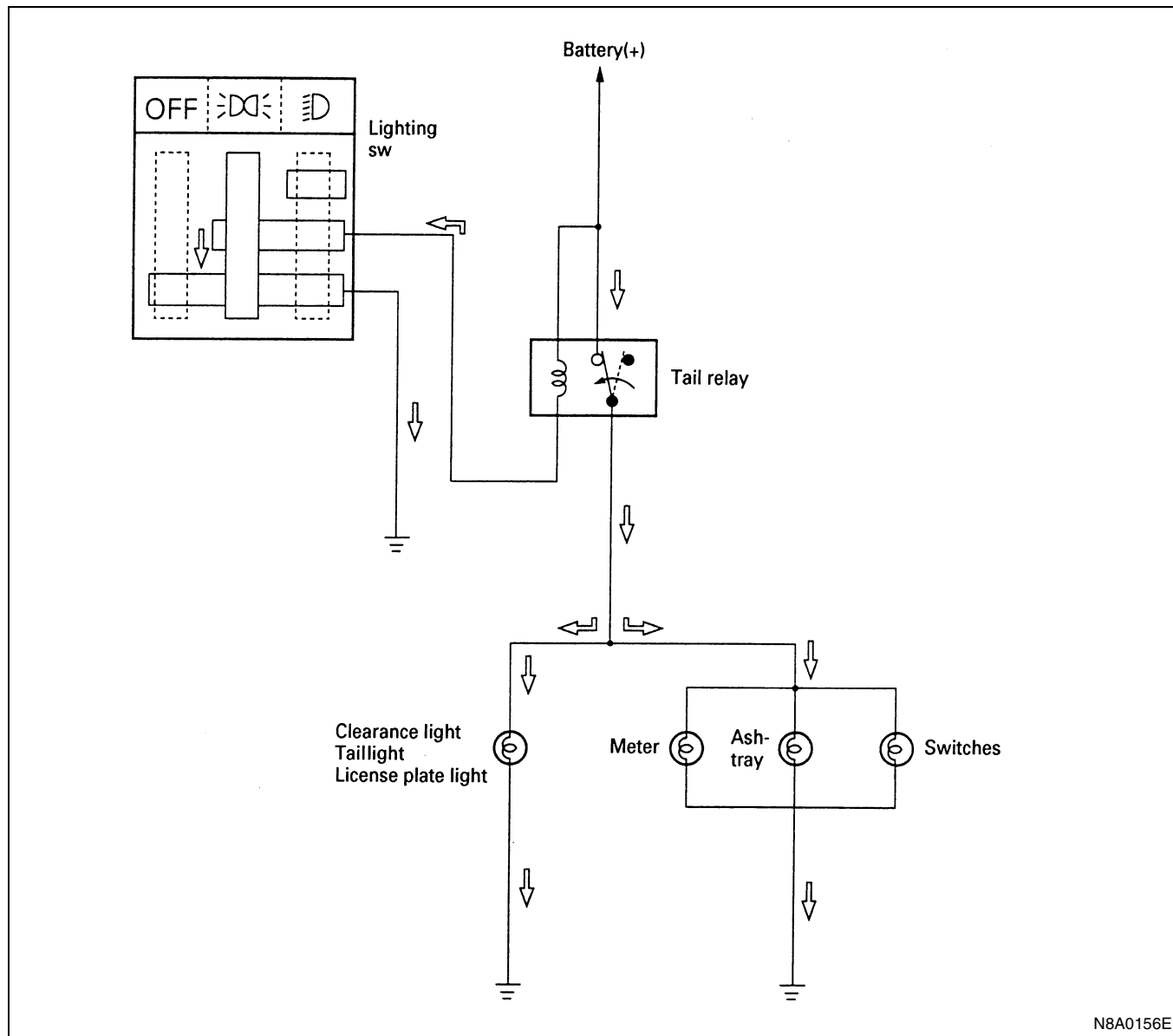
Caution:

1. For vehicles with 12 V and 24 V, this leveling input voltage is 12 V.
2. Input to SIGNAL must be less than 65% of the input voltage to positive terminal.

Clearance Light, Taillight, License Plate Light and Illumination Light**General Description**

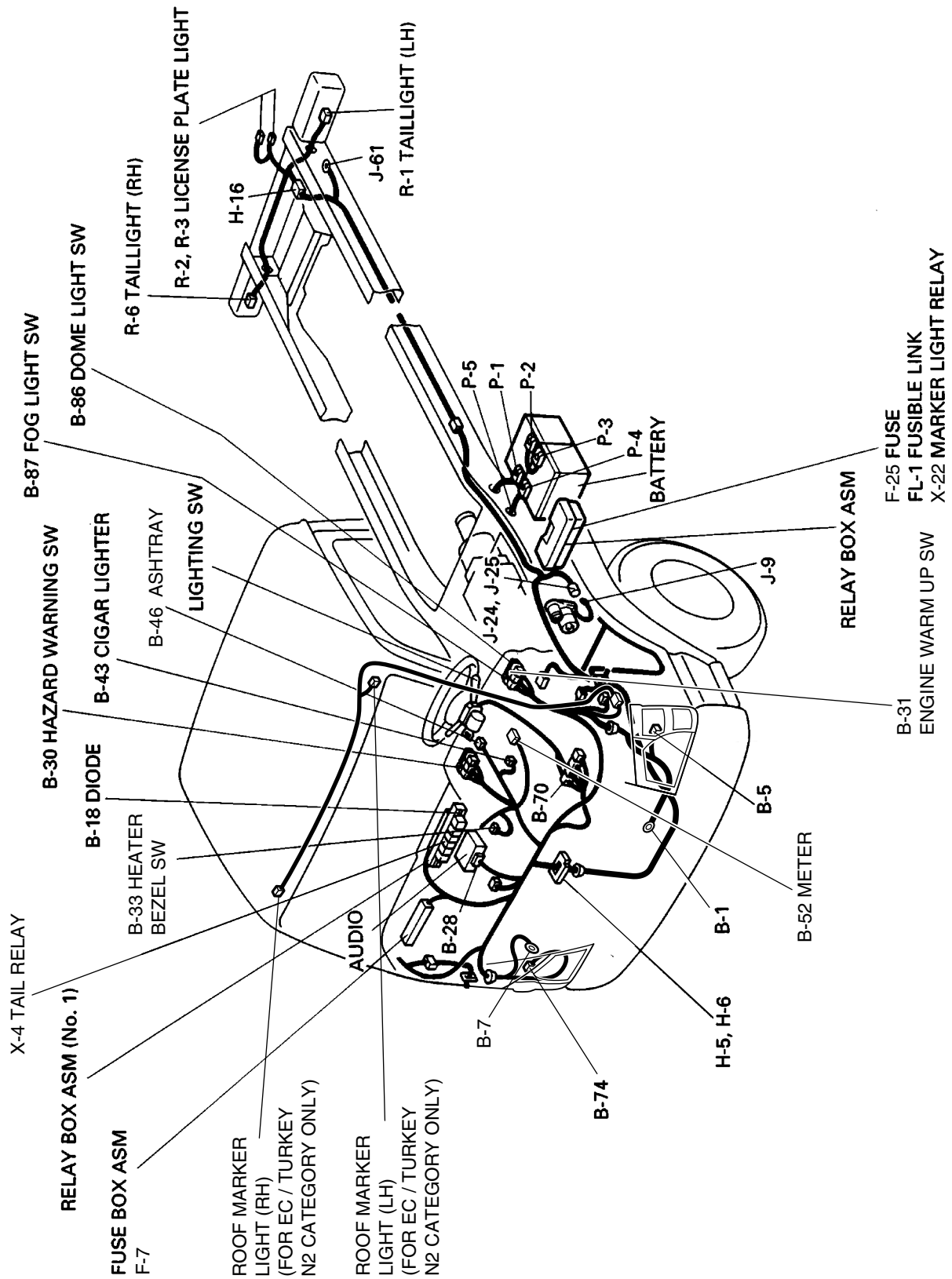
The circuit consists of the lighting switch, clearance light, taillight, license plate light and the illumination light for each of switch, meter and ashtray.

All these lights come on when the lighting switch is turned on with the switch to either clearance or headlight position.

Lighting Circuit

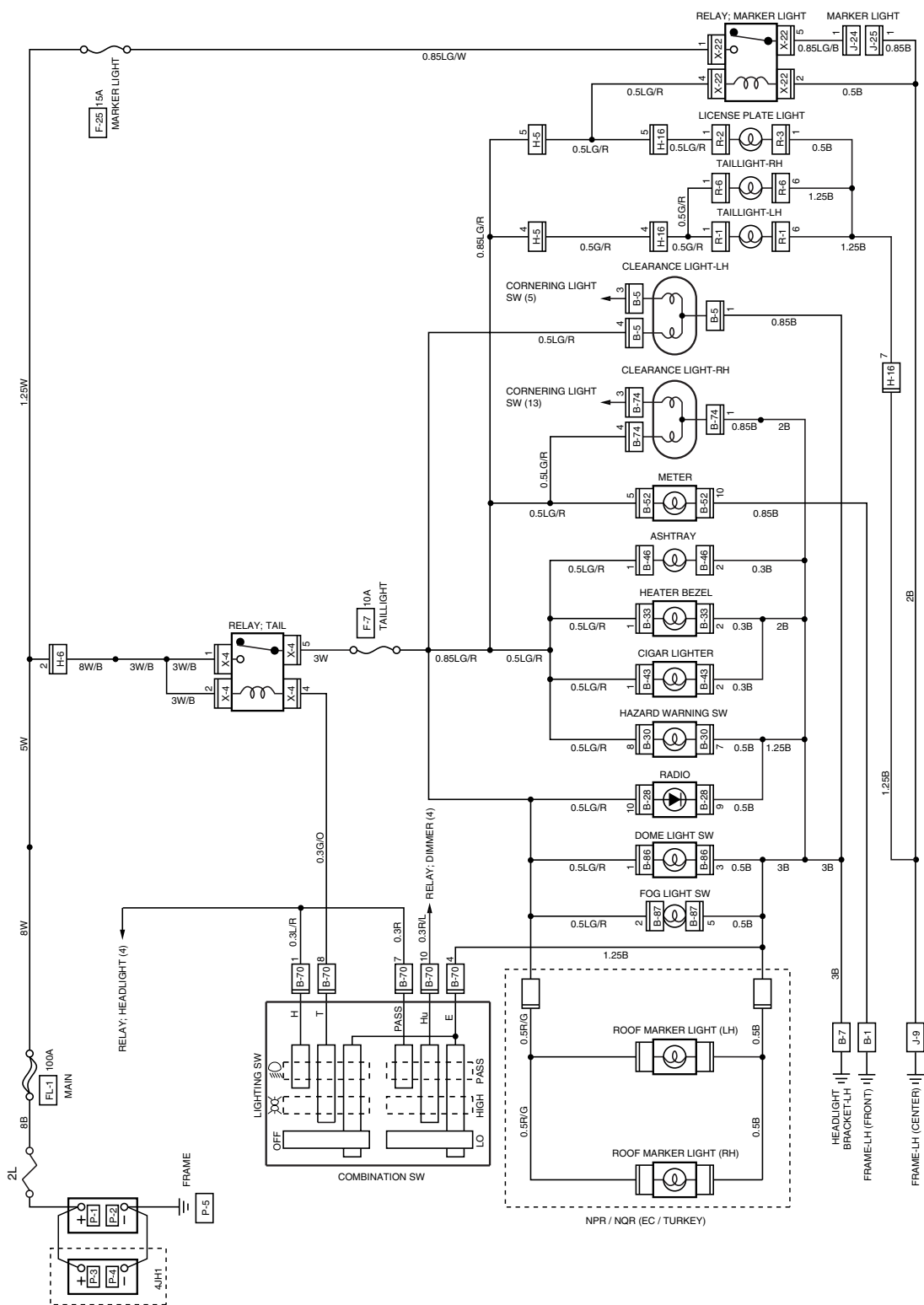
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Parts Location

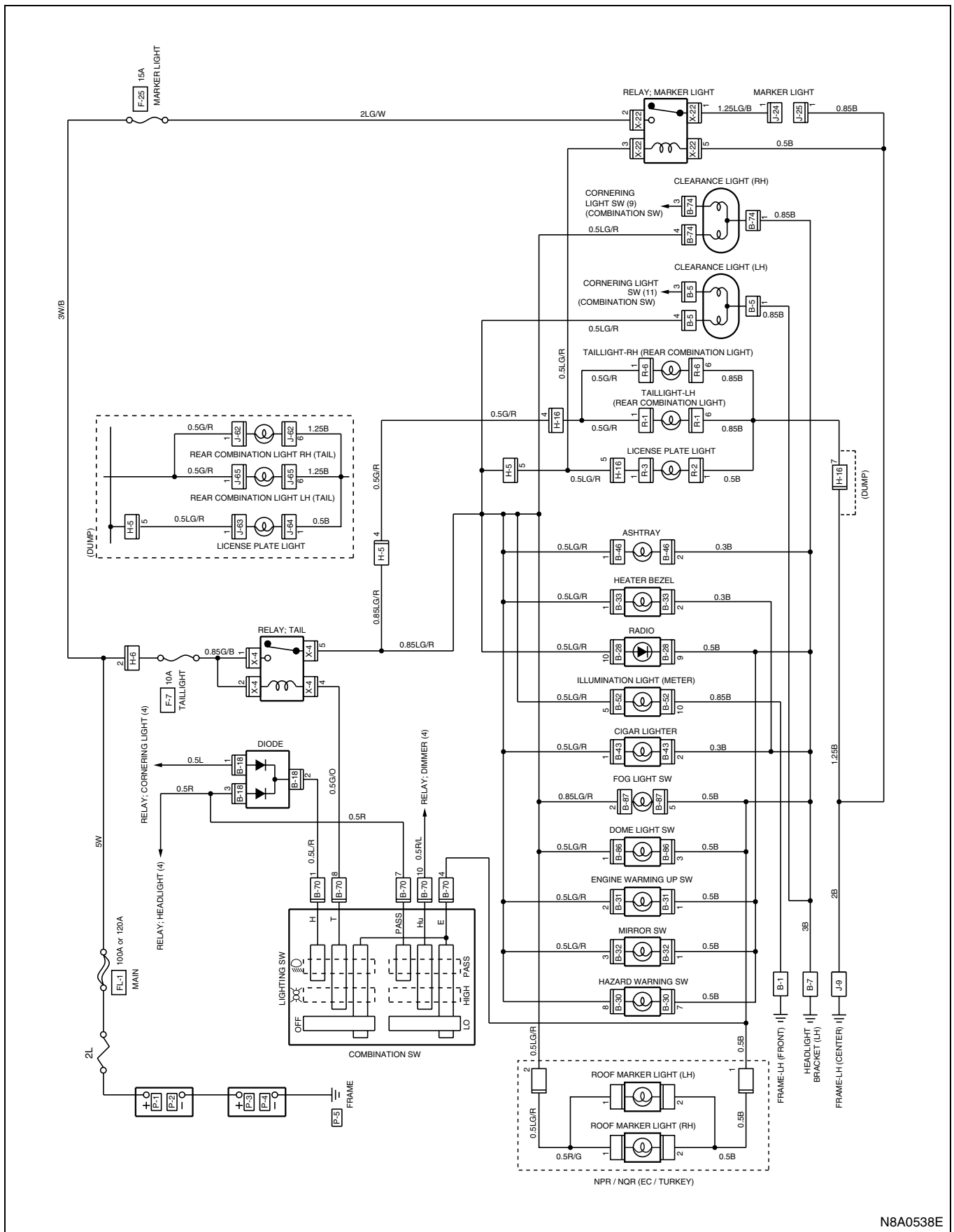


Circuit Diagram

For 12 Volt



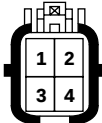
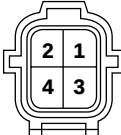
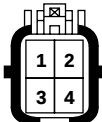
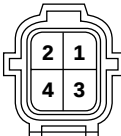
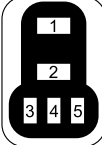
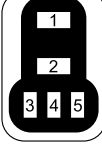
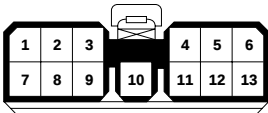
For 24 Volt

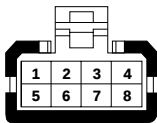
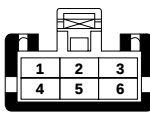
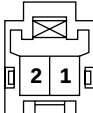
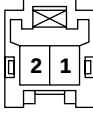
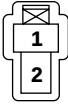


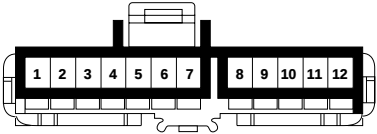
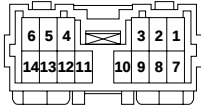
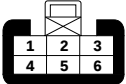
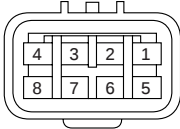
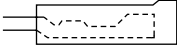
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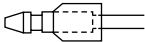
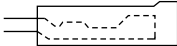
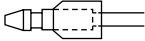
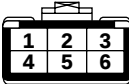
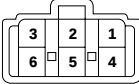
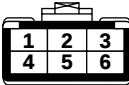
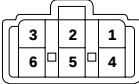
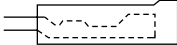
8-172 CAB AND CHASSIS ELECTRICAL

Connector List

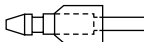
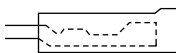
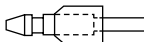
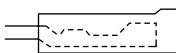
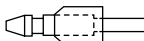
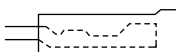
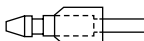
No.	Connector Face
B-5	 004-012
B-5	 004-013
B-74	 004-012
B-74	 004-013
B-18	 003-024
X-4	 005-006
X-22	 005-006
B-28	 013-001

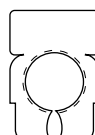
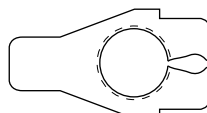
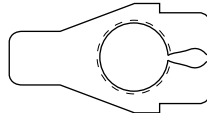
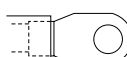
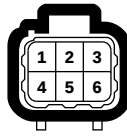
No.	Connector Face
B-30	 008-005
B-31	 006-001
B-33	 002-022
B-33	 002-023
B-46	 002-022
B-46	 002-023
B-43	 002-009
B-43	 002-010

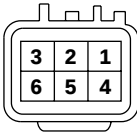
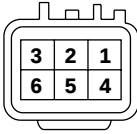
No.	Connector Face
B-52	 012-005
B-70	 014-002
B-70	 014-003
B-86	 004-001
B-87	 006-006
H-16	 008-003
H-16	 008-004
J-24	 000-010

No.	Connector Face
J-24	 000-011
J-25	 000-010
J-25	 000-011
J-62	 006-010
J-62	 006-015
J-65	 006-010
J-65	 006-015
J-63	 000-010

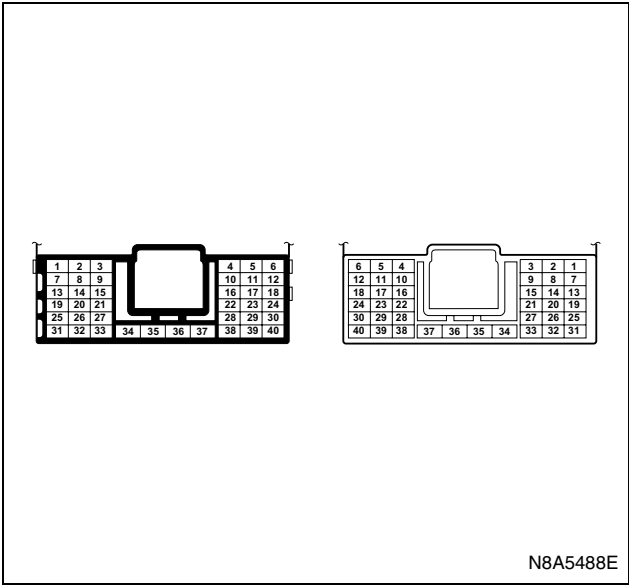
8-174 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
J-63	 000-011
J-64	 000-010
J-64	 000-011
R-2	 000-010
R-2	 000-011
R-3	 000-010
R-3	 000-011
P-1 (12 V)	 000-003

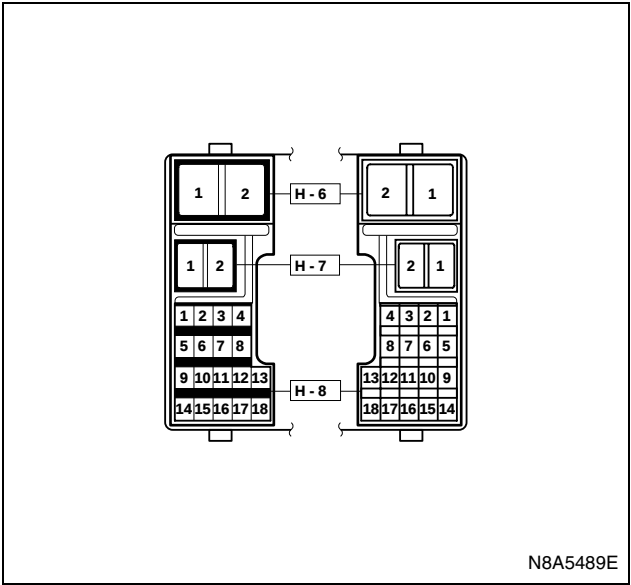
No.	Connector Face
P-2	 000-004
P-1 (24 V)	 000-004
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002
R-1	 006-004

No.	Connector Face
R-1	 006-005
R-6	 006-004
R-6	 006-005

H-5



H-6



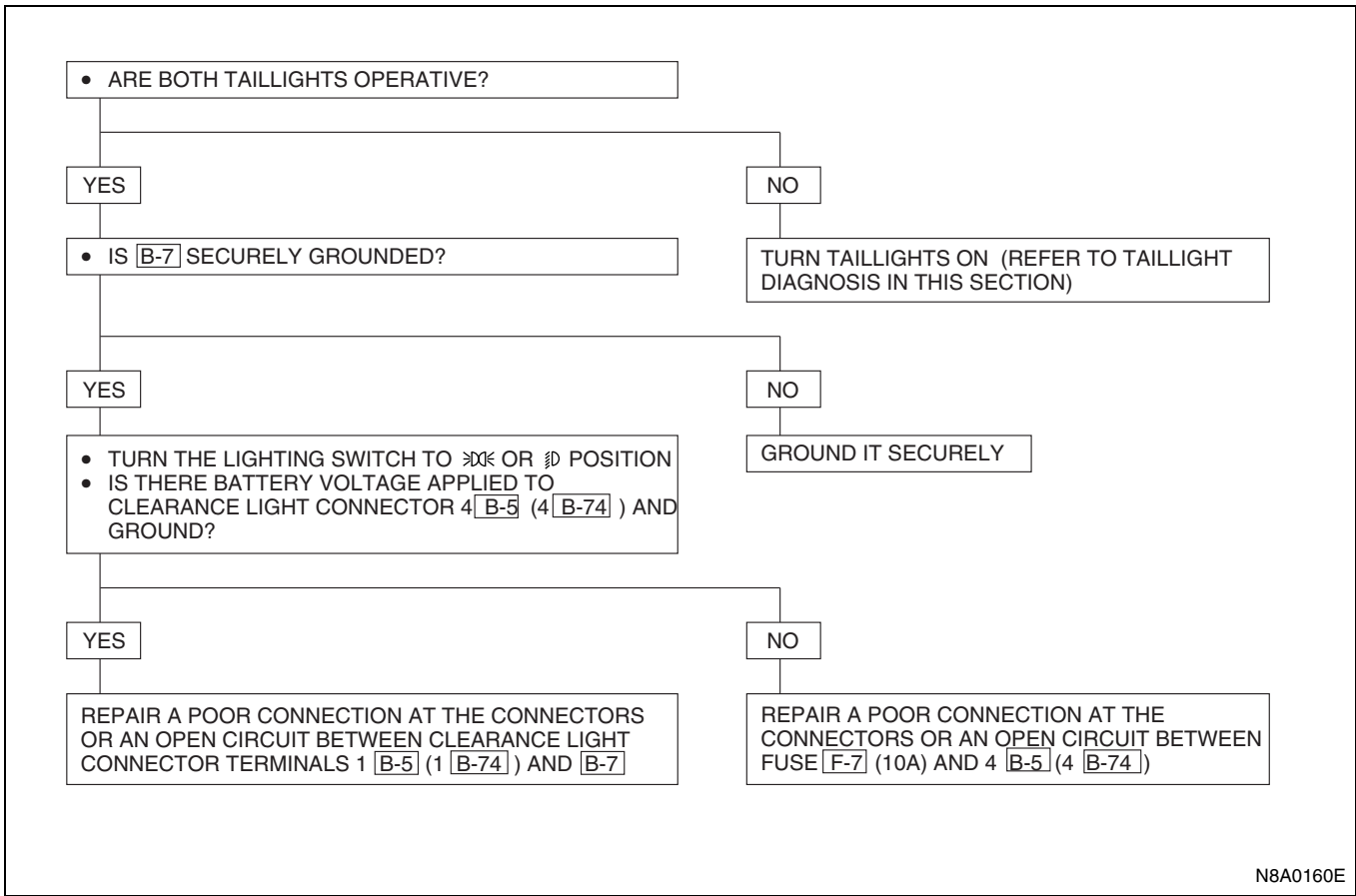
Diagnosis**Quick Chart for Check Point**

		Check point								
		Fuse		Light- ing SW	Tail- light bulb	Clear- ance light bulb	License plate light bulb	Marker light relay	Cable har- ness	Marker light bulb
		F-7 (10 A)	F-25 (15 A)							
Trouble mode	1. Both clearance lights inoperative	○ (1)		○ (3)		○ (2)			○ (4)	
	2. Clearance light on the left (or right) side inoperative					○ (1)			○ (2)	
	3. Both taillights inoperative	○ (1)		○ (2)					○ (3)	
	4. Taillight on the left (or right) side inoperative				○ (1)				○ (2)	
	5. License plate light inoperative						○ (1)		○ (2)	
	6. Marker light inoperative		○ (2)					○ (3)	○ (4)	○ (1)

Notice:

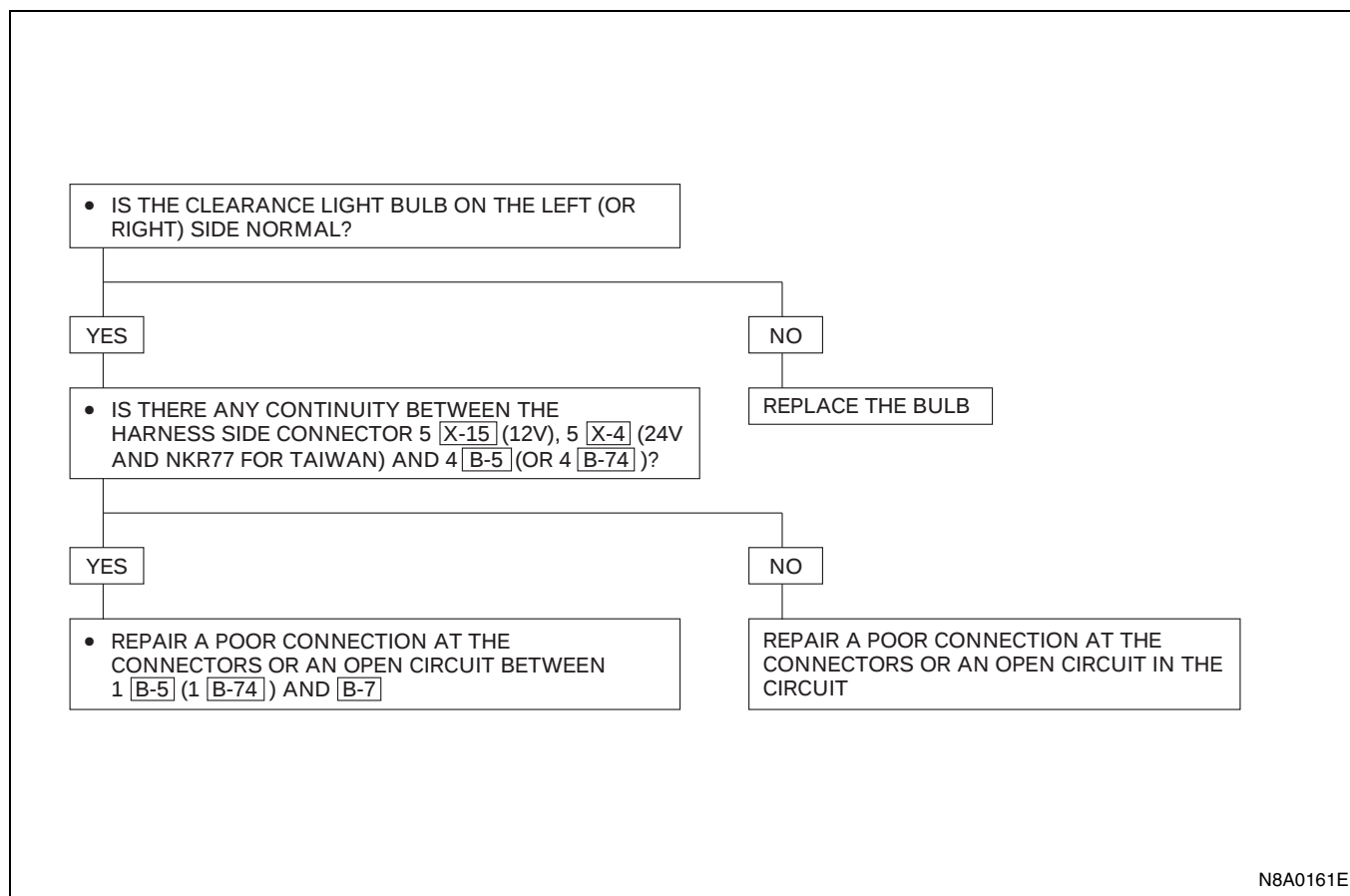
Figure in parenthesis “()” indicates the order of inspection.

1. Both Clearance Lights Inoperative



Notice:

Figure in parenthesis “()” indicates place of inspection for clearance light on the right side.

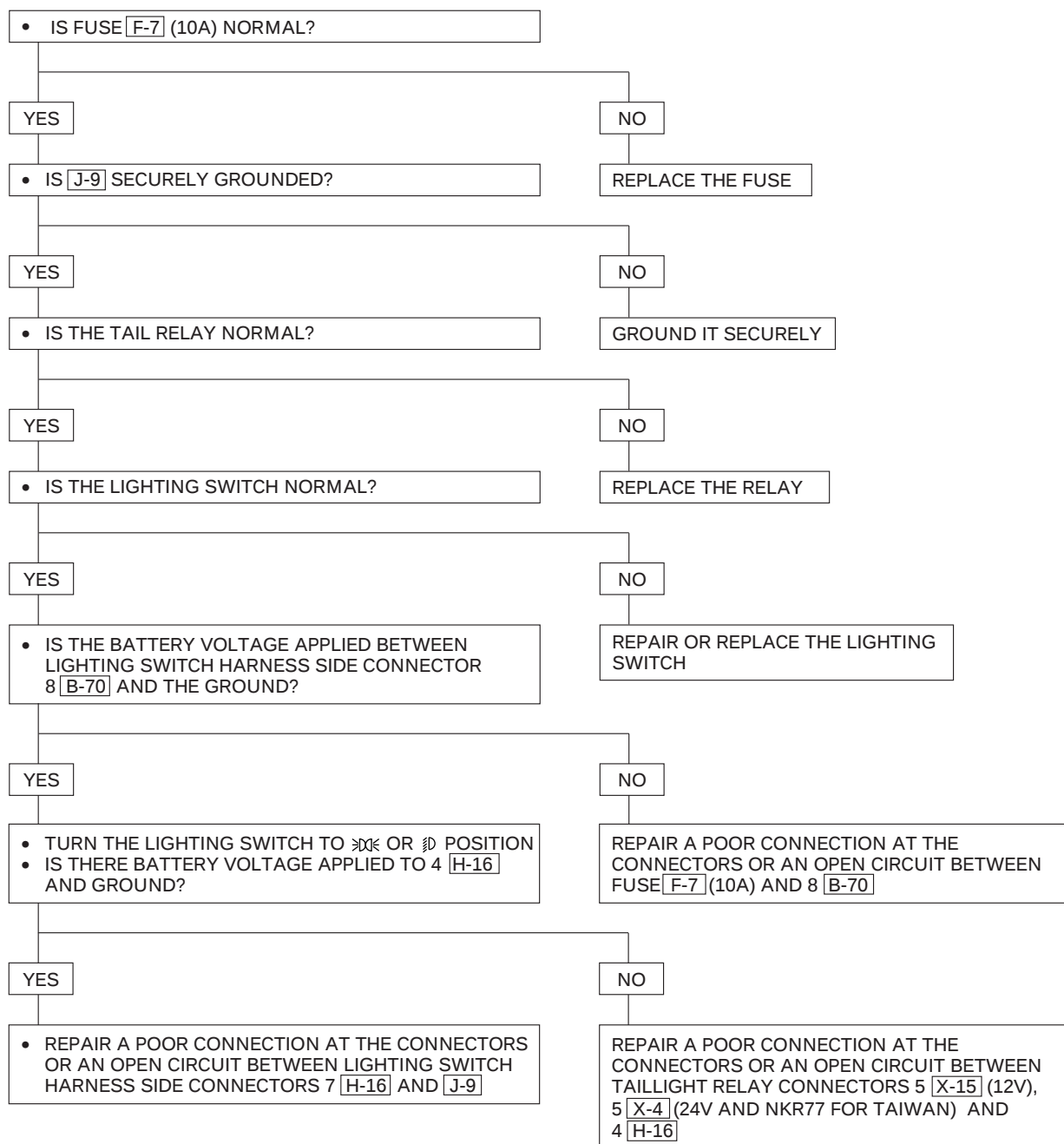
2. Clearance Light on the Left (or Right) Side Inoperative

N8A0161E

Notice:

Figure in parenthesis “()” indicates place of inspection for clearance light on the right side.

3. Both Taillights Inoperative



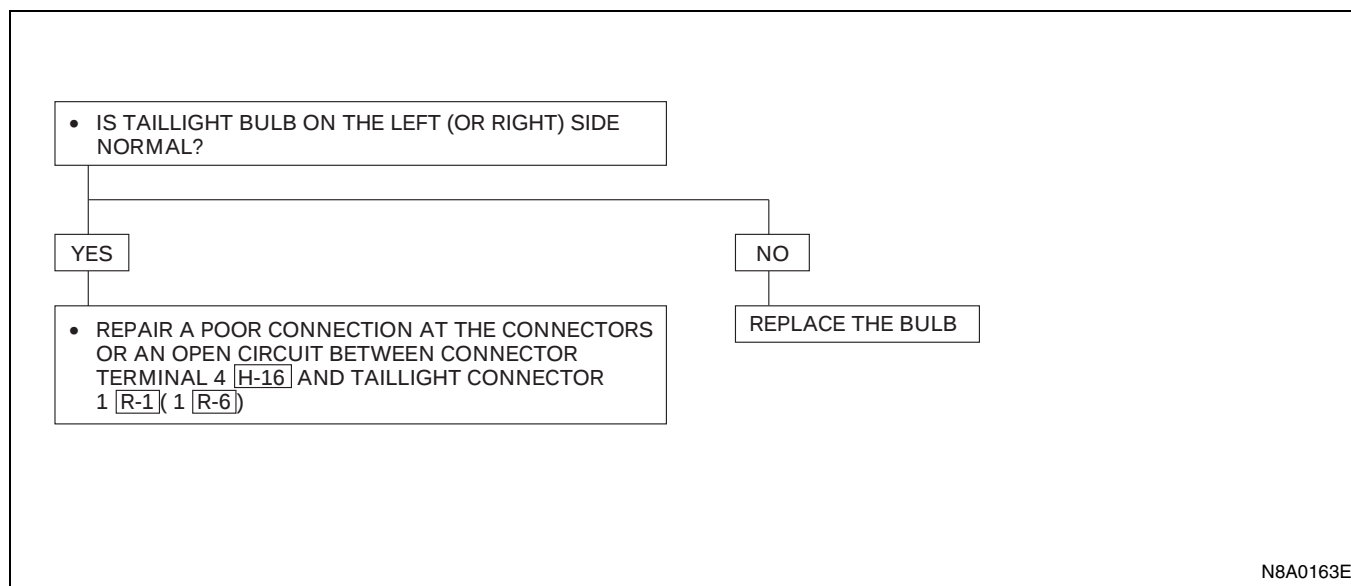
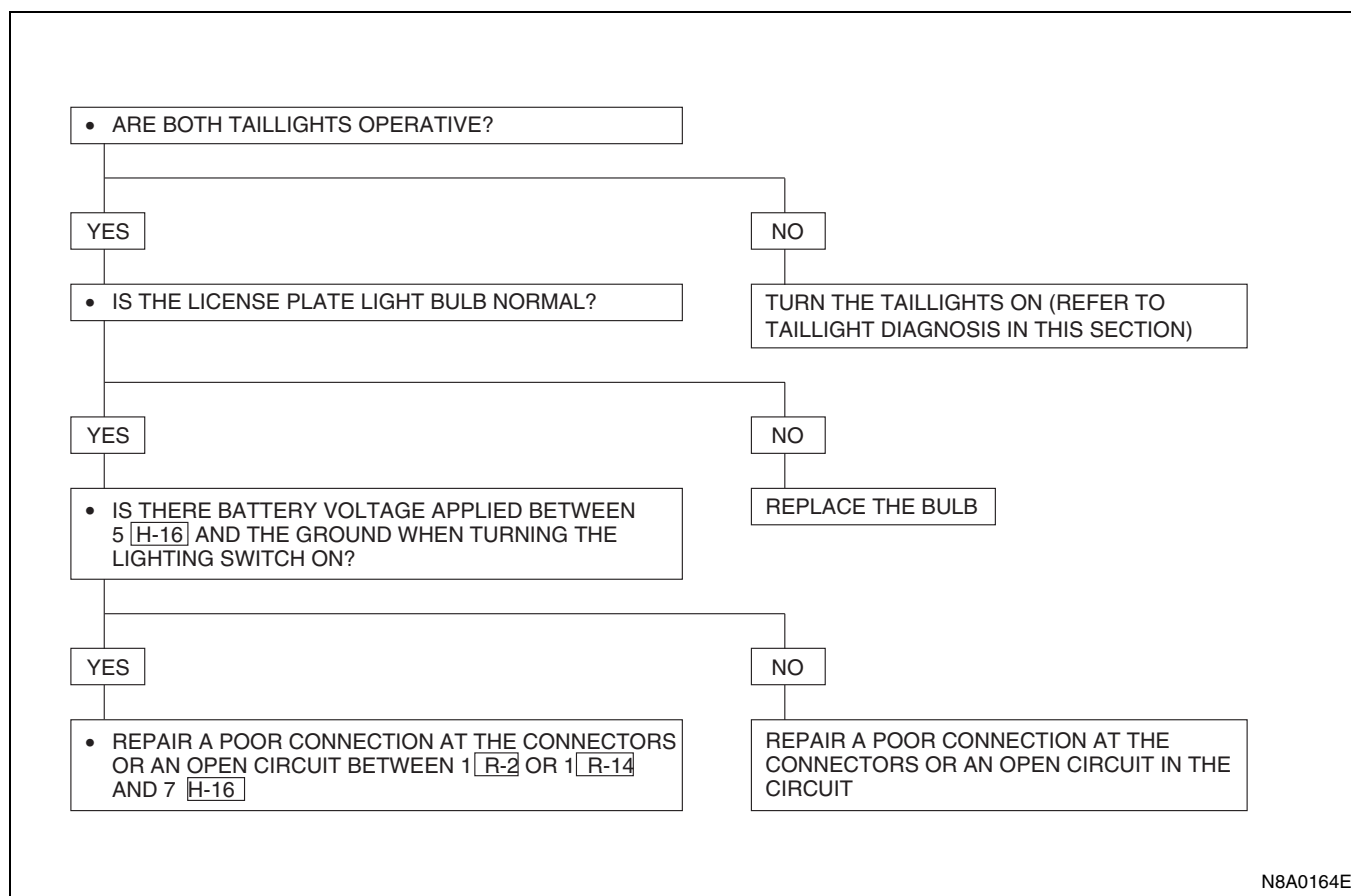
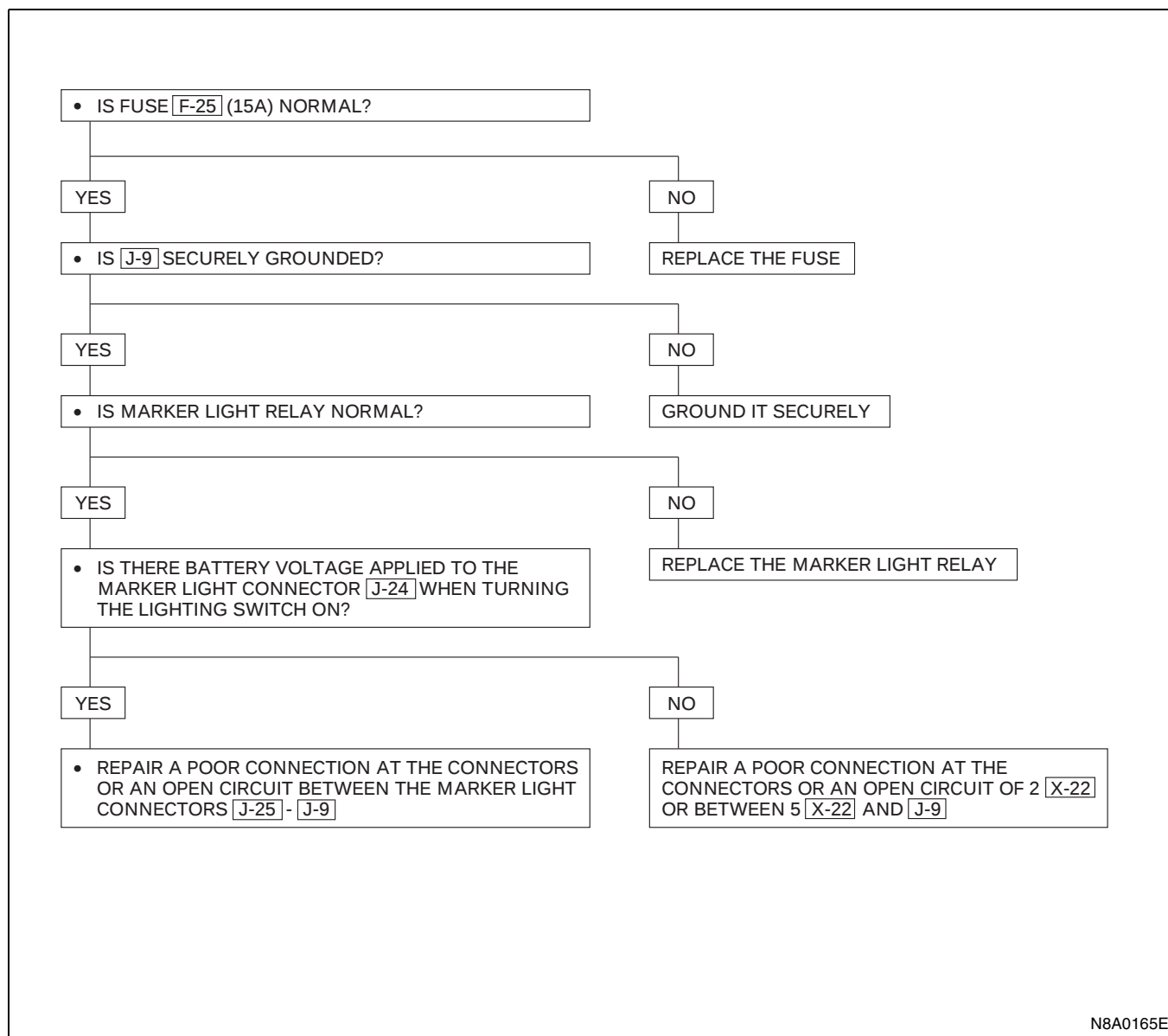
4. Taillight on the Left (or Right) Side Inoperative**Notice:**

Figure in parenthesis “()” indicates place of inspection for taillight on the right side.

5. License Plate Light Inoperative

6. Marker Light Inoperative



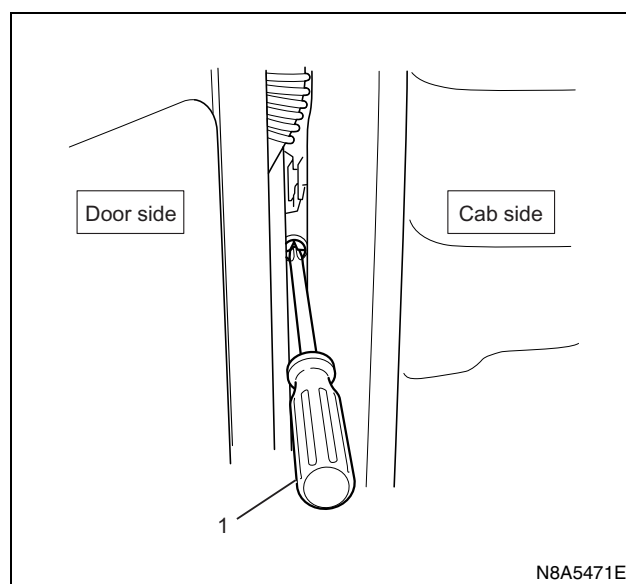
Lighting Switch

Refer to "HEADLIGHT, FOG LIGHT AND CORNERING LIGHT" in this section.

Clearance Light/Bulb

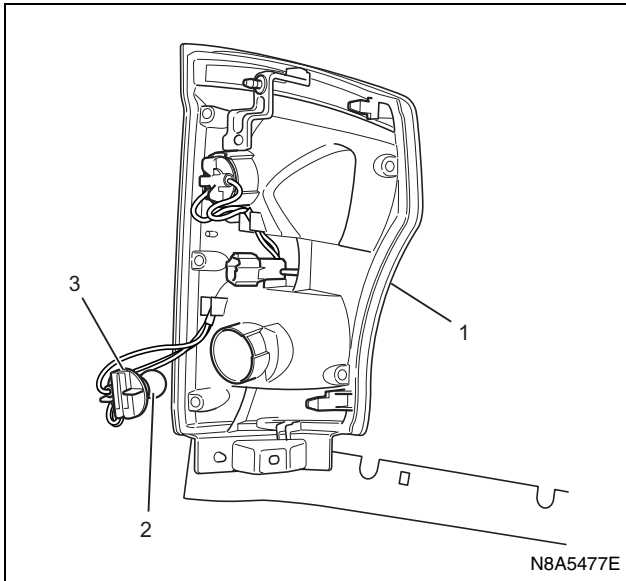
Removal

1. Remove the battery ground cable at the battery.
2. Remove the front combination light.
 - Open the cab door. Insert a screwdriver (1) into the space between the cab and the cab door. Use the screwdriver to force out the stud pin at the center of the grommet (the pin securing the front combination light).



- Remove the fixing screw.

- Remove the two catches.
- Remove the front combination light (1) connector.



3. Remove the clearance light bulb.
 - Turn the bulb socket (3) to the left to remove it.
 - Press the bulb (2) in and turn it to the left to remove it from the socket.

Installation

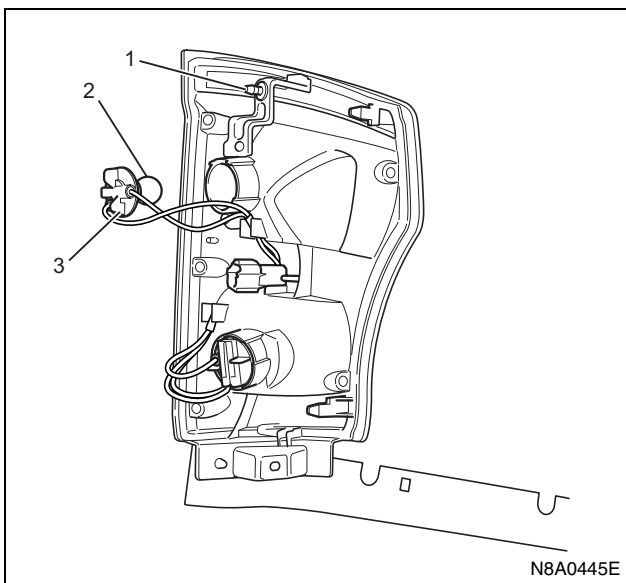
Installation procedure of cornering/clearance light bulb

1. Install the cornering/clearance light bulb.
 - While pressing the bulb (2), turn it clockwise to fit.

Notice:

Do not let the glass portion dirty with sebum etc.

- Turn the bulb socket (3) clockwise to fit.



2. Installation procedure of front combination light assembly
 - Connect the connector of the combination light assembly.

- Position it by aligning two pawls with the groove of H/L.
- Fit the iron PIN (1) in the upper portion of the side by aligning it with the center of corresponding grommet.

Notice:

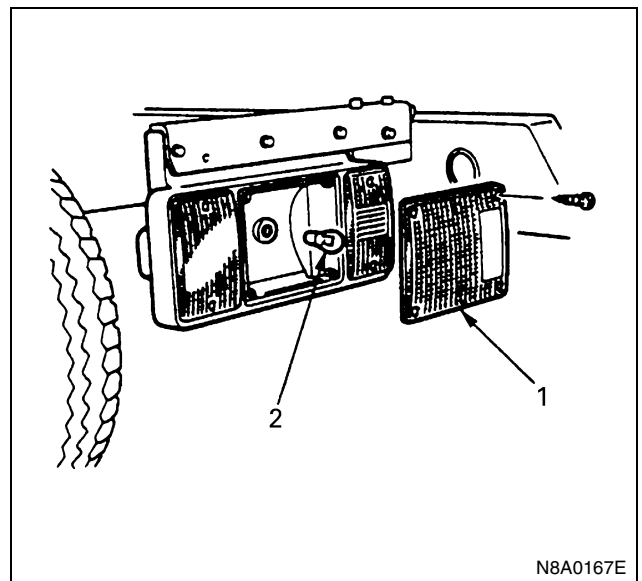
Push it into securely with a force of approx. 250 N (25 kgf) until click is heard.

- Pull the front combination light assembly lightly toward the front of vehicle to make sure that the PIN and grommet are engaged securely.
 - Tighten one bolt in the lower portion of front combination light assembly.
3. Hook the seal rubber on two projections under H/L.
 4. Connect the battery ground cable.
 5. Check lighting of each light.

Taillight Bulb

Removal

1. Lens
2. Bulb



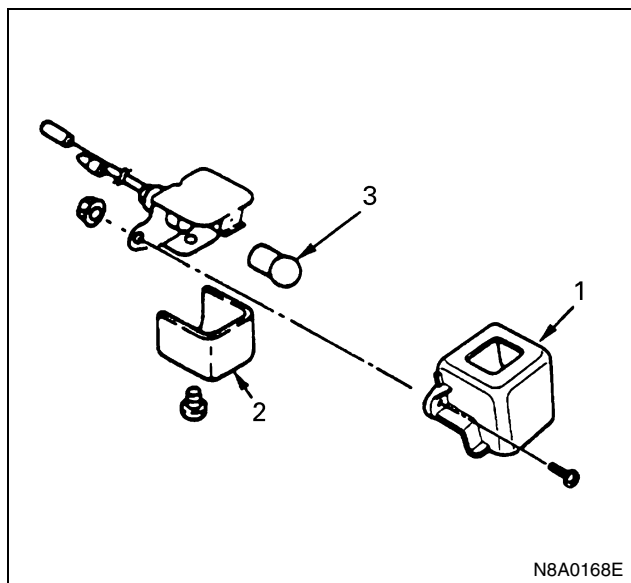
Installation

To install, follow the removal steps in the reverse order.

License Plate Light Bulb

Removal

1. Cover
2. Lens
3. Bulb



Installation

To install, follow the removal steps in the reverse order.

Turn Signal Light, Hazard Warning Light, and Stoplight

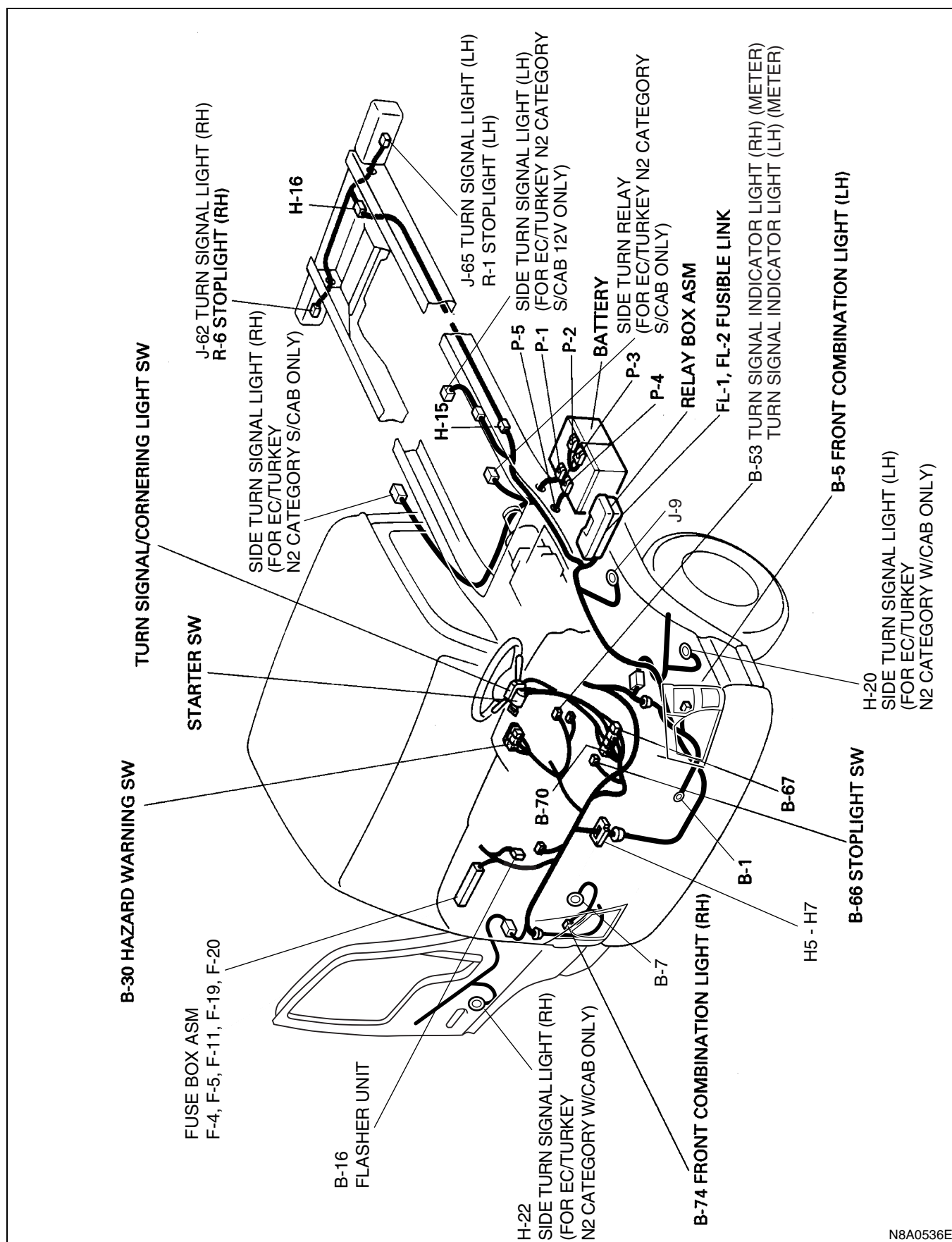
General Description

The circuit consists of the starter switch, turn signal light (front and rear), turn signal light switch, hazard warning light, flasher unit, stoplight and stoplight switch.

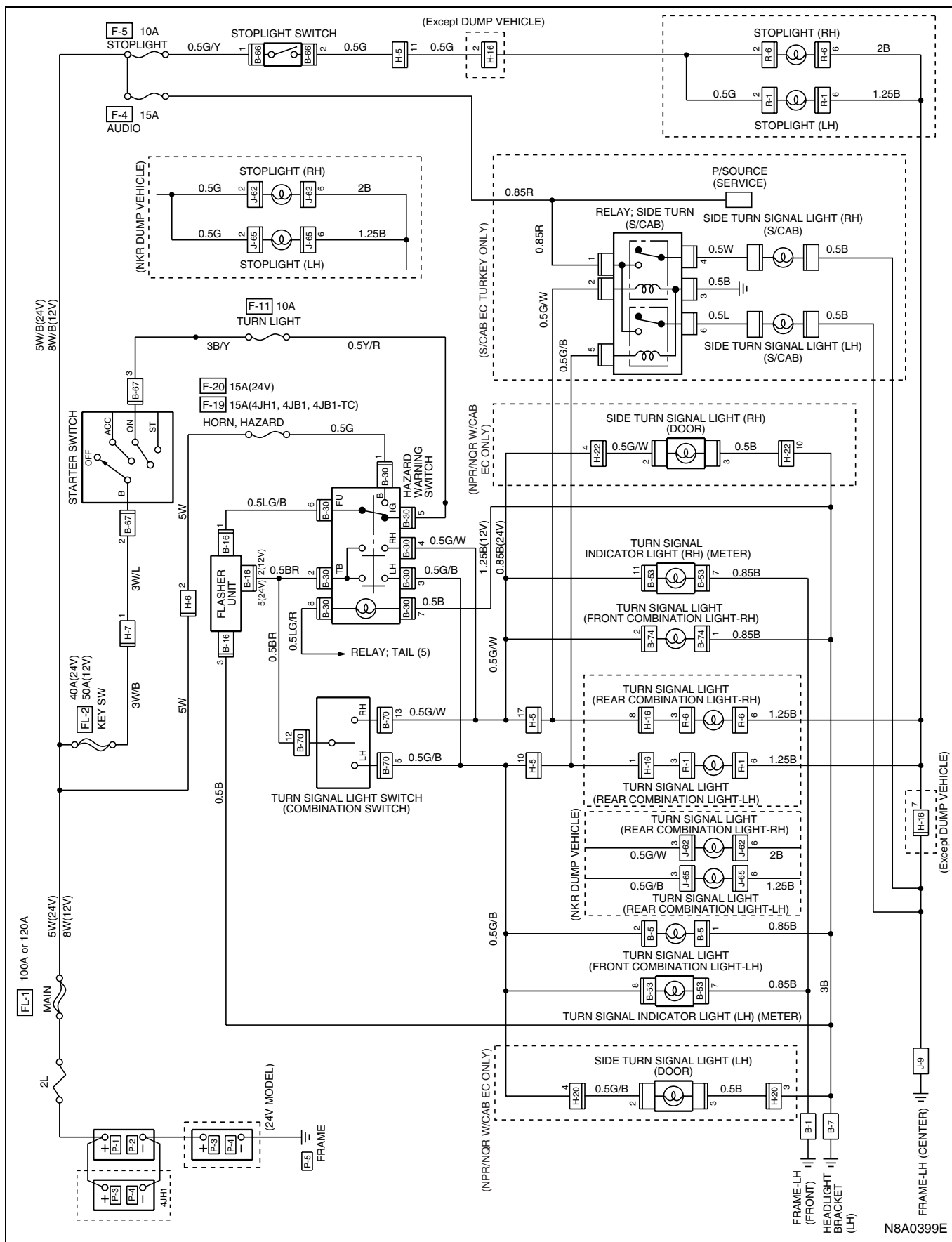
When turning on the respective switches with the starter switch on, the turn signal light will operate. When the turn signal light is flashing, the indicator light in the meter also starts flashing. When the hazard warning switch is turned on, the current flows to the flasher unit through the hazard warning switch to cause the hazard warning light to flash, independent of the position of the starter switch. At the same time, the indicator lights in the meter also start flashing.

The stoplight switch will turn on and the light comes on once the brake pedal is depressed, independent of the position of the starter switch.

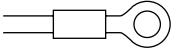
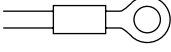
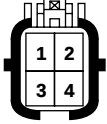
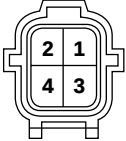
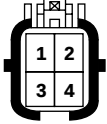
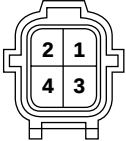
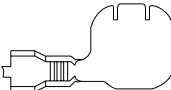
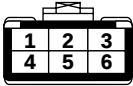
Parts Location

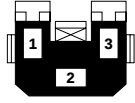
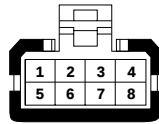
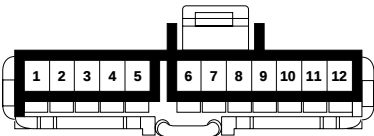
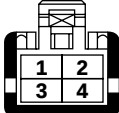
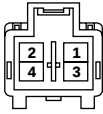
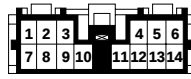
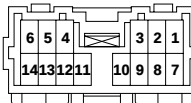


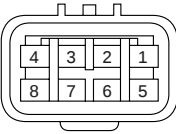
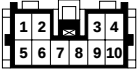
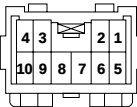
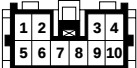
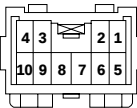
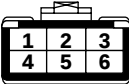
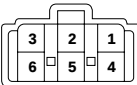
Circuit Diagram

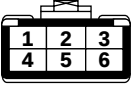
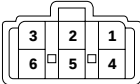
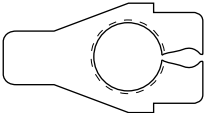
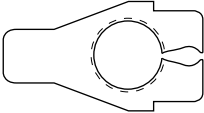
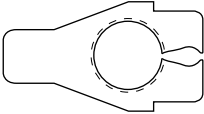
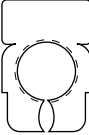
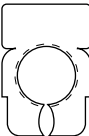


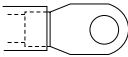
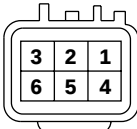
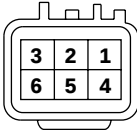
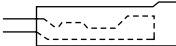
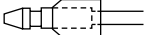
Connector List

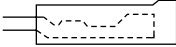
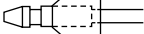
No.	Connector Face
B-1	 000-001
J-9	 000-001
B-5	 004-012
B-5	 004-013
B-74	 004-012
B-74	 004-013
B-7	 000-012
B-16 (24 V)	 006-010

No.	Connector Face
B-16 (12 V)	 003-008
B-30	 008-005
B-53	 012-004
B-66	 002-024
B-67	 004-001
B-67	 004-002
B-70	 014-002
B-70	 014-003

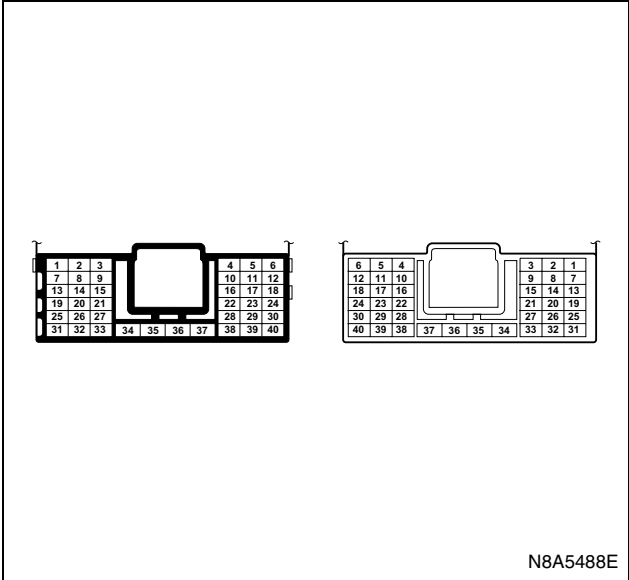
No.	Connector Face
H-16	 008-003
H-16	 008-004
H-20	 010-003
H-20	 010-004
H-22	 010-003
H-22	 010-004
J-62	 006-010
J-62	 006-015

No.	Connector Face
J-65	 006-010
J-65	 006-015
P-1 (12 V)	 000-003
P-2	 000-006
P-1 (24 V)	 000-006
P-4	 000-006
P-2 (24 V)	 000-004
P-3	 000-004

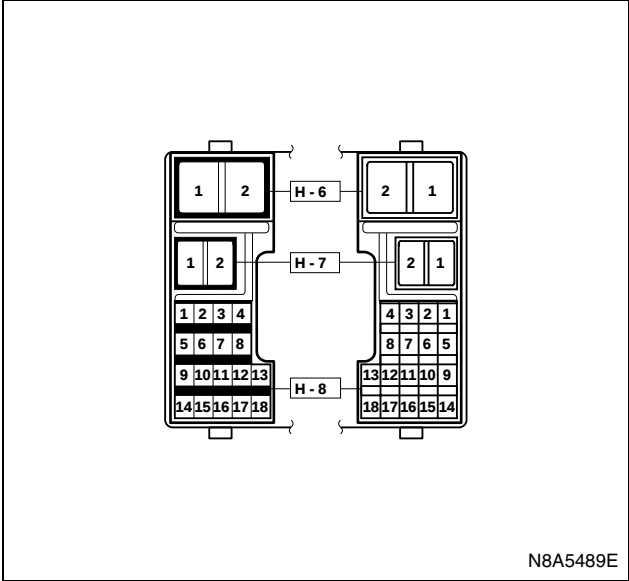
No.	Connector Face
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002
R-1	 006-004
R-1	 006-005
R-6	 006-004
R-6	 006-005
	 000-010
	 000-011

No.	Connector Face
	 000-010
	 000-011

H-5



H-6, H-7



Diagnosis**Quick Chart for Check Point****1. Turn Signal Light, Hazard Warning Light**

		Check point						
		Fuse		Turn signal light SW	Hazard warning light SW	Flasher unit	Turn signal light bulb	Cable harness
		F-19, F-20 (15 A)	F-11 (10 A)					
Trouble mode	1-1. Turn signal lights inoperative		○	○		○		○
	1-2. Turn signal lights flash too quickly						○	○
	1-3. Hazard warning lights inoperative	○			○			

Notice:

Figure in parenthesis “()” indicates the order of inspection.

2. Stoplight

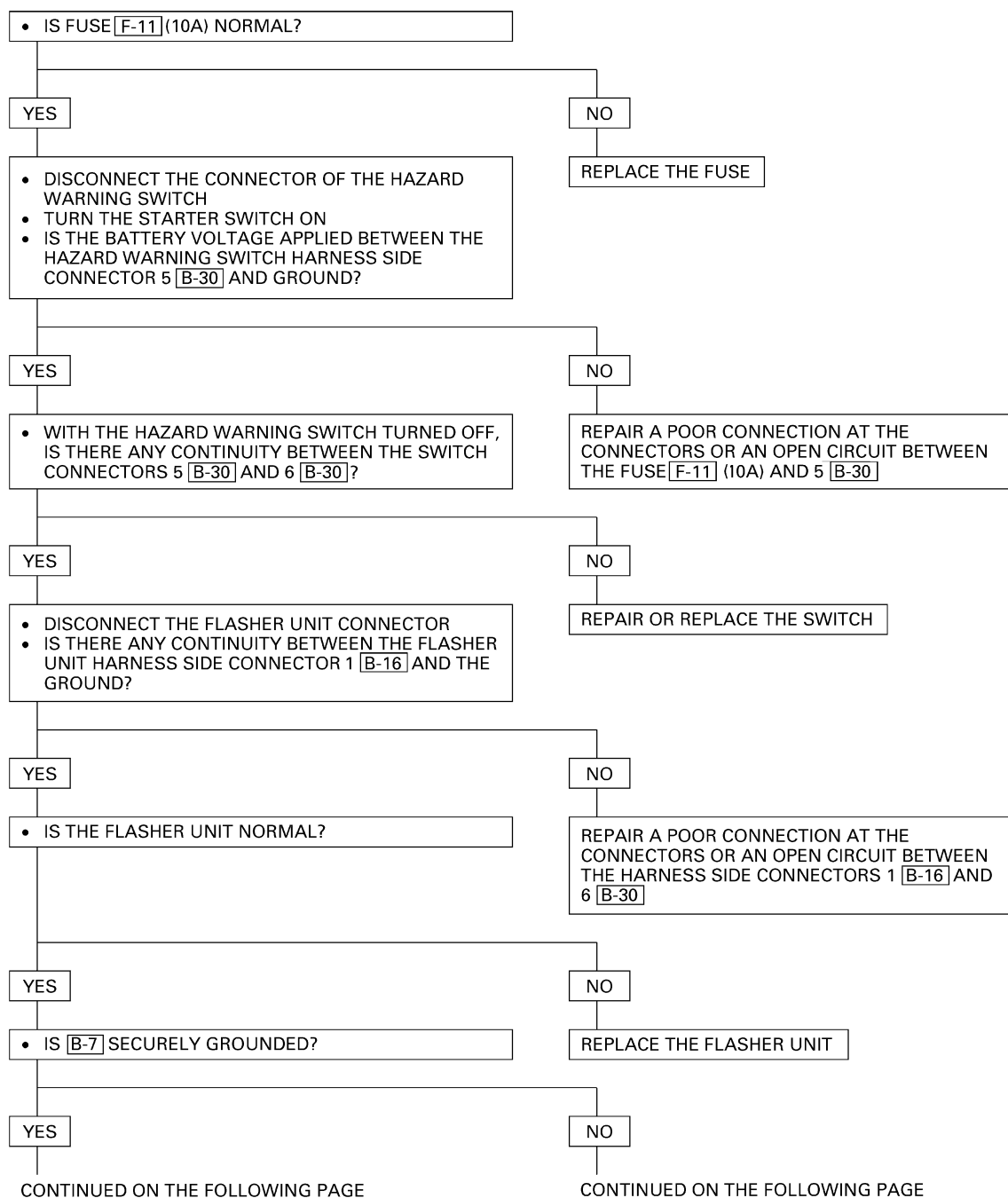
		Check point			
		Fuse F-5 (10 A)	Stoplight SW	Stoplight bulb	Cable harness
Trouble mode	2-1. Both stoplights inoperative	○	○		○
	2-2. Stoplight on the left (or right) side inoperative			○	○

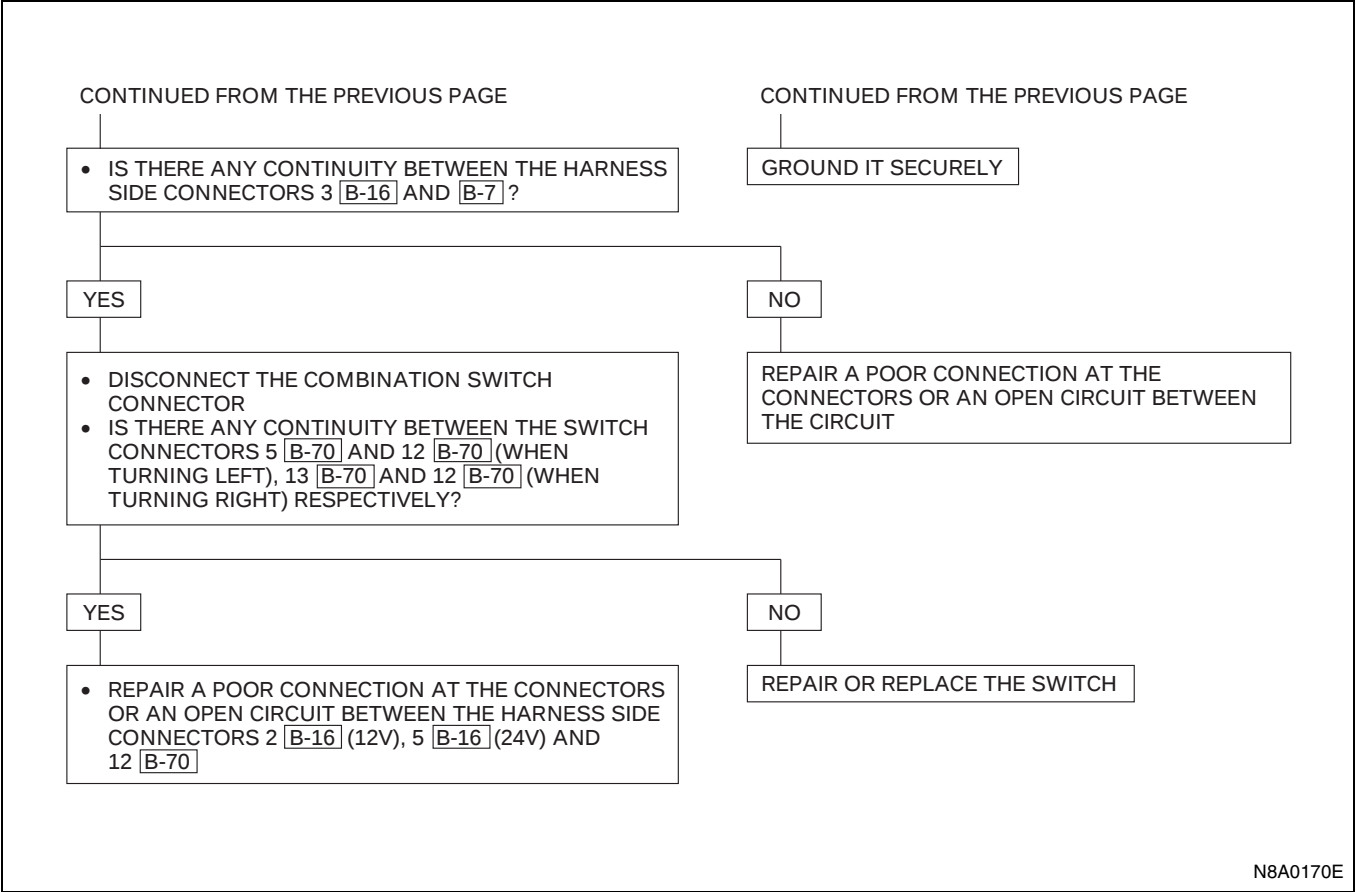
Notice:

Figure in parenthesis “()” indicates the order of inspection.

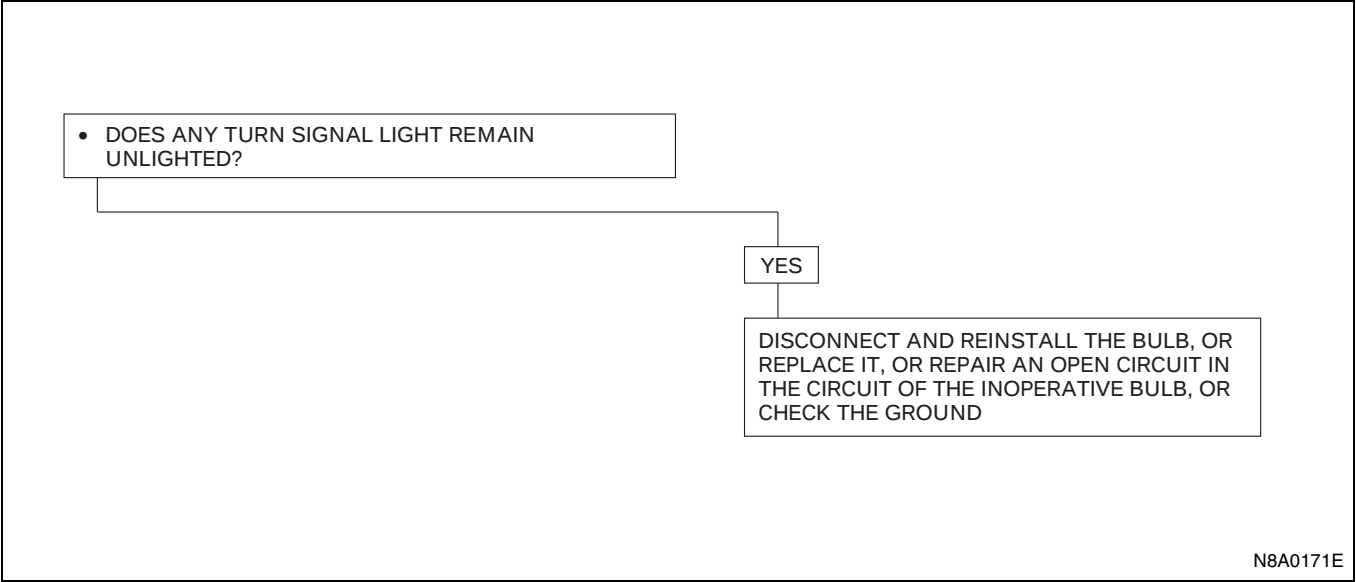
1. Turn Signal Light, Hazard Warning Light

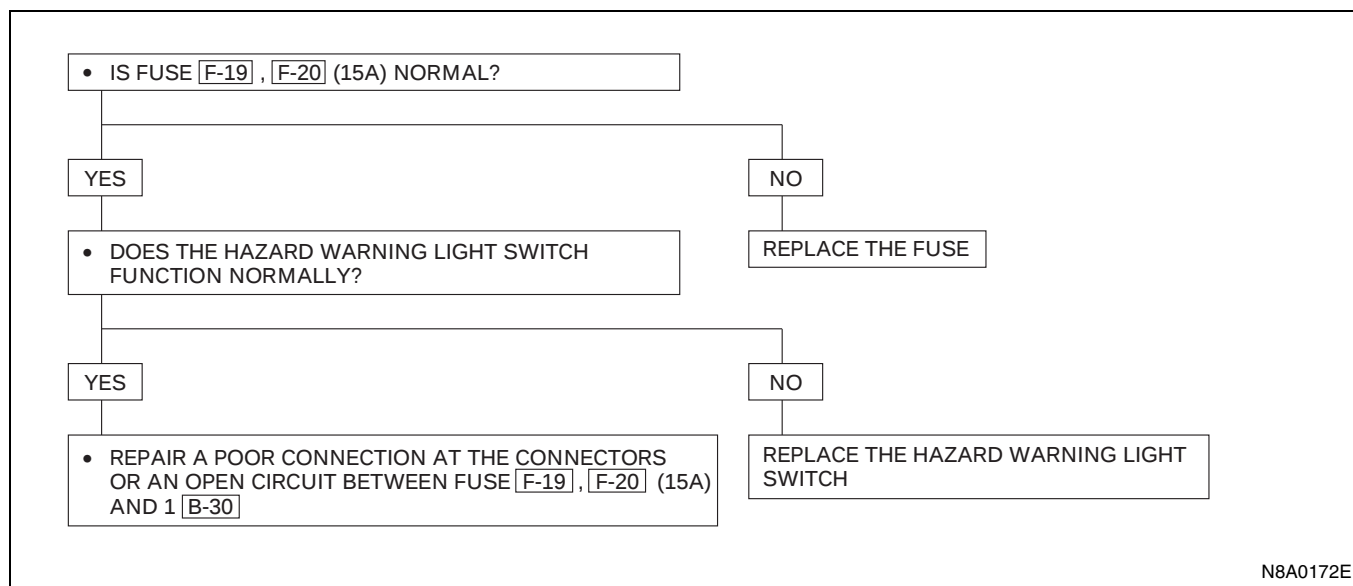
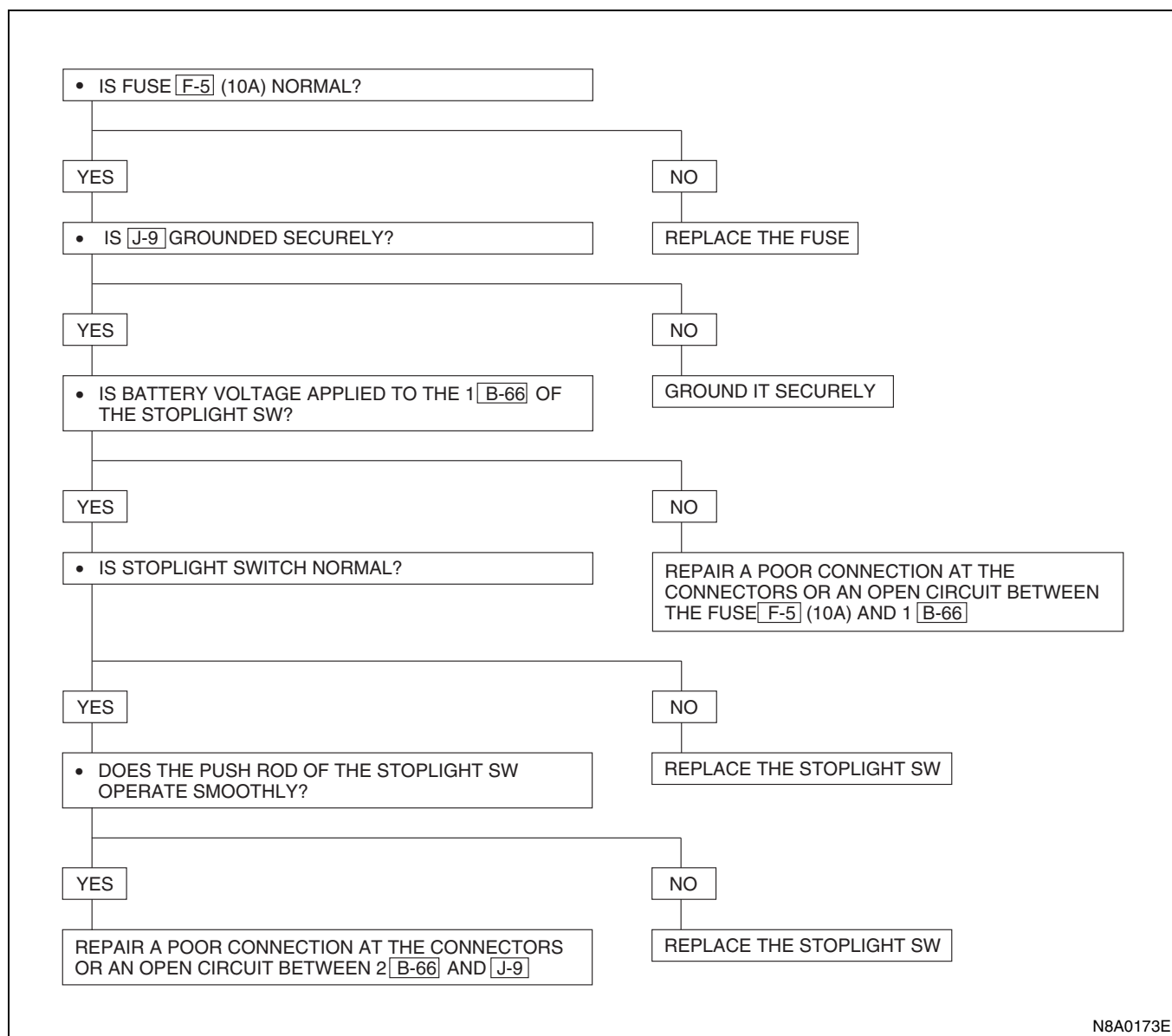
1-1. Turn Signal Lights Inoperative



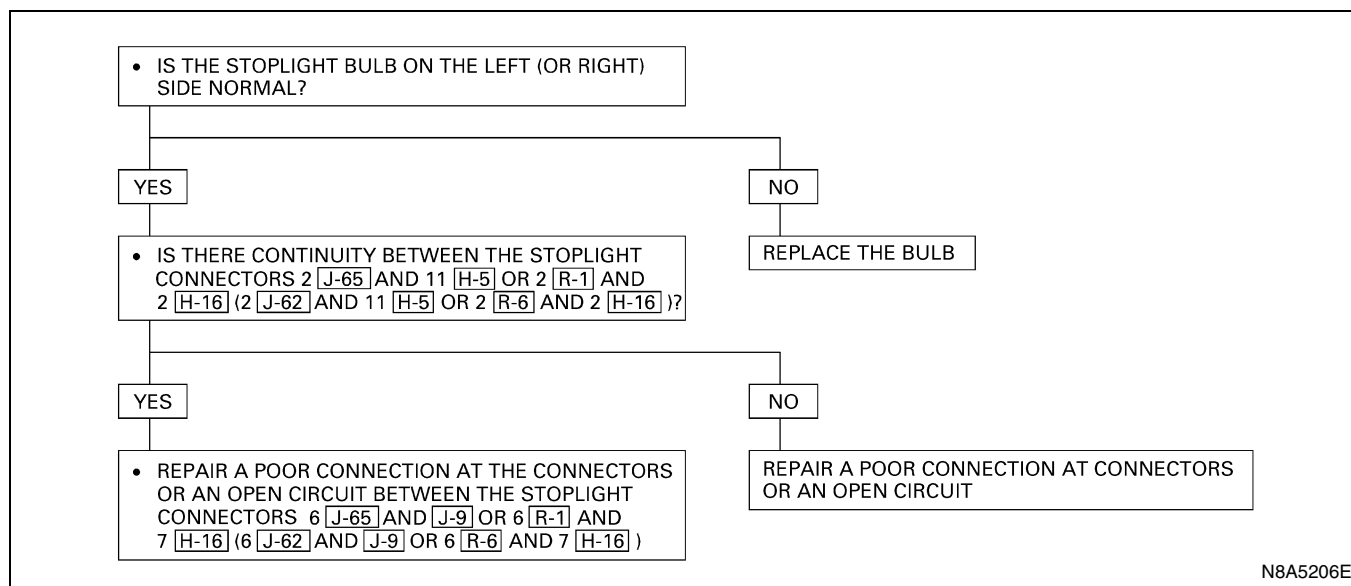


1-2. Turn Signal Lights Flash Too Quickly



1-3. Hazard Warning Lights Inoperative**2. Stoplight****2-1. Both Stoplights Inoperative**

2-2. Stoplight on the Left (or Right) Side Inoperative



Notice:

Figure in parenthesis “()” indicates the place of inspection for the right side stoplight.

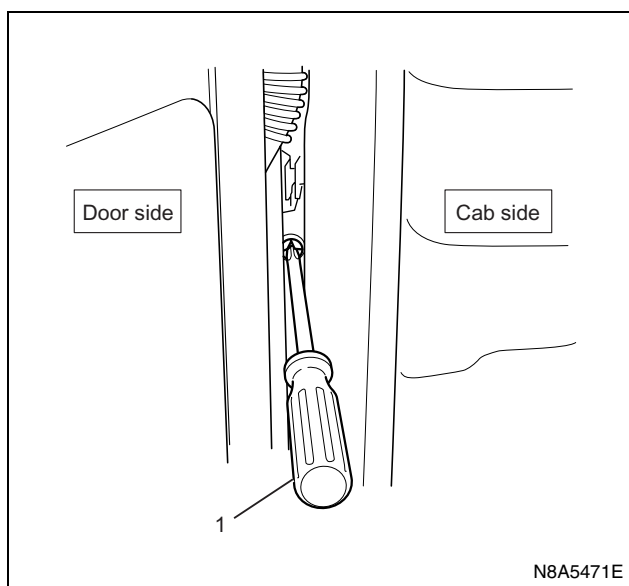
Starter Switch

Refer to “START AND CHARGING” in this section.

Front Turn Signal Light/Bulb

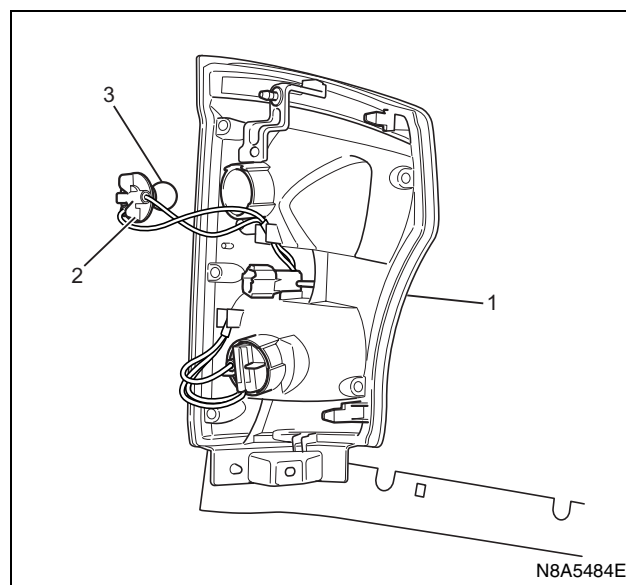
Removal

1. Remove the battery ground cable at the battery.
2. Remove the front combination light.
 - Open the cab door. Insert a screwdriver (1) into the space between the cab and the cab door. Use the screwdriver to force out the stud pin at the center of the grommet (the pin securing the front combination light).



- Remove the fixing screw.
- Remove the two catches.

- Remove the front combination light (1) connector.



3. Remove the front turn signal light bulb.
 - Turn the bulb socket (2) to the left to remove it.
 - Press the bulb (3) in and turn it to the left to remove it from the socket.

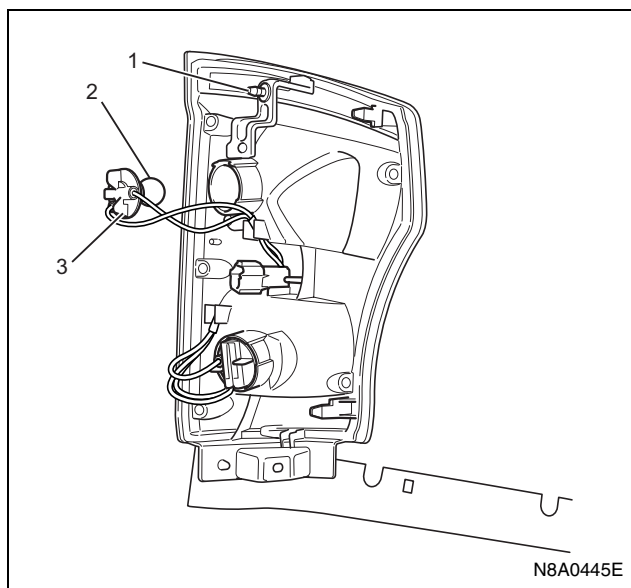
Installation

1. Install the front turn signal light bulb.
 - While pressing the bulb (2), turn it clockwise to fit.

Notice:

Do not let the glass portion dirty with sebum etc.

- Turn the bulb socket (3) clockwise to fit.



2. Installation procedure of front combination light assembly

- Connect the connector of the front combination light assembly.
- Position it by aligning two pawls with the groove of H/L.
- Fit the iron PIN (1) in the upper portion of the side by aligning it with the center of corresponding grommet.

Notice:

Push it into securely with a force of approx. 250 N (25 kgf) until click is heard.

- Pull the front combination light assembly lightly toward the front of vehicle to make sure that the PIN and grommet are engaged securely.
- Tighten one bolt in the lower portion of front combination light assembly.

3. Hook the seal rubber on two projections under H/L.

4. Connect the battery ground cable.
5. Check lighting of each light.

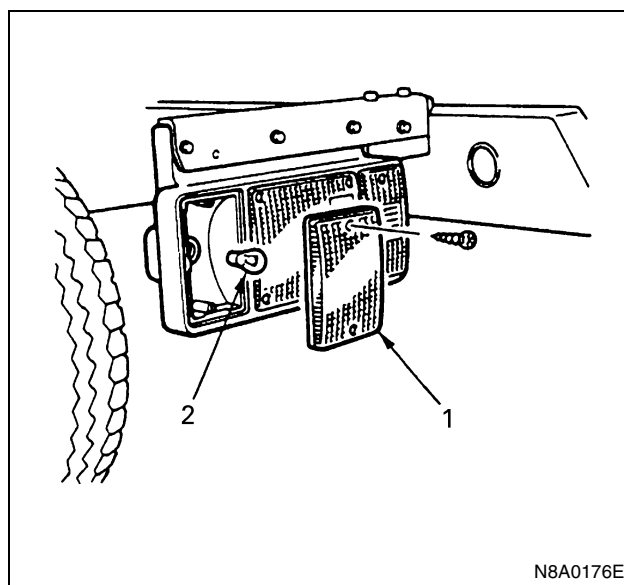
Rear Turn Signal Light/Bulb

Removal

Preparation:

Disconnect the battery ground cable.

1. Lens
2. Bulb



Installation

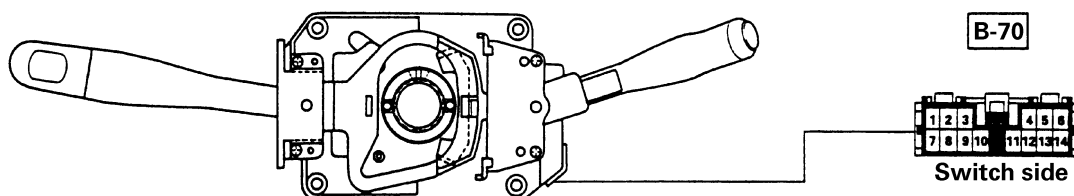
To install, follow the removal steps in the reverse order.

Turn Signal Light Switch (Combination Switch)

Inspection

Check the continuity between the terminals of the turn signal light switch.

Repair or replace the switch when the result of inspection is found abnormal.



Terminal No.		2	5	9	11	12	13
SW position							
Turn signal light SW	Turning left		○			○	
	Neutral						
	Turning right					○	○

Removal and Installation

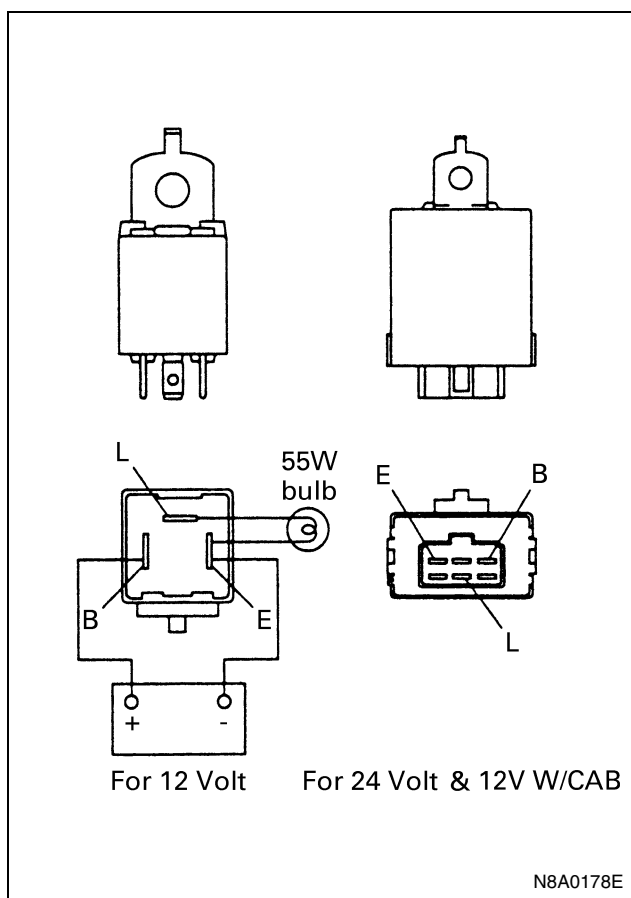
Refer to "HEADLIGHT, FOG LIGHT AND CORNERING LIGHT" in this section.

Flasher Unit

Inspection

When a 55W bulb is connected to the unit side terminals "L" and "E" while connecting the battery (+) terminal to terminal "B", and the battery (-) terminal to terminal "E", does the bulb light on and off?

Replace the unit when the result of inspection is found abnormal.



Stoplight Bulb

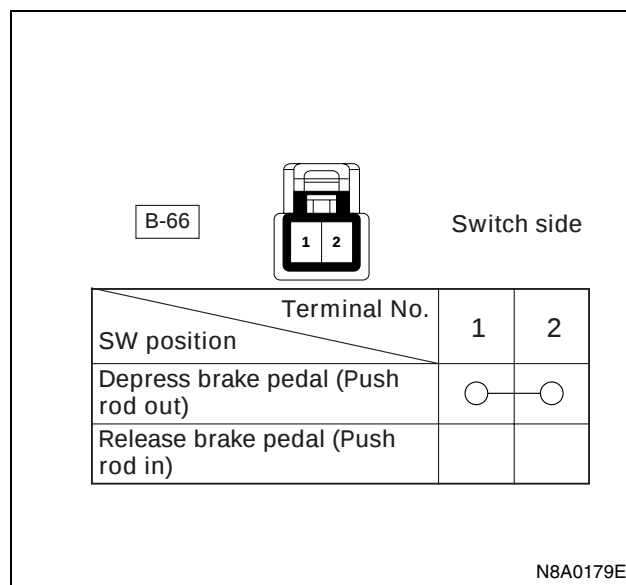
Removal and Installation

Refer to "CLEARANCE LIGHT, TAILLIGHT, LICENSE PLATE LIGHT AND ILLUMINATION LIGHT" for TAIL-LIGHT BULB removal and installation steps in this section.

Stoplight Switch

Inspection

1. Check to see if the stoplight switch is installed correctly to the specified position. Adjust the position when the result of the inspection is found abnormal.
2. Check to see if there is any continuity between the terminals of the stoplight switch. Replace the switch when the result of inspection is found abnormal.

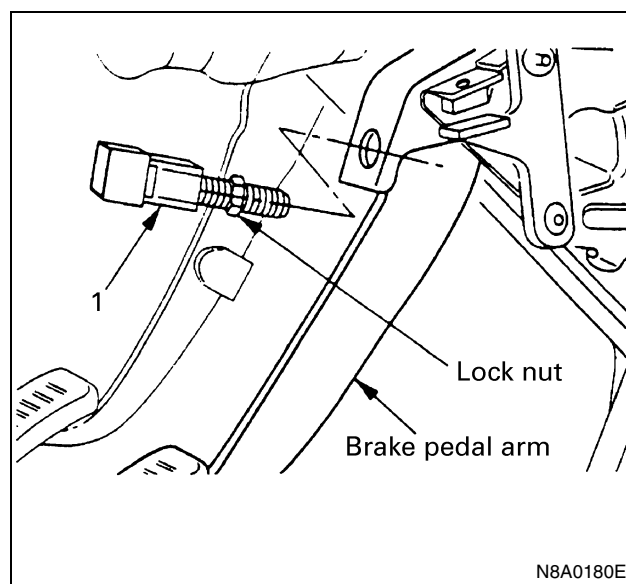


Removal

Preparation:

Disconnect the battery ground cable.

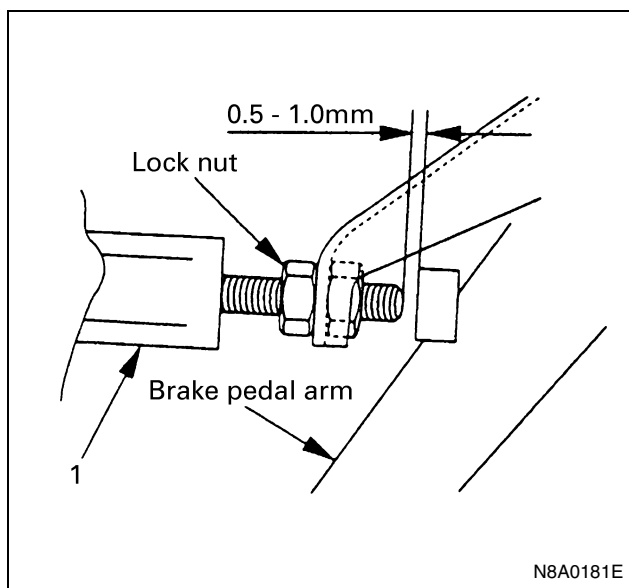
1. Stoplight Switch
 - 1) Disconnect the connector.
 - 2) Loosen the lock nut of the switch.
 - 3) Remove the switch by turning it.



Installation

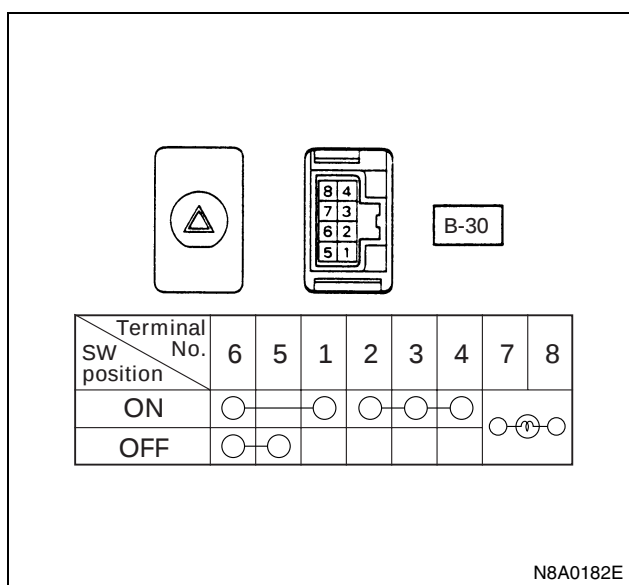
To install, follow the removal steps in the reverse order, noting the following points.

- 1) Check to see if the brake pedal has been returned by the return spring to the specified position.
- 2) Turn the stoplight switch clockwise until the tip of the threaded portion of the switch contacts the pedal arm.
- 3) Turn the switch counterclockwise until the space between the tip of the threaded portion and the pedal arm is 0.5 to 1.0 mm (0.02 — 0.04 in.).

**Hazard Warning Switch****Inspection**

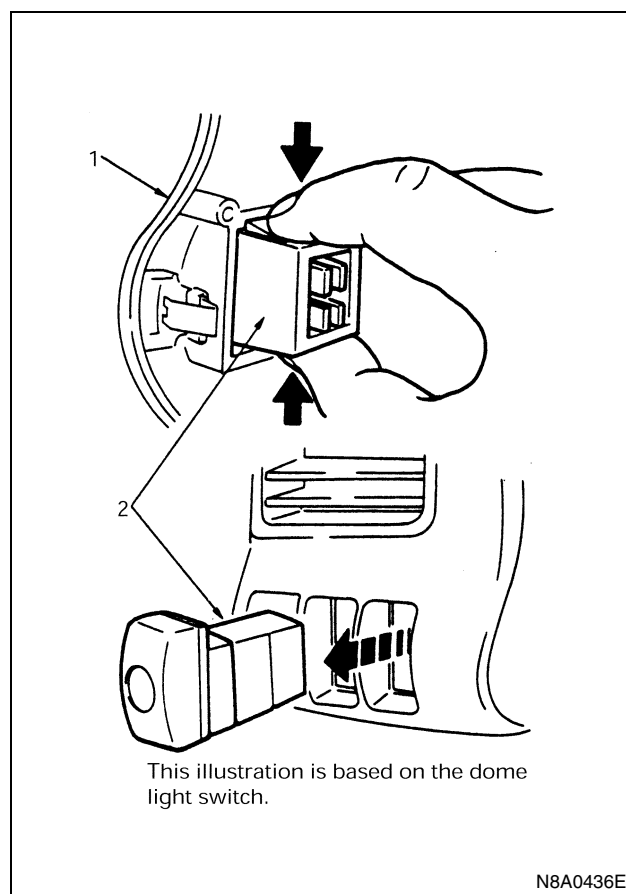
Check the continuity between the terminals of the hazard warning switch.

Repair or replace the switch when the result of inspection is found abnormal.

**Removal****Preparation:**

Disconnect the battery ground cable.

1. Meter Cluster
Refer to the "METER AND WARNING/INDICATOR LIGHT" in this section.
2. Hazard Warning Switch
Release the lock pushing the switch from the back side of the meter cluster.

**Installation**

To install, follow the removal steps in the reverse order noting the following point.

1. Push the switch with your fingers until locks securely.

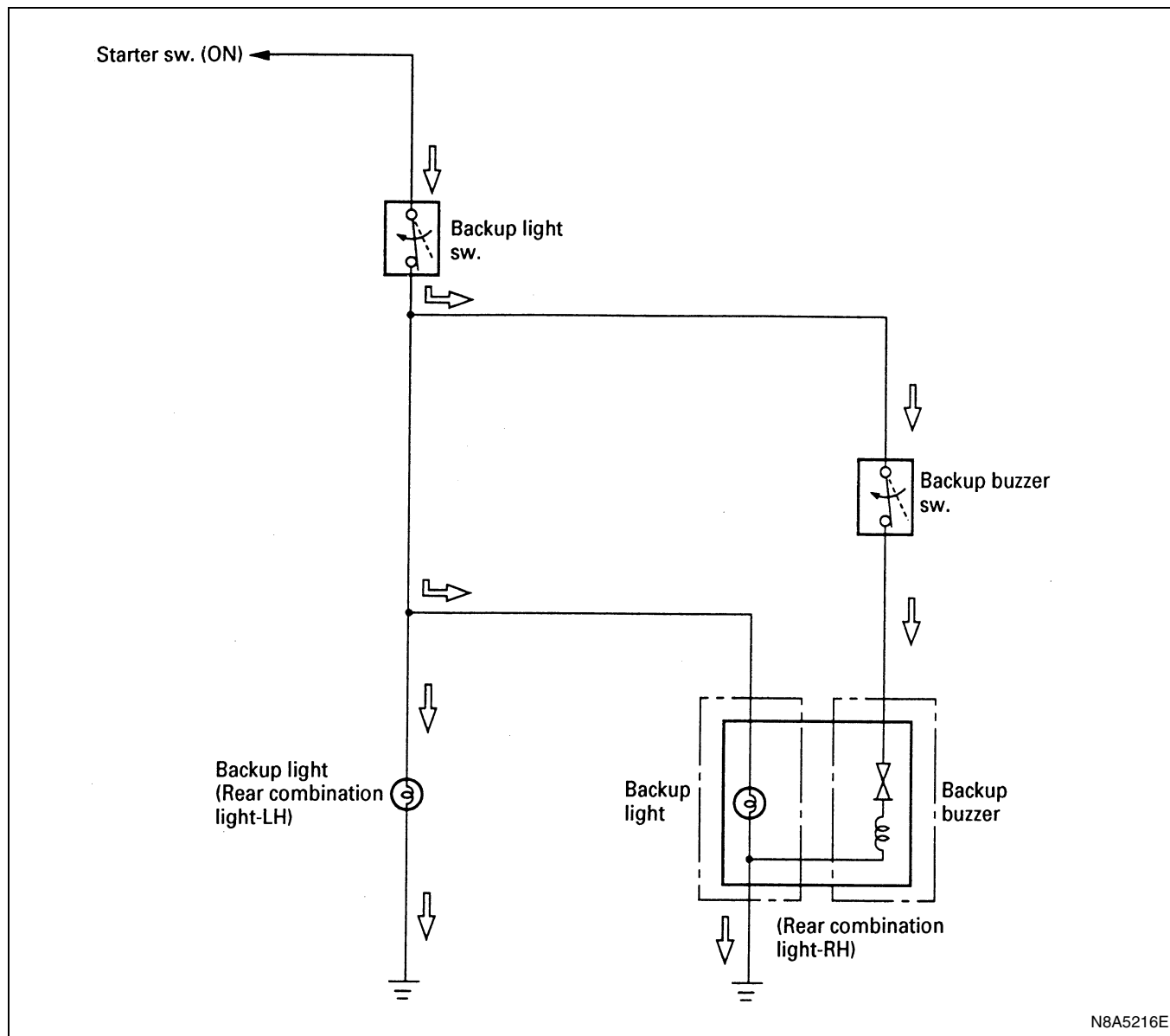
Horn, Backup Light and Backup Buzzer

General Description

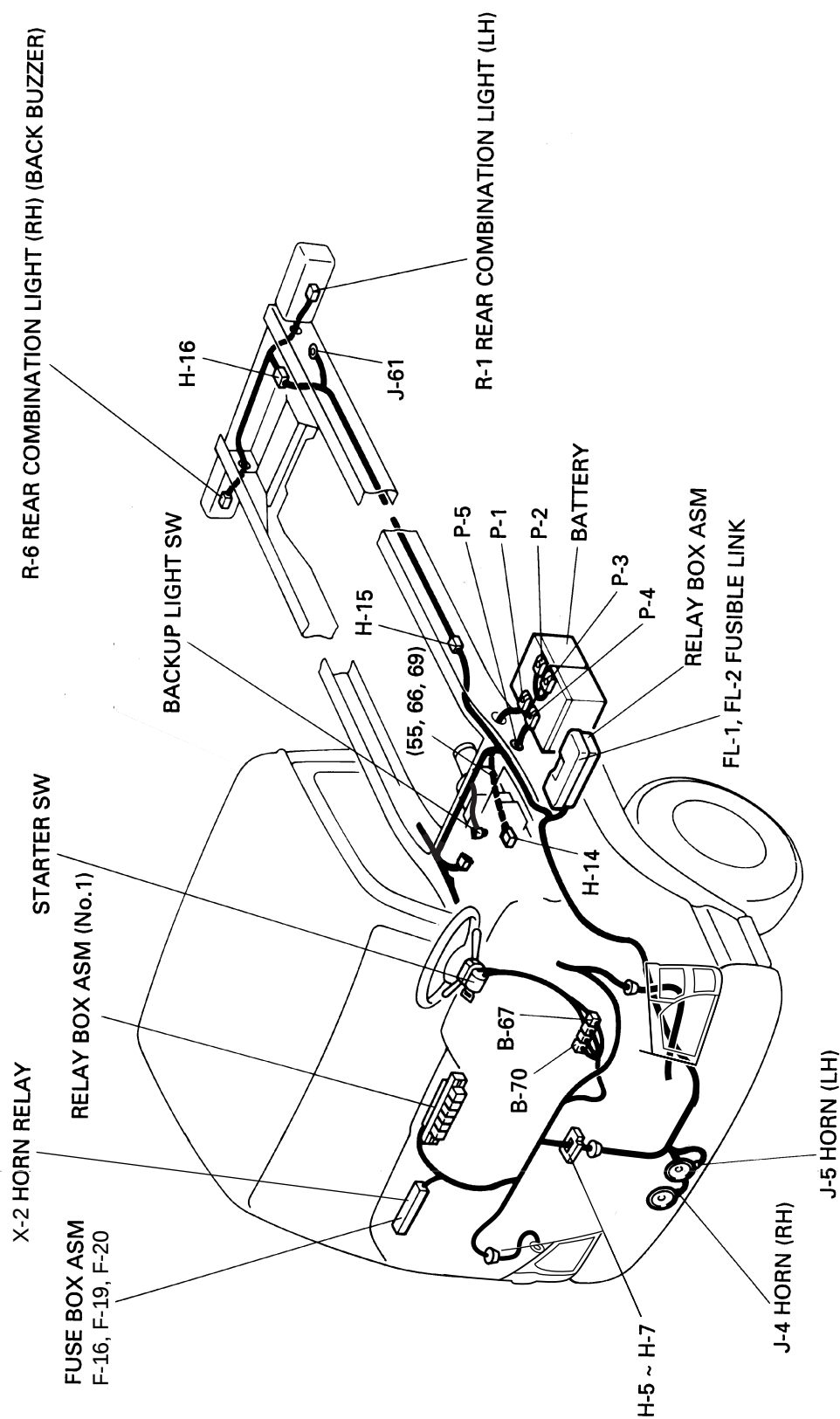
The circuit consists of the starter switch, horn, horn switch, backup light (Rear combination light), backup light switch, back buzzer and the relay.

When the horn switch is turned on independent of the position of the starter switch, the relay is activated to sound the horn. When the backup light switch turns on with the starter switch on, the backup light will operate.

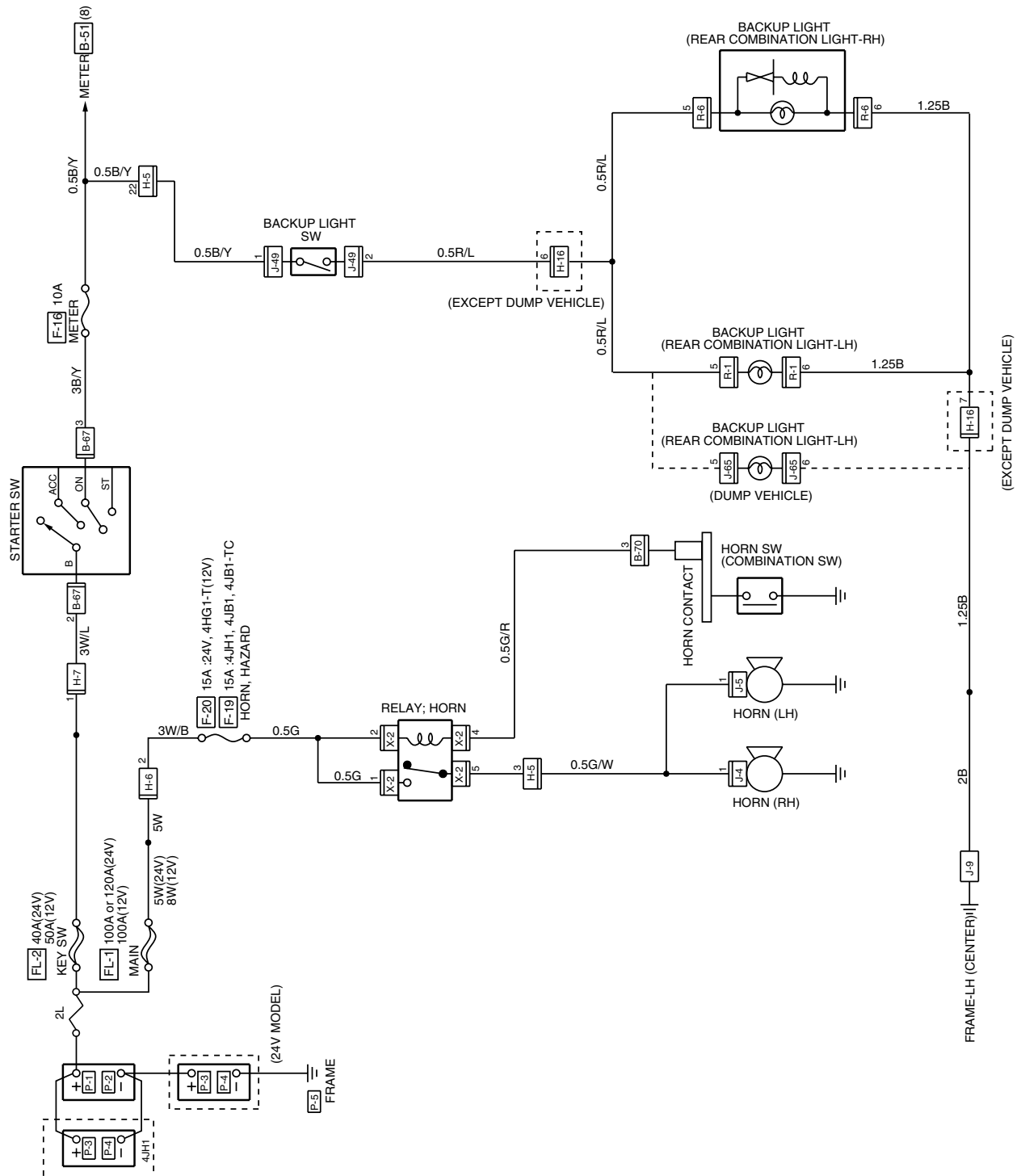
Backup Light and Backup Buzzer Circuit



Parts Location



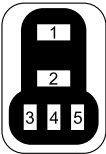
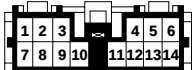
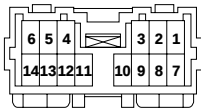
Circuit Diagram

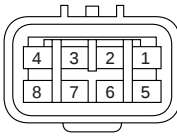
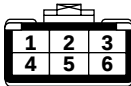
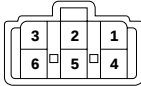
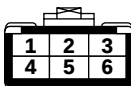
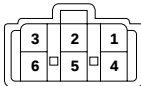


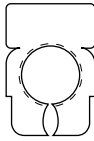
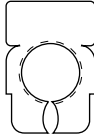
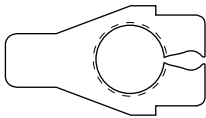
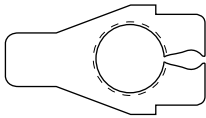
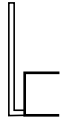
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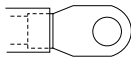
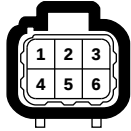
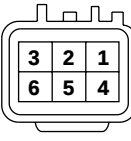
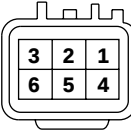
8-200 CAB AND CHASSIS ELECTRICAL

Connector List

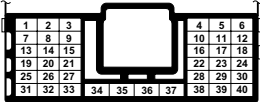
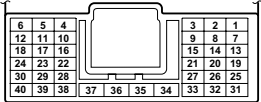
No.	Connector Face
X-2	 005-006
B-70	 014-002
B-70	 014-003
E-10	 002-025
E-10	 002-026
J-49	 002-025
J-49	 002-026
H-14	 016-003

No.	Connector Face
H-14	 016-004
H-16	 008-003
H-16	 008-004
J-62	 006-010
J-62	 006-015
J-65	 006-010
J-65	 006-015
J-4	 001-018

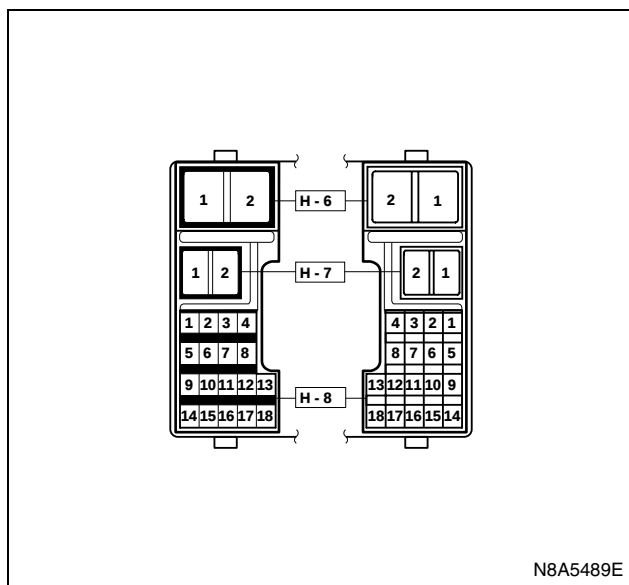
No.	Connector Face
J-5	 001-018
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007

No.	Connector Face
P-5 (24 V)	 000-002
R-1	 006-004
R-1	 006-005
R-6	 006-004
R-6	 006-005

H-5

	
N8A5488E	

H-6

**Diagnosis****Quick Chart for Check Point****1. Horn**

		Check point					
		Fuse F-19, F-20 (15 A)	Horn	Horn SW	Horn relay	Horn contact	Cable harness
Trouble mode	1-1. Horn does not sound	○ (1)	○ (4)	○ (6)	○ (2)	○ (5)	○ (3)
	1-2. Horn does not shut off			○ (2)	○ (1)		○ (3)

Notice:

Figure in parenthesis “()” indicates the order of inspection.

2. Backup Light

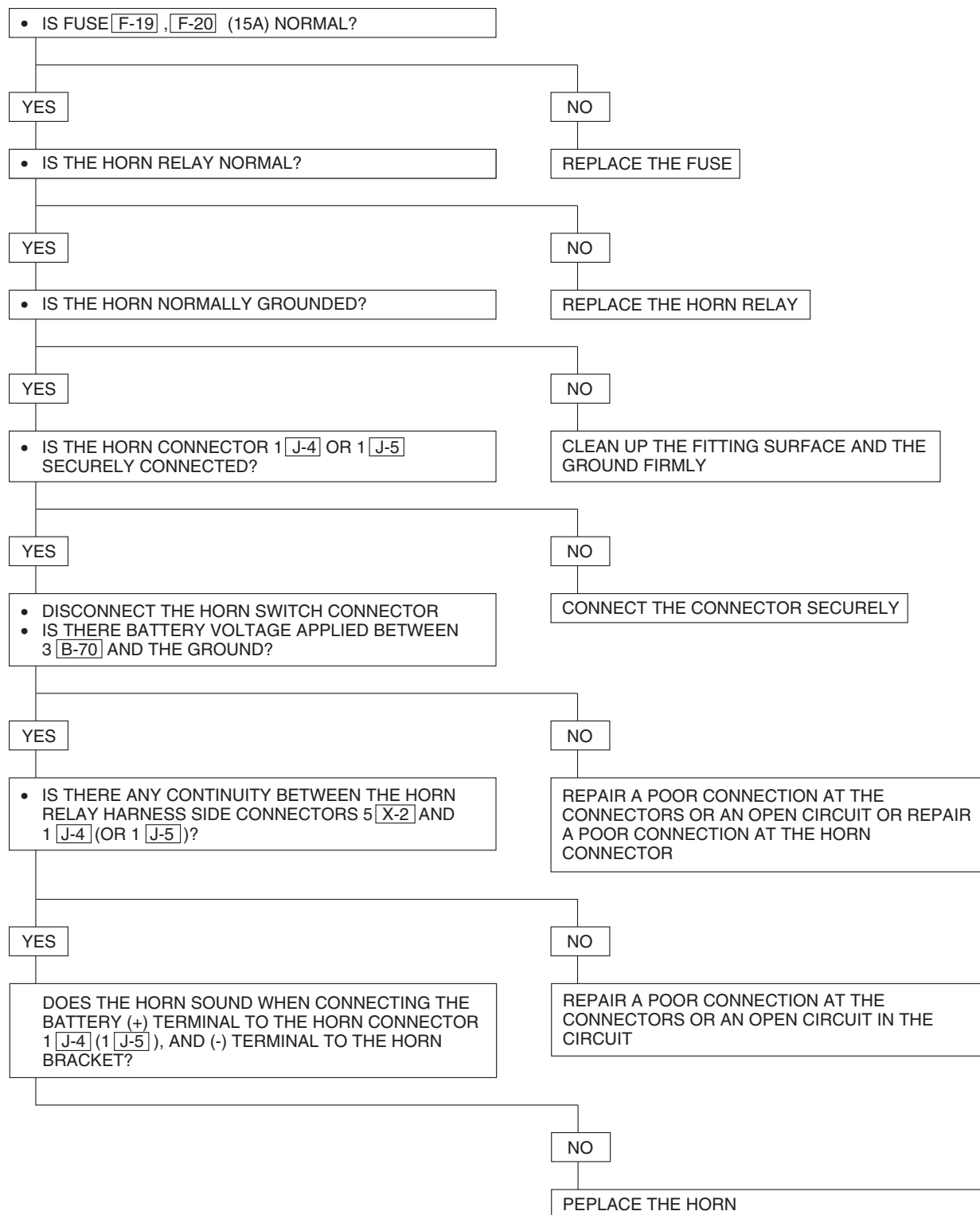
		Check point				
		Fuse F-16 (10 A)	Backup light SW (Inhibitor SW)	Backup light bulb	Backup buzzer	Cable harness
Trouble mode	2-1. Both backup lights inoperative	○ (1)	○ (3)			○ (2)
	2-2. Backup light on the left (or right) side inoperative			○ (1)		○ (2)
	2-3. Backup light remains on		○ (1)			

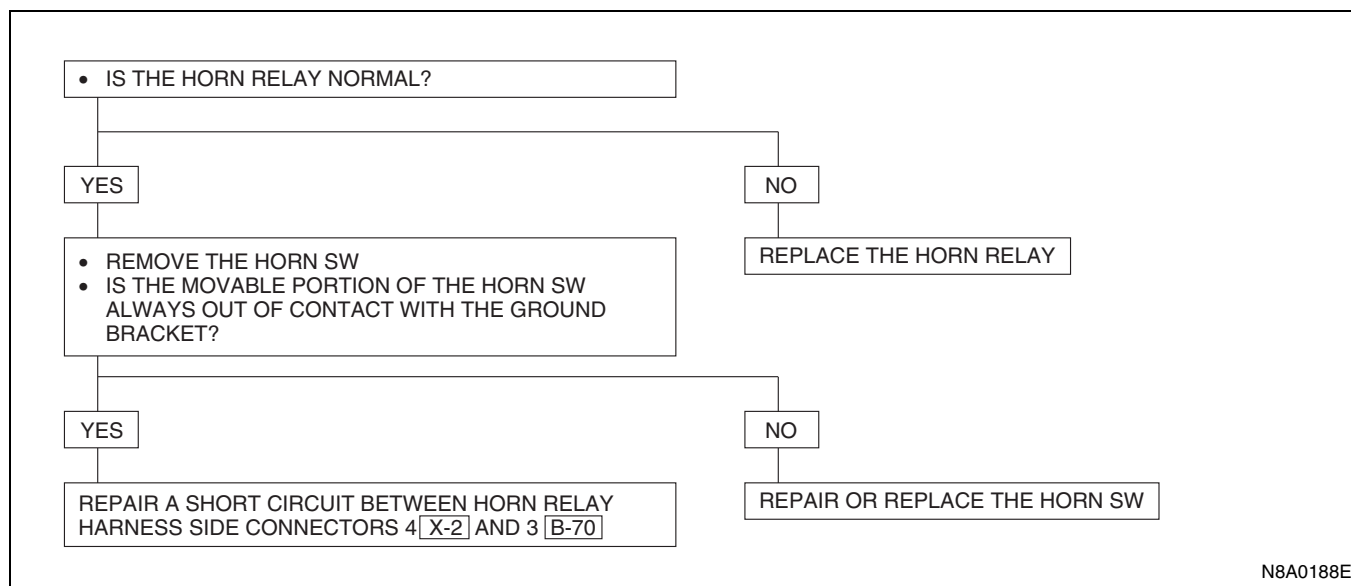
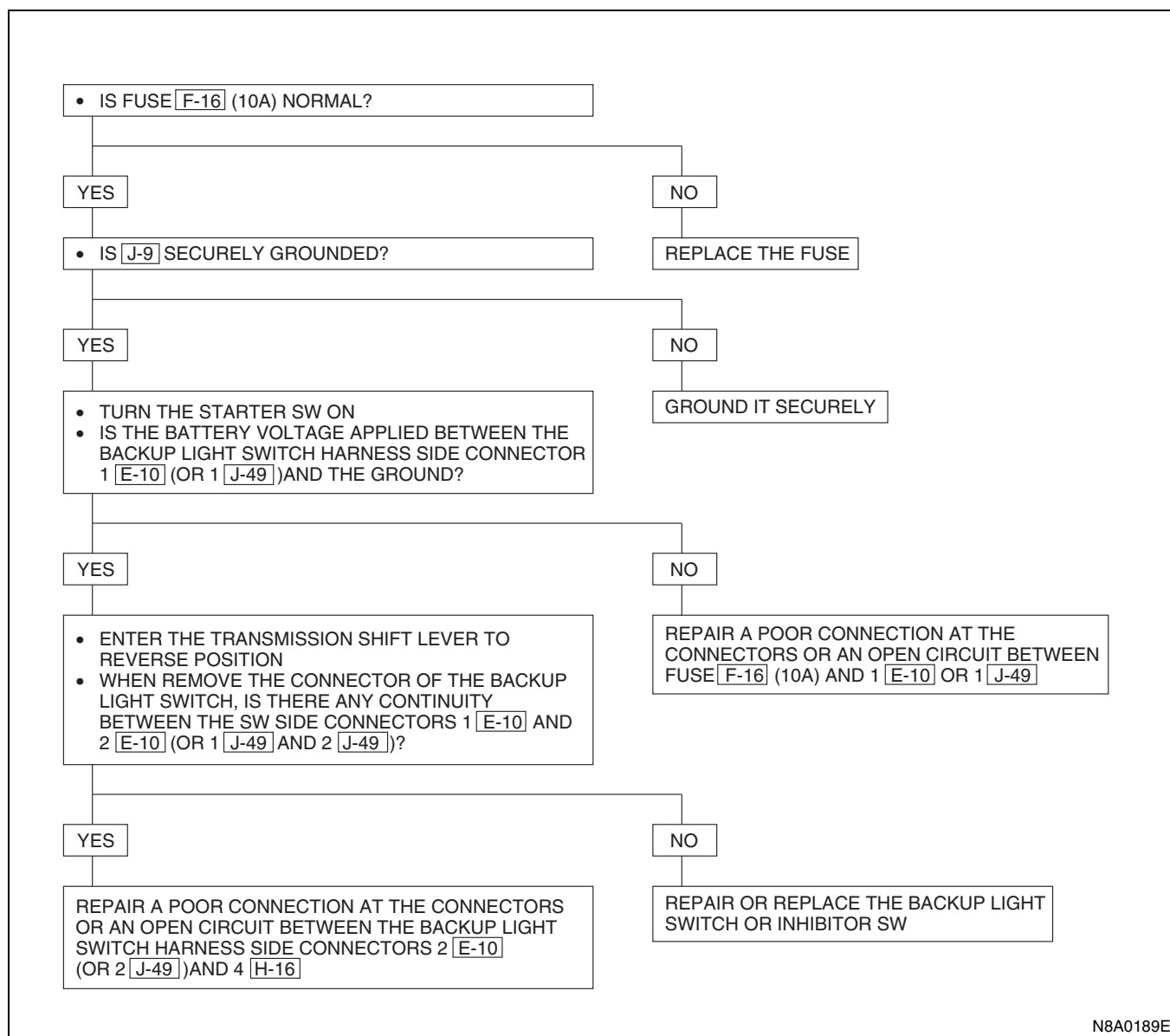
Notice:

Figure in parenthesis “()” indicates the order of inspection.

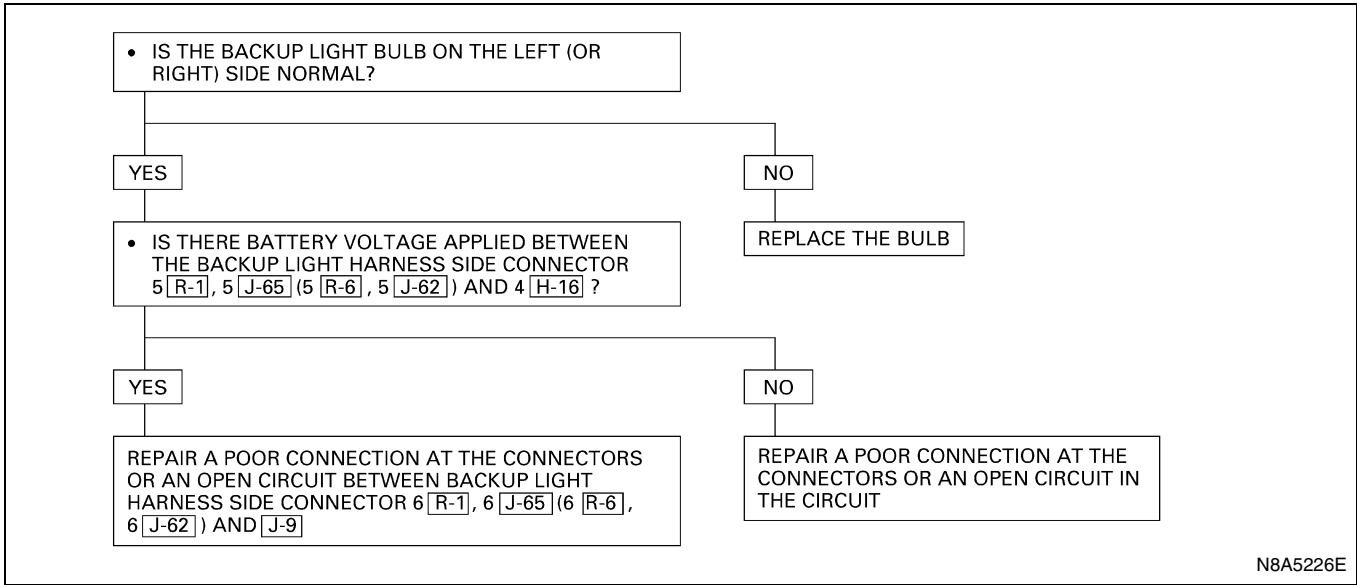
1. Horn

1-1. Horn Does Not Sound

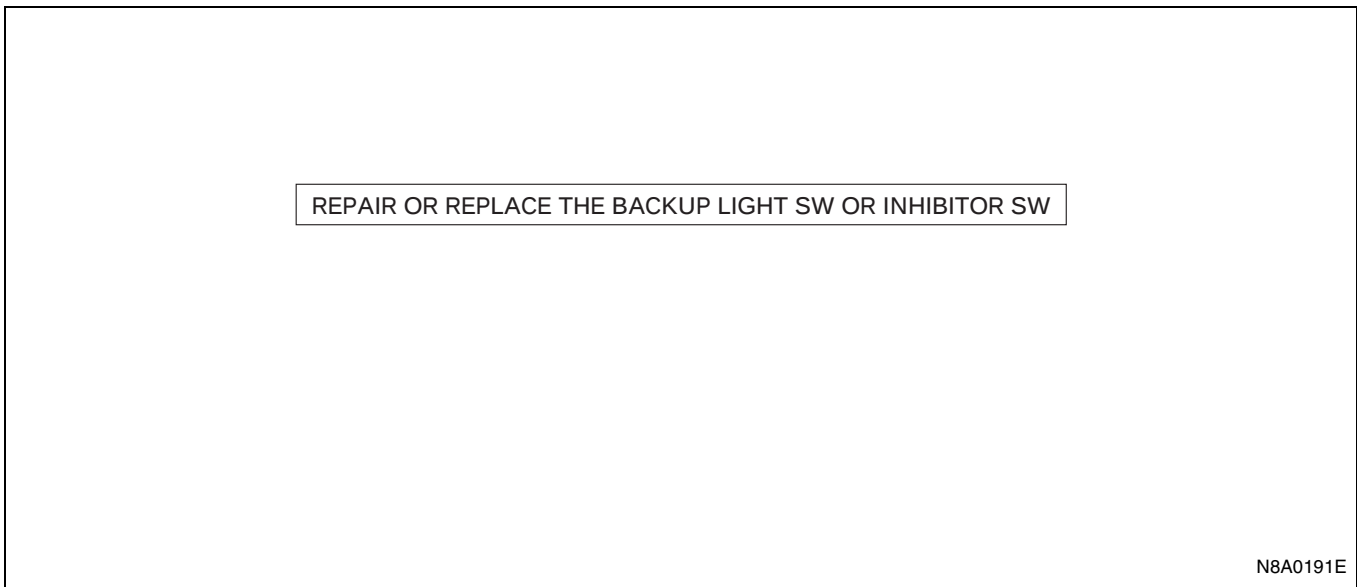


1-2. Horn Does Not Shut Off**2. Backup Light****2-1. Backup Lights Inoperative**

2-2. Backup Light on the Left (or Right) Side Inoperative



2-3. Backup Light Remains on



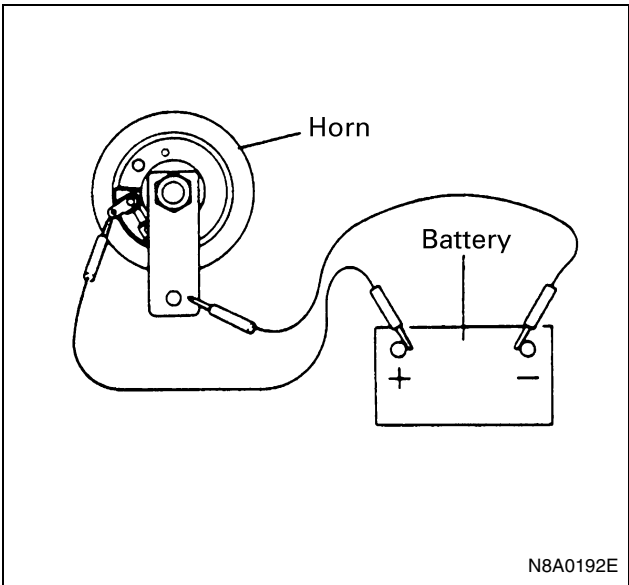
Starter Switch

Refer to “START AND CHARGING” in this section.

Horn

Inspection

Check to see if horn sound when a battery voltage between horn terminal and the fixing bracket. Repair or replace the horn when the result of inspection is found abnormal.

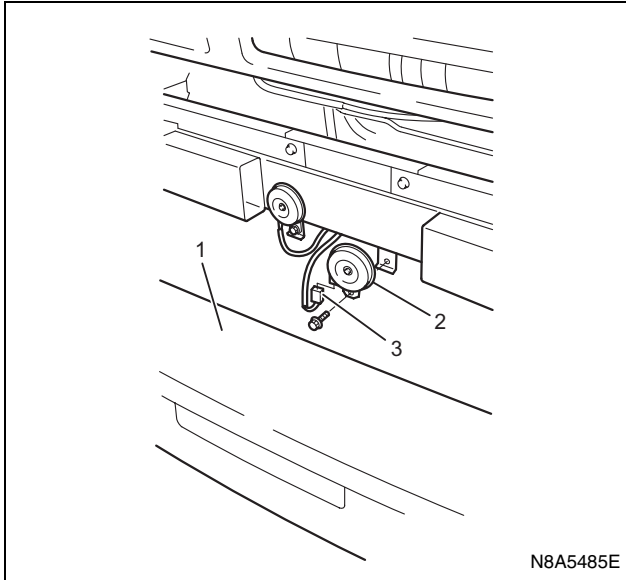


Removal

Preparation:

Disconnect the battery ground cable.

1. Bumper
Refer to "BUMPER" in section 2.
2. Horn
Disconnect the connector (3).



N8A5485E

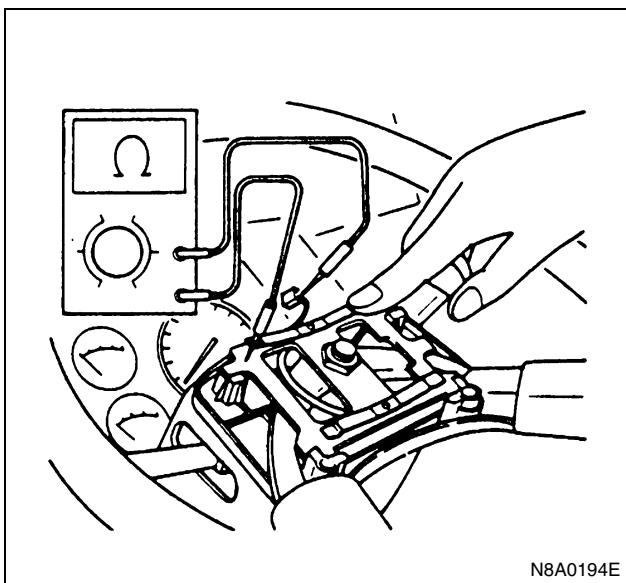
Installation

To install, follow the removal steps in the reverse order.

Horn Switch

Inspection

With the contact point of the horn switch pressed to the switch bracket, check the continuity between the connector terminal and the bracket of the switch. Check the contact condition between horn contact of the combination switch and contact plate of steering wheel. Repair or replace the switch when the result of inspection is found abnormal.



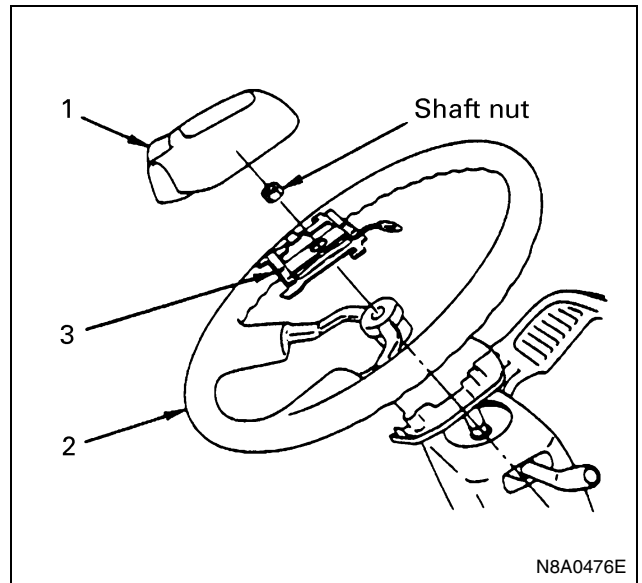
N8A0194E

Removal

Preparation:

Disconnect the battery ground cable.

1. Horn Pad
1) Hold the horn pad and pull it upward.
2. Steering Wheel
1) Remove the steering shaft nut.
2) Remove the steering wheel by using steering wheel remover.
(Refer to Section 3B4 "STEERING COLUMN" for steering wheel removal steps.)
3. Horn Switch



N8A0476E

Installation

To install, follow the removal steps in the reverse order, noting the following point.

1. Tighten the steering shaft nut to the specified torque.

Tighten:

Shaft nut to 49 N·m (5 kg·m / 36 lb·ft)

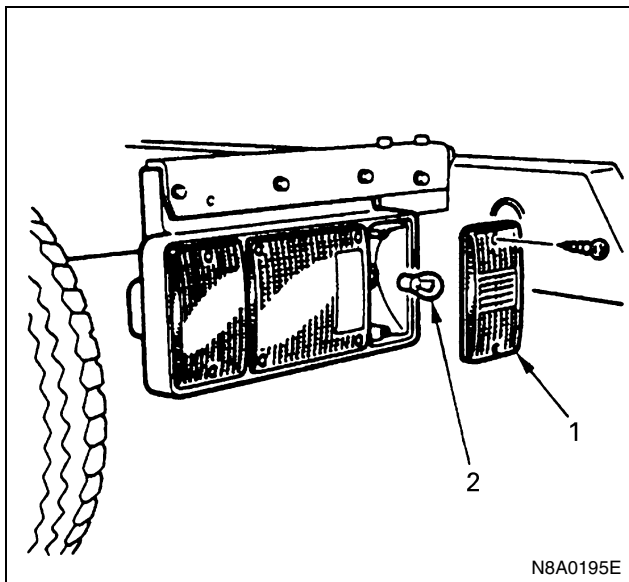
Backup Light Bulb

Removal

Preparation:

Disconnect the battery ground cable.

1. Lens
2. Bulb



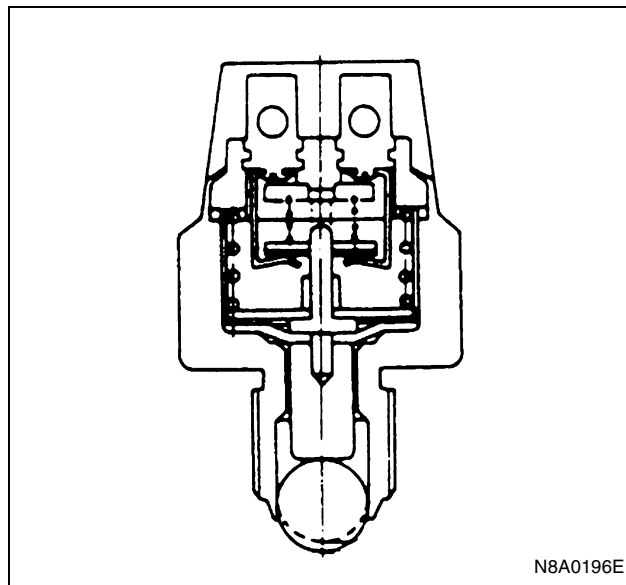
Installation

To install, follow the removal steps in the reverse order.

Backup Light Switch

Inspection

1. With the switch installed to the transmission, check the continuity between the terminals of the switch connectors.
When the continuity is found between the terminals only with the switch shifted to the reverse position, the switch is normal.
2. When the result of the above inspection is found abnormal, remove the switch from the transmission and conduct a test on the switch alone.
If the continuity appears between the connector terminals when the ball of the switch is released, the switch is normal. (When the ball is pushed, the continuity disappears.)
3. If there is no continuity with the switch installed to the transmission, even though the switch is found to be normal, then adjust the stroke of the switch by changing the thickness of the switch gasket.



Removal

Preparation:

Disconnect the battery ground cable.

1. Backup Light Switch
 - 1) Disconnect the connectors.
 - 2) Remove the switch by turning it counterclockwise.

Installation

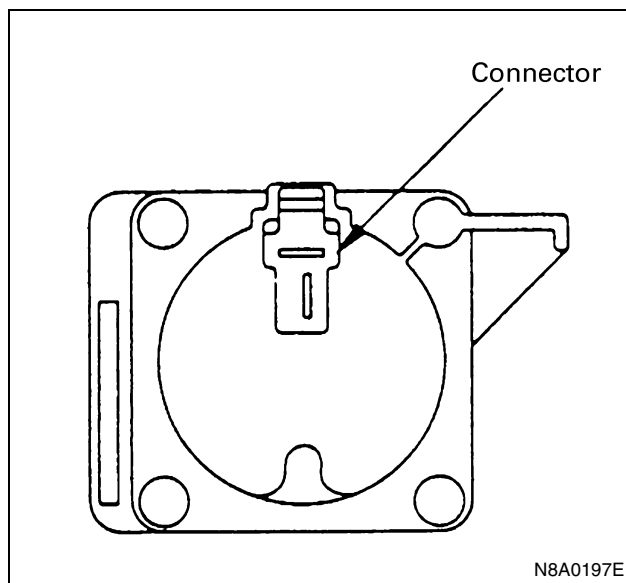
1. Backup Light Switch
Apply liquid gasket to the screw portion of the switch to prevent oil leak.

Backup Buzzer

Inspection

Apply battery voltage to the backup buzzer connector to check the buzzer sound.

Repair or replace the buzzer when the result of inspection is found abnormal.

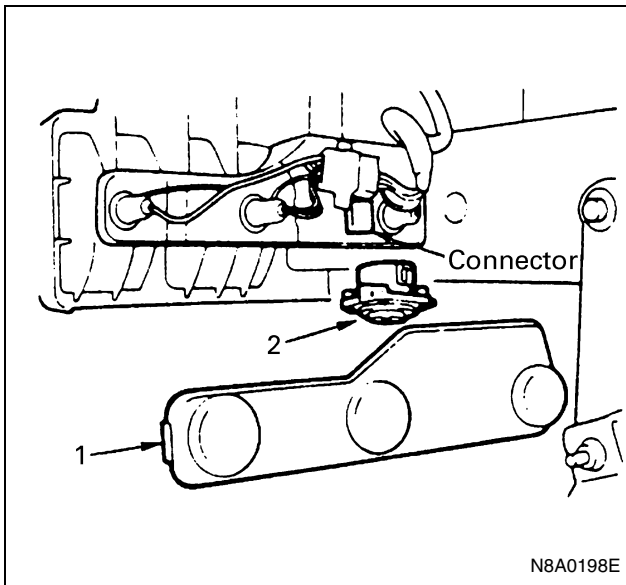


Removal

Preparation:

Disconnect the battery ground cable.

1. Rear Combination Light Cover
2. Backup Buzzer
 - 1) Remove the rear combination light connector fixing screw.
 - 2) Remove buzzer fixing screw.
 - 3) Disconnect the connector.



Installation

To install, follow the removal steps in the reverse order.

Dome Light and Key Remind Buzzer

General Description

The circuit consists of the starter switch, dome light, dome light switch, door switch, backup light switch and the key remind buzzer.

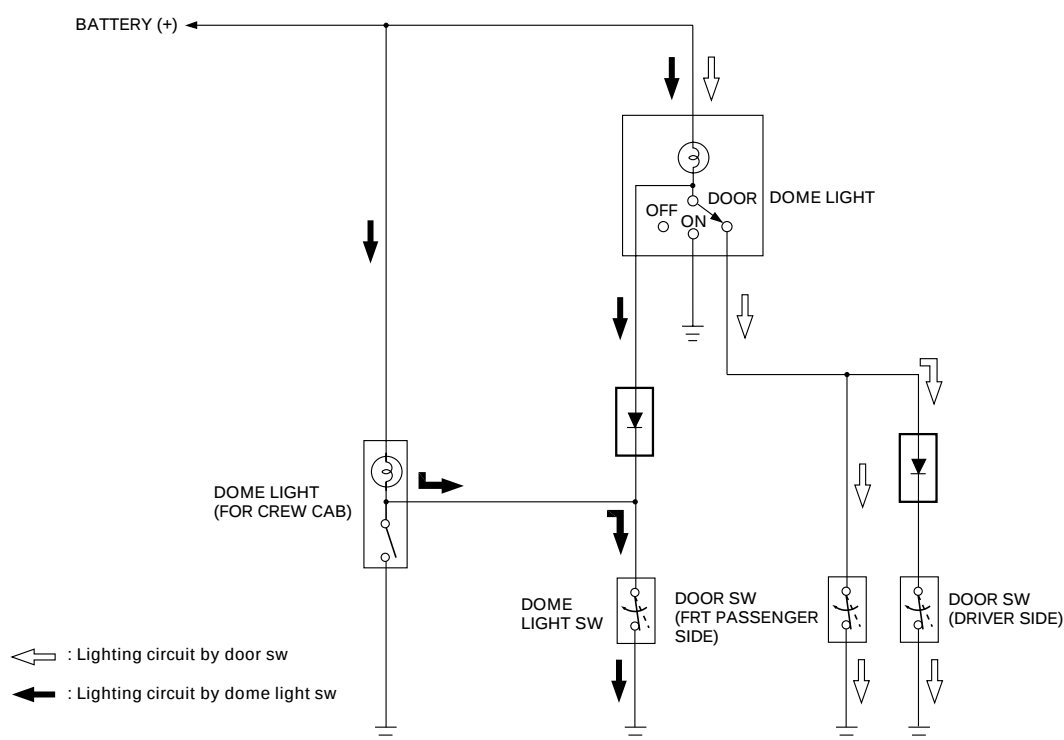
The dome light lights up when the left or right side door is opened with the switch set at the door mode. It can be lit by operating ON or OFF of the dome light switch.

The dome light can be lit by respective switch independent of the position of the starter switch.

By operating the dome light switch fitted on the instrument panel, the dome light can be lit independent of the switch position of dome light.

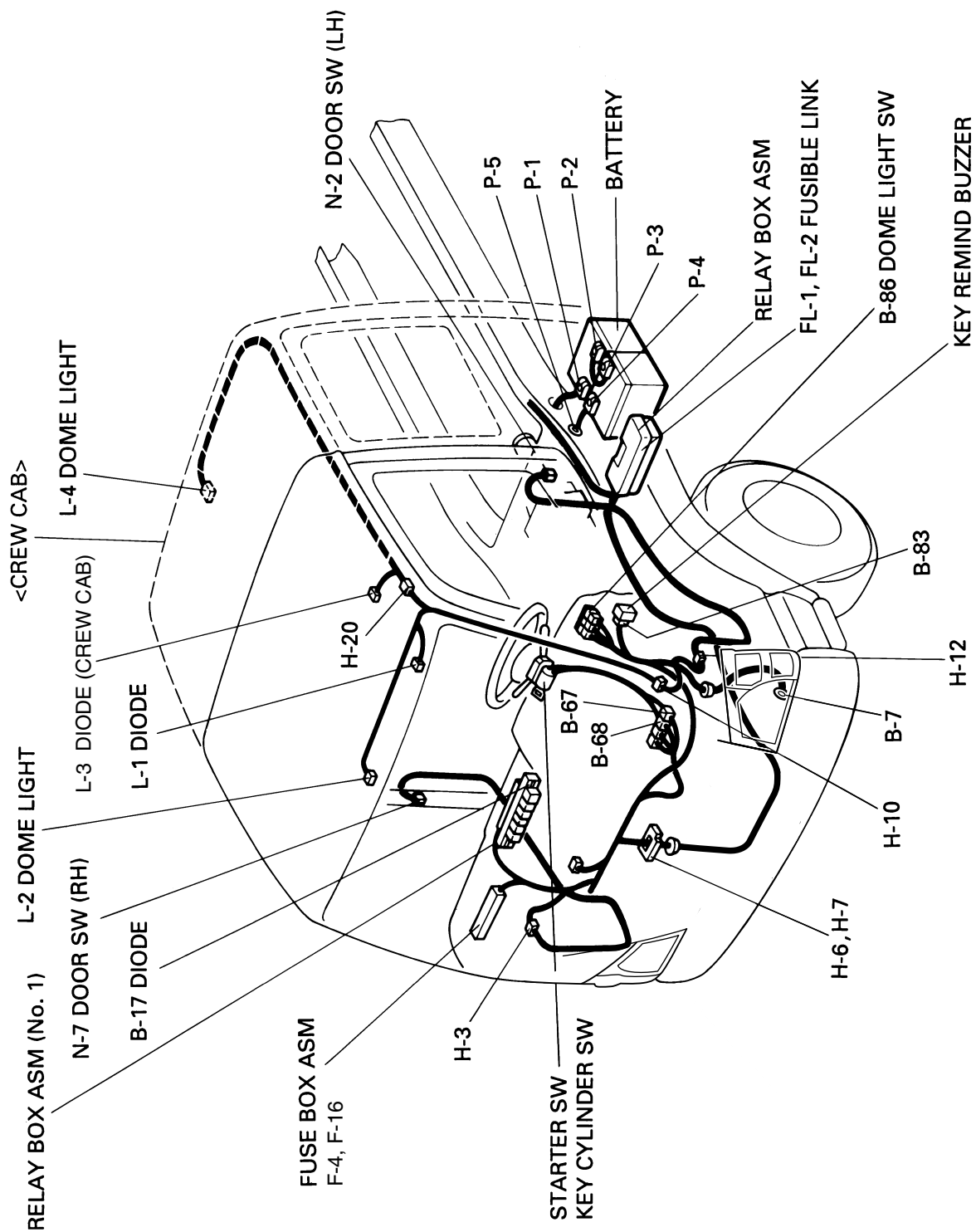
Key remind buzzer sounds to remind the driver of leaving the key in the starter switch when opening the driver's side door.

Lighting Circuit

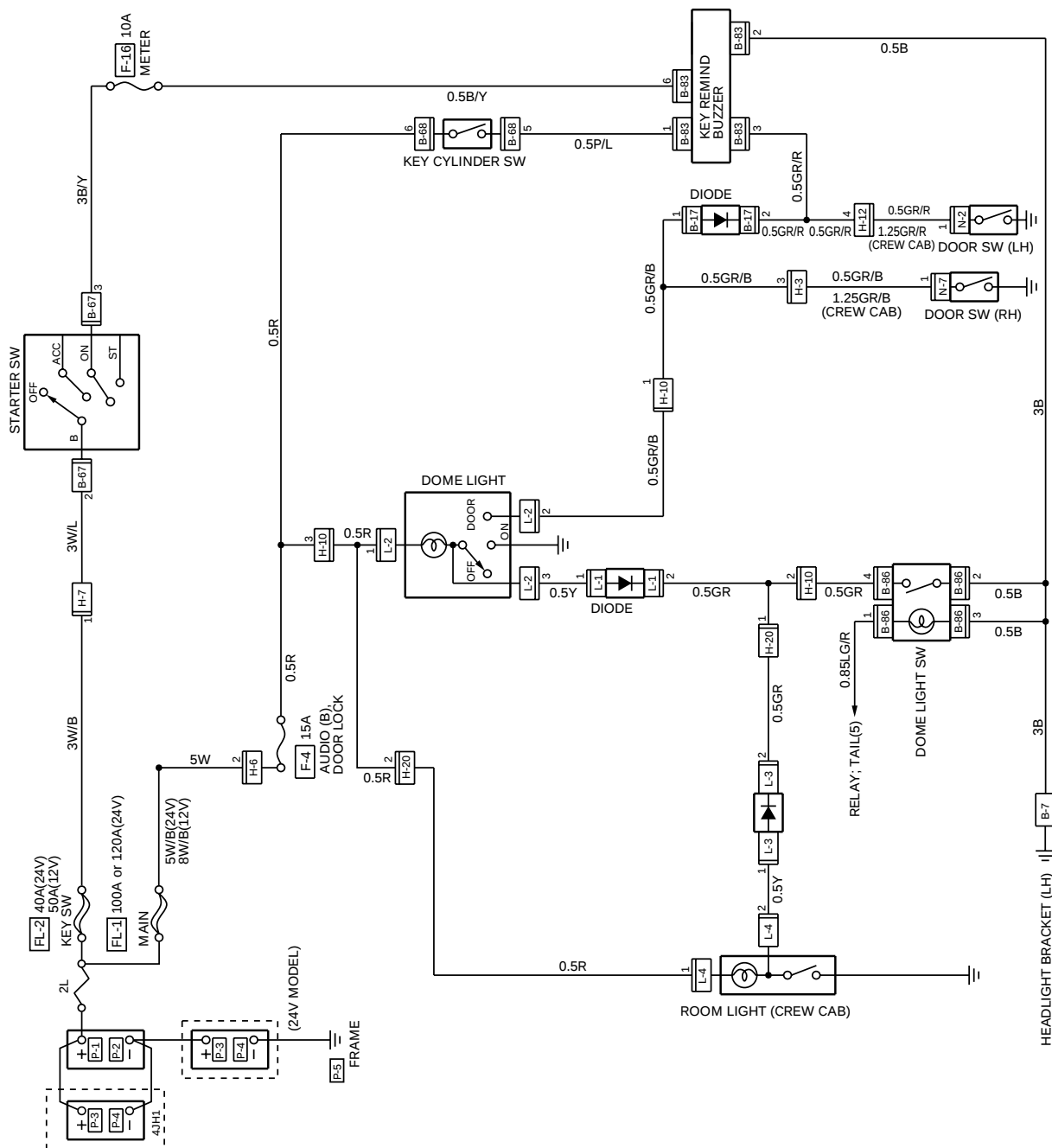


NOTE: Arrow marks "→" indicate the direction of current

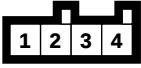
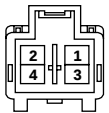
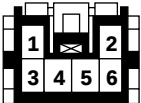
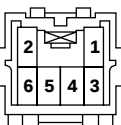
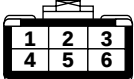
Parts Location

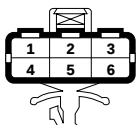
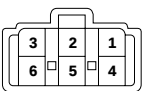
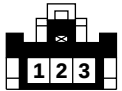
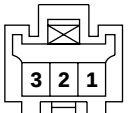
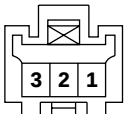
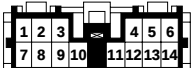
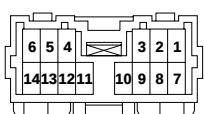


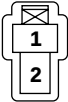
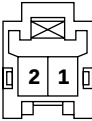
Circuit Diagram

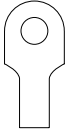
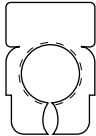
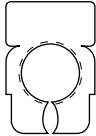
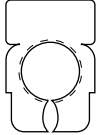
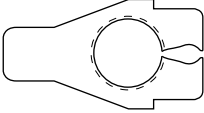
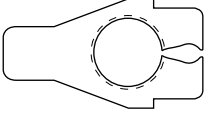
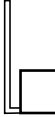
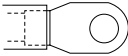


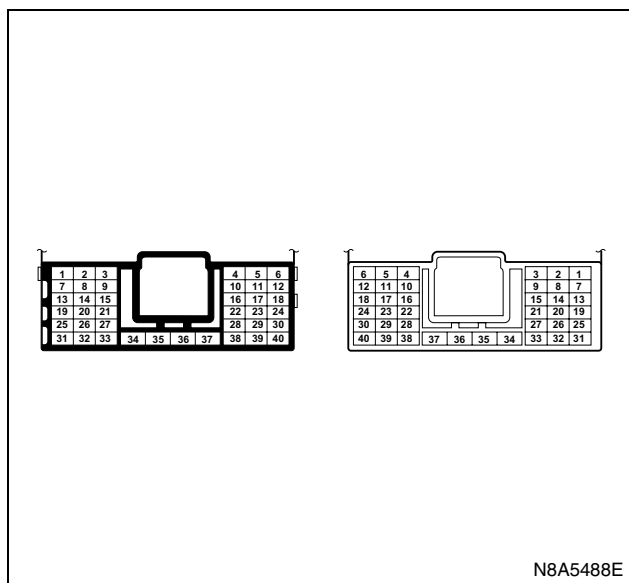
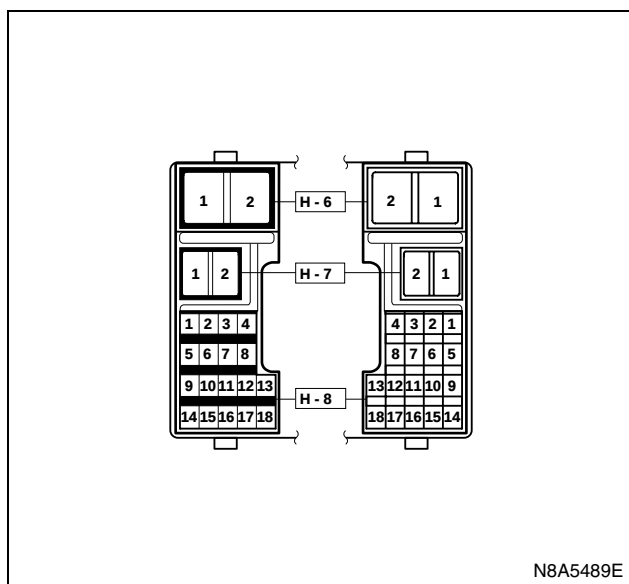
Connector List

No.	Connector Face
B-17	 004-004
B-67	 004-001
B-67	 004-002
B-86	 004-001
B-86	 004-002
B-68	 006-002
B-68	 006-003
B-83	 006-010

No.	Connector Face
H-3	 006-014
H-3	 006-015
H-10	 003-009
H-10	 003-010
L-2	 003-009
L-2	 003-010
H-12	 014-002
H-12	 014-003

No.	Connector Face
H-20	 002-009
H-20	 002-010
L-1	 002-027
L-3	 002-027
L-4	 002-022
L-4	 002-023
N-2	 001-009
N-7	 001-009

No.	Connector Face
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002

H-5**H-7****Starter Switch**

Refer to "START AND CHARGING" in this section.

Key Cylinder Switch

Refer to "START AND CHARGING" in this section.

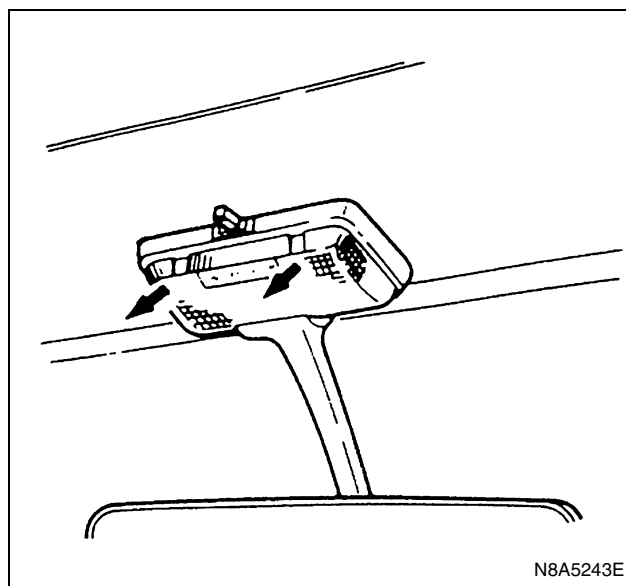
Backup Light Switch

Refer to "HORN, BACKUP LIGHT AND BACKUP BUZZER" in this section.

Dome Light Bulb**Removal****Preparation:**

Disconnect the battery ground cable.

1. Lens
Hold the lens and pull it downward.



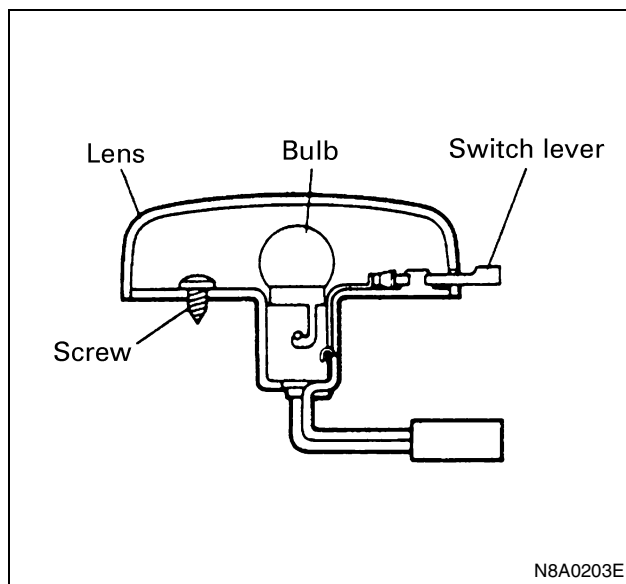
2. Bulb
Installation

To install, follow the removal steps in the reverse order.

Dome Light Bulb (for Crew Cab)**Removal****Preparation:**

Disconnect the battery ground cable.

1. Lens
Hold the lens and pull it down.
2. Bulb

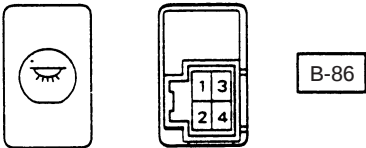
**Installation**

To install, follow the removal steps in the reverse order.

Dome Light Switch**Inspection**

Check the continuity between the dome light switch connector terminals.

Repair or replace the switch when the result of inspection is found abnormal.



SW position \ Terminal No.	2	4	1	3
ON				
OFF				

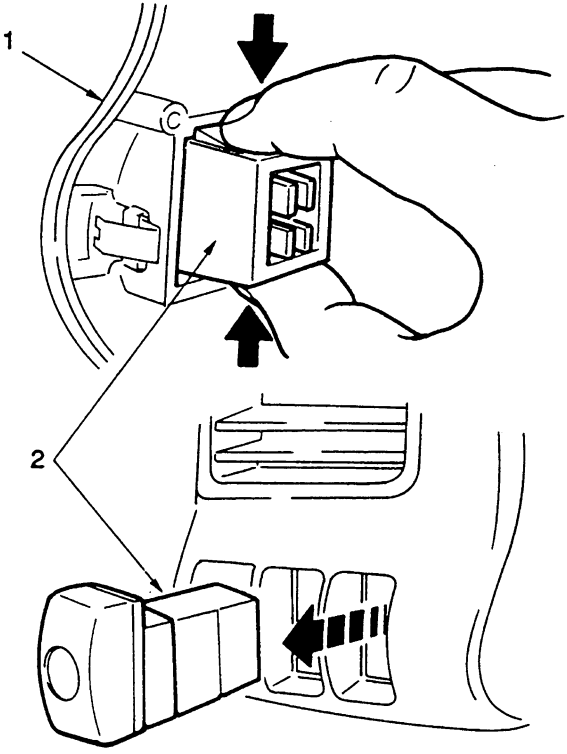
N8A0204E

Removal

Preparation:

Disconnect the battery ground cable.

- 1. Meter cluster
Refer to the “METER AND WARNING/INDICATOR LIGHT” in this section.
- 2. Dome Light Switch
Release the lock pushing the switch from the back side of the meter cluster.



N8A5160E

Installation

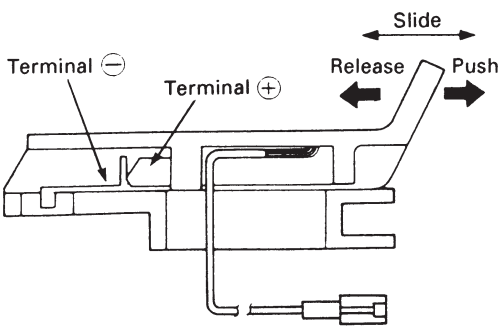
To install, follow the removal steps in the reverse order noting the following point.

- 1. Push the switch with your fingers until locks securely.

Door Switch

Inspection

Check to see if there is any continuity between the terminals and the body while operating the door switch. Repair or replace the switch, when the result of inspection is found abnormal.



Connector No. \ Terminal No.	N-2	N-7
SW operation	1	Body
Push		
Release		

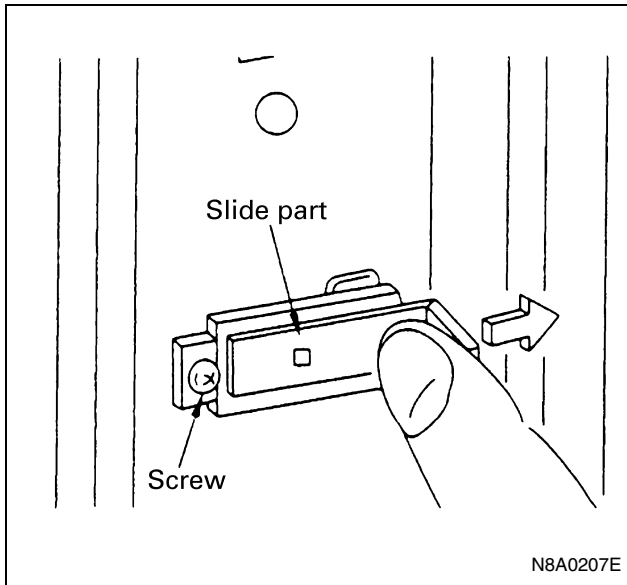
N8A0206E

Removal

Preparation:

Disconnect the battery ground cable.

- 1. Door Switch
 - 1) Remove the screw.
 - 2) Disconnect the connector of the switch.

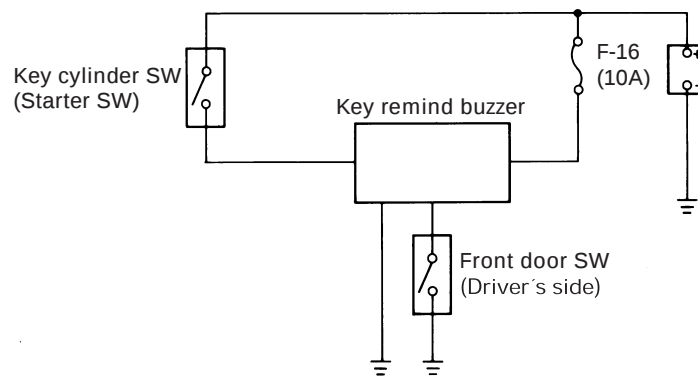


Installation

To install, follow the removal steps in the reverse order.

Key Remind Buzzer

The key remind buzzer sounds to remind the driver to remove the starter key from the starter switch when front driver side door is opened (Front driver side door switch is on).



N8A0208E

Inspection of The Buzzer Circuit

Disconnect the key remind buzzer connector, measure the continuity and voltage between the harness side connector terminals.

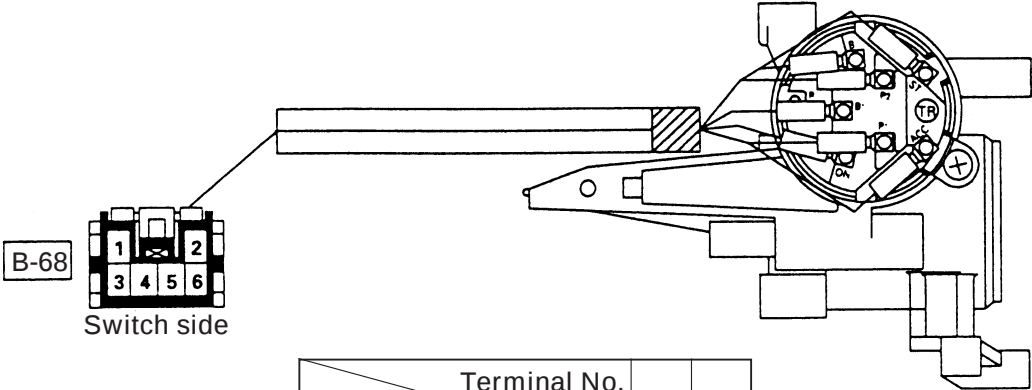


Termi- nal No.	Wire color	Connected to	Item to be checked	Connect- ing terminal	Checking conditions	Standard
2	B	Ground	Continuity	2-Ground	-	Continuity
1	P/L	Ground	Voltage	1-Ground	Starter key inserted	Approx. battery voltage
					Starter key removed	0V
3	GR/R	Ground	Continuity	3-Ground	Front driver-s side door "OPEN"	Continuity
					Front driver-s side door "CLOSE"	No Continuity
6	B/Y	Fuse F-12 (10A)	Voltage	6-Ground	• Starter SW ON	Approx. battery voltage

Key Cylinder Switch (Starter Switch)

Inspection

Check to see if there is any continuity between the connector terminals of the key cylinder switch.
Repair or replace the switch when the result of inspection is found abnormal.



Terminal No.		5	6
Starter key position	Key removed		
	Key inserted	○	○
LOCK			
OFF			
ACC			
ON			
START			

Power Door Lock

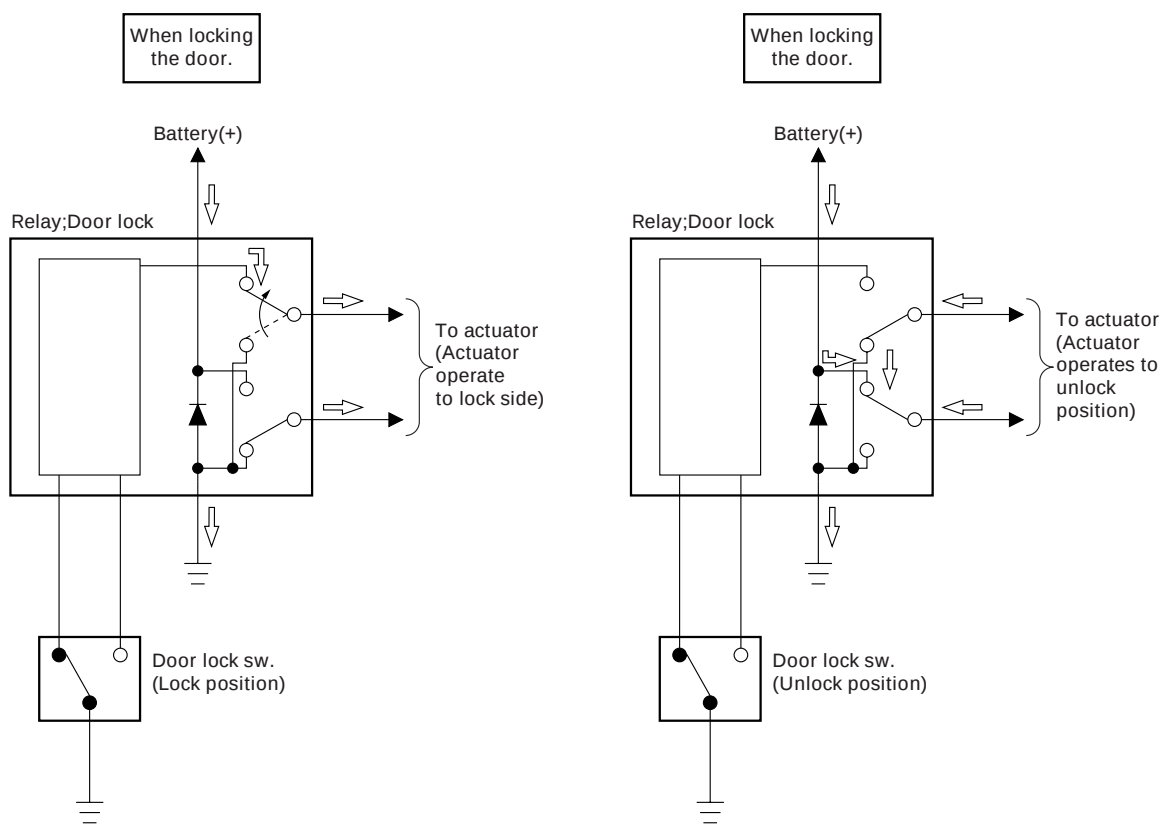
General Description

The circuit consists of the door lock switch, actuator for the front passenger door, rear doors and the door lock controller.

The door lock controller is always provided with battery voltage. The key or the inside lock knob on the driver's door can activate the lock mechanism of all the doors.

When the driver's door lock switch is turned on, current flows for about one second to the door lock actuator of each door connected in parallel with the controller to activate the actuator to lock and unlock the doors.

Operation of Door Lock Controller

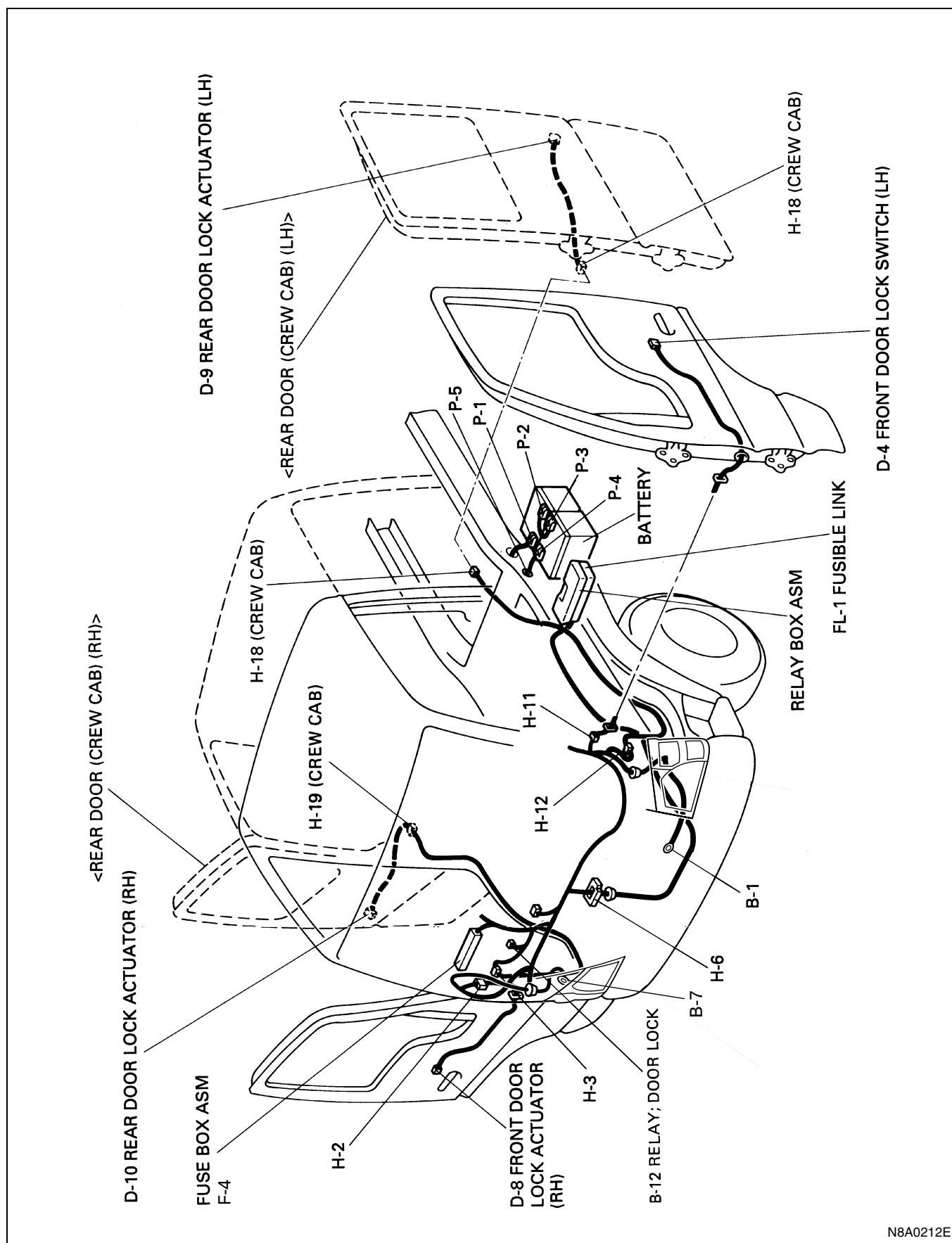


N8A0211E

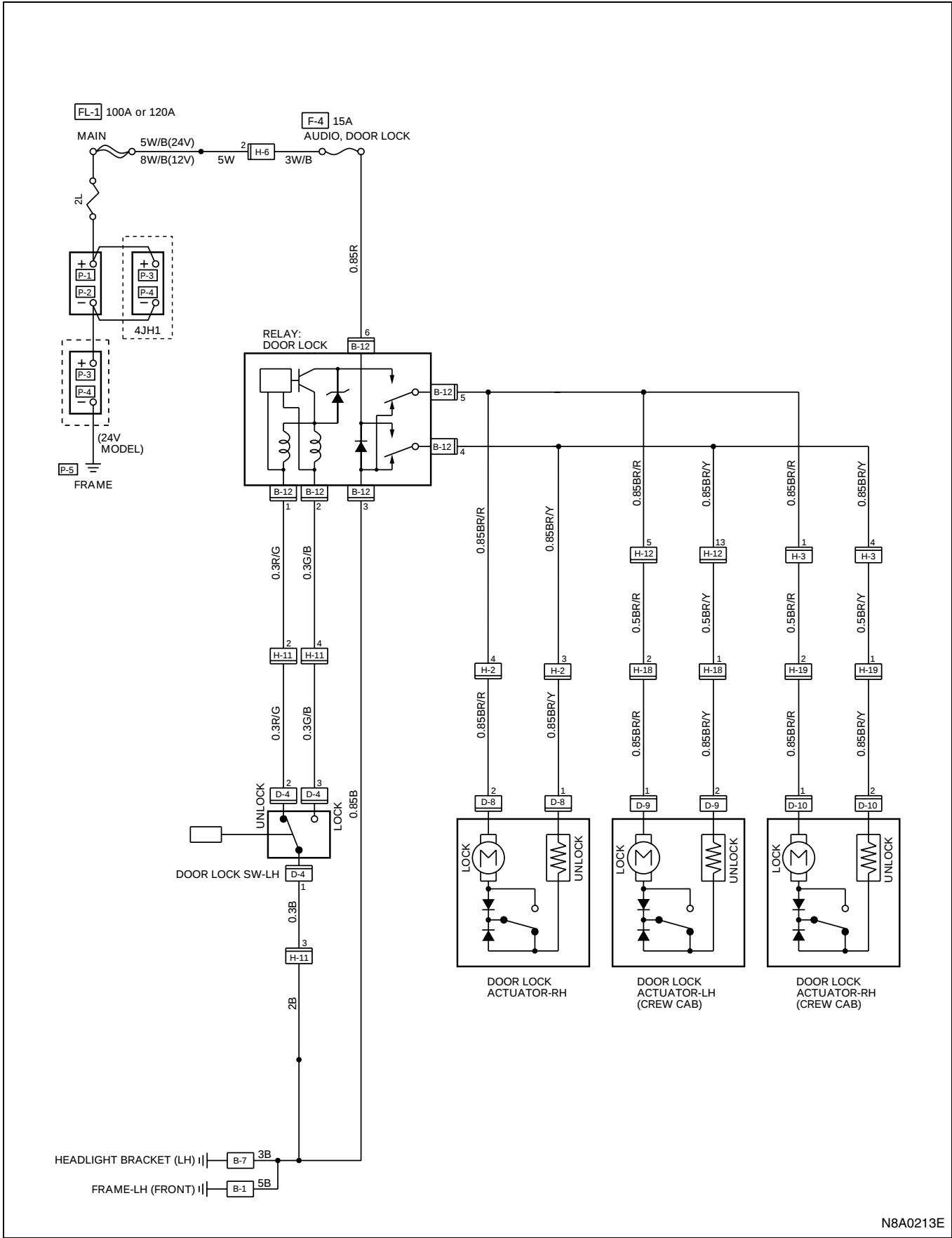
Notice:

Arrow marks indicate the direction of current.

Parts Location

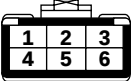
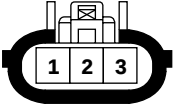
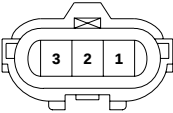
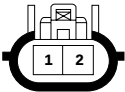
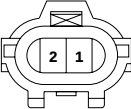


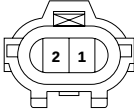
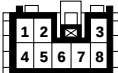
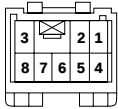
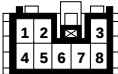
Circuit Diagram

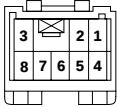
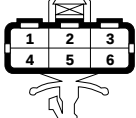
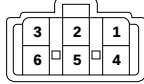
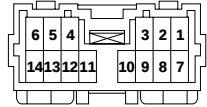
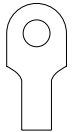
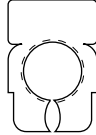


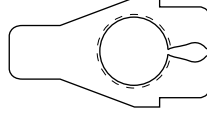
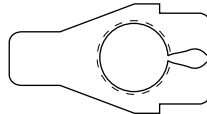
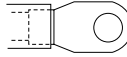
8-222 CAB AND CHASSIS ELECTRICAL

Connector List

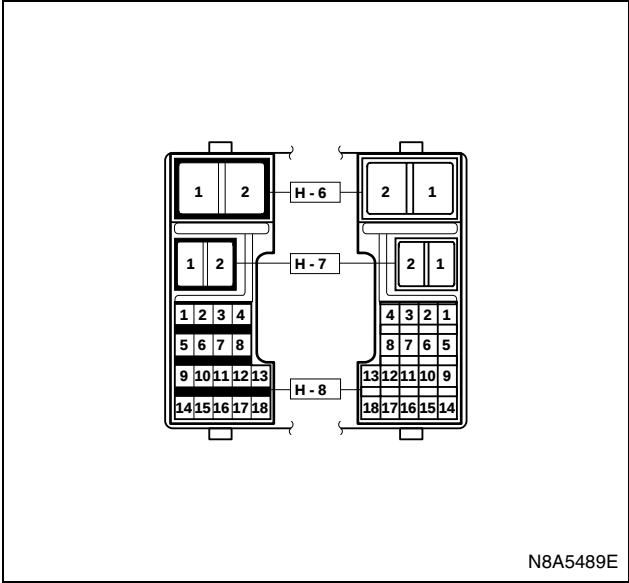
No.	Connector Face
B-12	 006-010
D-4	 003-003
D-4	 003-011
D-8	 002-001
D-8	 002-002
D-9	 002-001
D-9	 002-002
D-10	 002-001

No.	Connector Face
D-10	 002-002
H-18	 002-001
H-18	 002-002
H-19	 002-001
H-19	 002-002
H-2	 008-009
H-2	 008-010
H-11	 008-009

No.	Connector Face
H-11	 008-010
H-3	 006-014
H-3	 006-015
H-12	 014-002
H-12	 014-003
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004

No.	Connector Face
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002

H-6

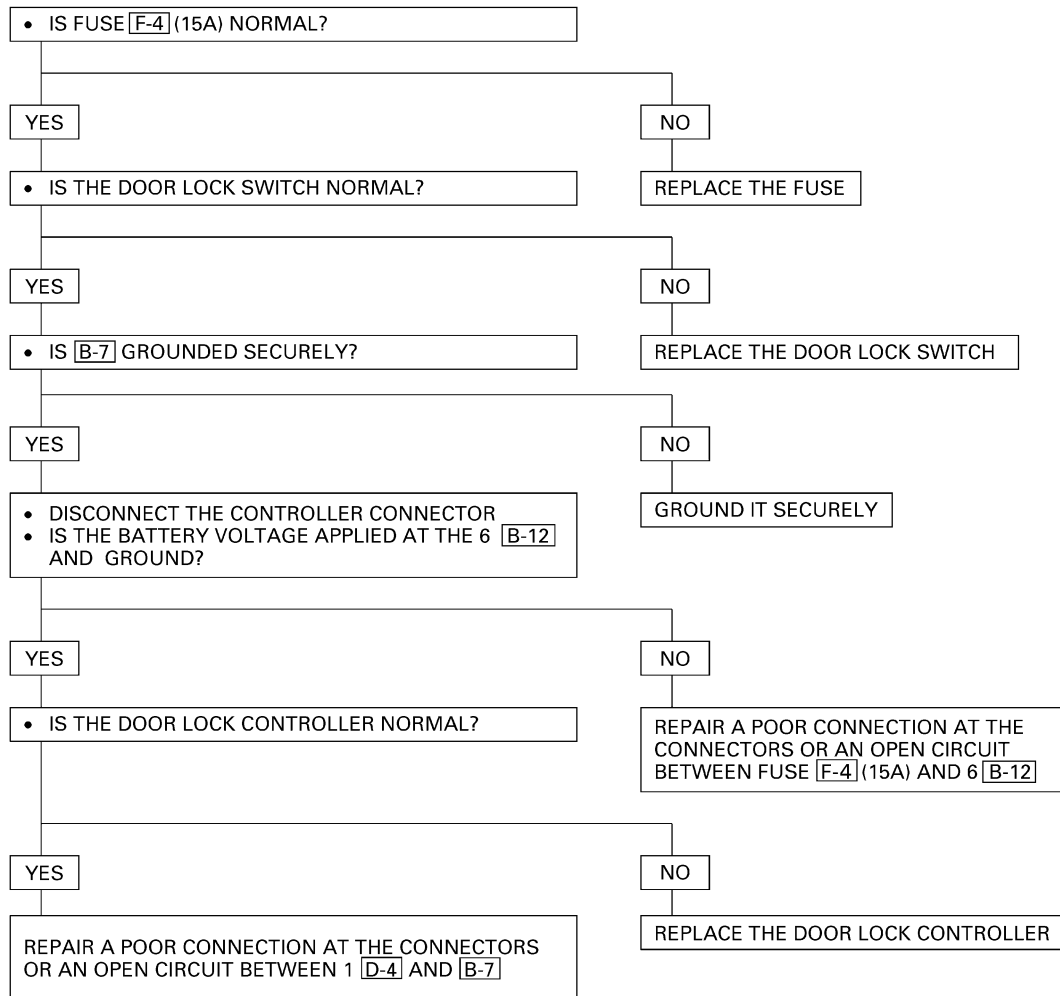


Diagnosis**Quick Chart for Check Point**

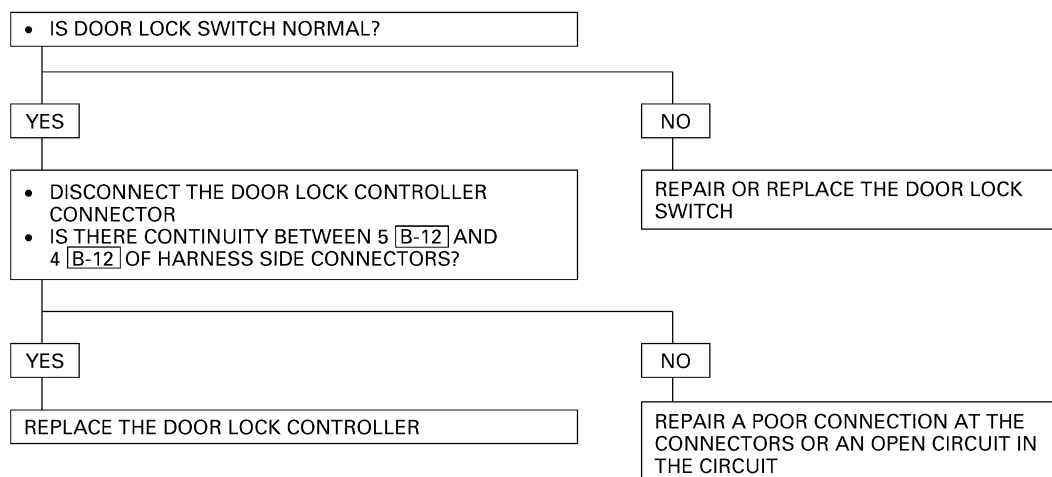
		Check point						
		Fuse F-4 (15 A)	Door lock controller	Door lock SW (Driver side)	Door lock actuator			
					Front (Passen- ger side)	Rear (RH)	Rear (LH)	Cable harness
Trouble mode	1. All the doors do not lock and unlock	○	○					○
	2. All the doors do not get locked (or unlocked)		○					○
	3. Driver side door does not get locked (or unlocked)			○				○
	4. Front passenger side door does not get locked (or unlocked)				○			○
	5. Rear door-RH side does not get locked (or unlocked)					○		○
	6. Rear door-LH side does not get locked (or unlocked)						○	○

Notice:

Figure in parenthesis “()” indicates the order of inspection.

All the Doors Do Not Lock and Unlock

N8A5256E

All the Doors Do Not Get Locked (or Unlocked)

N8A5257E

Driver Side Door Does Not Get Locked (or Unlocked)

REPLACE THE DOOR LOCK SWITCH

N8A0216E

FRT Passenger Side Door Does Not Get Locked (or Unlocked)

RR Door-RH Side Does Not Get Locked (or Unlocked)

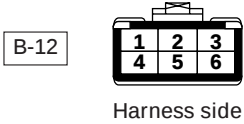
RR Door-LH Side Does Not Get Locked (or Unlocked)

REPLACE THE DOOR LOCK ACTUATOR

N8A0217E

Inspection of The Door Lock Circuit

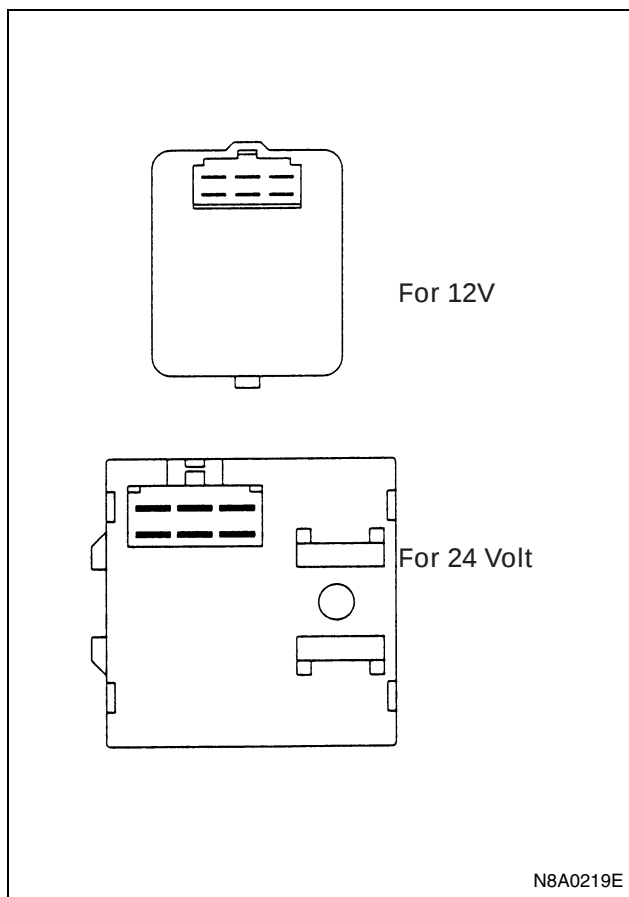
Check the voltage and the continuity between the controller harness side connector terminals.



Termi- nal No.	Wire color	Connected to	Item to be checked	Connect- ing terminal	Checking conditions		Standard
1	R/G	Door lock SW (Unlock)	Conti- nuity (Resis- tance)	1-Ground	Driver seat side door	Unlock	Continuity
						Lock	No continuity
2	G/B	Door lock SW (Lock)		2-Ground	Driver seat side door	Unlock	No continuity
						Lock	Continuity
3	B	Ground		3-Ground	-		Continuity
4	BR/Y	Actuator (Unlock)		4-5	-		Continuity (There is some resistance)
5	BR/R	Actuator (Lock)		5-4	-		Continuity (There is some resistance)
6	R	Fuse F-7 (15A)	Voltage	6-Ground	-		Battery voltage

Door Lock Relay

The door lock controller sends out to each door lock actuator the lock/unlock signals received from door lock switch of driver seat side.

**Inspection**

Remove the connector of the door lock controller, and check the continuity and the voltage between the controller side connector terminals.

(Connect the (+) terminal of the battery to 6 [B-12] and the (-) terminal to 3 [B-12].)

3 [B-12] — 5 [B-12]Continuity

3 [B-12] — 4 [B-12]Continuity

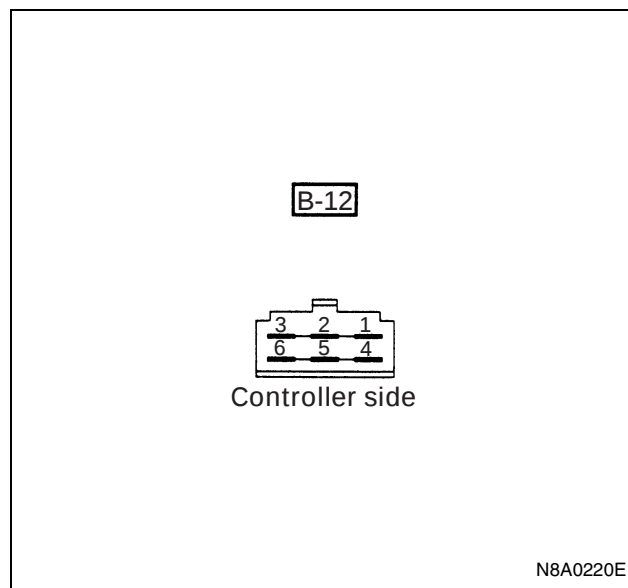
(Then, ground 2 [B-12].)

5 [B-12]Voltage for approx. 1 second

(Disconnect the ground of 2 [B-12], and ground 1 [B-12].)

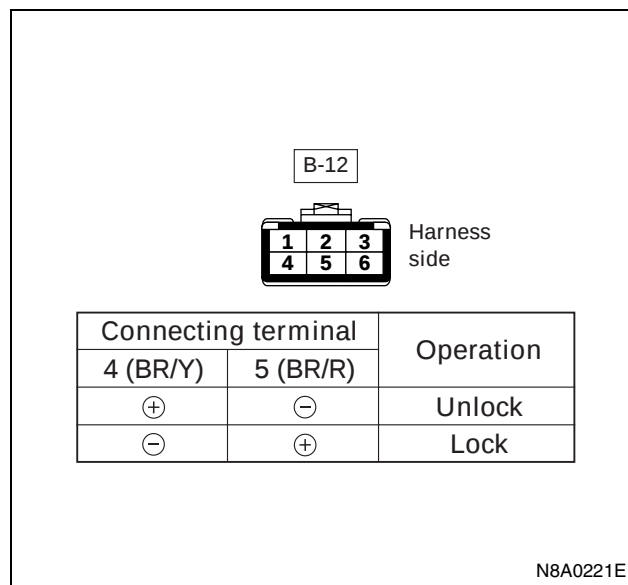
4 [B-12]Voltage for approx. 1 second

Replace the controller when the result of inspection is found abnormal.

**Door Lock Operation Test**

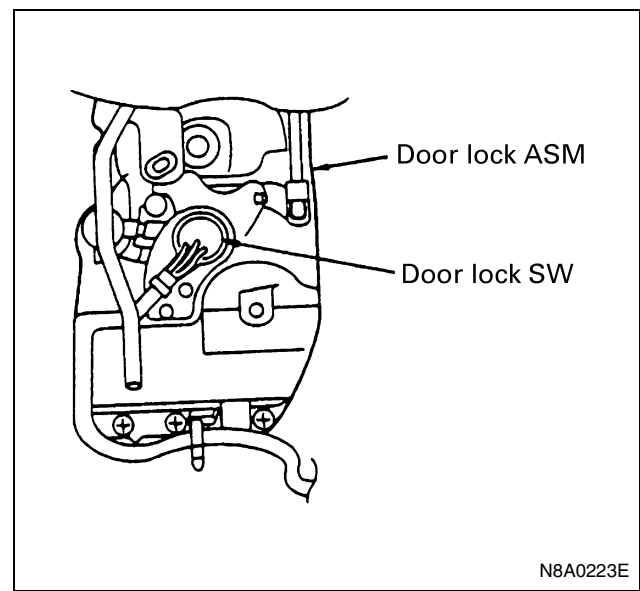
After confirming that there is continuity between the harness side connector terminals 4 [B-12] and 5 [B-12] of the door lock controller, apply battery voltage to each of the terminals to conduct the operation test.

When the door lock will not operate, check the door lock actuator for any trouble.



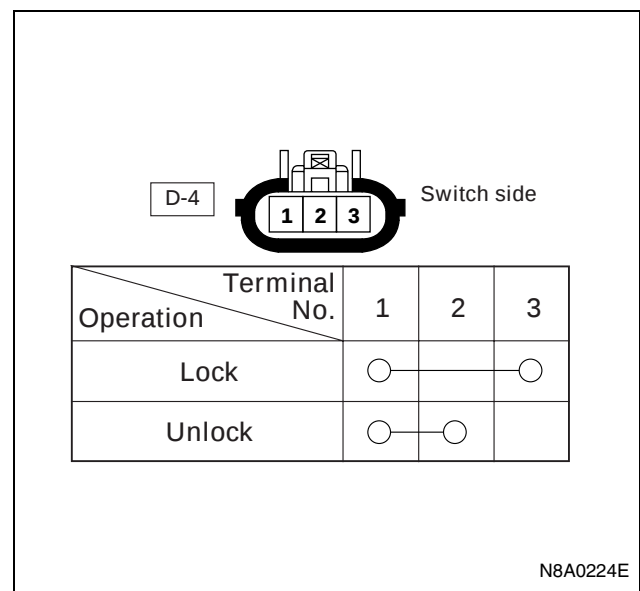
Door Lock Switch (Driver Seat Side)

The door lock switch on the driver's door is connected with the door lock cylinder and the inside lock knob with a rod. The switch sends lock/unlock signals to the door lock controller.



Inspection

Check to see if there is any continuity between the connector terminals of the door lock switch. Replace the switch when the result of inspection is found abnormal.

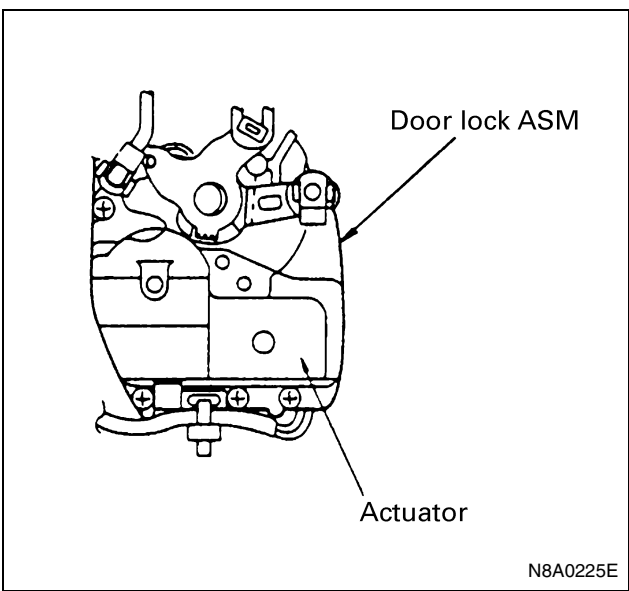


Removal and Installation

Refer to Section 2 for "DOOR LOCK ASSEMBLY".

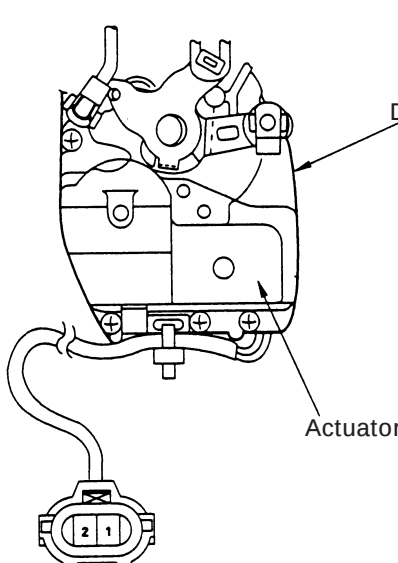
Door Lock Actuator

Receiving forward or reverse current from the door lock controller, the door lock actuator locks or unlocks the door with the rod connected to the door lock mechanism.



Inspection of The Door Lock Actuator

Apply the battery voltage to the connector terminals of the door lock actuator to check the operation. When the door lock actuator is checked on the vehicle and there is no continuity, and when the door lock actuator itself is checked and no trouble is found, check the circuit between the door lock actuator and the door lock controller for any failure.



Door lock ASM

Actuator

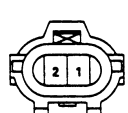
D-8



Actuator side

D-9

D-10



Actuator side

Door Connector No.	FRT Passenger		RR-LH		RR-RH	
	D-8		D-9		D-10	
	1	2	1	2	1	2
Lock	⊖	⊕	⊕	⊖	⊕	⊖
Unlock	⊕	⊖	⊖	⊕	⊖	⊕

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Removal and Installation

Refer to Section 2 for “DOOR LOCK ASSEMBLY”.

Power Window

General Description

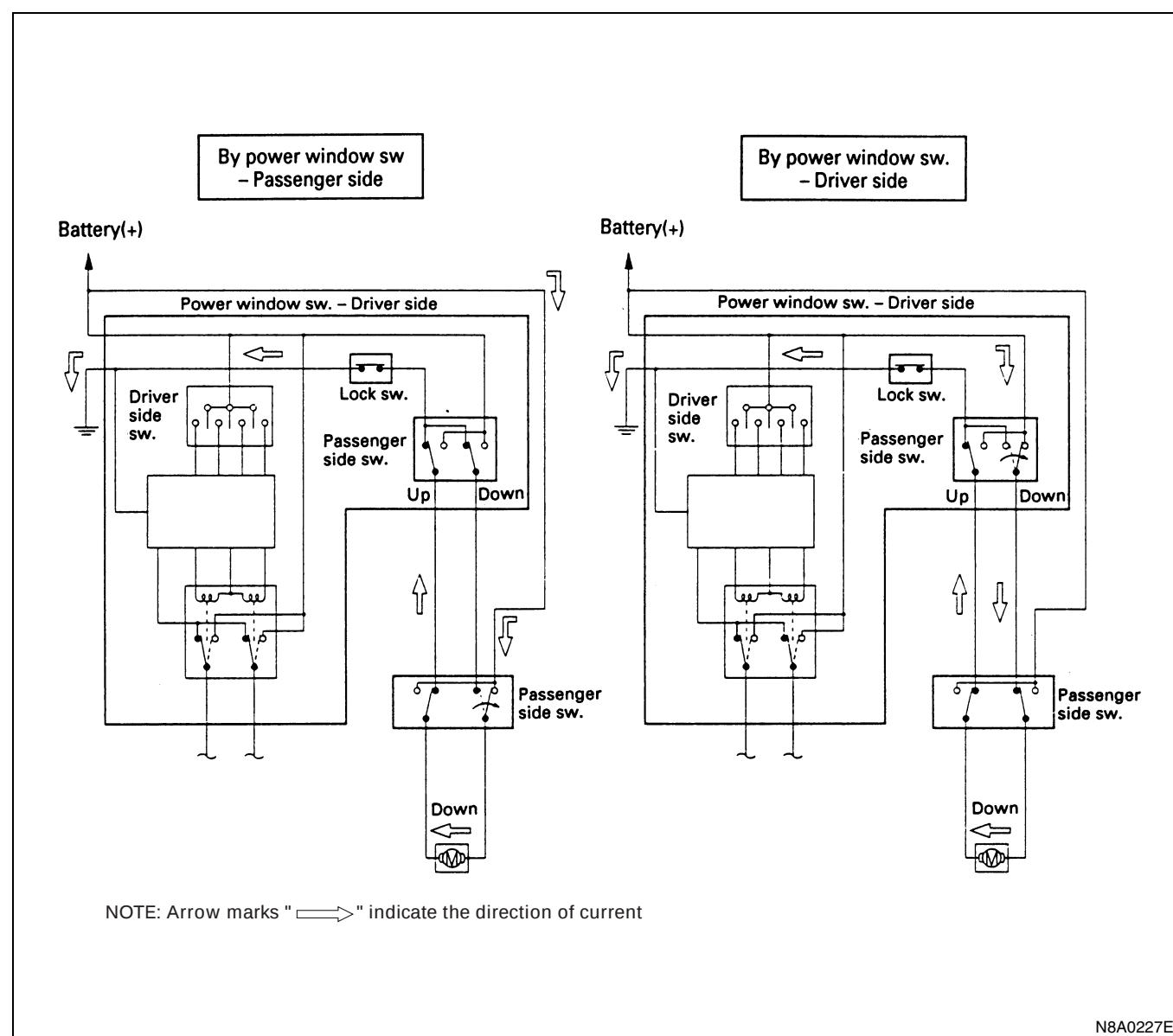
The circuit consists of the starter switch, power window switch for each of the windows and power window motor. When the starter switch is turned on, the battery voltage is applied to each of the power window switches through the circuit breaker and the power window relay on the circuit.

By operating the switches of each window to select "UP" or "DOWN", the revolving direction of the power window motor changes to open or close the window.

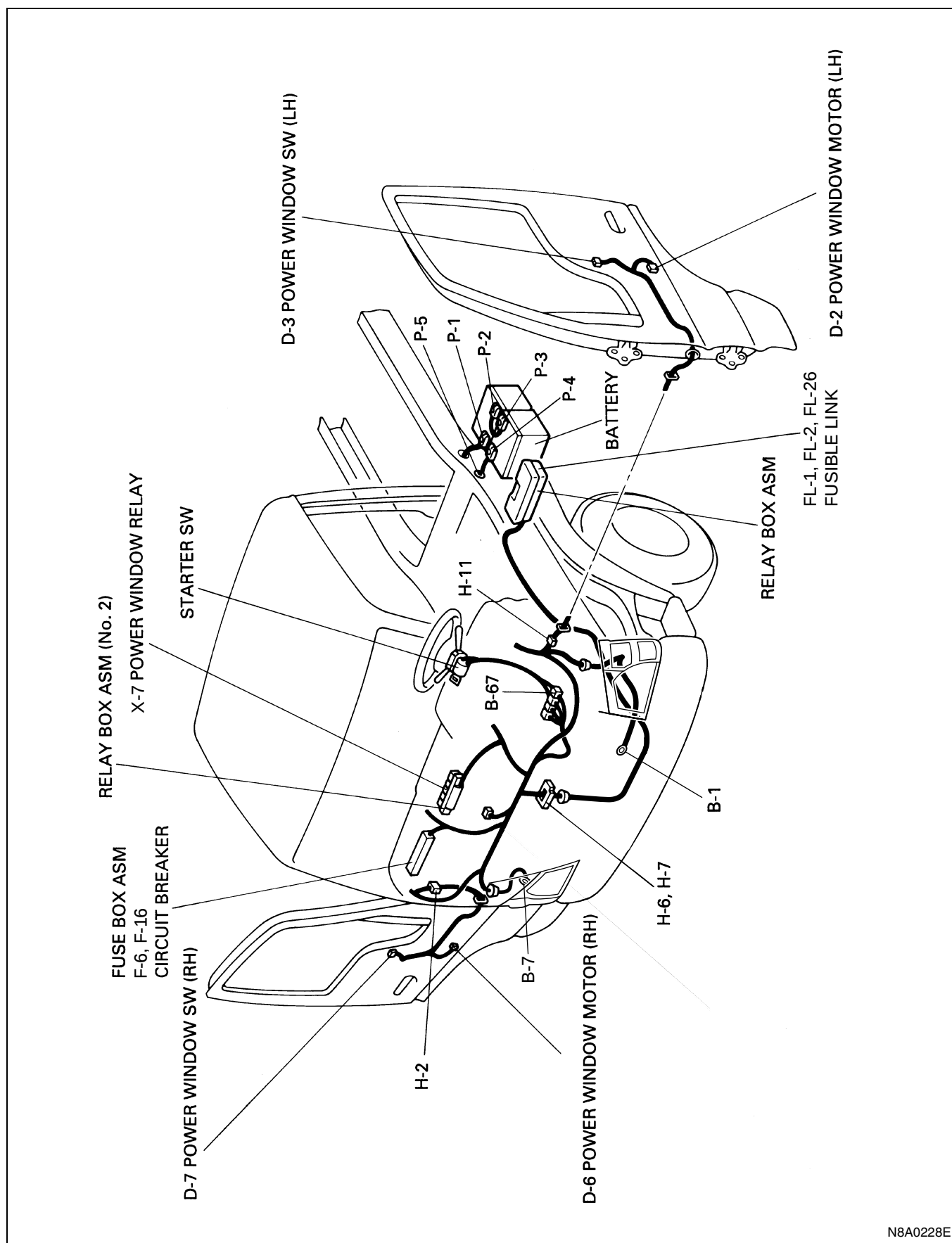
The driver's power window switch has a built-in one-touch operating circuit which allows to automatically open the window by operating the switch to the AUTO position.

When the driver's power lock switch at the driver side is depressed, the power source to the passenger's power window switches will be shut off and passenger's side power window motor will not operate if the switch is operated.

Operation of Passenger Side Window

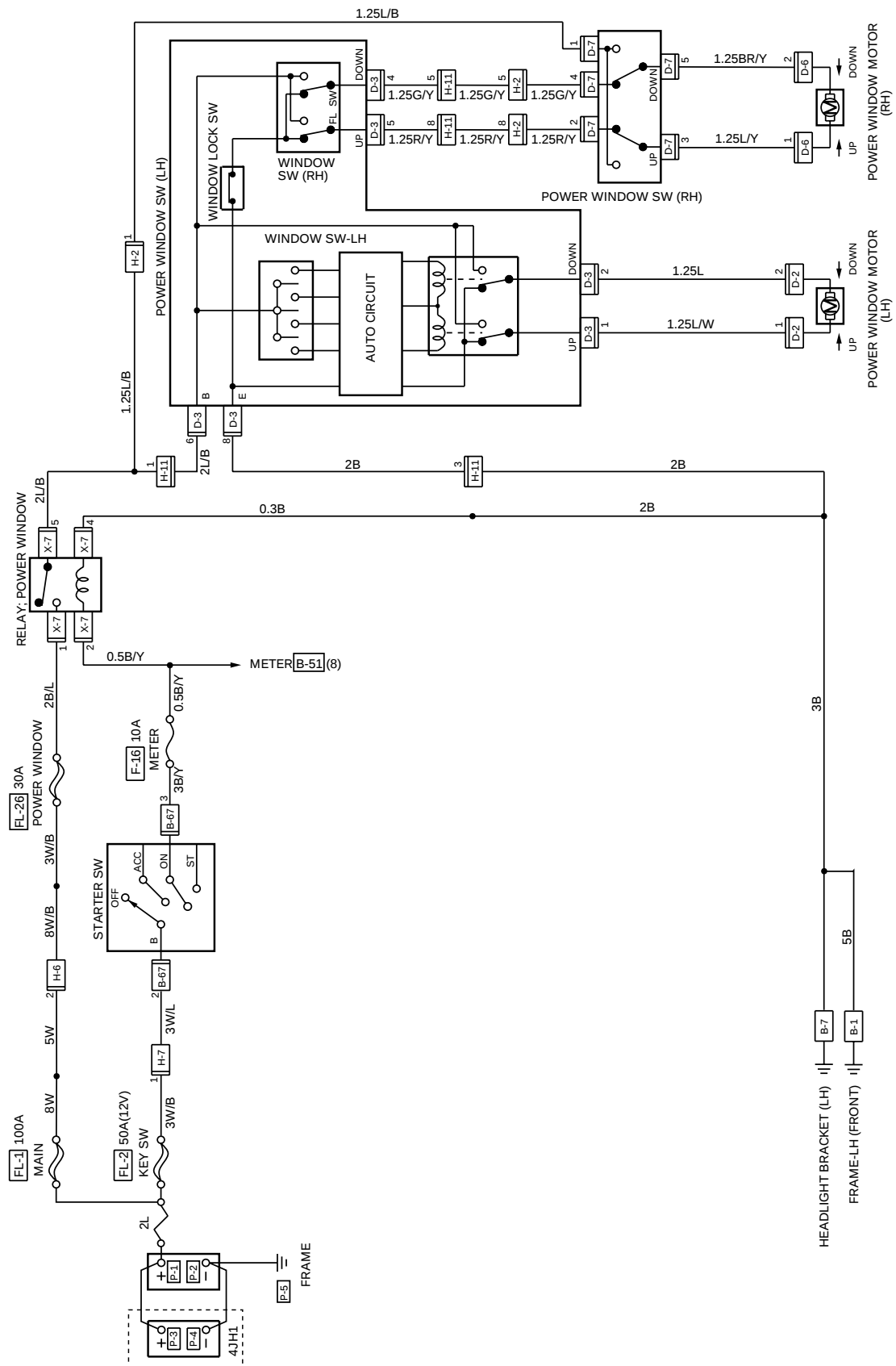


Parts Location

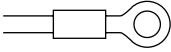
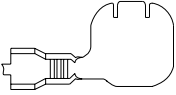
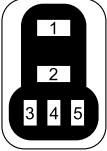
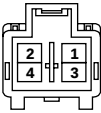
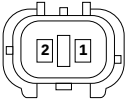
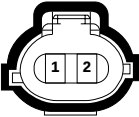


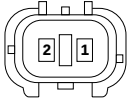
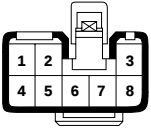
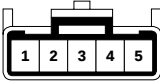
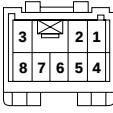
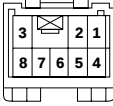
Circuit Diagram

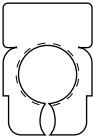
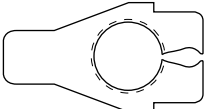
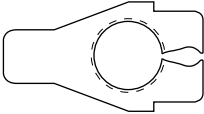
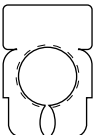
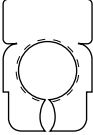
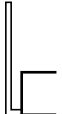
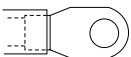
For 12 Volt



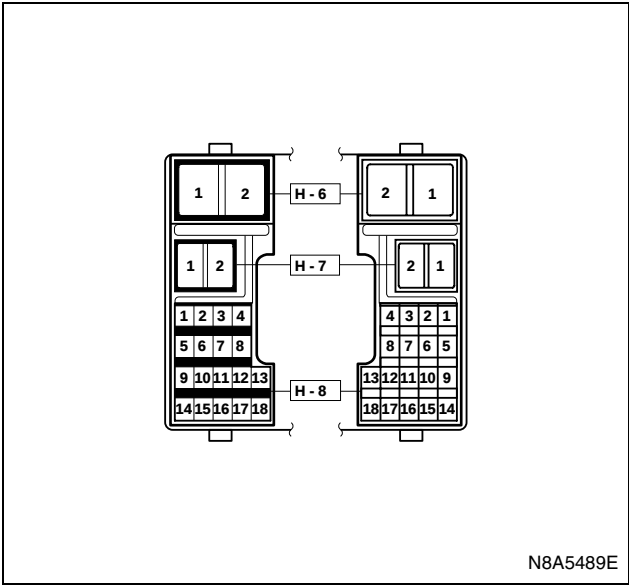
Connector List

No.	Connector Face
B-1	 000-001
B-7	 000-012
X-7	 005-006
B-67	 004-001
B-67	 004-002
D-2	 002-028
D-2	 002-029
D-6	 002-028

No.	Connector Face
D-6	 002-029
D-3	 008-011
D-7	 005-005
H-2	 008-009
H-2	 008-010
H-11	 008-009
H-11	 008-010
P-1 (12V)	 000-003

No.	Connector Face
P-2	 000-004
P-1 (24V)	 000-006
P-4	 000-006
P-2 (24V)	 000-004
P-3	 000-004
P-5 (12V)	 000-007
P-5 (24V)	 000-002

H-6, H-7

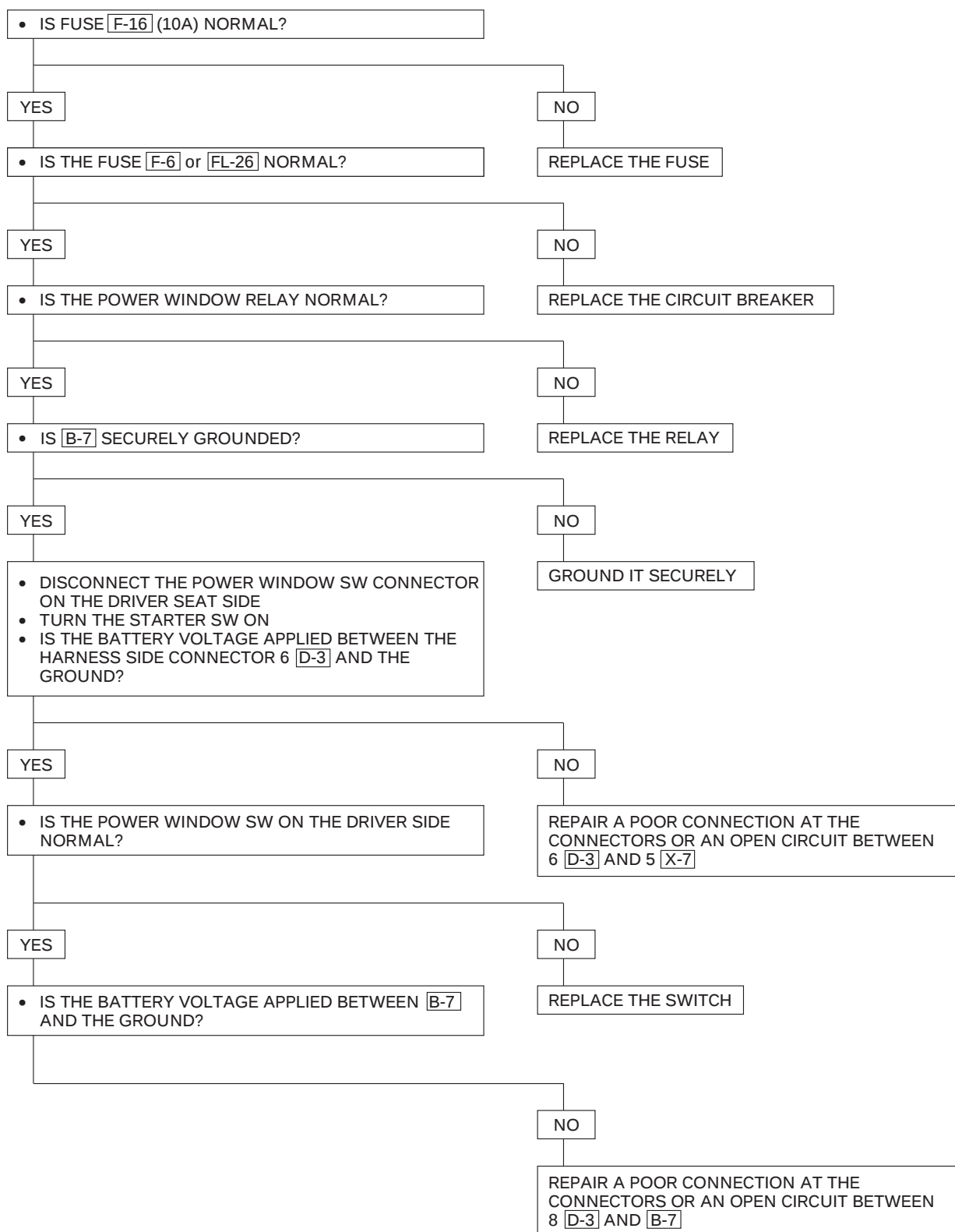


Diagnosis**Quick Chart for Check Point**

		Check point							
		Fuse F-16 (10A)	F-6, FL-26 (20A, 30A)	Power win- dow relay	Power window SW		Power window motor		Cable har- ness
					Driver side	Pas- senger side	Driver side	Pas- senger side	
Trouble mode	All windows do not operate	○ (1)	○ (2)	○ (3)	○ (5)				○ (4)
	Lock SW does not function				○ (1)				
	Driver side window								
	Window does not operate				○ (1)		○ (2)		○ (3)
	One-touch opera- tion does not oper- ate				○ (1)				
	Window operates in only one direction				○ (1)				
	Front passenger side window								
	Window does not operate				○ (2)	○ (1)		○ (3)	○ (4)
	Window does not operate when oper- ating the driver side SW				○ (1)				○ (2)
	Window does not operate when oper- ating the passen- ger side SW					○ (1)			○ (2)
	Window operates in only one direction when operating the driver side SW				○ (1)				○ (2)
	Window operates in only one direction when operating the passenger side SW				○ (2)	○ (1)			

Notice:

Figure in parenthesis “()” indicates the order of inspection.

All Windows Do Not Operate

Lock Sw Does Not Function

REPAIR OR REPLACE THE POWER WINDOW SW
ON THE DRIVER SEAT SIDE

N8A0231E

Window on the Driver Side Does Not Operate

• IS THE POWER WINDOW SWITCH ON THE DRIVER
SEAT SIDE NORMAL?

YES

NO

REPLACE THE POWER WINDOW SWITCH
ON THE DRIVER SEAT SIDE

• DISCONNECT THE CONNECTOR OF THE POWER
WINDOW MOTOR ON THE DRIVER SEAT SIDE
• WHEN CONNECTING THE MOTOR CONNECTOR
1 [D-2] TO THE BATTERY (+) TERMINAL AND 2 [D-2]
TO THE (-) TERMINAL, DOES THE MOTOR ROTATE IN
THE "UP" DIRECTION OF THE WINDOW (OR WHEN
CONNECTING 2 [D-2] TO THE (+) TERMINAL AND
1 [D-2] TO THE (-) TERMINAL, DOES THE MOTOR
ROTATE IN THE "DOWN" DIRECTION OF THE
WINDOW)?

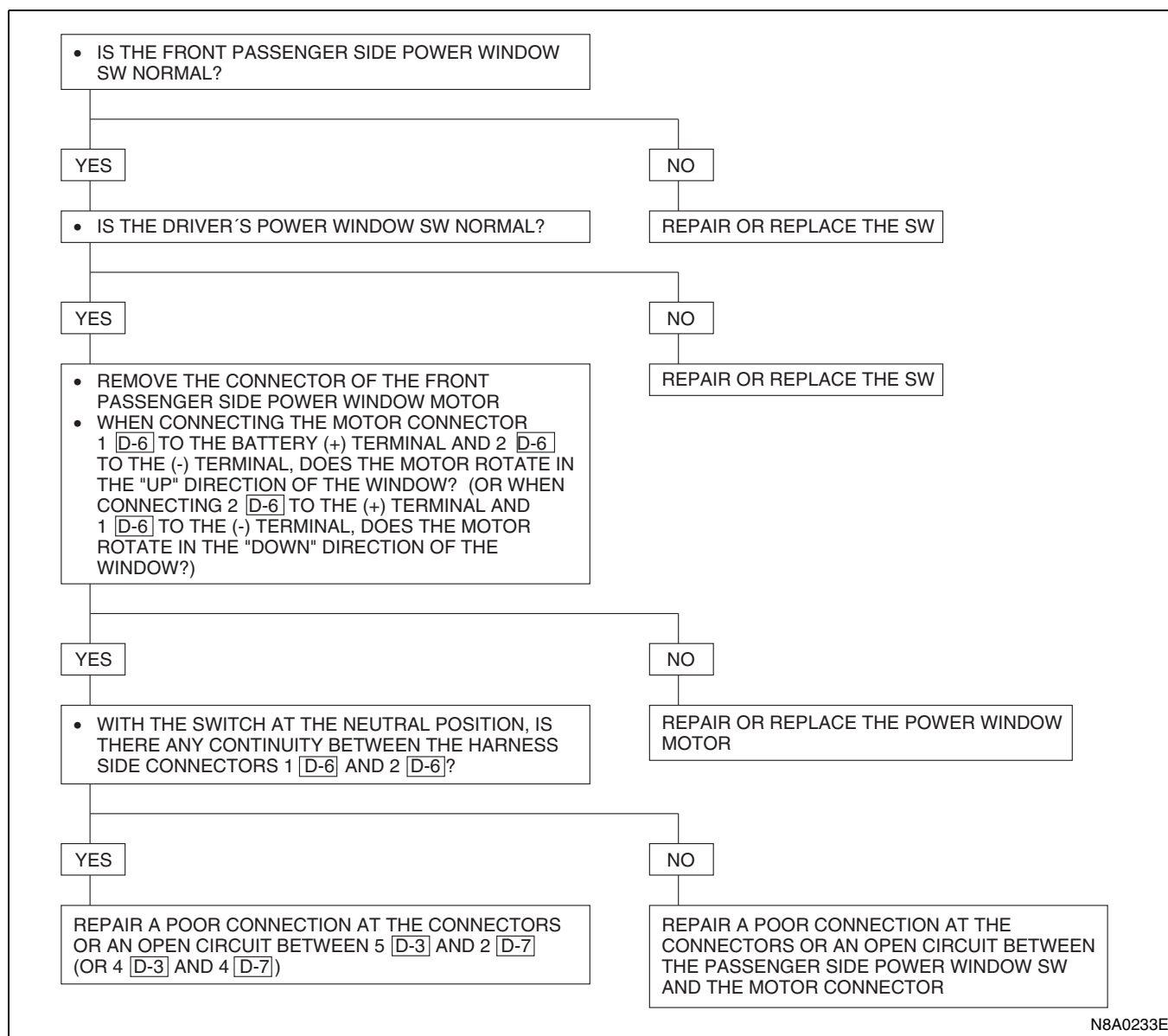
YES

NO

REPAIR A POOR CONNECTION AT THE CONNECTORS
OR AN OPEN CIRCUIT BETWEEN HARNESS SIDE
CONNECTOR TERMINALS 1 [D-3] AND POWER
WINDOW MOTOR 1 [D-2] OR 2 [D-3] AND 2 [D-2]

REPAIR OR REPLACE THE POWER WINDOW
MOTOR

N8A0232E

Window on the Front Passenger Side Does Not Operate

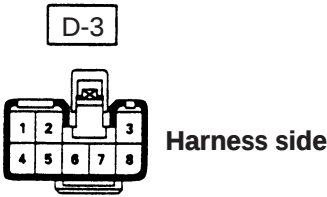
Starter Switch

Refer to “START AND CHARGING” in this section.

Power Window Switch-driver Side

Circuit Inspection

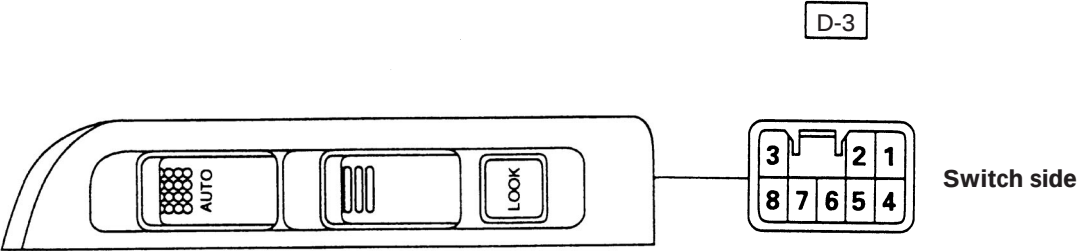
Disconnect the switch connectors to check the voltage and the continuity between the harness side connector terminals.



Terminal No.	Wire color	Connected to	Item to be checked	Connecting terminal	Checking conditions	Standard
1	L/W	Driver seat side motor	Continuity (resistance)	1-2	-	Continuity
2	L			4-5		
4	G/Y	Passenger side power window SW		5-4		
5	R/Y					
6	L/B	Power window relay	Voltage	6-Ground	Starter SW "ON"	Battery voltage
8	B	Ground	Continuity (resistance)	8-Ground	-	Continuity

Inspection

Check the continuity between the connector terminals of the switch.
Repair or replace the switch when the result of inspection is found abnormal.



Window		Driver side				Passenger side			
SW position	Terminal No.	6	1	2	8	6	5	4	8
UP		○	○	○	○	○	○	○	○
			○		○		○		○
OFF				○	○			○	○
				○	○			○	○
DOWN		○		○		○		○	
			○		○		○		○
LOCK	UP	○	○	○	○	○	○		
	OFF		○		○		○	○	
	DOWN	○		○		○		○	

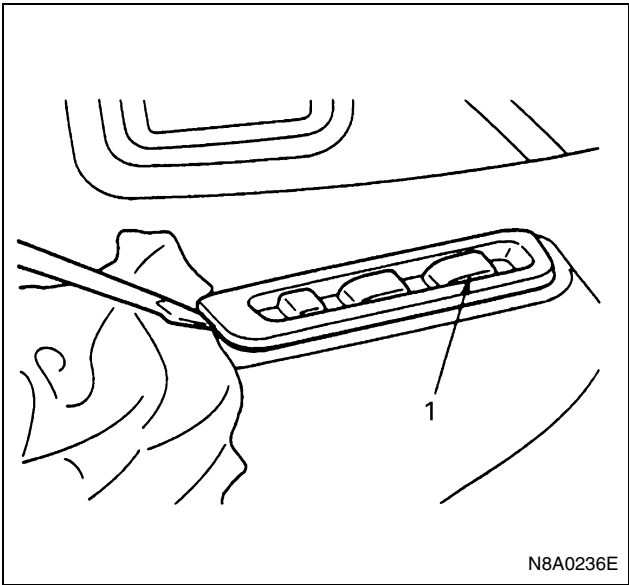
N8A0235E

Removal

Preparation:

Disconnect the battery ground cable.

1. Switch
 - 1) Insert the screw driver to the cut off portion to remove the switch.
 - 2) Disconnect the connector.



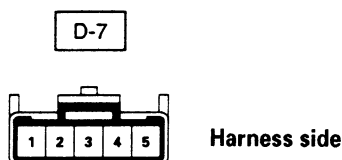
N8A0236E

Installation

To install, follow the removal steps in the reverse order.

Power Window Switch-passenger Side**Circuit Inspection**

Disconnect the switch connectors to check the voltage and the continuity between the harness side connector terminals.



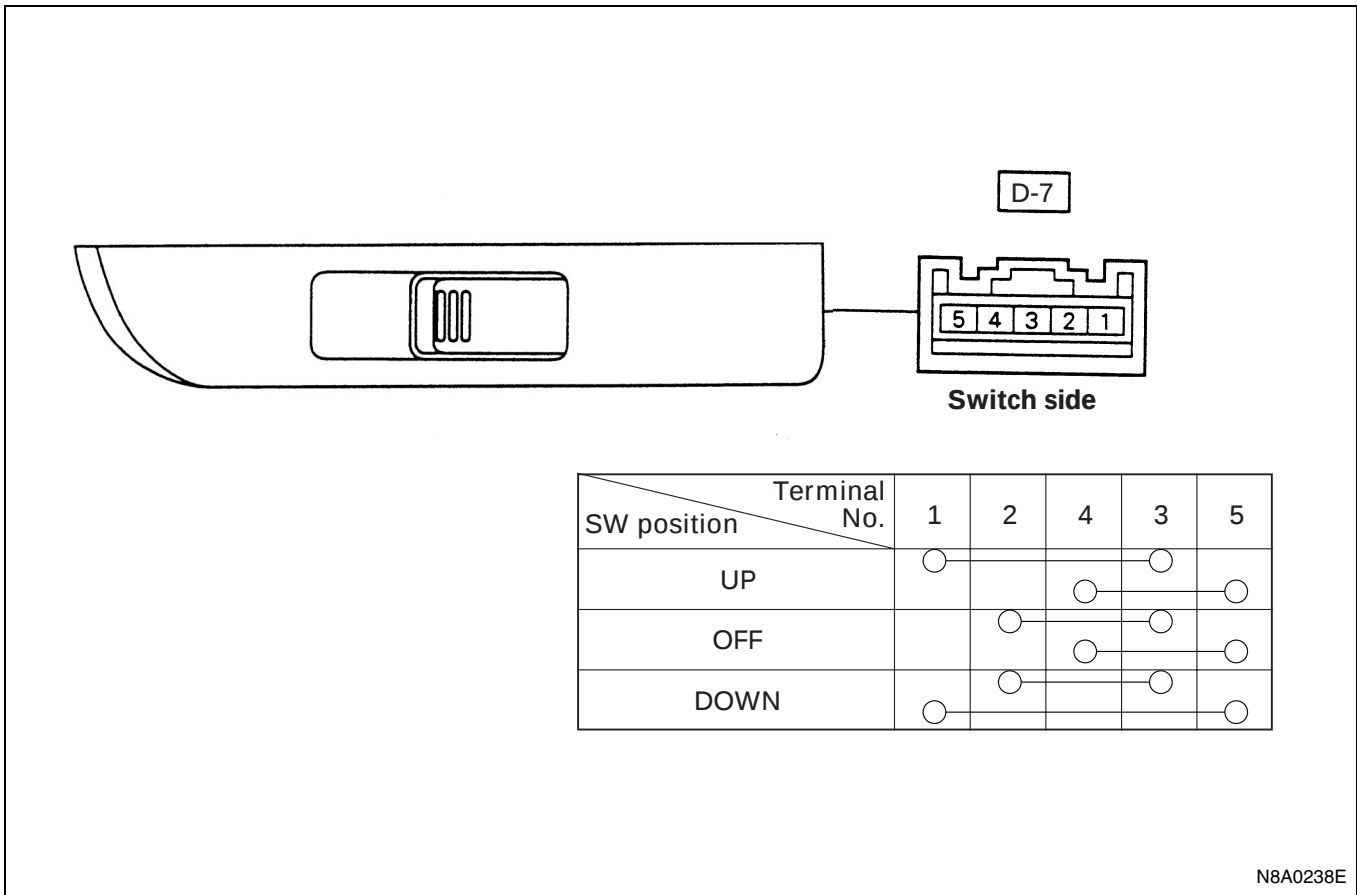
Terminal No.	Wire color	Connected to	Item to be checked	Connecting terminal	Checking conditions	Standard
1	L/B	Power window relay	Voltage	1-Ground	· Turn "ON" the starter SW	Battery voltage
2	R/Y	Driver side SW	Continuity (Resistance)	2-Ground	· Turn "OFF" the passenger side SW at the driver side SW	Continuity
			Voltage	2-Ground	· Turn "ON" the starter SW · Turn to "UP" the passenger side SW at the driver side SW	Battery voltage
3	L/Y	Passenger side motor	Continuity (Resistance)	3-5	—	Continuity
4	G/Y	Driver side SW	Continuity (Resistance)	4-Ground	· Turn "OFF" the passenger side SW at the driver side SW	Continuity
			Voltage	4-Ground	· Turn "ON" the starter SW · Turn to "DOWN" the passenger side SW at the driver side SW	Battery voltage
5	BR/Y	Passenger side motor	Continuity (Resistance)	5-3	—	Continuity

N8A5280E

Inspection

Check the continuity between the connector terminals of the switch.

Repair or replace the switch when the result of inspection is found abnormal.

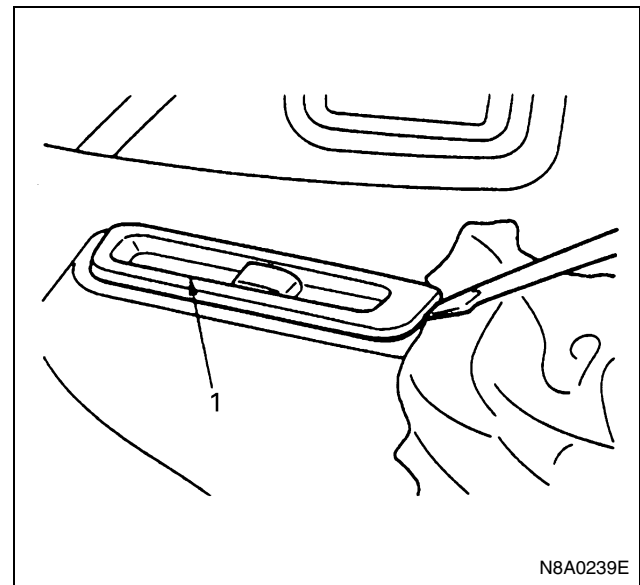


Removal

Preparation:

Disconnect the battery ground cable.

1. Switch
 - 1) Insert the screw driver to the cut off portion to remove the switch.
 - 2) Disconnect the connector.



Installation

To install, follow the removal steps in the reverse order.

Driver Seat Side Power Window Motor

Inspection

Before checking to see if the motor functions correctly, be sure to check the circuit through the connector **D-3** of the driver's power window switch.

If the motor does not operate smoothly, either the motor or the circuit between the switch and the motor is defective.

1. Circuit inspection of the driver side window switch
Disconnect the switch connector and apply battery voltage to the harness side connector terminals to check its function.

D-3

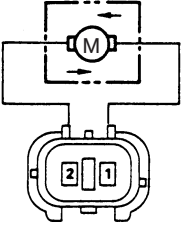


Harness side

Connecting terminal		Operation
1 (L/W)	2 (L)	
⊖	⊕	DOWN
⊕	⊖	UP

N8A0240E

2. Inspection of the driver seat side motor
- Remove the motor connector and apply battery voltage to the motor side connector terminals to check its function.
- Replace the motor when the result of inspection is found abnormal.



D-2

Direction of operation \ Terminal No.	1	2
	⊖	⊕
DOWN	⊖	⊕
UP	⊕	⊖

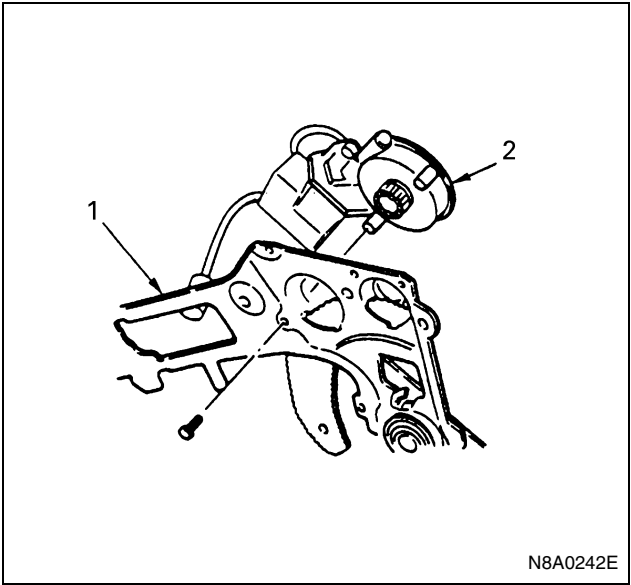
N8A0241E

Removal

Preparation:

Disconnect the battery ground cable.

1. Window Regulator Assembly
Refer to Section 2 for Window Regulator and Glass.
2. Power Window Motor
Remove three screws.



Installation

To install, follow the removal steps in the reverse order.

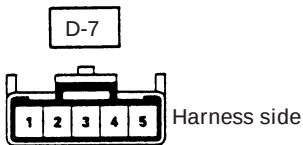
Front Passenger Seat Side Power Window Motor

Inspection

Before checking to see if the motor functions correctly, be sure to check the circuit through the front passenger's switch connector **D-7** and the driver's power window switch connector **D-3**.

If the motor does not operate smoothly, either the motor or the circuit between the switch and the motor is defective.

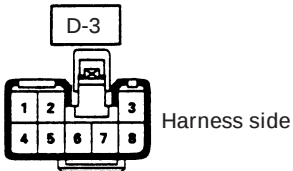
- 1. Circuit inspection of the front passenger seat side window
Disconnect the switch connector and apply battery voltage to the harness side connector terminals to check its function.



Connecting terminal		Direction of operation
3 (L/Y)	5 (BR/Y)	
⊖	⊕	DOWN
⊕	⊖	UP

N8A0243E

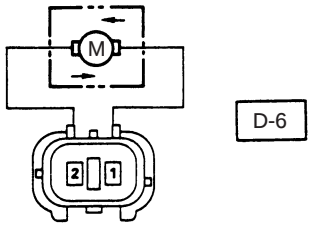
- 2. Circuit inspection of the driver seat side switch
Disconnect the switch connector and apply battery voltage to the harness side connector terminals to check its function.



Connecting terminal		Direction of operation
4 (G/Y)	5 (R/Y)	
⊕	⊖	DOWN
⊖	⊕	UP

N8A0244E

- 3. Inspection of the front passenger window motor
Disconnect the motor connector and apply battery voltage to the motor side connector terminals to check its function.
Repair or replace the motor when the result of inspection is found abnormal.



Direction of operation \ Terminal No.	1	2
DOWN	⊖	⊕
UP	⊕	⊖

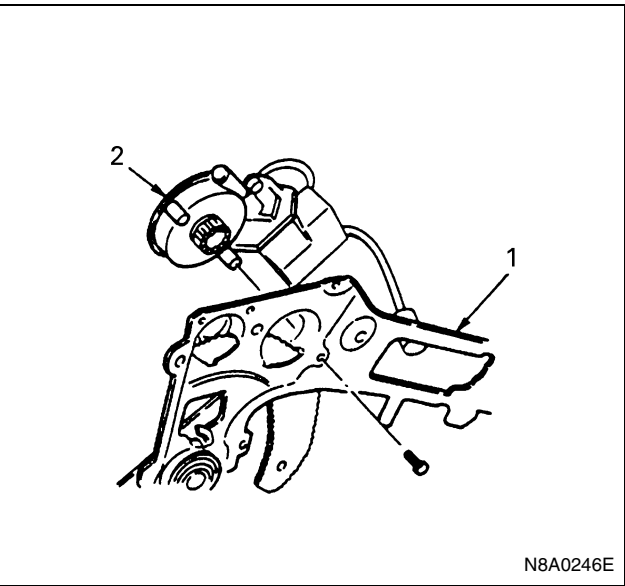
N8A0245E

Removal

Preparation:

Disconnect the battery ground cable.

- 1. Window Regulator Assembly
Refer to Section 2 for Window Regulator and Glass.
- 2. Power Window Motor
Remove three screws.



Installation

To install, follow the removal steps in the reverse order.

Windshield Wiper and Washer

General Description

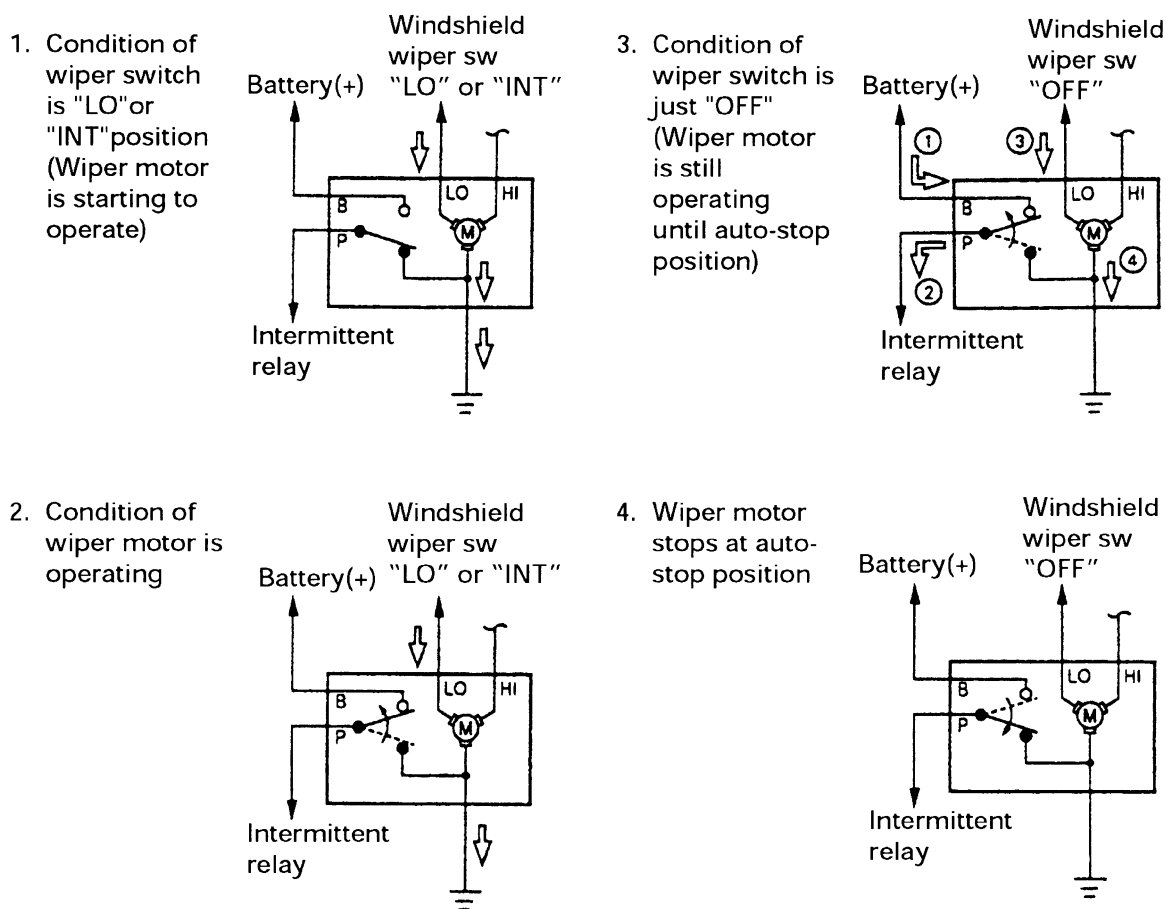
The circuit consists of the starter switch, windshield wiper & washer switch, wiper motor, washer motor and the intermittent relay.

When the wiper & washer switch is turned on with starter switch on, the battery voltage is applied to the wiper motor to activate the wiper.

The washer motor squirts glass cleaning fluid while the washer switch is being pushed. The intermittent relay is used to control motion of the wiper.

Operation of Windshield Wiper Motor

(When wiper "LO" or "INT" position)

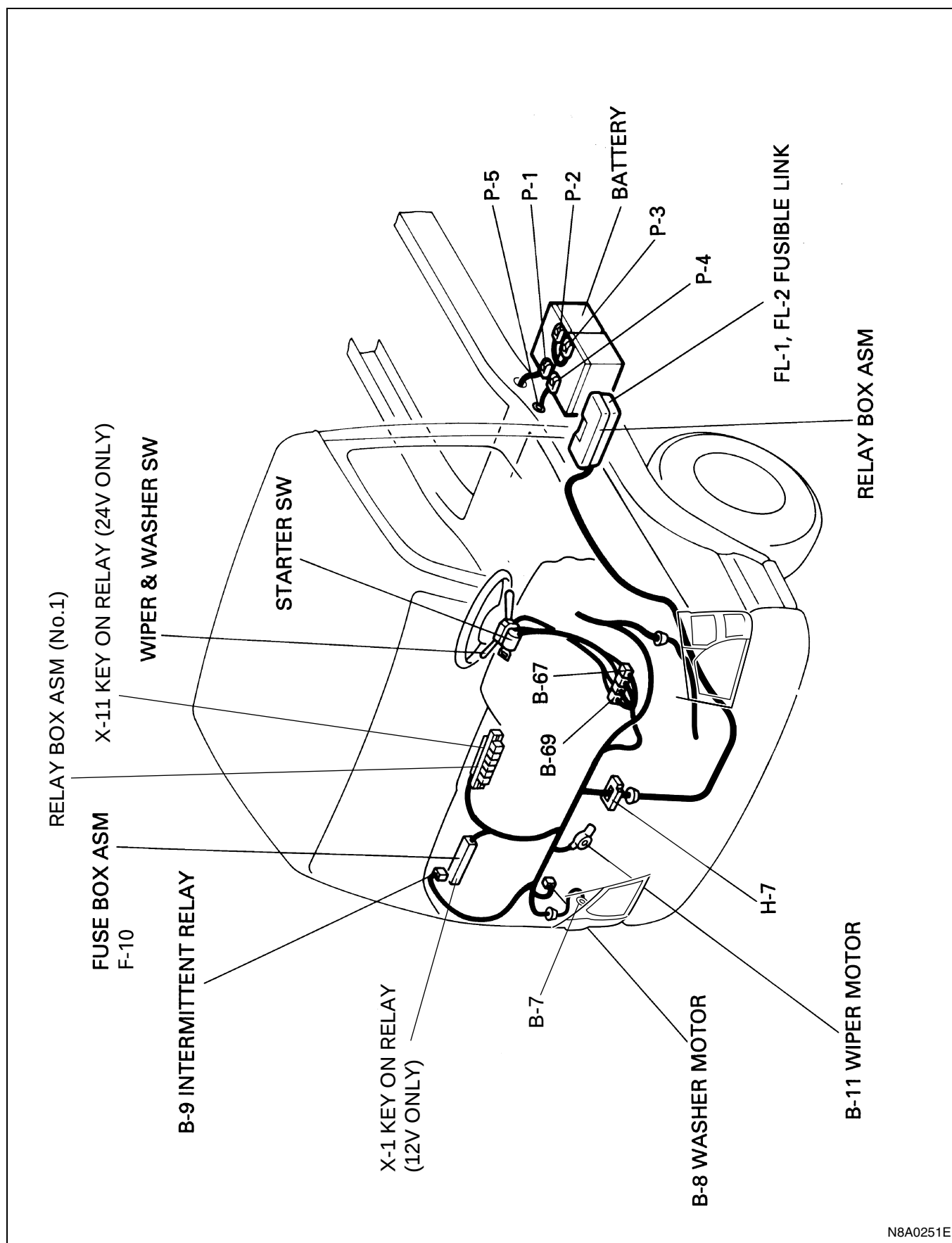


N8A0250E

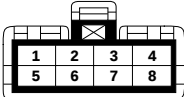
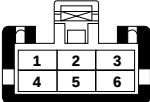
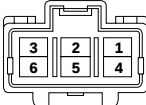
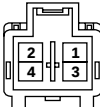
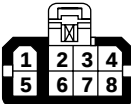
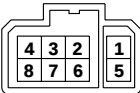
Notice:

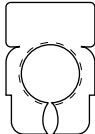
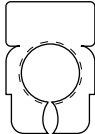
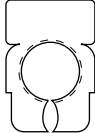
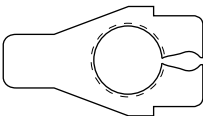
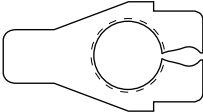
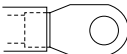
Arrow marks indicate the direction of current.

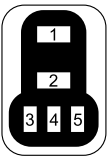
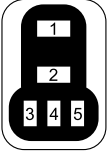
Parts Location

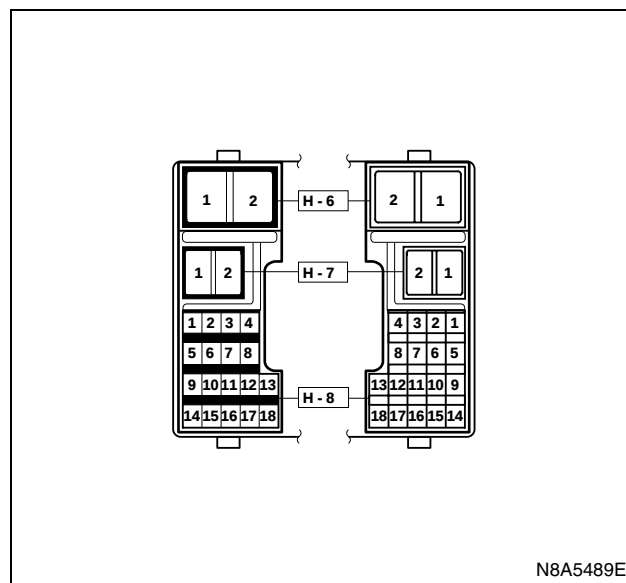


Connector List

No.	Connector Face
B-8	 002-009
B-9	 008-012
B-11	 006-001
B-11	 006-016
B-67	 004-001
B-67	 004-002
B-69	 008-001
B-69	 008-002

No.	Connector Face
P-1 (12V)	 000-003
P-2	 000-004
P-1 (24V)	 000-004
P-4	 000-004
P-2 (24V)	 000-006
P-3	 000-006
P-5 (12V)	 000-007
P-5 (24V)	 000-002

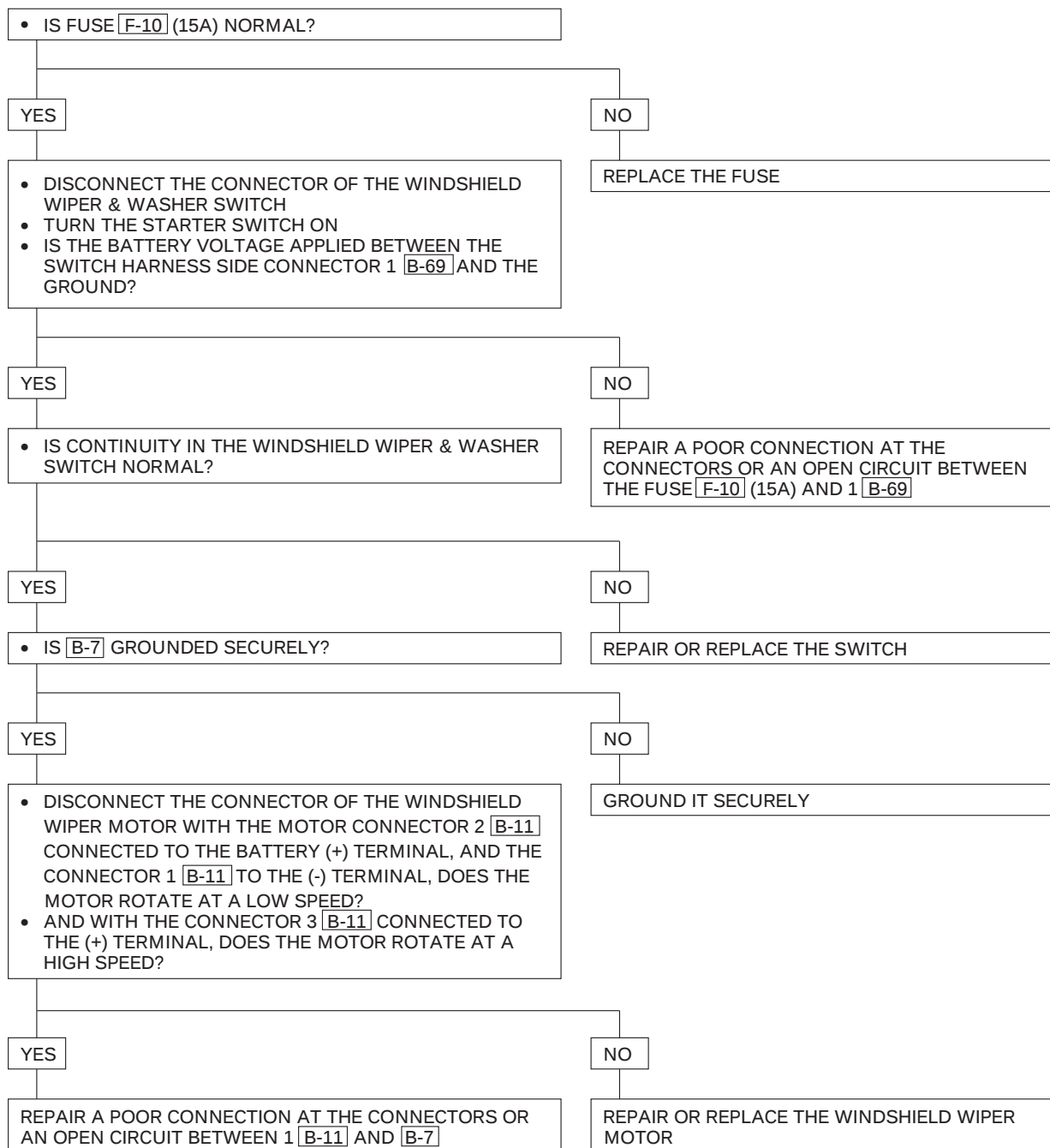
No.	Connector Face
X-1	 005-006
X-11	 005-006

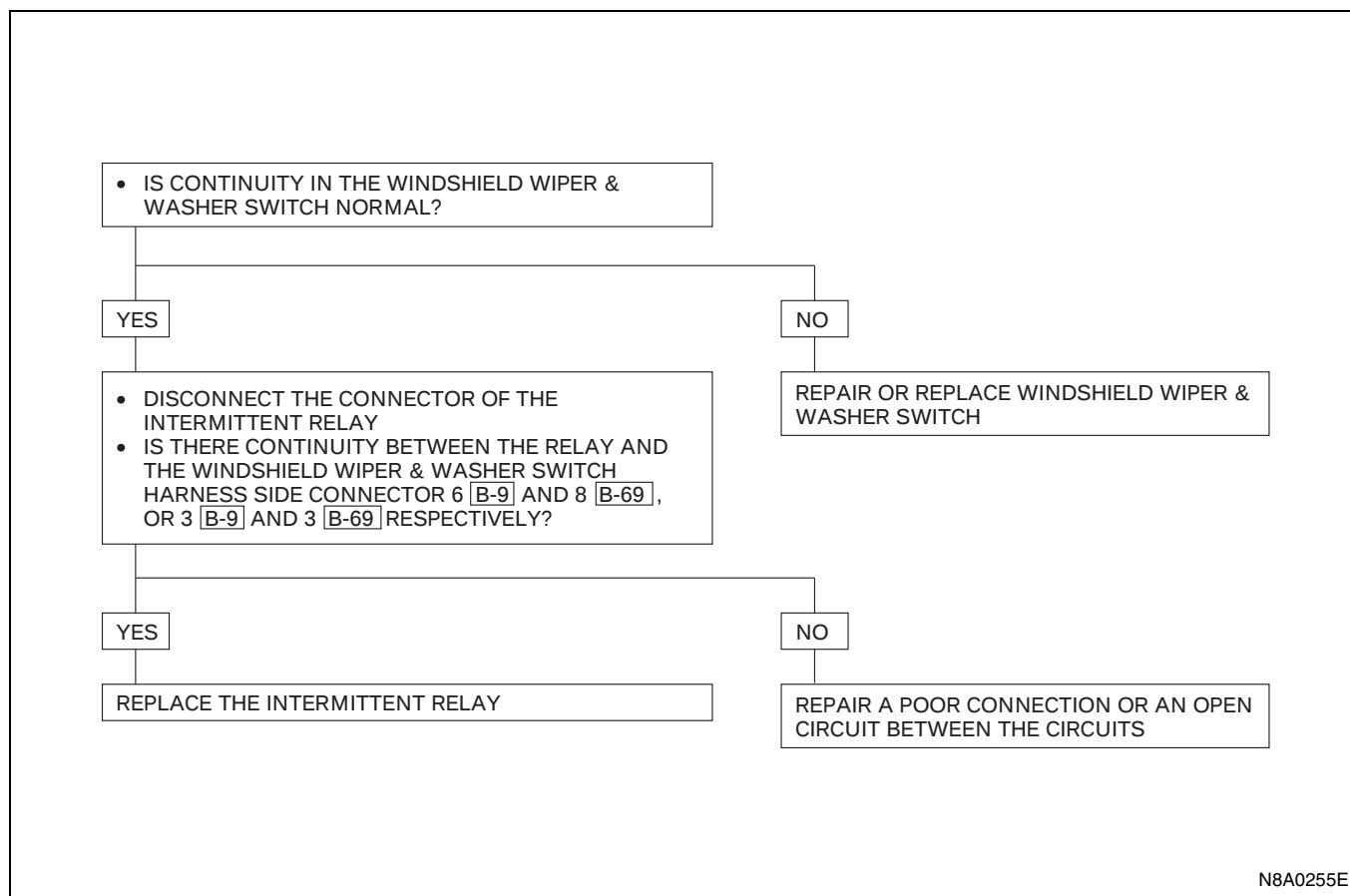
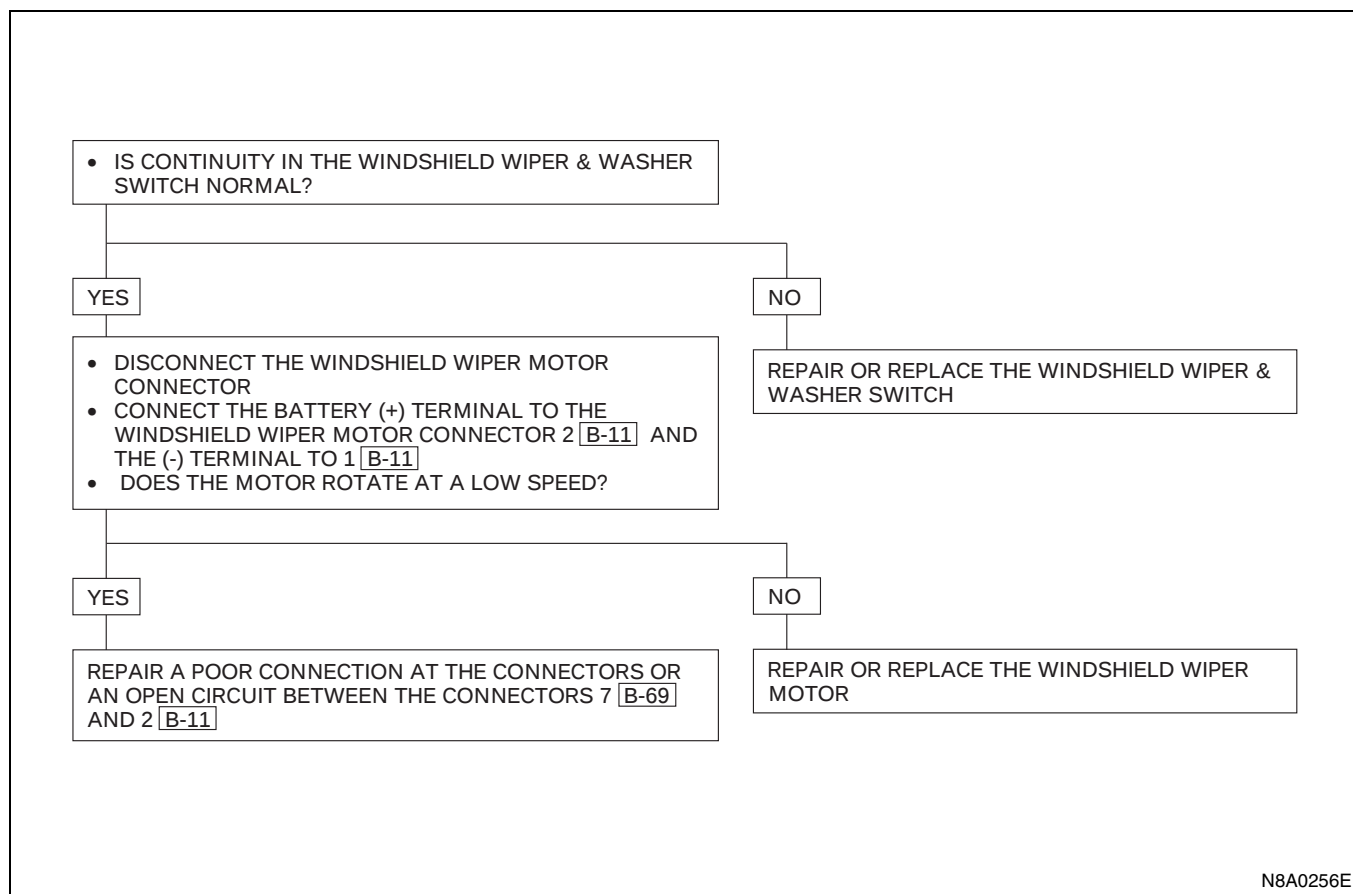
H-7**Diagnosis****Quick Chart for Check Point****1. Windshield Wiper and Washer**

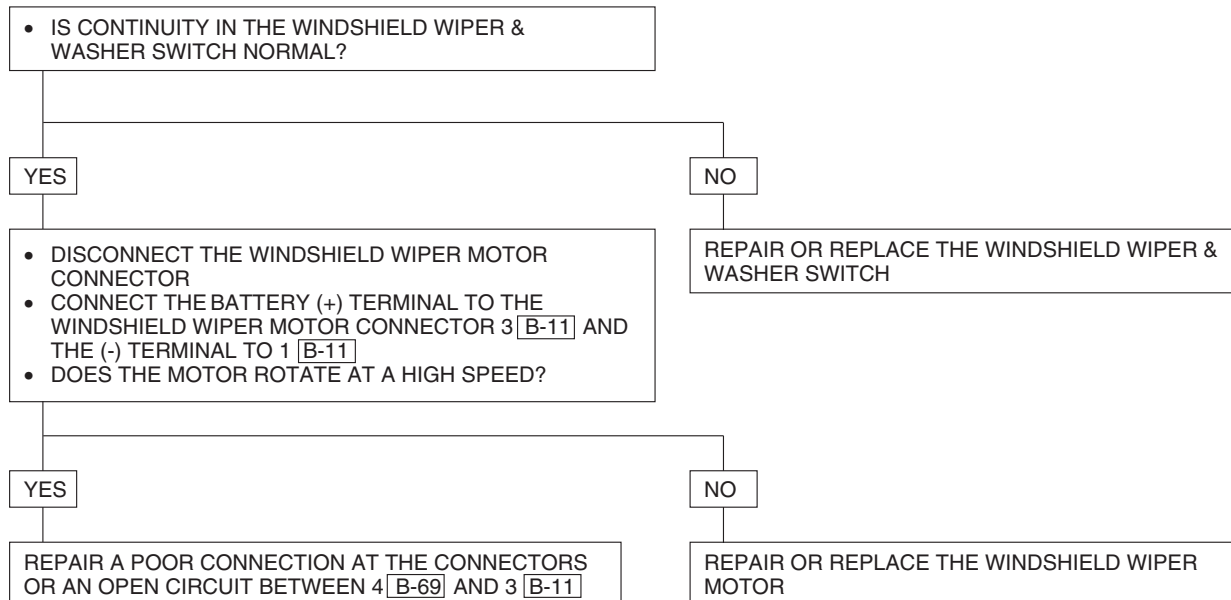
		Check point					
		Fuse F-10 (15A)	Wiper & washer SW	Intermittent relay	Wiper motor	Washer motor	Cable harness
Trouble mode	1. Windshield wiper does not operate at any switch position	○ (1)	○ (3)		○ (4)		○ (2)
	2. Windshield wiper does not operate at "INT" position		○ (1)	○ (3)			○ (2)
	3. Windshield wiper does not operate at "LO" position		○ (1)		○ (3)		○ (2)
	4. Windshield wiper does not operate at "HI" position		○ (1)		○ (2)		○ (3)
	5. Auto-stop function of the windshield wiper motor does not operate		○ (1)	○ (4)	○ (2)		○ (3)
	6. Rotation of the windshield wiper motor does not stop		○ (1)		○ (2)		
	7. Windshield washer motor does not operate		○ (1)			○ (3)	○ (2)

Notice:

Figure in parenthesis "()" indicates the order of inspection.

1. Windshield Wiper and Washer**1-1. Windshield Wiper Does Not Operate at Any Switch Position**

1-2. Windshield Wiper Does Not Operate at “INT” Position**1-3. Windshield Wiper Does Not Operate at “LO” Position**

1-4. Windshield Wiper Does Not Operate at “HI” Position

1-5. Auto-stop Function of the Windshield Wiper Motor Does Not Operate

• IS CONTINUITY IN THE WINDSHIELD WIPER & WASHER SWITCH NORMAL?

YES

NO

REPAIR OR REPLACE THE WINDSHIELD WIPER & WASHER SWITCH

• DISCONNECT THE CONNECTOR OF THE WINDSHIELD WIPER MOTOR
 • CONNECT THE MOTOR CONNECTOR 2 [B-11] TO THE BATTERY (+) TERMINAL, AND 1 [B-11] TO THE BATTERY (-) TERMINAL, AND THEN CHANGE THE CONNECTION OF THE BATTERY (+) TERMINAL TO THE CONNECTOR 4 [B-11] WHILE ROTATING THE MOTOR AT A LOW SPEED
 • WHEN CONNECTING THE CONNECTOR TERMINALS 2 [B-11] AND 5 [B-11] IN THIS CONDITION, DOES THE MOTOR STOP AT AUTO-STOP POSITION?

YES

NO

REPAIR OR REPLACE THE WINDSHIELD WIPER MOTOR

• TURN THE STARTER SWITCH ON
 • IS THERE BATTERY VOLTAGE APPLIED BETWEEN THE WINDSHIELD WIPER MOTOR HARNESS SIDE CONNECTOR TERMINAL 4 [B-11] AND GROUND?

YES

NO

REPAIR A POOR CONNECTION AT THE CONNECTORS OR AN OPEN CIRCUIT BETWEEN THE FUSE [F-10] (15A) AND 4 [B-11]

• DISCONNECT THE CONNECTOR OF THE WINDSHIELD INTERMITTENT RELAY
 • IS THERE CONTINUITY BETWEEN THE RELAY HARNESS SIDE CONNECTOR 7 [B-9] AND THE WINDSHIELD WIPER MOTOR HARNESS SIDE CONNECTOR 5 [B-11] ?

YES

NO

REPLACE THE WINDSHIELD INTERMITTENT RELAY

REPAIR A POOR CONNECTION AT THE CONNECTORS OR AN OPEN CIRCUIT BETWEEN THE CIRCUITS

1-6. Rotation of the Windshield Wiper Motor Does Not Stop

• IS CONTINUITY IN THE WINDSHIELD WIPER & WASHER SWITCH NORMAL?

YES

• THE MOMENT THE WINDSHIELD WIPER COMES TO AUTO-STOP POSITION, TURN THE STARTER SWITCH OFF
(ALTERNATIVELY, CONNECT THE BATTERY (+) TERMINAL TO THE WINDSHIELD WIPER MOTOR CONNECTOR 2 [B-11] AND THE (-) TERMINAL TO 1 [B-11], AND THEN MOVE THE WINDSHIELD WIPER MOTOR TO AUTO-STOP POSITION AND STOP IT)

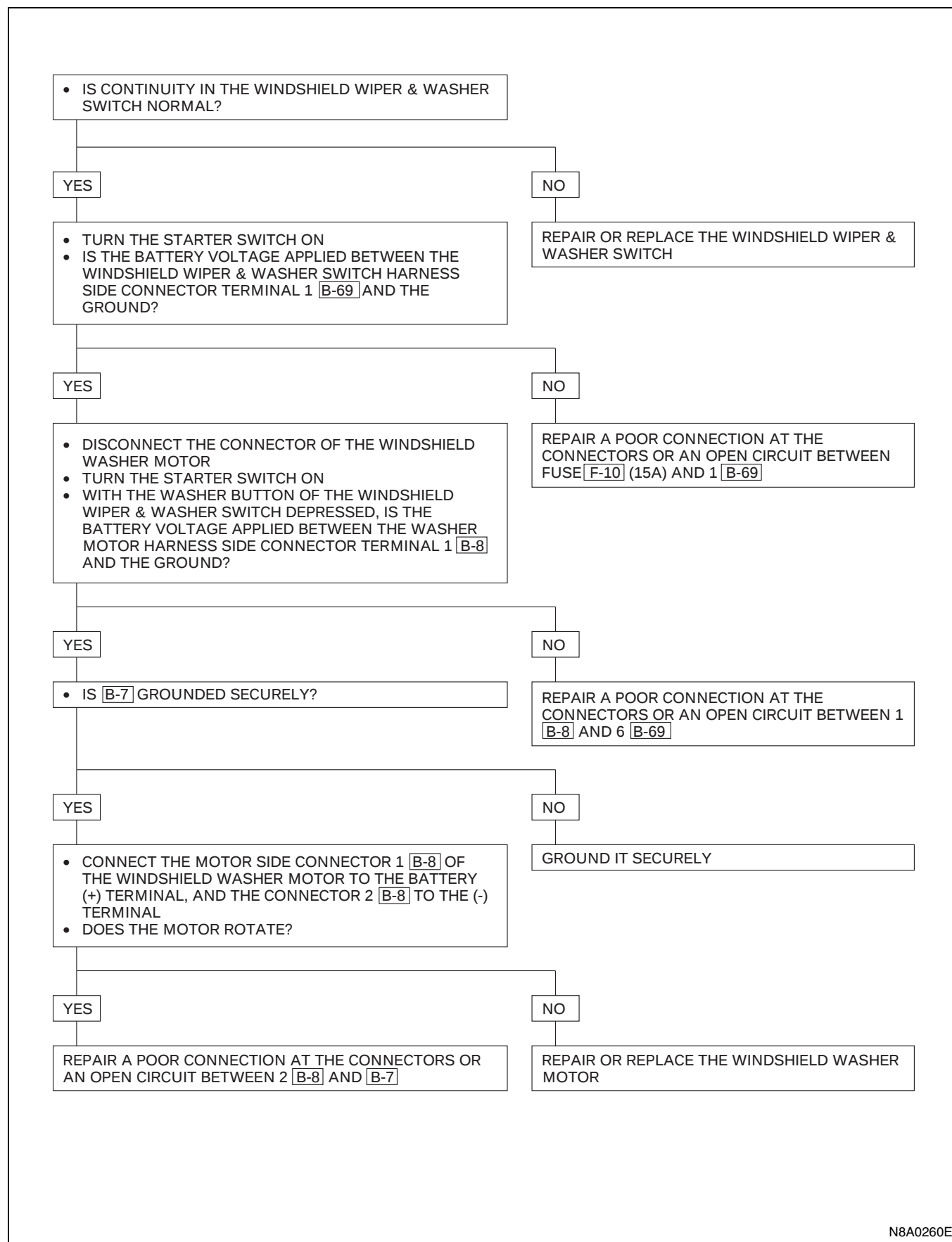
YES

CONFIRM CONTINUITY BETWEEN THE WINDSHIELD WIPER MOTOR SIDE CONNECTOR TERMINALS 4 [B-11] AND 5 [B-11], AND REPAIR OR REPLACE THE MOTOR

NO

REPAIR OR REPLACE THE WINDSHIELD WIPER & WASHER SWITCH

1-7. Windshield Washer Motor Does Not Operate

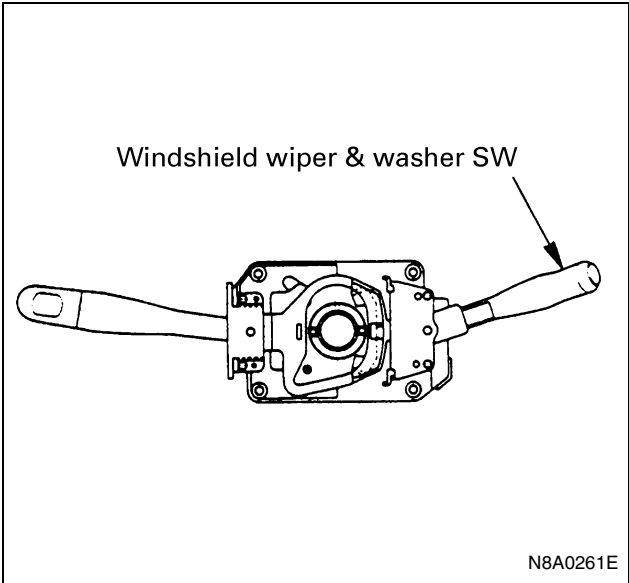


Starter Switch

Refer to “START AND CHARGING” in this section.

Windshield Wiper & Washer Switch

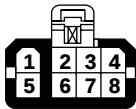
With the starter switch on, the windshield wiper and washer switch controls the start and stop operation as well as the change of operating speeds. Both the windshield washer motor and the wiper motor jointly operate while the washer button is pushed.



Inspection

Check the continuity between the connector terminals of the switch.
Repair or replace the switch when the result of inspection is found abnormal.

B-69



Switch side

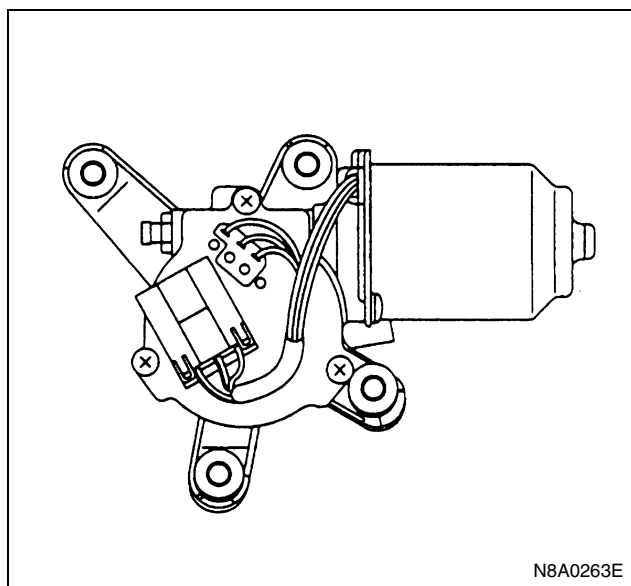
Washer SW	Wiper SW	Terminal No.					
		3	7	1	4	8	6
OFF	OFF	○	○				
	INT	○	○	○		○	
	LO		○	○			
	HI			○	○		
ON	MIST,OFF INT,LO,HI			○			○

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Removal and Inspection

Refer to “HEADLIGHT, FOG LIGHT AND CORNERING LIGHT” in this section.

Windshield Wiper Motor



Inspection

1. Operation in low speed
With the motor connector terminal 2 [B-11] connected to the battery (+) terminal and the connector 1 [B-11] to the (-) terminal, check to see if the motor rotates in low speed.
2. Operation in high speed
With the motor connector terminal 3 [B-11] connected to the battery (+) terminal and the connector 1 [B-11] to the (-) terminal, check to see if the motor rotates in low speed.
3. Stop operation
After stopping the windshield wiper in the position on the way by confirming the operation at the low speed in item No. 1.
When the connectors 2 [B-11] and 5 [B-11] are connected, while connecting the motor connector terminal 4 [B-11] to the battery (+) terminal, check to see, if the motor rotates at low speed and stops at the auto-stop position.

Repair or replace the motor when the results of the above inspections are found abnormal.

Removal

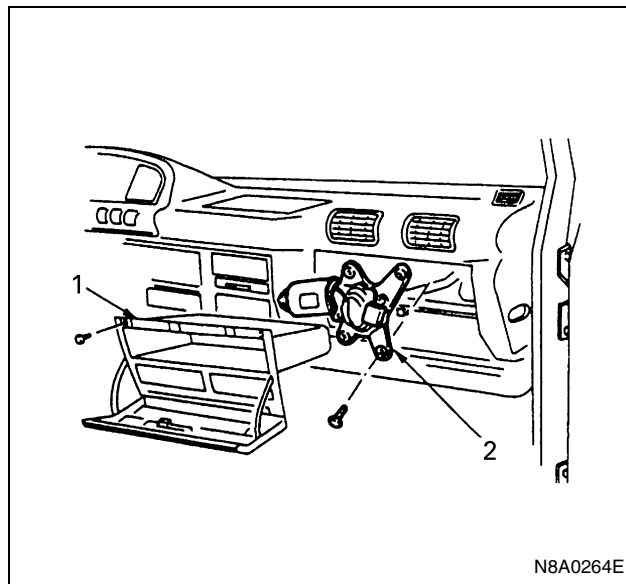
Preparation:

Disconnect the battery ground cable.

1. Glove Box
Refer to "INSTRUMENT PANEL" of section 2.

2. Windshield Wiper Motor

- 1) Disconnect the connector.
- 2) Remove four screws.
- 3) Remove the ball joint between crank arm and wiper link.



Installation

To install, follow the removal steps in the reverse order, noting the following points.

- Windshield Wiper Motor
When the crank arm is removed from the windshield wiper motor, tighten the motor shaft nut with the specified torque.

Tighten:

Shaft nut to 17 N·m (170 kg·cm/147 lb·in)

- Temporarily fit the motor by using one of the four wiper motor fixing screws.
- Put the crank arm ball joint in the wiper link hole and fix them together while pulling the wiper link.

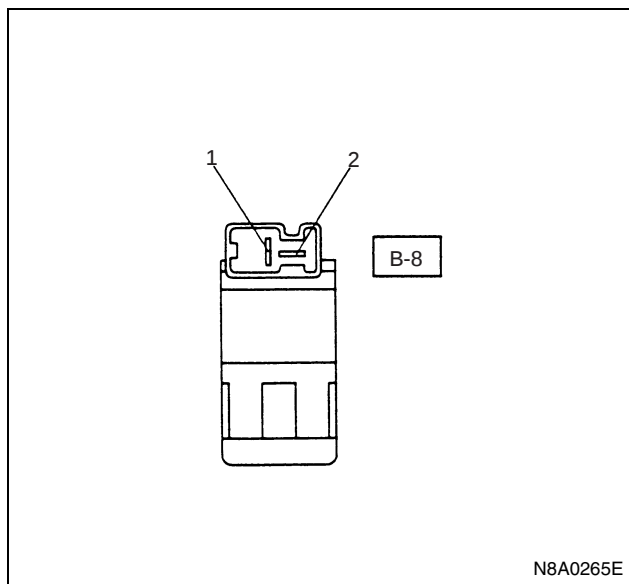
Windshield Washer Motor**Inspection**

With the battery (+) terminal connected to the washer motor connector terminal 1 B-8 and the (-) terminal to the connector 2 B-8, check to see if the cleaning fluid pushes out.

Replace the tank/motor when the result of inspection is found abnormal.

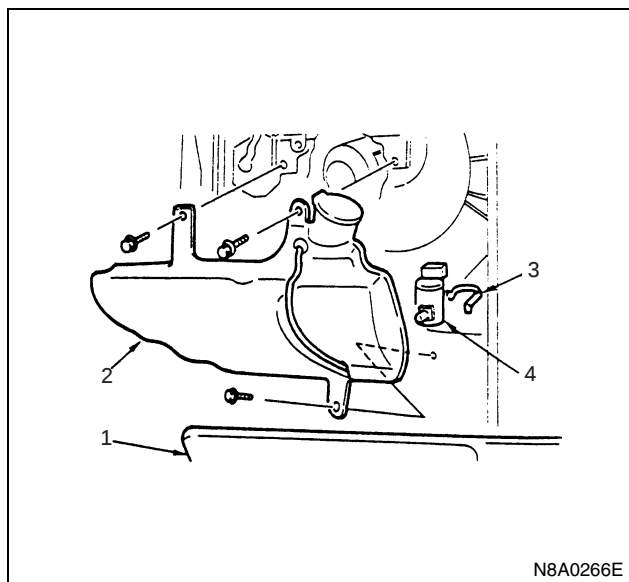
Installation

To install, follow the removal steps in the reverse order.

**Removal****Preparation:**

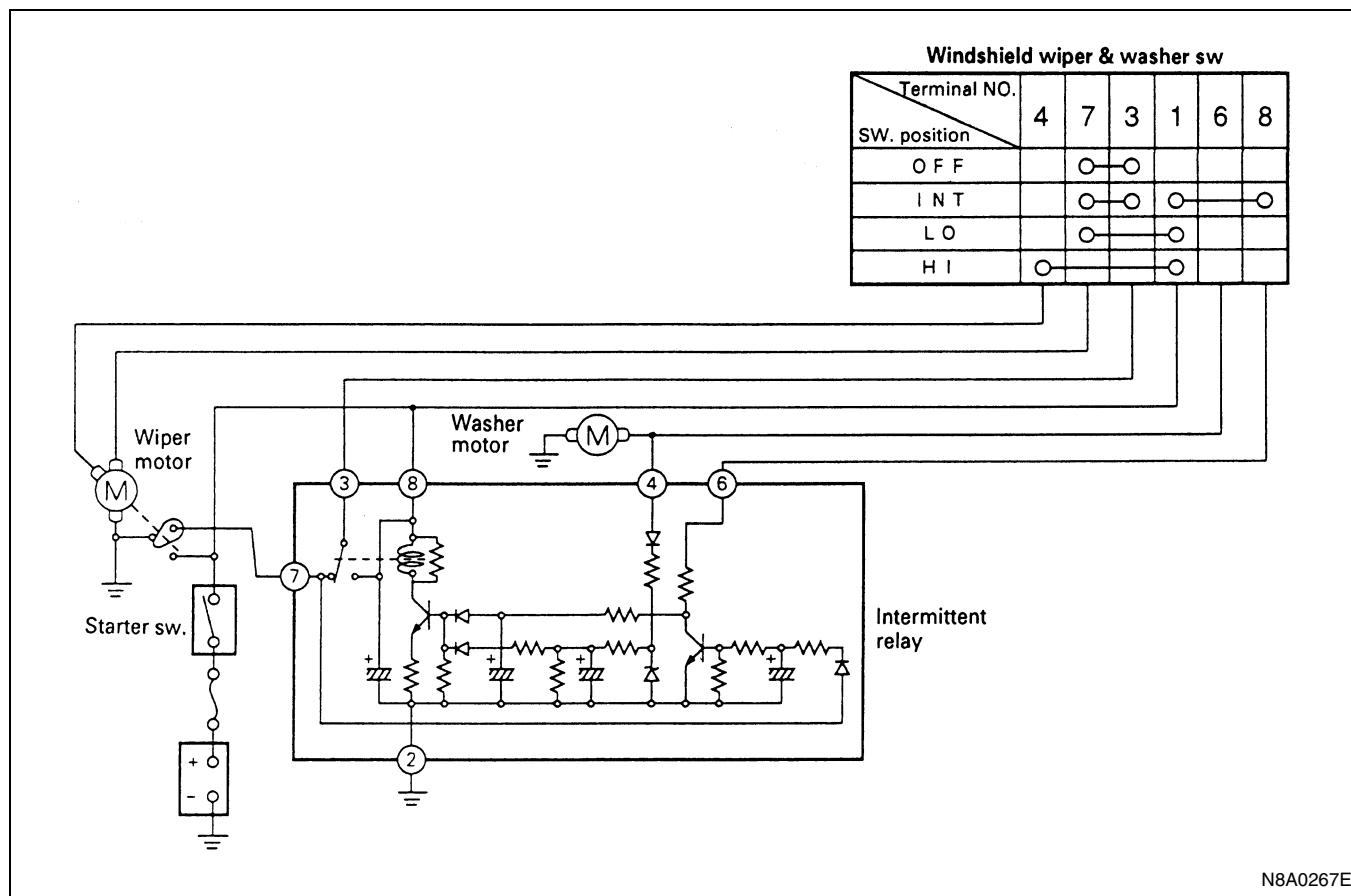
Disconnect the battery ground cable.

1. Instrument Panel Under Cover
Refer to "INSTRUMENT PANEL" of section 2.
2. Washer Tank
 - 1) Disconnect the washer motor connector.
 - 2) Disconnect the washer hose.
 - 3) Remove three fixing screws.
3. Clip Band
4. Windshield Washer Motor
Hold the motor and pull it out from the washer tank.



Intermittent Relay

Circuit Diagram



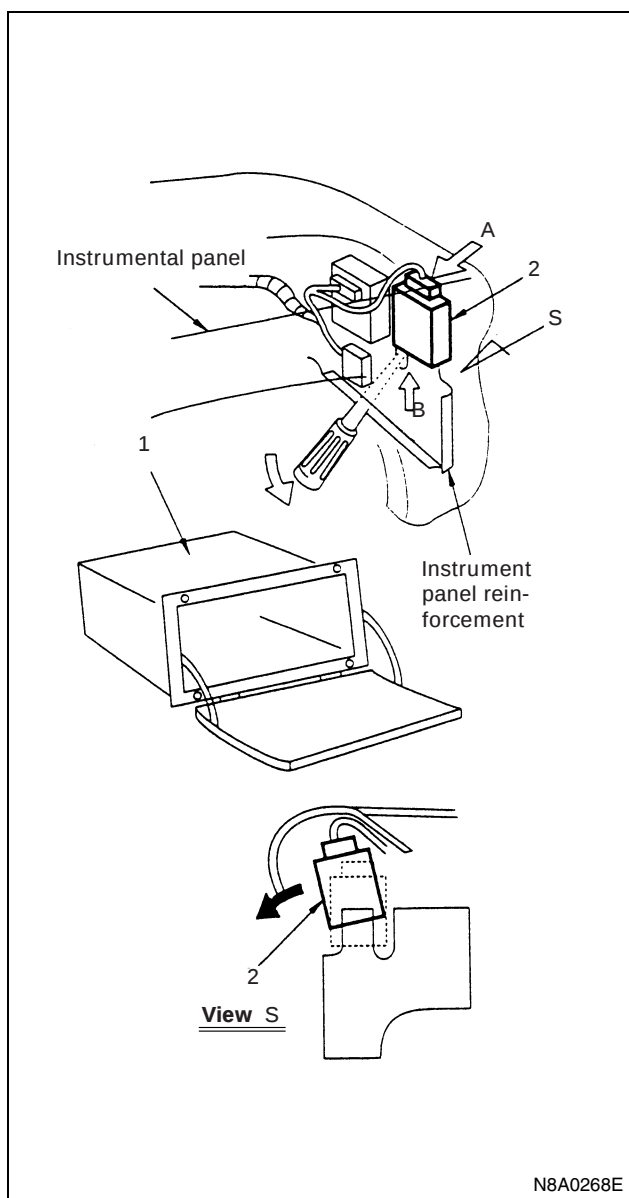
N8A0267E

Removal

Preparation:

Disconnect the battery ground cable.

1. Glove Box
Open the lid and remove the four screws.
2. Intermittent Relay
 - 1) Press A position with your finger and pry up B position with the tip of a screw-driver.
 - 2) When the relay moves up by about 2/3 of its size, tilt and take off the relay to avoid interference with the instrument panel.
 - 3) Disconnect the connector.



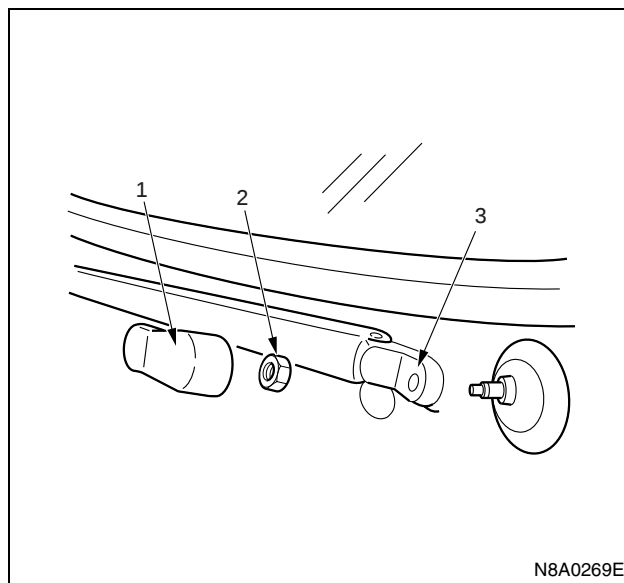
Installation

To install, follow the removal steps in the reverse order.

Windshield Wiper Arm & Blade

Removal

1. Cover
2. Wiper Arm Nut
3. Wiper Arm & Blade



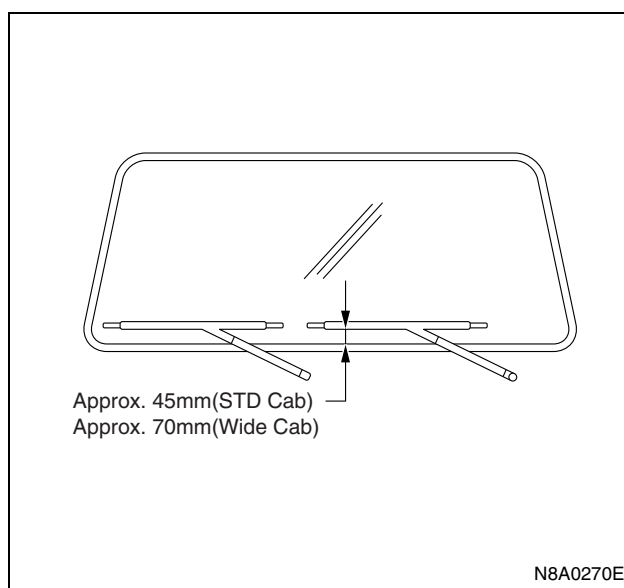
Installation

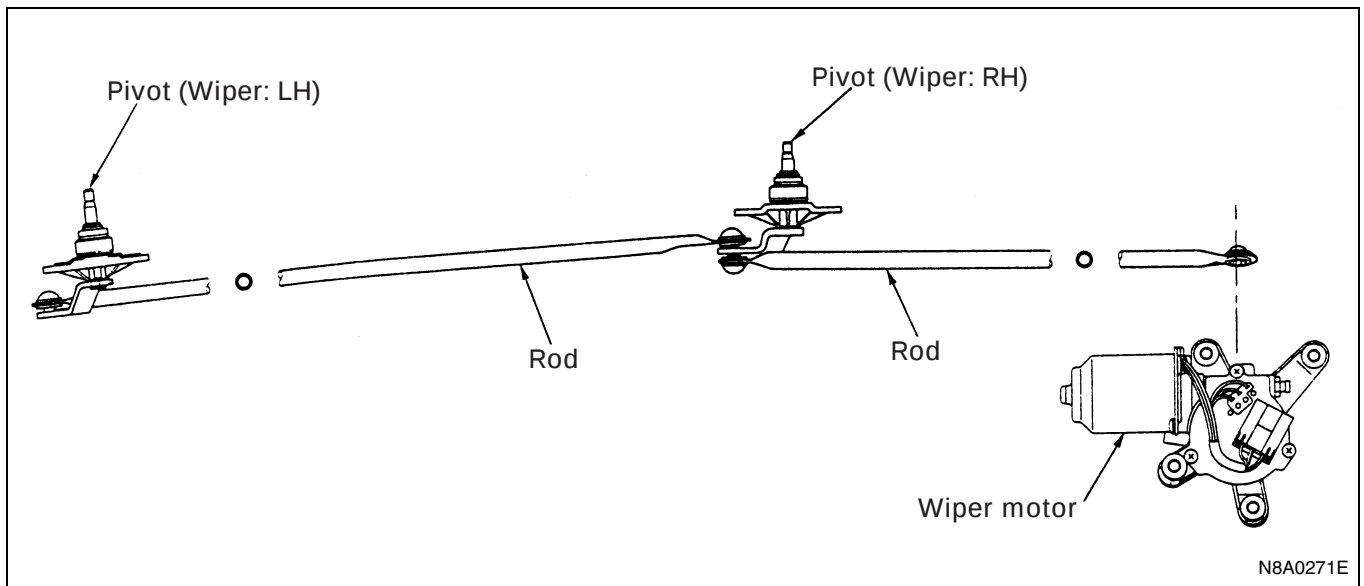
To install, follow the removal steps in the reverse order, noting the following points.

1. Before installing the wiper arm & blade to the shaft, confirm that the motor stops at the auto-stop position.
2. Set the wiper arm & blade so that the tips of both blades are positioned as shown in the illustration.
3. Tighten the wiper arm nut to the specified torque.

Tighten:

Wiper arm nut to 17 N·m (170 kg·cm/147 lb·in)

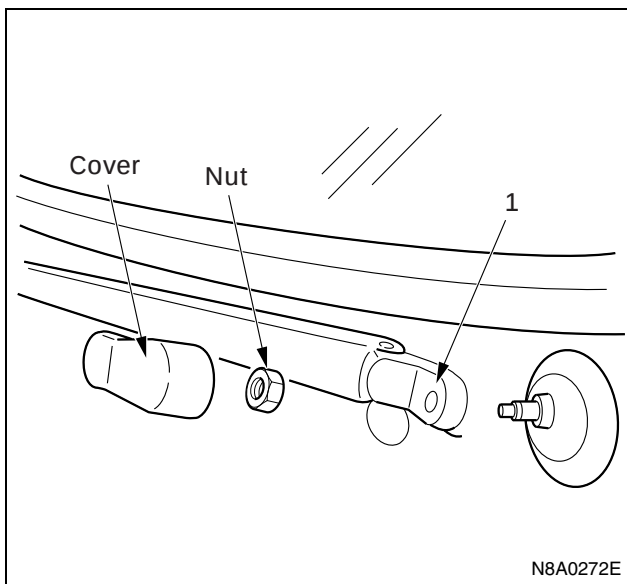


Windshield Wiper Linkage**Location of Rod and Pivot****Removal****Preparation:**

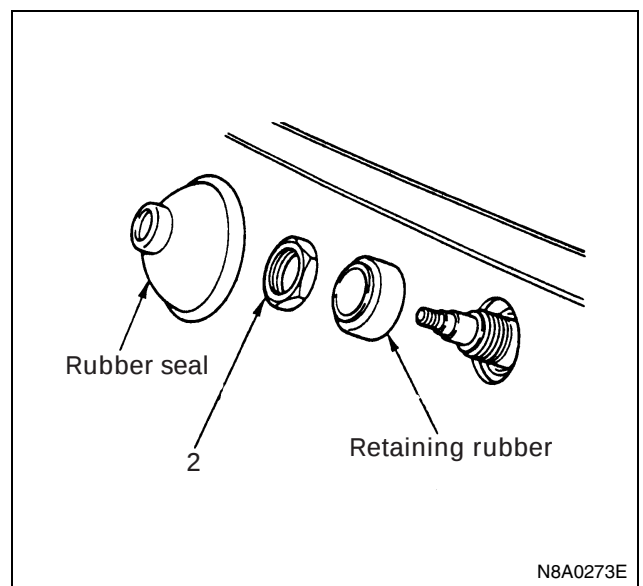
Disconnect the battery ground cable.

1. Wiper Arm & Blade

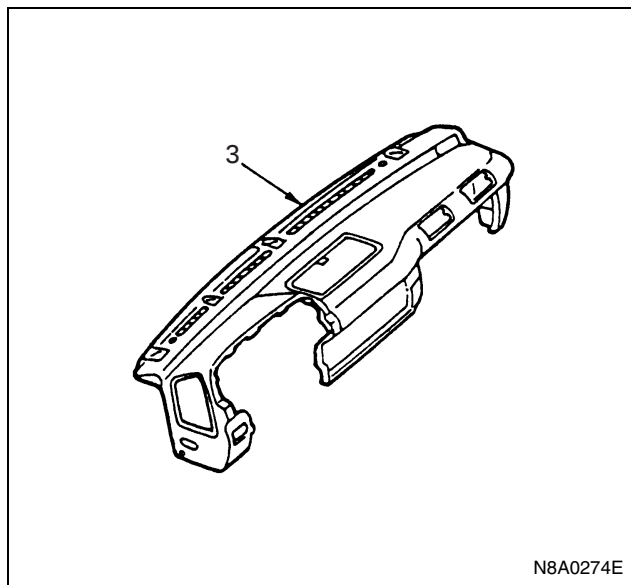
Remove the cover, nut and wiper arm & blade.

**2. Pivot Nut**

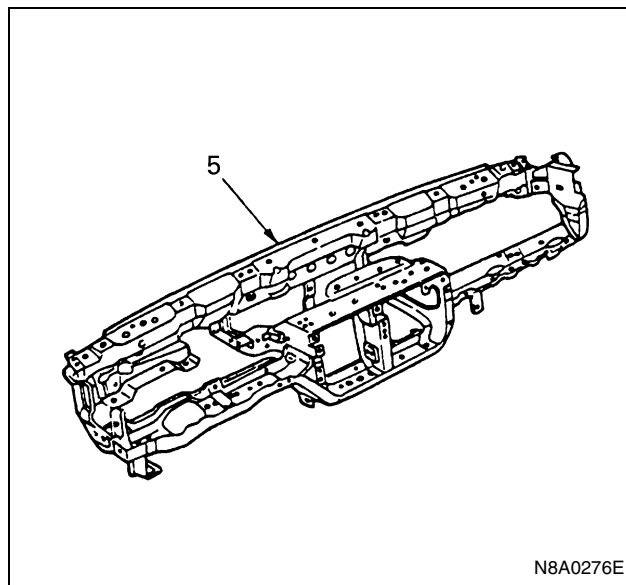
Remove the rubber seal, nut and retaining rubber.



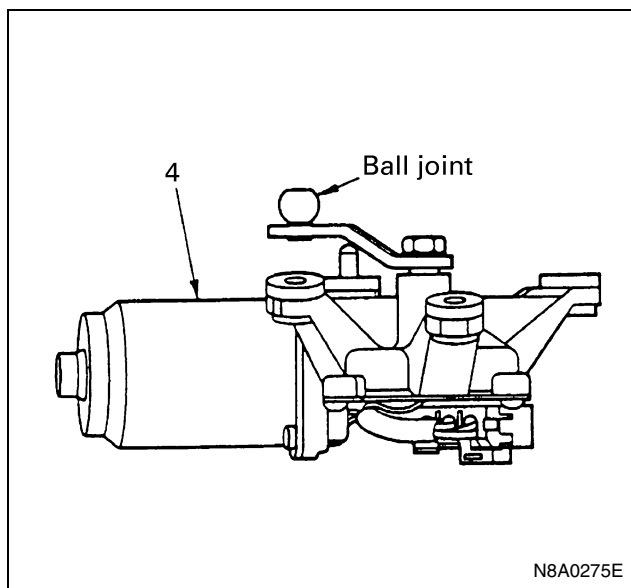
3. Instrument Panel Assembly
Refer to "INSTRUMENT PANEL" of section 2.



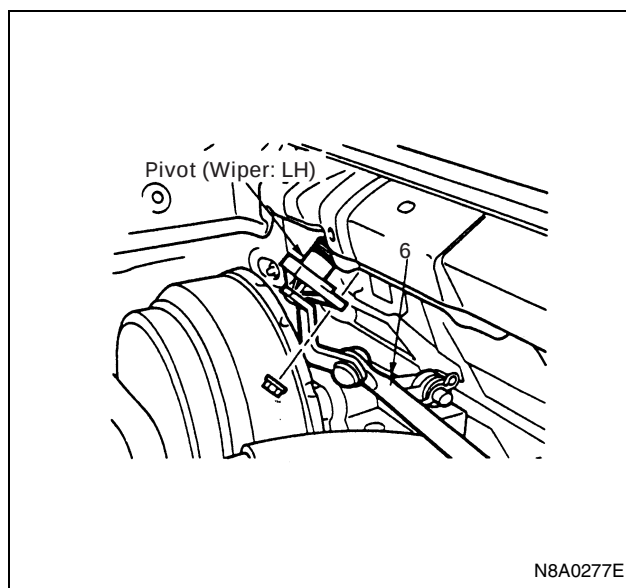
5. Instrument Panel Reinforcement
Refer to "INSTRUMENT PANEL" of section 2.



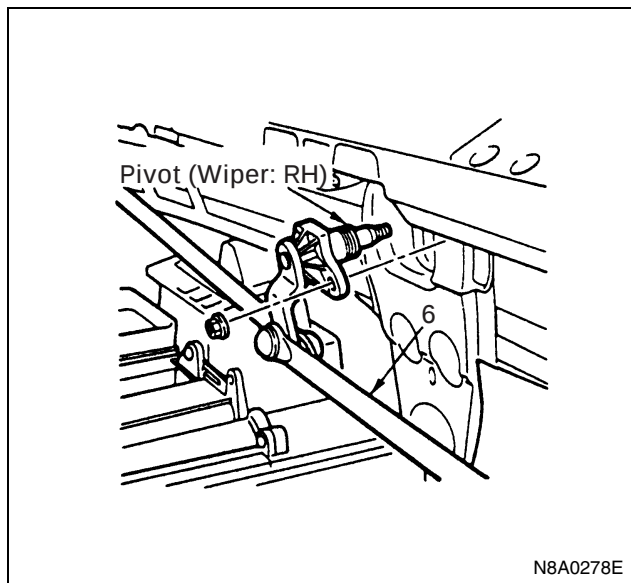
4. Wiper Motor
1) Remove the four screws.
2) Disconnect the ball joint between the crank arm and the wiper link.



6. Wiper Link Assembly
Remove two retaining nuts from left hand side of pivot.



Remove two retaining nuts from right hand side of pivot.



Installation

To install, follow the removal steps in the reverse order, noting the following points.

- Temporarily fit the wiper motor by using one of the four wiper motor fixing screws.
- Put the crank arm ball joint in the wiper link hole and fix them together while pulling the wiper link.
- Fit the motor with four screws.
- Tighten the pivot nut with the specified torque.

Tighten:

Pivot nut to 8 N·m (80 kg·cm/70 lb·in)

- Tighten the wiper arm nut with the specified torque.

Tighten:

Wiper arm nut to 17 N·m (170 kg·cm/147 lb·in)

Wiper Blade Rubber

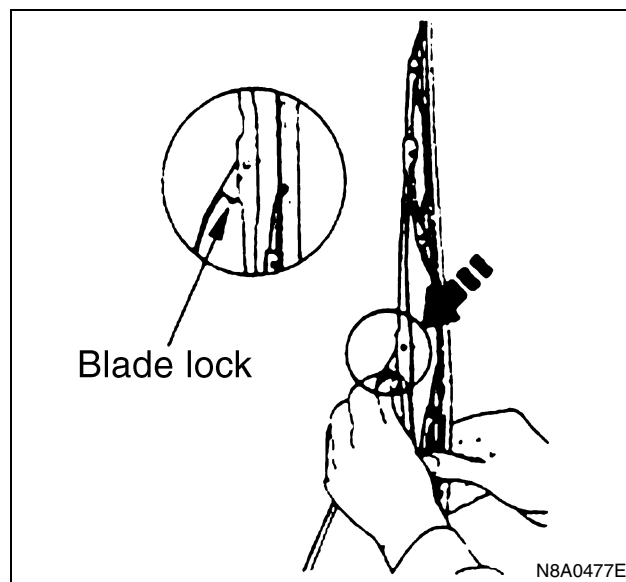
Removal

1. Wiper Blade

Push the wiper blade lock while pulling the wiper blade in the arrow direction.

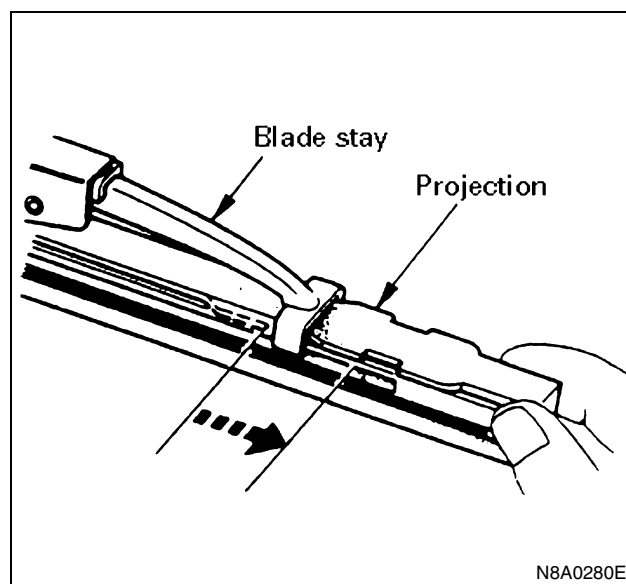
Notice:

When the wiper blade has been removed, wrap the tip of the wiper arm with cloth, to avoid damaging the glass.



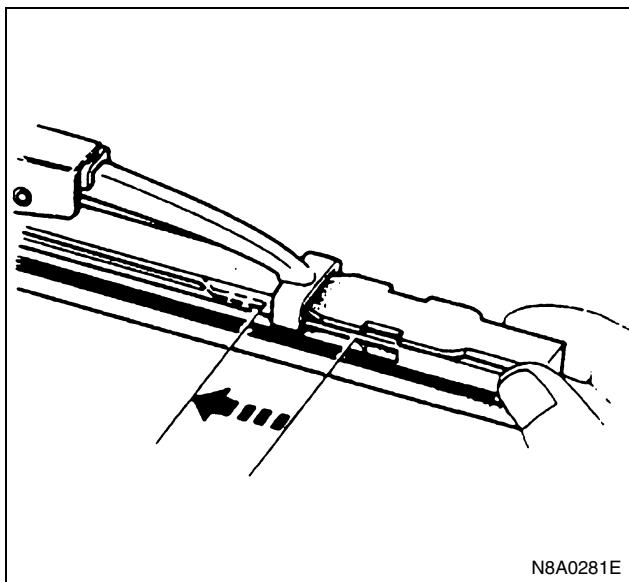
2. Wiper Blade Rubber

- 1) Pull the end of rubber and remove the projection from the click of the blade stay.
- 2) Pull the rubber out in the same direction.

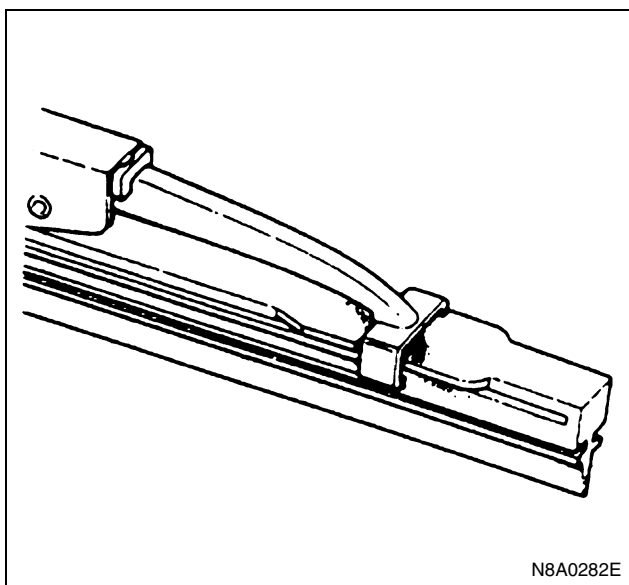


Installation**1. Wiper Blade Rubber**

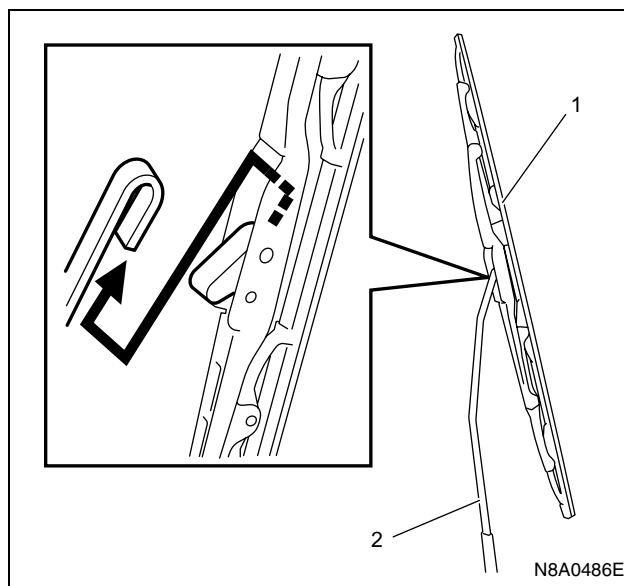
Install the click of the blade stay in the groove of the new rubber and slide it in. Complete installation by pushing the click.



Finally, check that the click of the stay has caught in the hole of the rubber.

**2. Wiper Blade**

Push the lock of wiper blade (1) into the retentive portion on the tip of wiper arm (2).

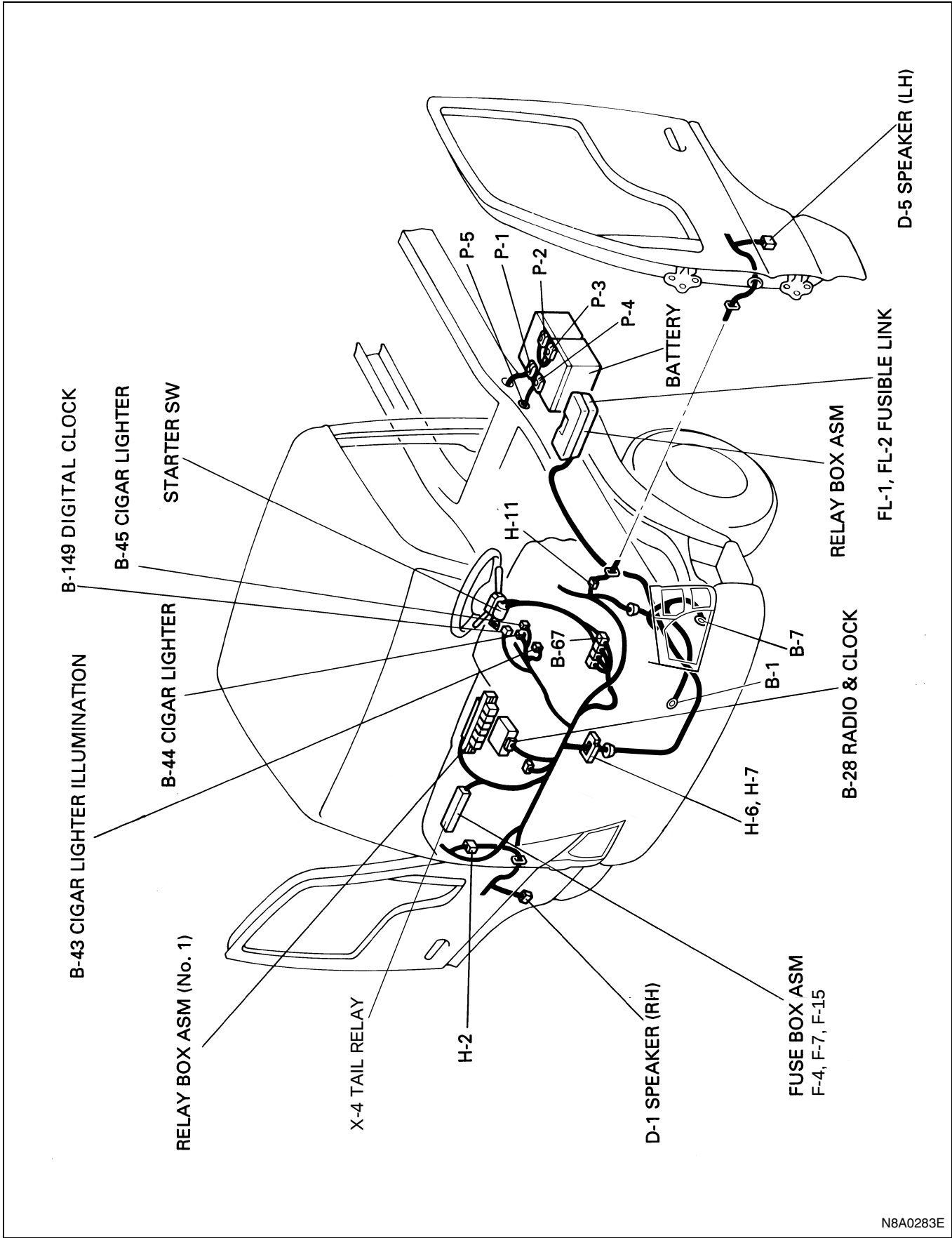
**Audio and Cigar Lighter****General Description**

The circuit consists of the starter switch, radio, cigar lighter and the relay.

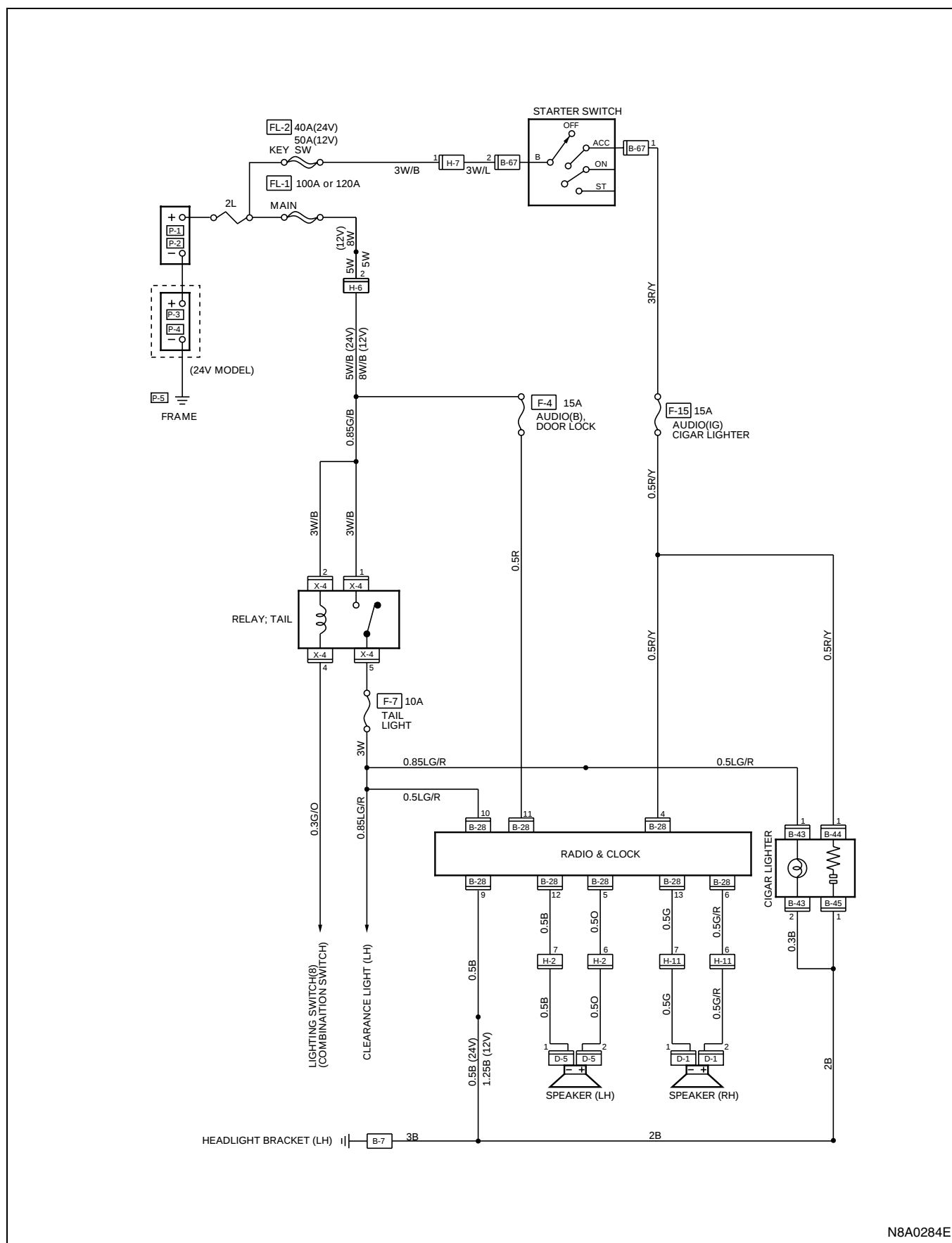
The audio circuit is designed for the current to flow through the receiver circuit when the radio switch is turned on with the starter switch in "ACC" or "ON". Current runs through the memory circuit of the audio regardless of the position of the starter switch.

When the cigar lighter is pushed in with the starter switch at either "ACC" or "ON" position, a circuit is formed in the cigar lighter case to heat the lighter coil. The cigar lighter is spring back to its original position after the lighter coil is heated.

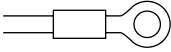
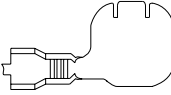
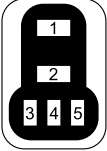
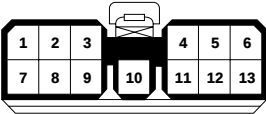
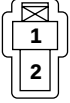
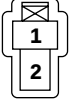
Parts Location

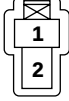
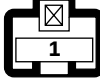
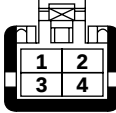
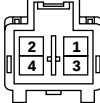


Circuit Diagram

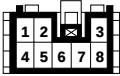
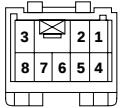
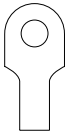
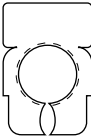
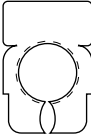
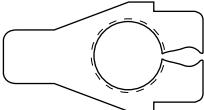
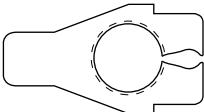


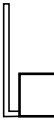
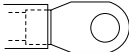
Connector List

No.	Connector Face
B-1	 000-001
B-7	 000-012
X-4	 005-006
B-28	 013-001
B-43	 002-009
B-43	 002-010
D-5	 002-009
D-5	 002-010

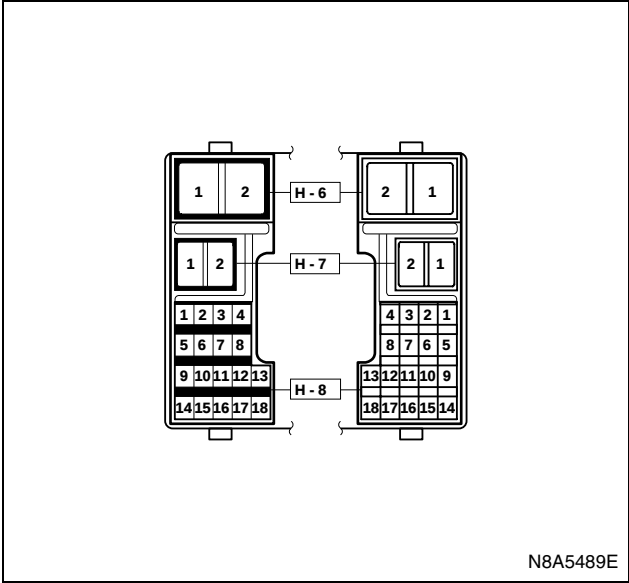
No.	Connector Face
D-1	 002-009
D-1	 002-010
B-44	 001-011
B-45	 001-009
B-67	 004-001
B-67	 004-002
H-2	 008-009
H-2	 008-010

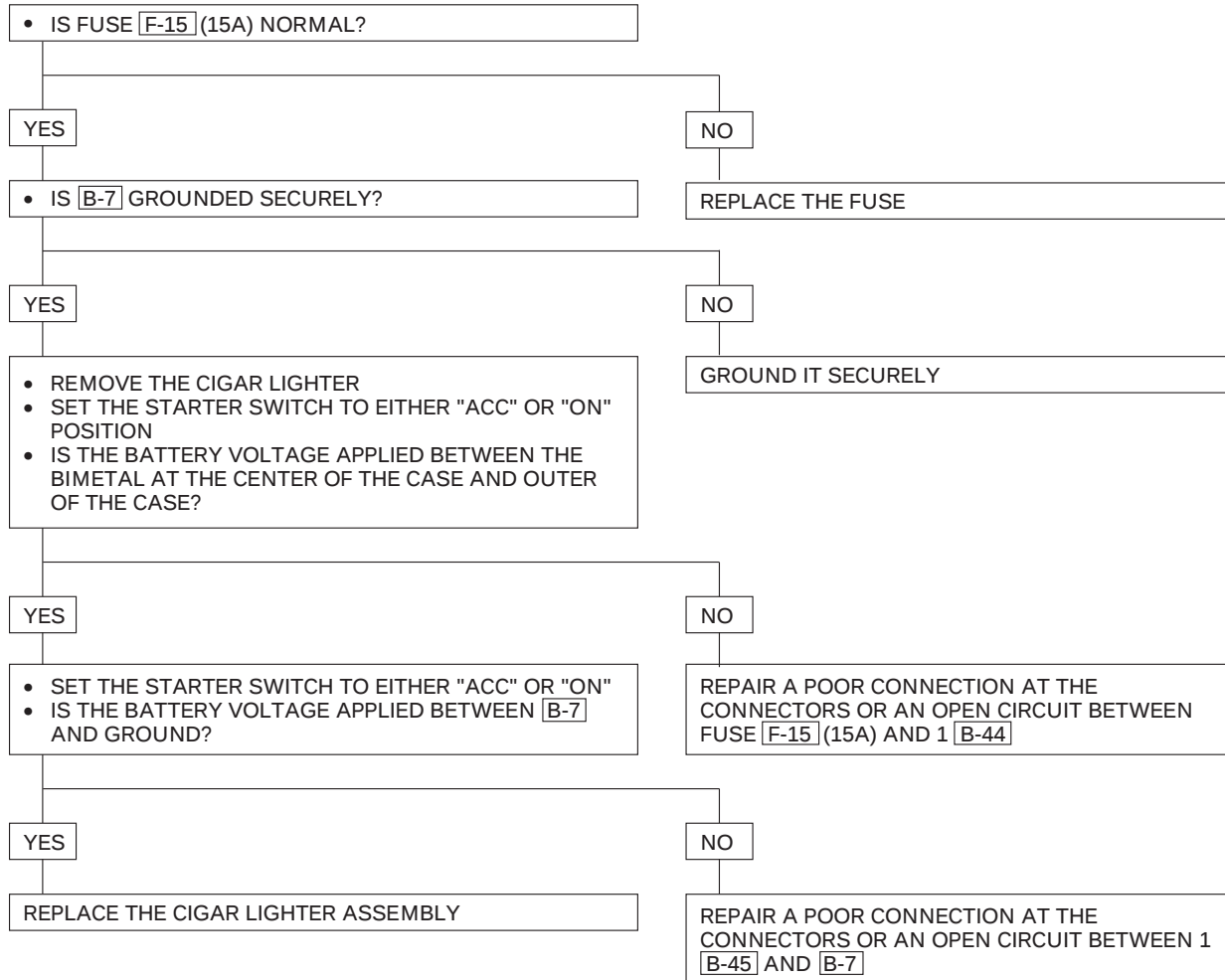
8-270 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
H-11	 008-009
H-11	 008-010
P-1 (12V)	 000-003
P-2	 000-004
P-1 (24V)	 000-004
P-4	 000-004
P-2 (24V)	 000-006
P-3	 000-006

No.	Connector Face
P-5 (12V)	 000-007
P-5 (24V)	 000-002

H-6, H-7



Diagnosis**1. Cigar Lighter Does Not Heat Sufficiently**

N8A0285E

2. The Cigar Lighter Does Not Spring Out After Being Heated

• IS THE FORM OF CIGAR LIGHTER NORMAL?

YES

REPLACE THE CIGAR LIGHTER ASSEMBLY
(INCLUDE OUTER CASE)

NO

REPLACE THE CIGAR LIGHTER

N8A0286E

Starter Switch

Refer to "START AND CHARGING" in this section.

Radio

Removal

Preparation:

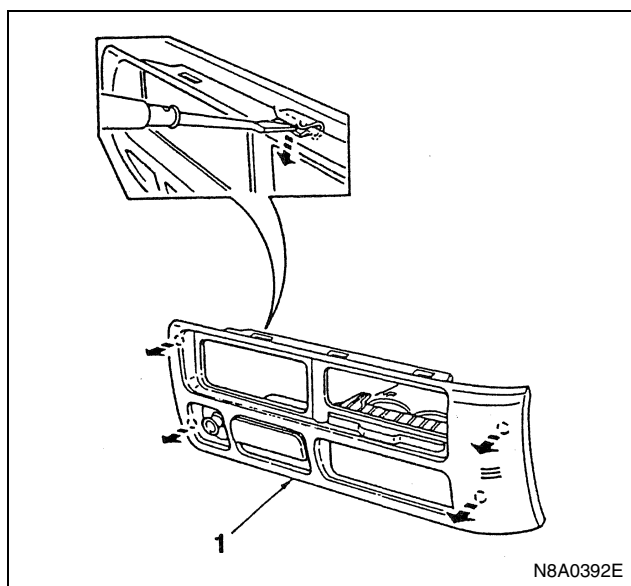
Disconnect the battery ground cable.

1. Center Cluster

- 1) Pull it to remove. Pry off three clips by the tip of screwdriver.
- 2) Remove the cigar lighter power source and its illumination connector.

Notice:

To remove the center cluster, do not force to pry off three clips at upper portion of the center cluster.

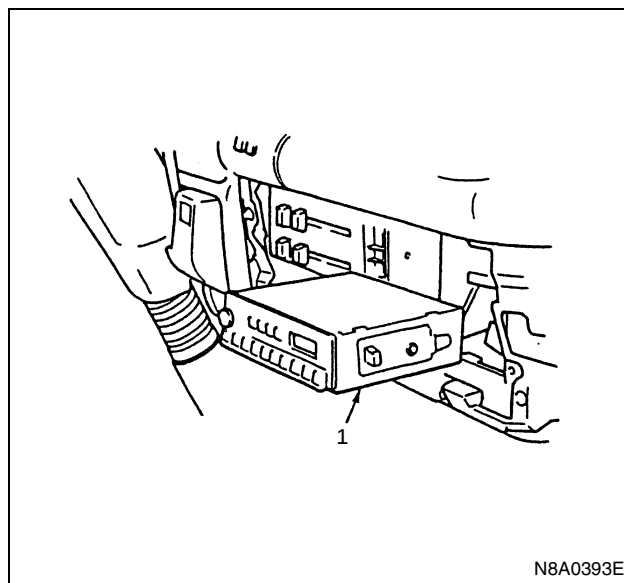


Legend

1. Center Cluster

2. Radio

- 1) Remove the two radio fixing screws.
- 2) Disconnect the connector and feeder plug.



Legend

1. Radio

Installation

To install, follow the removal steps in the reverse order.

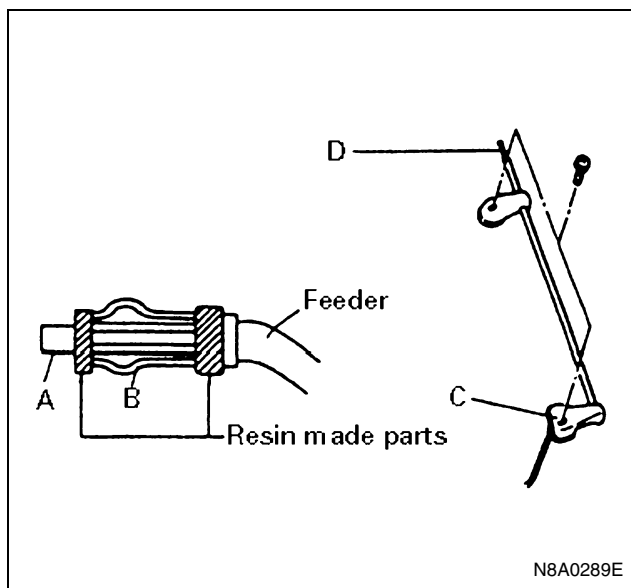
Antenna

Inspection

The metal A is connected to the pole D at the top of the antenna through the core of the feeder.

The metal B is fitted in the feeder shielding the core, and grounded at the screw C to avoid the core hampered by noise.

Defective grounding would cause noise.



In checking, measure the following three points with the circuit tester in the range of "resistance x 1 (Ω)."

Between A and B

No continuity (No reading at the indicator) →

Normal

Continuity (A bite in the feeder. The core grounded) →

Lower reception

Between B and C

Continuity (Indicator reading: 0Ω) → Normal

No continuity (Shielded core disconnected or defective grounding at the screw → Hampered by noise)

Between A and D

Continuity or no continuity

There are some antenna feeders and relay feeders with a condenser built in their connections.

Measuring resistance between the two points does not result in correct judgment. Connect temporarily another normal antenna to the radio and check to see if its reception is audible. Most antenna now available are slide type. Rust at the screw C and the cab panel where grounded would lead no continuity, followed by lower reception.

Keep this portion clean to avoid rust.

Removal

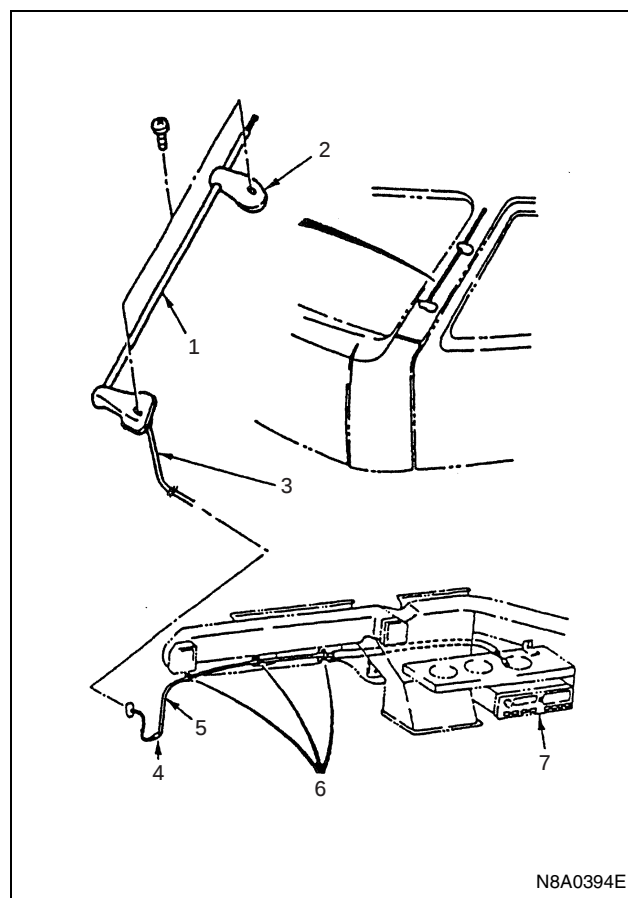
Preparation:

Disconnect the battery ground cable.

1. Antenna
 - 1) Disconnect the joint connector.
 - 2) Remove the upper and lower side antenna bracket.
 - 3) Pull out the antenna feeder.

Notice:

For easier fitting, tie the lead wire to the end of the antenna feeder in advance.



Legend

1. Antenna
2. Antenna Bracket
3. Feeder
4. Joint Connection
5. Feeder
6. Clip
7. Radio

Installation

To install, follow the removal steps in the reverse order.

Speaker

Inspection

1. With the circuit tester set to the range of $\times 1 (\Omega)$, connect the circuit tester probes (red and black) to the (+) and (-) terminals of the speaker.
 2. When the speaker is normal, a low buzzing sound is heard.
 3. When the speaker is defective, no sound is heard. However, the distortion or chattering of the sound cannot be identified.
- When the speaker is installed to the vehicle, disconnect the connectors before checking.

When no sound is heard, the following are considered as the cause.

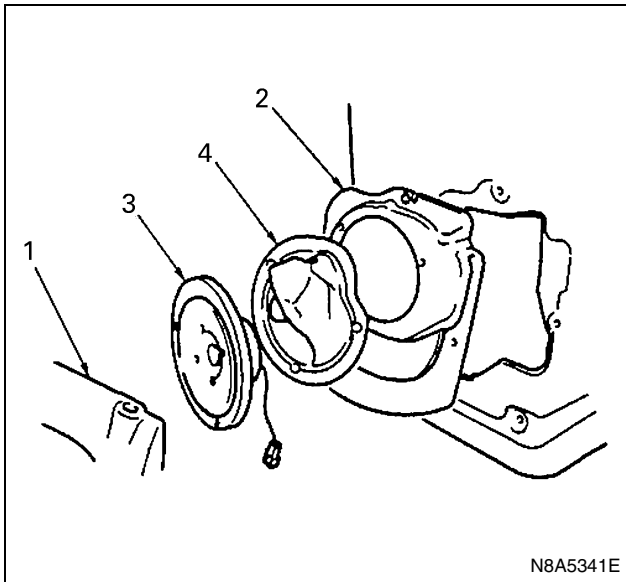
- The speaker wiring is disconnected at the speaker terminals.
- The speaker body is defective.
- There is an open circuit somewhere in the speaker harness on the vehicle side.
- The speaker harness on the vehicle side is grounded or caught up.

Removal

Preparation:

Disconnect the battery ground cable.

1. Door Pad
Refer to "FRONT DOOR TRIM PAD" of section 2.
2. Speaker Panel
Disconnect the speaker connector.
3. Speaker
4. Waterproof Sheet



N8A5341E

Legend

1. Trim Panel
2. Speaker Panel
3. Speaker
4. Waterproof Sheet

Installation

To install, follow the removal steps in the reverse order.

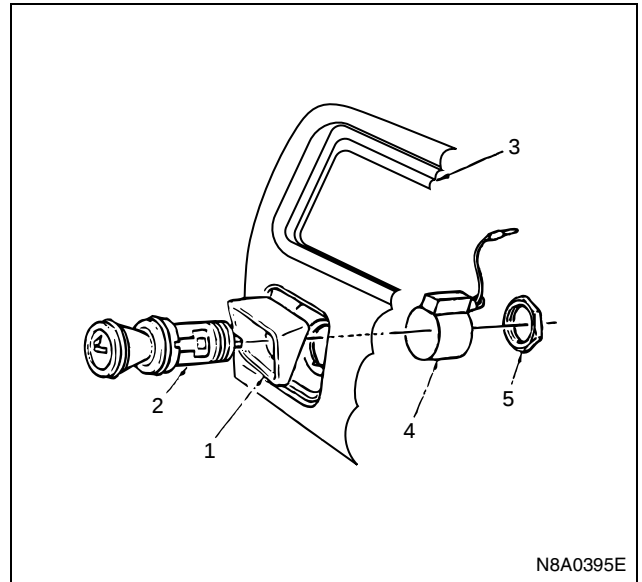
Cigar Lighter

Removal

Preparation:

Disconnect the battery ground cable.

1. Center Cluster
Refer to "RADIO" in this section.
2. Cigar Lighter Assembly
Remove the nut, then remove cigar lighter assembly, bezel and outer case.



N8A0395E

Legend

1. Bezel
2. Cigar Lighter Assembly
3. Center Cluster
4. Outer Case
5. Nut

Installation

To install, follow the removal steps in the reverse order.

Meter and Warning/indicator Light

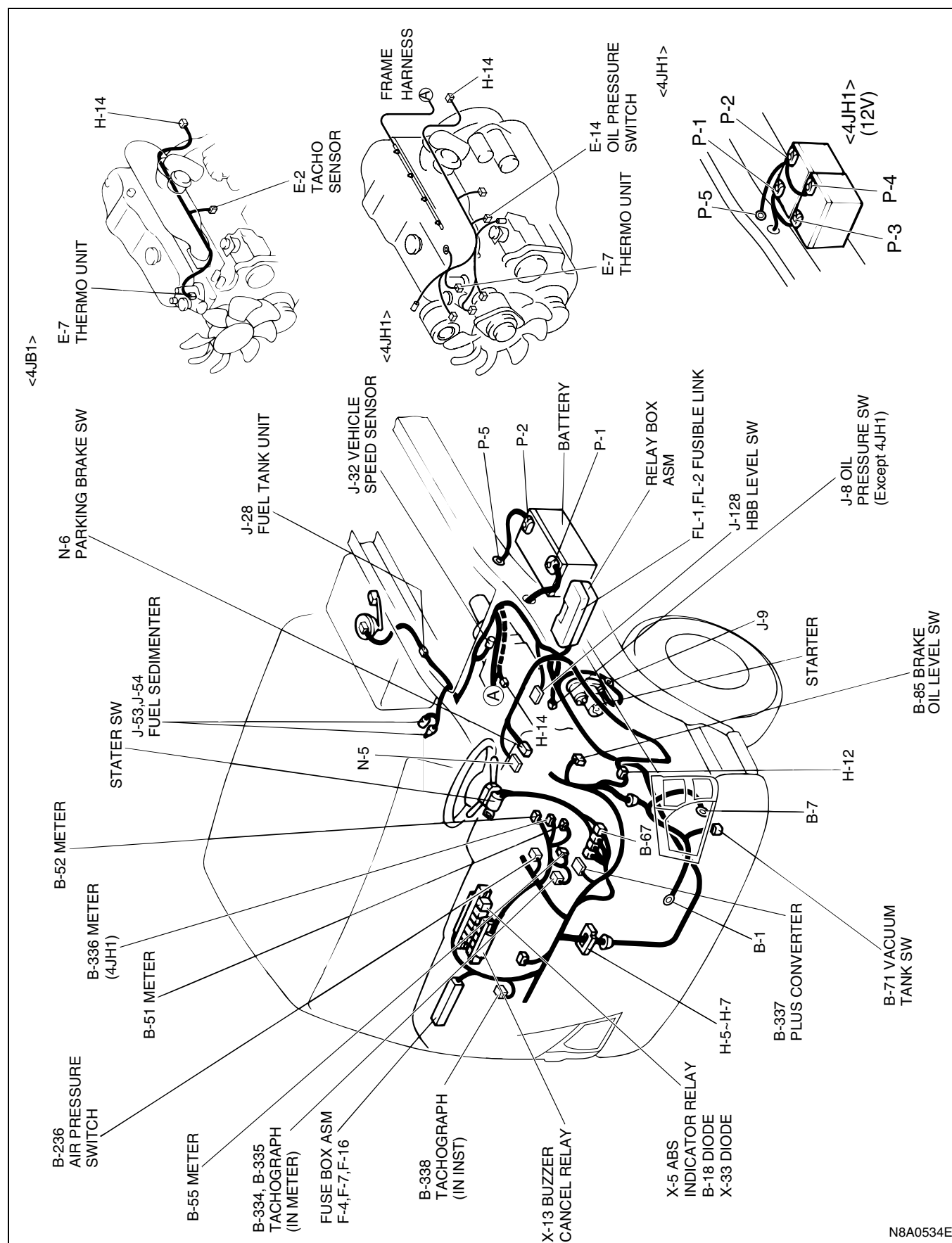
General Description

The circuit consists of the starter switch, meter assembly, vacuum tank switch, seat belt switch, oil pressure switch, fuel sedimenter switch, brake fluid switch, parking brake switch, vehicle speed sensor, fuel tank unit, thermo unit and engine speed sensor.

The meter assembly contains the speedometer, tachometer, fuel meter, thermometer and the warning/indicator light.

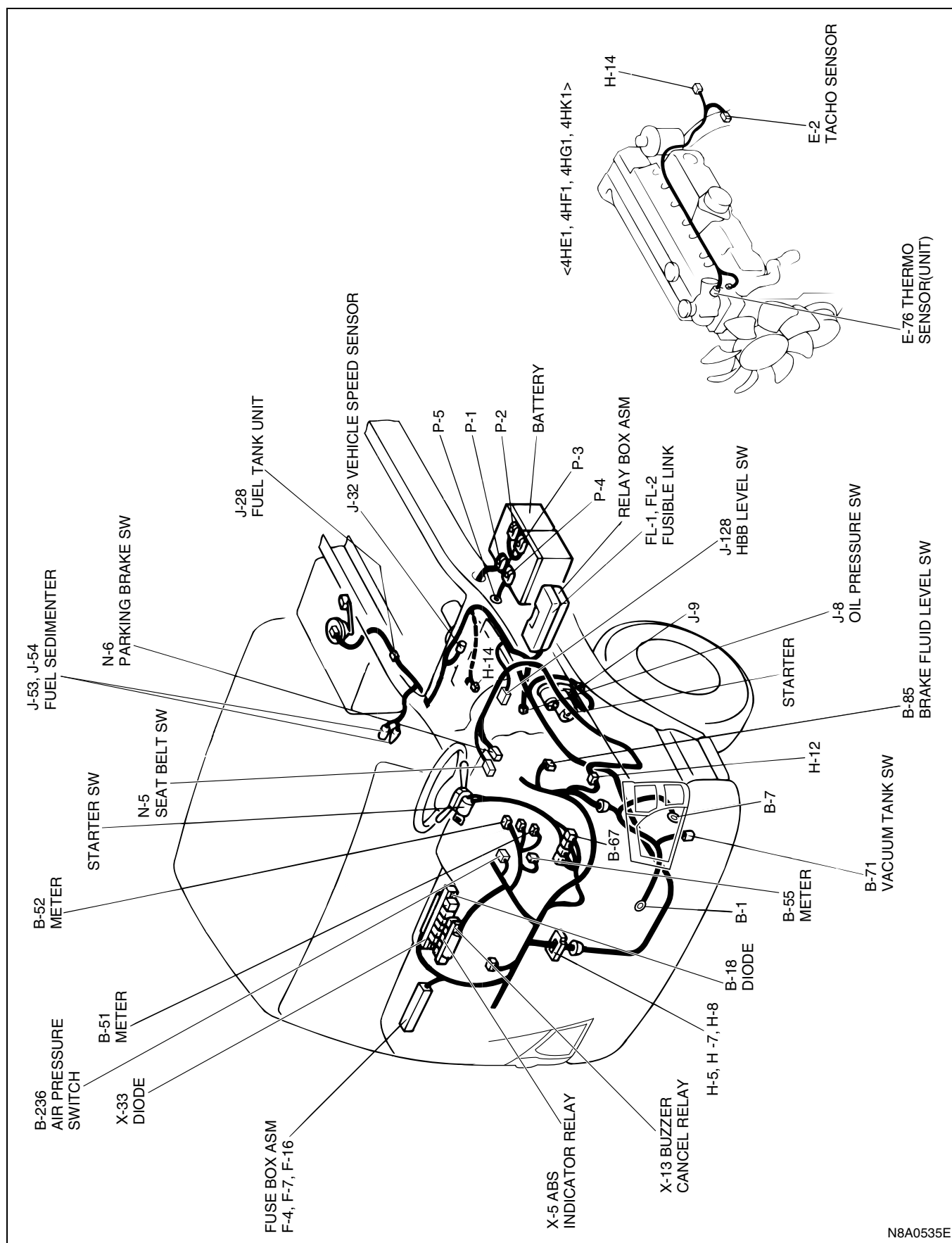
The meter warning/indicator lights and their bulb sockets are a unit, they are installed from the back of the speedometer assembly.

Parts Location For 12 Volt



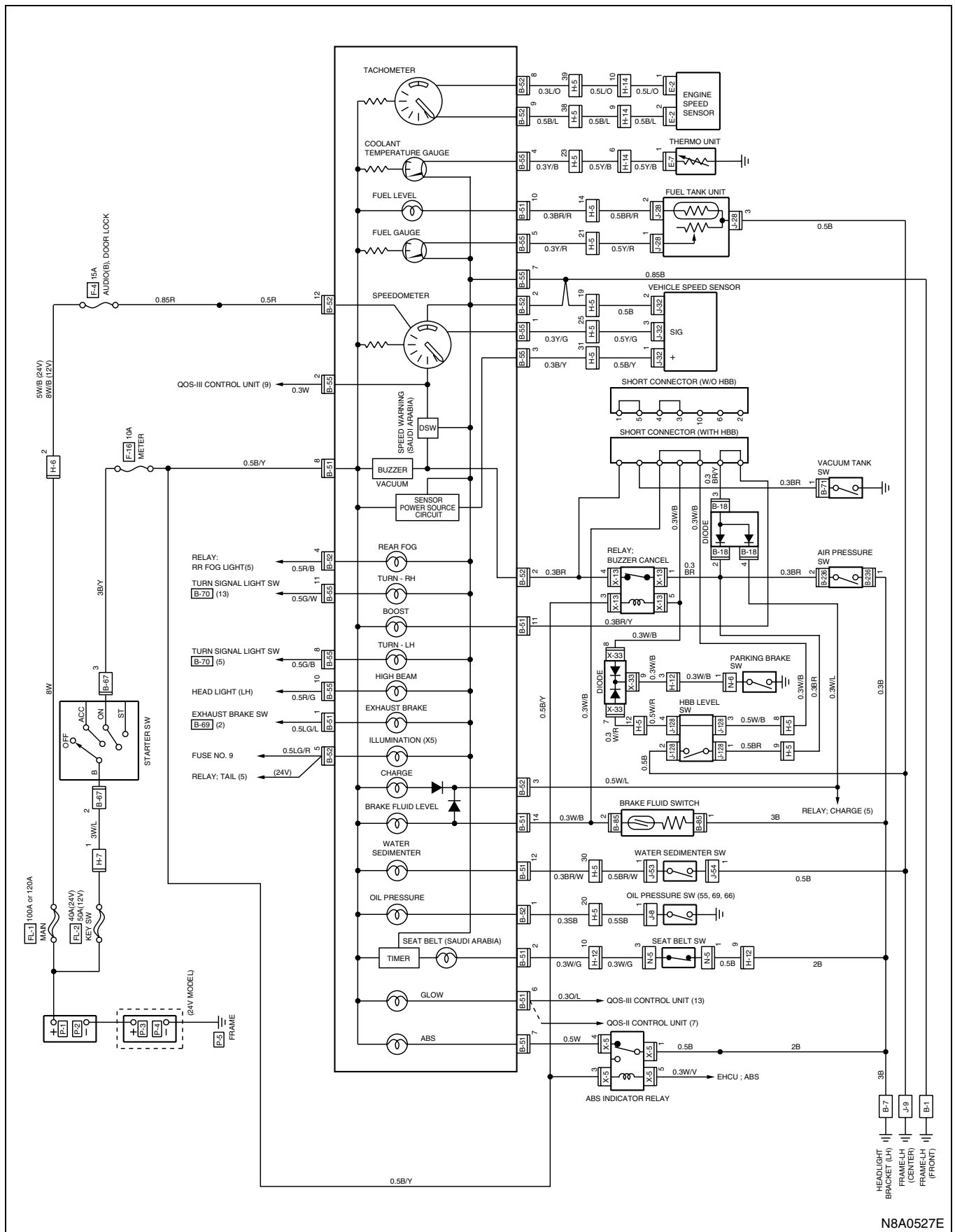
N8A0534E

For 24 Volt



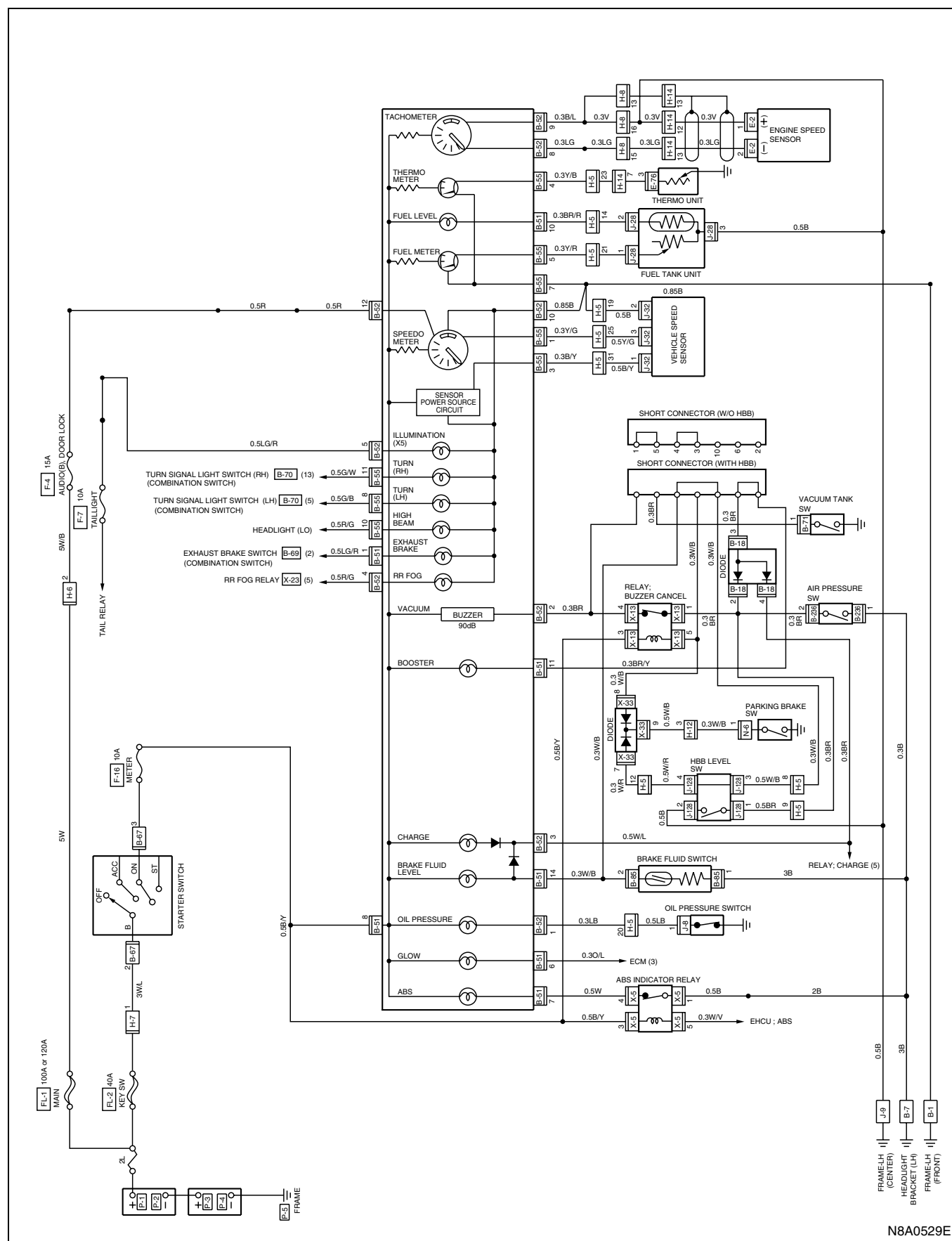
N8A0535E

Circuit Diagram Except 4JH1 / 4HK1 Engine



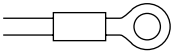
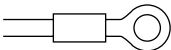
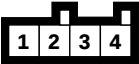
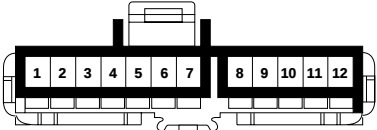
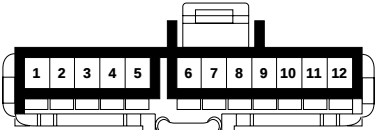
N8A0527E

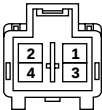
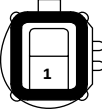
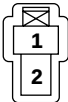
For 4HK1 Engine

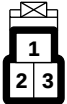
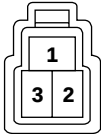
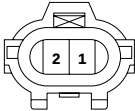


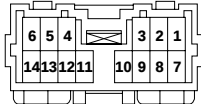
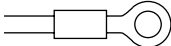
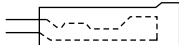
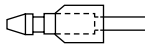
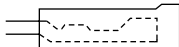
N8A0529E

Connector List**Except 4JH1 / 4HK1 Engine**

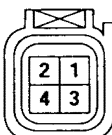
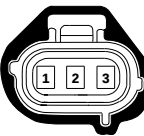
No.	Connector Face
B-1	 000-001
B-7	 000-001
B-18	 004-004
B-52	 012-005
B-51	 014-001
B-55	 012-004
N-6	 001-002
N-6	 001-011

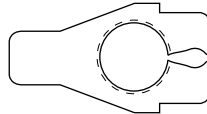
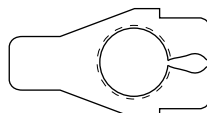
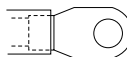
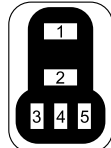
No.	Connector Face
B-67	 004-001
B-67	 004-002
B-71	 001-013
B-71	 001-014
J-8	 001-013
J-8	 001-014
B-85	 002-009
B-85	 002-010

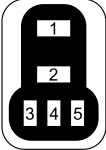
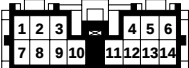
No.	Connector Face
B-236	 002-022
N-5	 003-020
N-5	 003-021
E-2 (66)	 002-001
E-2 (66)	 002-002
E-2 (55,69)	 002-011
E-2 (55,69)	 002-012
E-7	 001-018

No.	Connector Face
H-12	 014-002
H-12	 014-003
H-14	 016-003
H-14	 016-004
J-9	 000-001
J-53	 000-010
J-53	 000-011
J-54	 000-010

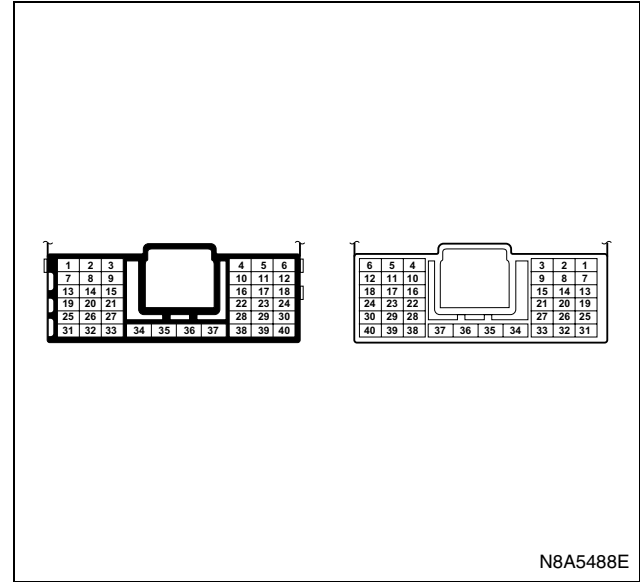
8-282 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
J-54	 000-011
J-128	 004-018
J-28	 003-016
J-28	 003-017
J-32	 003-018
P-1 (12V)	 000-003
P-1	 000-004
P-4	 000-004

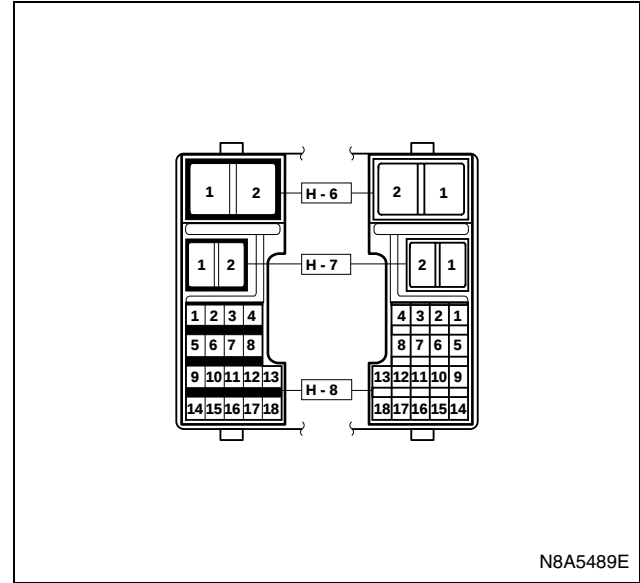
No.	Connector Face
P-2	 000-006
P-3	 000-006
P-5 (12V)	 000-007
P-5	 000-002
H-14	 016-001
H-14	 016-002
J-8 (FOR 4Jtype ENGINE)	 001-019
X-5	 005-006

No.	Connector Face
X-13	 005-006
X-33	 014-002

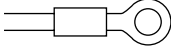
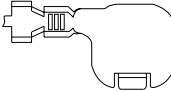
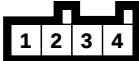
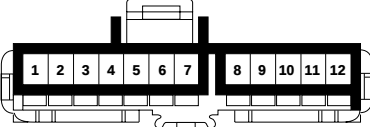
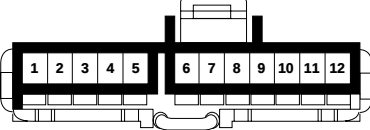
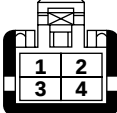
H-5



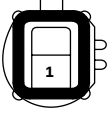
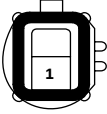
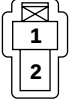
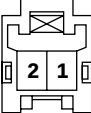
H-6, H-7

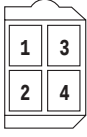
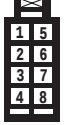
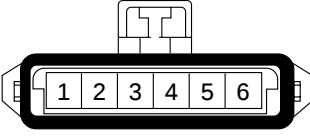
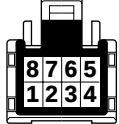
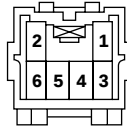
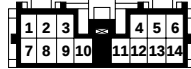
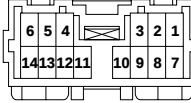


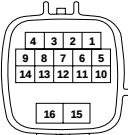
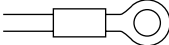
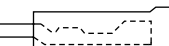
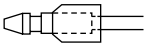
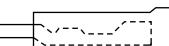
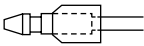
For 4JH1 Engine

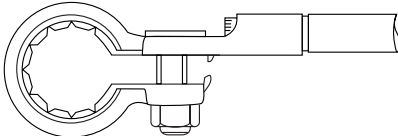
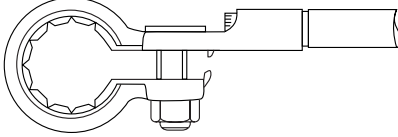
No.	Connector Face
B-1	 000-001
B-7	 000-017
B-18	 004-004
B-52	 012-005
B-51	 014-001
B-55	 012-004
B-67	 004-001
B-67	 004-002

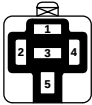
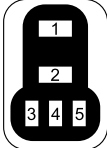
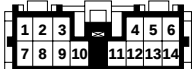
8-284 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
B-71	 001-013
B-71	 001-014
E-14	 001-013
E-14	 001-014
B-85	 002-009
B-85	 002-010
N-6	 002-023
B236	 002-022

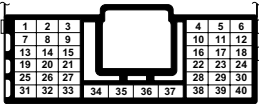
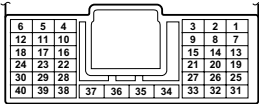
No.	Connector Face
B-334	 004-014
B-335	 008-014
B-336	 006-018
B-337	 008-013
B-338	 006-003
E-7	 001-009
H-12	 014-002
H-12	 014-003

No.	Connector Face
H-14	 016-003
H-14	 016-004
J-9	 000-001
J-53	 000-010
J-53	 000-011
J-54	 000-010
J-54	 000-011
J-28	 003-016

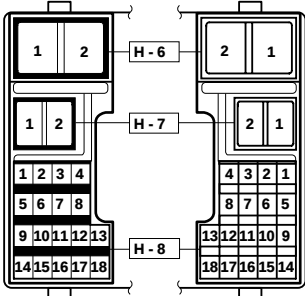
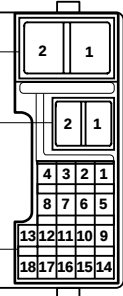
No.	Connector Face
J-28	 003-017
J-32	 003-018
J-128	 004-018
P-5	 000-007
P-1	 000-002
P-2	 000-002
P-3	 000-014
P-4	 000-014

No.	Connector Face
X-5	 005-001
X-13	 005-006
X-33	 014-002

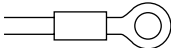
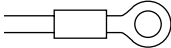
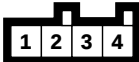
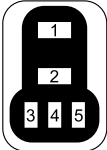
H-5

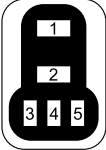
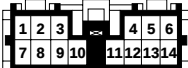
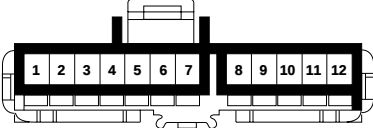
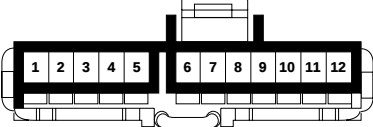
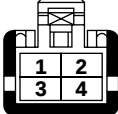
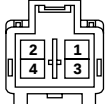
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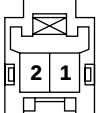
H-6, H-7

 N8A5489E	
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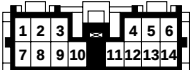
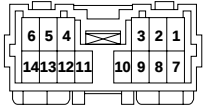
For 4HK1 Engine

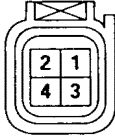
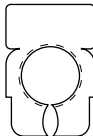
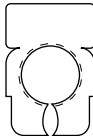
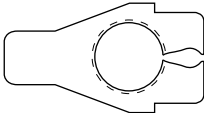
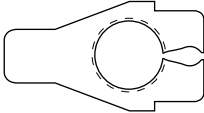
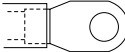
No.	Connector Face
B-1	 000-001
B-7	 000-001
J-9	 000-001
B-18	 004-004
X-5	 005-006

No.	Connector Face
X-13	 005-006
X-33	 014-002
B-52	 012-005
B-51	 014-001
B-55	 012-004
B-67	 004-001
B-67	 004-002
B-71	 001-013

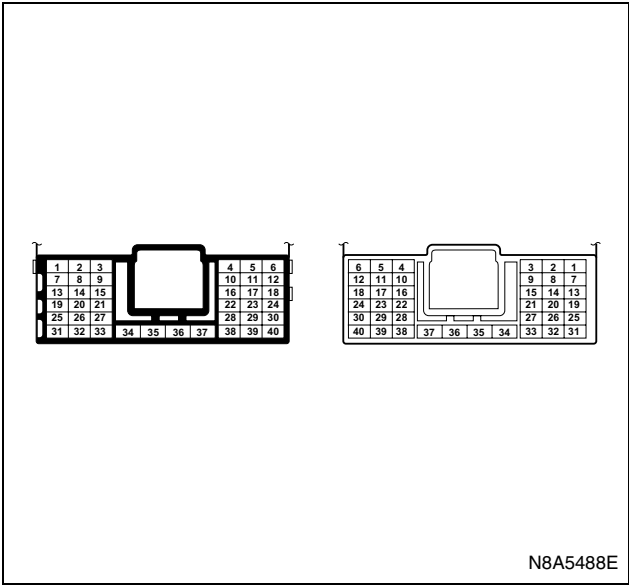
No.	Connector Face
B-71	 001-014
J-8	 001-013
J-8	 001-014
B-85	 002-009
B-85	 002-010
B-236	 002-022
N-6	 002-023
E-2	 002-013

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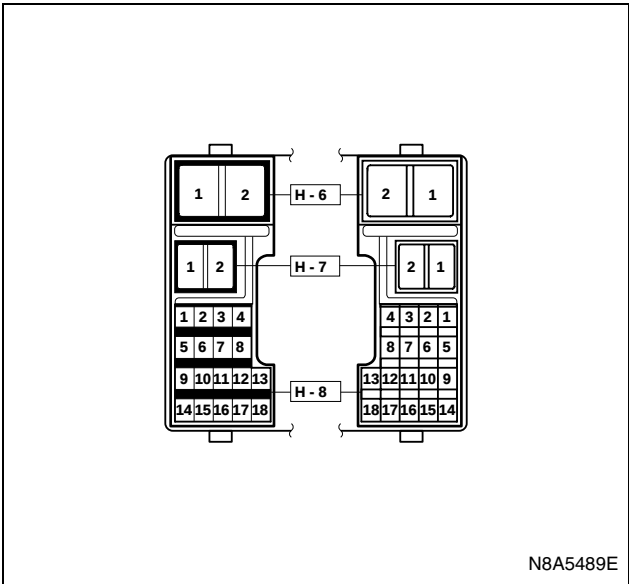
No.	Connector Face
E-76	 003-004
H-12	 014-002
H-12	 014-003
H-14	 016-003
H-14	 016-004
J-28	 003-016
J-28	 003-017
J-32	 003-018

No.	Connector Face
J-128	 004-018
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006
P-5	 000-002

H-5



H-6, H-7, H-8



Diagnosis**Quick Chart for Check Point****1. Speedometer**

		Check point		
		Speedometer	Vehicle speed sensor	Cable harness
Trouble mode	1-1. Speedometer and odometer do not function	○ (3)	○ (1)	○ (2)
	1-2. Speedometer does not function (odometer is normal)	○ (1)		
	1-3. Odometer does not function (Speedometer is normal)	○ (1)		
	1-4. Speedometer needle fluctuates (May be wide fluctuation)	○ (3)	○ (1)	○ (2)
	1-5. Speedometer needle jumps erratically	○ (3)	○ (1)	○ (2)

Notice:

Figure in parenthesis “()” indicates the order of inspection.

2. Tachometer

		Check point		
		Tachometer	Engine speed sensor	Cable harness
Trouble mode	2-1. Tachometer does not function	○ (3)	○ (1)	○ (2)
	2-2. Tachometer needle fluctuates (May be wide fluctuation)	○ (3)	○ (1)	○ (2)
	2-3. Tachometer needle jumps erratically	○ (3)	○ (1)	○ (2)

Notice:

Figure in parenthesis “()” indicates the order of inspection.

3. Coolant Temperature Gauge

		Check point				
		Meter ASM	Thermo meter	Thermo unit	Thermo seat	Cable harness
Trouble mode	3-1. Coolant temperature gauge needle does not move	○ (3)	○ (4)	○ (2)		○ (1)
	3-2. Coolant temperature gauge reading is too low (or high)	○ (4)	○ (5)	○ (3)	○ (1)	○ (2)
	3-3. Needle overshoots (or goes up to the “H” range)	○ (3)	○ (4)	○ (1)		○ (2)

Notice:

Figure in parenthesis “()” indicates the order of inspection.

4. Fuel Gauge

		Check point			
		Meter ASM	Fuel gauge	Fuel tank unit	Cable harness
Trouble mode	4-1. Fuel gauge needle does not move	○ (3)	○ (4)	○ (2)	○ (1)
	4-2. Even when the tank is filled up with fuel, the needle does not reach "F"	○ (3)	○ (4)	○ (2)	○ (1)
	4-3. When the tank is not full of fuel, the needle overshoots (or goes to "F")	○ (3)	○ (4)	○ (2)	○ (1)

Notice:

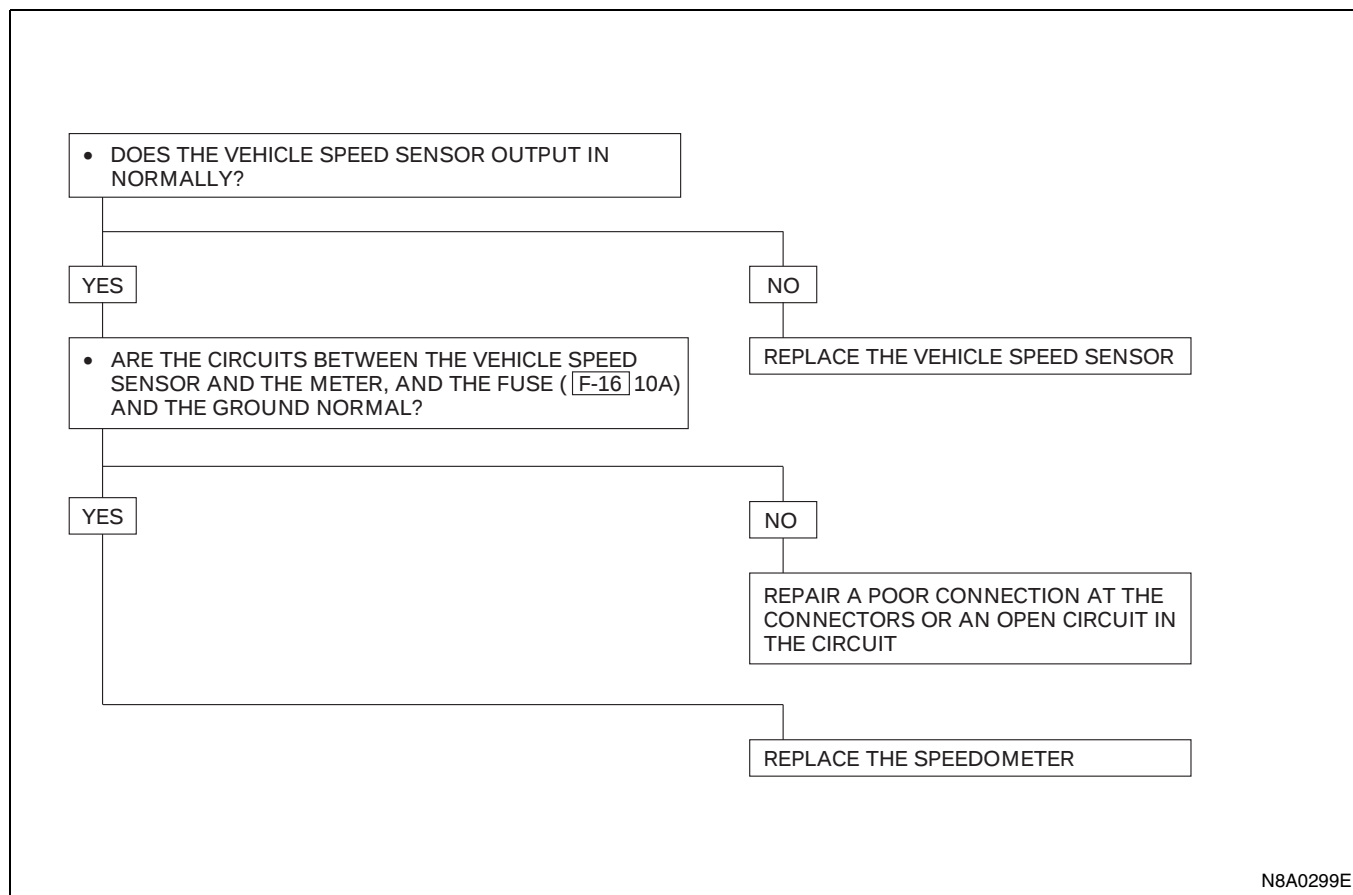
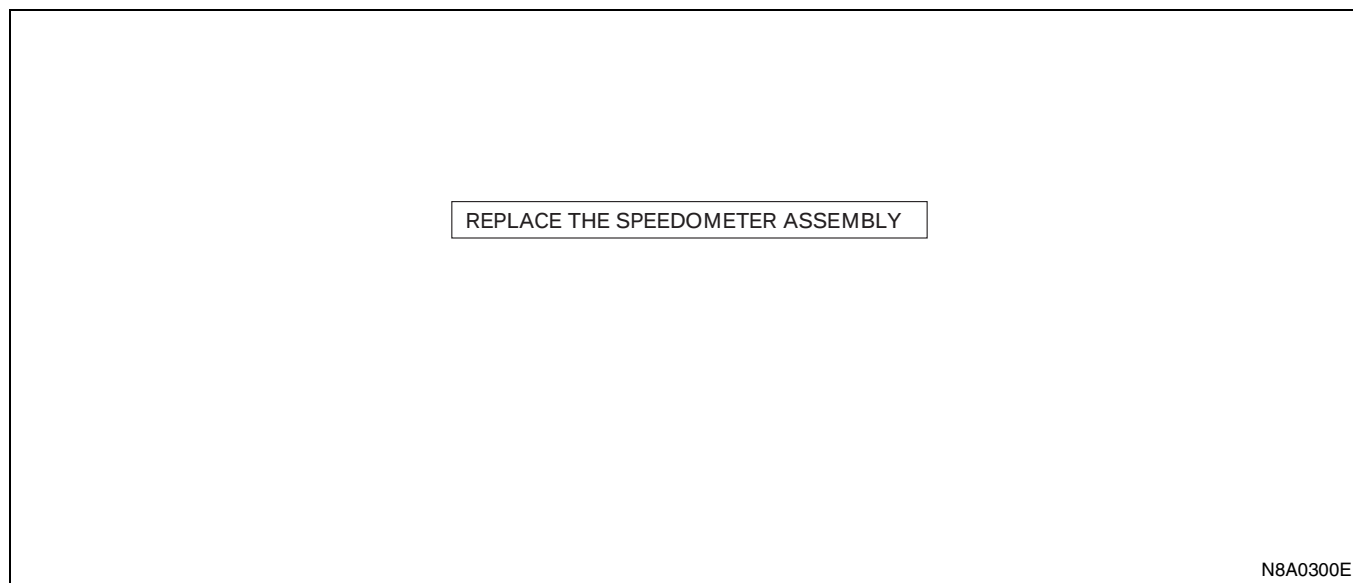
Figure in parenthesis "()" indicates the order of inspection.

5. Warning/indicator Light

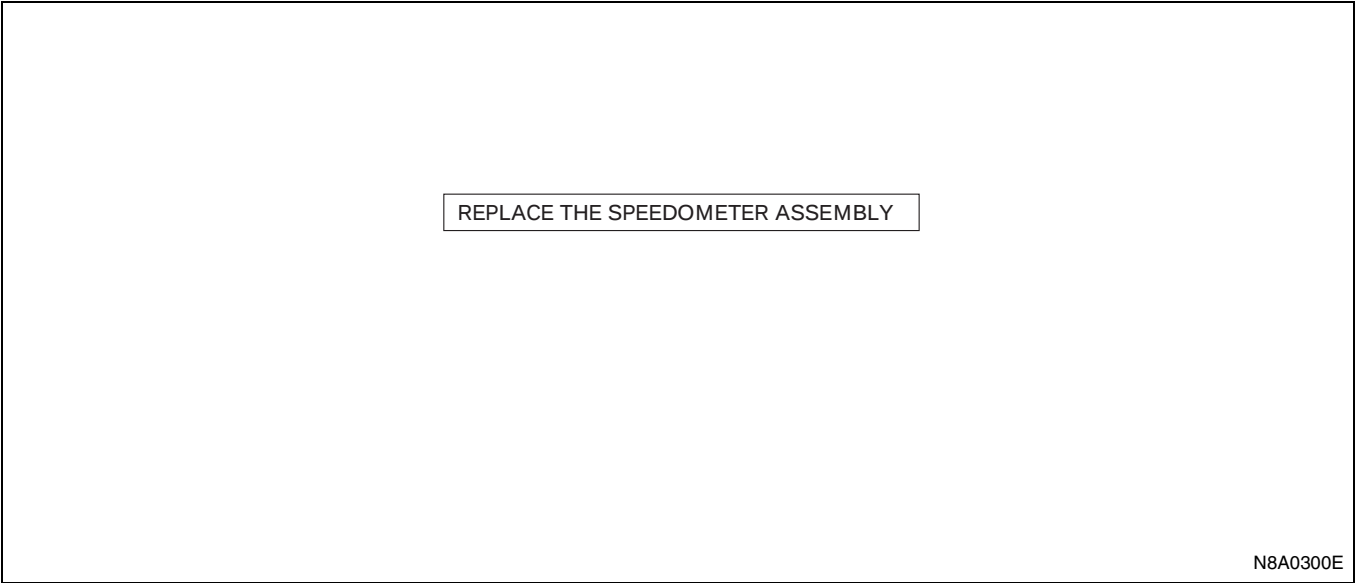
		Check point									
		Light bulb	Parking brake SW	Brake fluid SW	Oil pressure SW	Fuel tank unit	Vacuum SW	4WD SW	Sedim enter SW	Seat belt SW	Cable harness
Trouble mode	5-1. When the parking brake lever is pulled, the indicator light does not light up	○ (2)	○ (1)								○ (3)
	5-2. Even when the parking brake lever is released, the indicator light does not go off		○ (1)								○ (2)
	5-3. While the engine operating, the oil pressure warning light does not go off				○ (2)						○ (1)
	5-4. Even when the tank is full with fuel, the fuel warning light lights up					○ (1)					○ (2)
	5-5. Even when the tank is empty, the low fuel warning light does not light up	○ (1)				○ (2)					○ (3)
	5-6. Even when the float in the water sedimenter goes up above the drain warning level, the indicator light does not light up	○ (2)							○ (1)		○ (3)
	5-7. Even when the brake fluid is lower than specified level, the level warning light does not light up	○ (1)		○ (2)							○ (3)
	5-8. Even when the vacuum tank is empty vacuum warning buzzer does not sound						○ (1)				○ (2)

Notice:

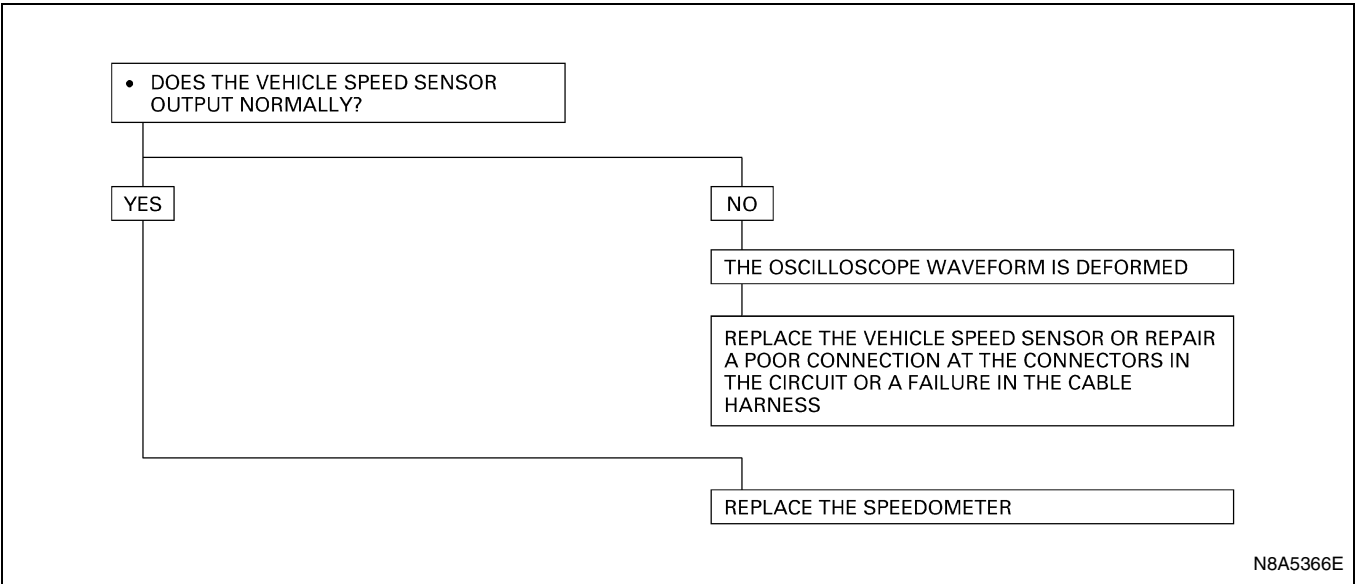
Figure in parenthesis “()” indicates the order of inspection.

1. Speedometer**1-1. Speedometer and Odometer Do Not Function****1-2. Speedometer Does Not Function (Odometer Is Normal)**

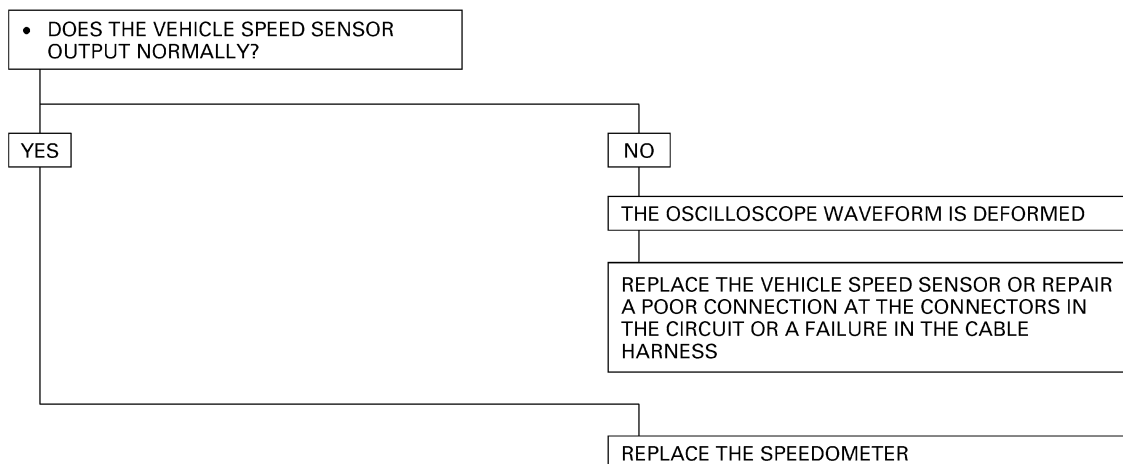
1-3. Odometer Does Not Function (Speedometer Is Normal)



1-4. Speedometer Needle Fluctuates (May Be Wide Fluctuation)



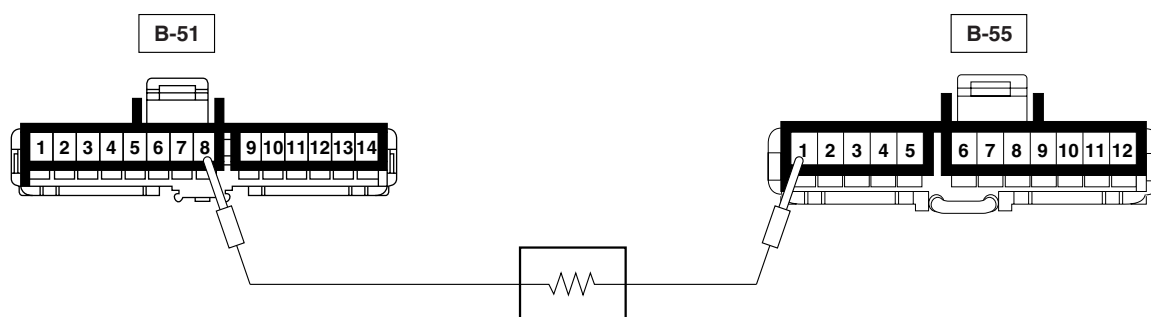
1-5. Speedometer Needle Jumps Erratically



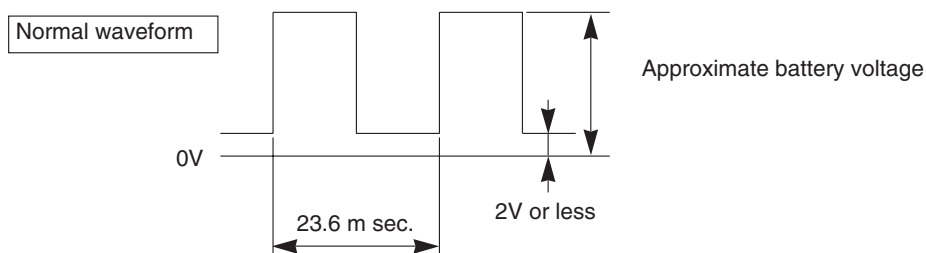
N8A5366E

Inspection of waveform by oscilloscope

1. Connect a resistance of 1.3 to 5k ohm (1.4W or more) between the harness side connectors 8 **B-51** and 1 **B-55** of the meter.



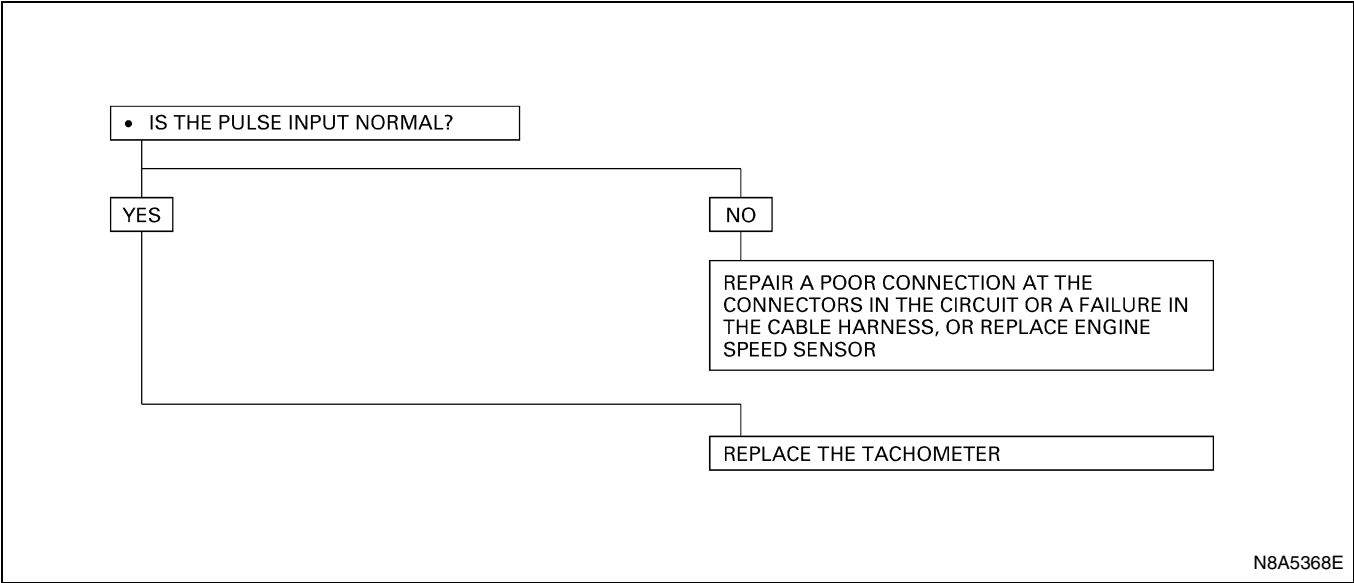
2. Install a speedometer tester.
3. Turn on the starter SW.
4. Check the waveform at the time when the vehicle speed is at 60 Km (37 mph).



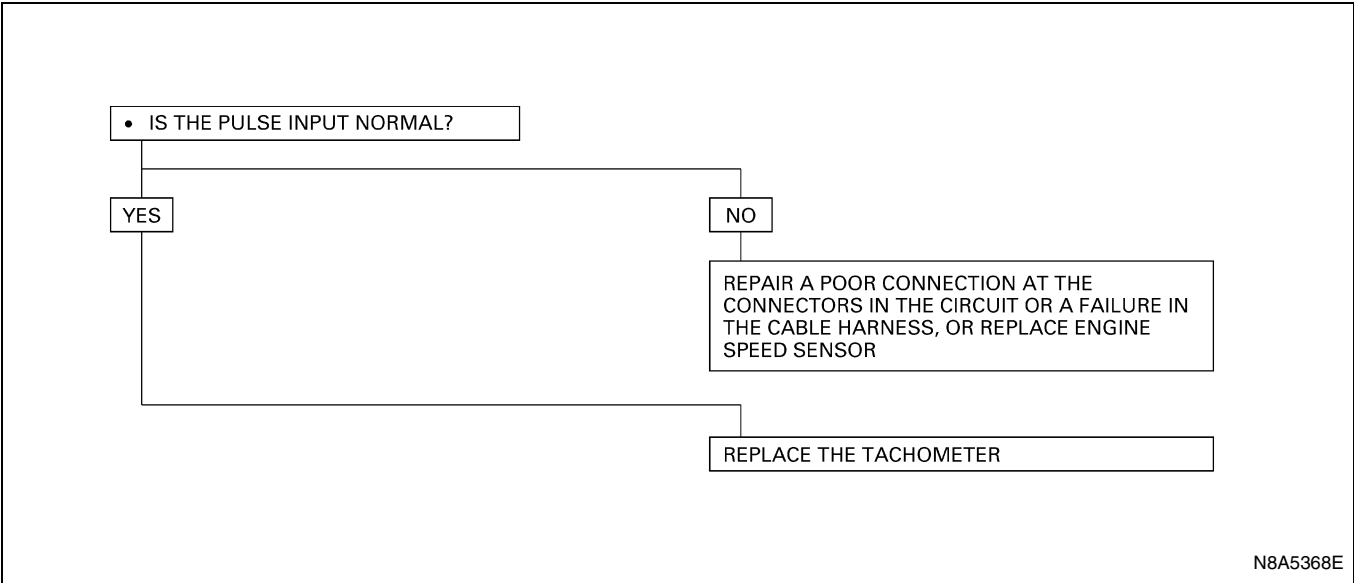
N8A0304E

2. Tachometer

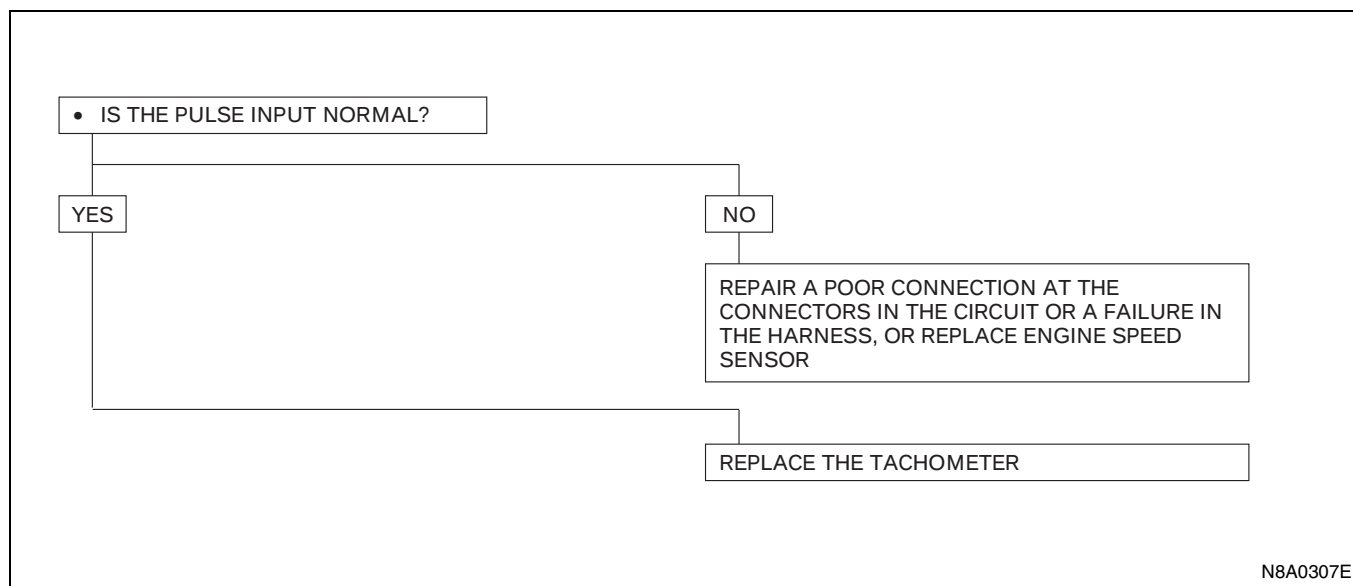
2-1. Tachometer Does Not Function

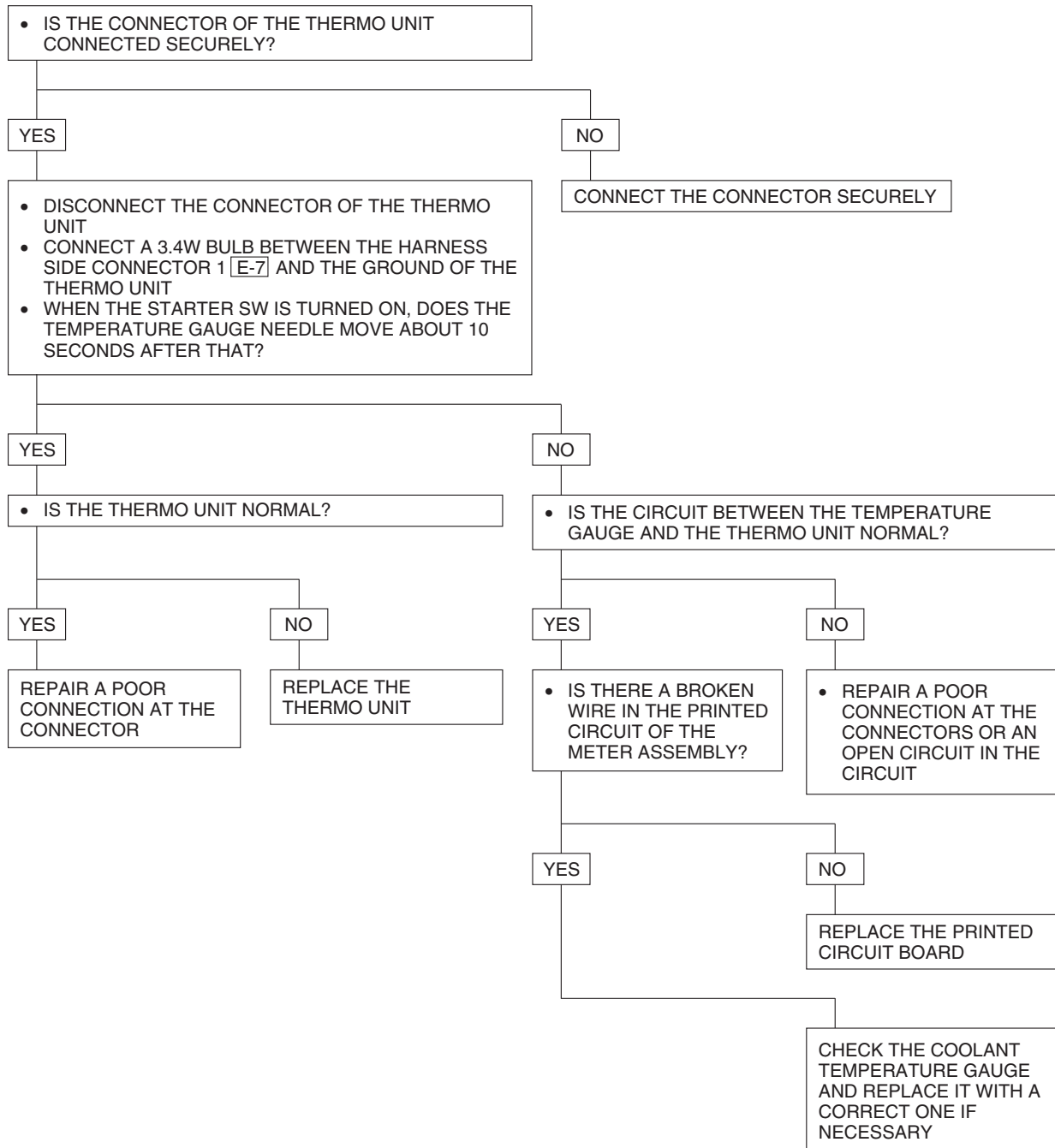


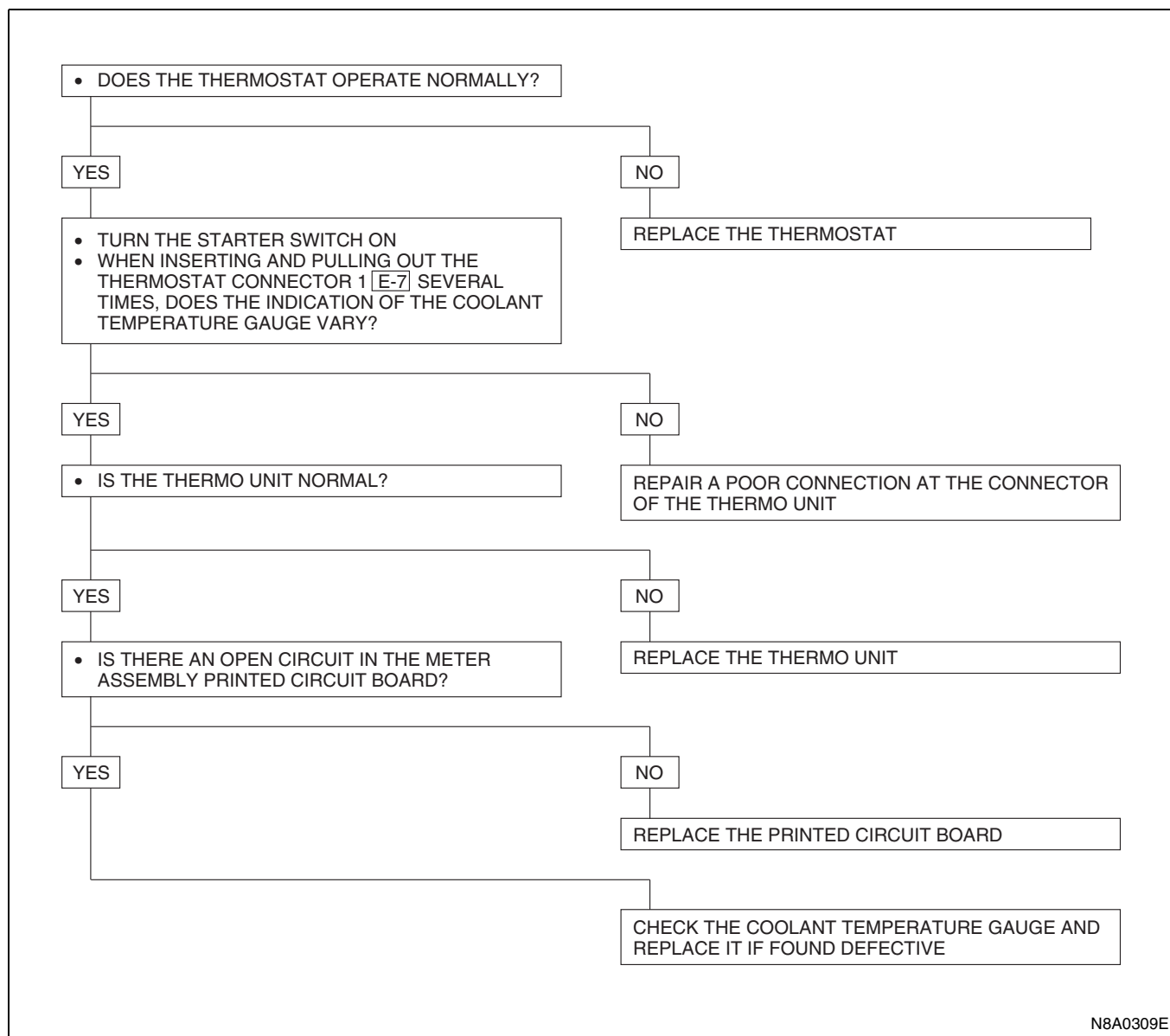
2-2. Tachometer Needle Fluctuates (May Be Wide Fluctuation)

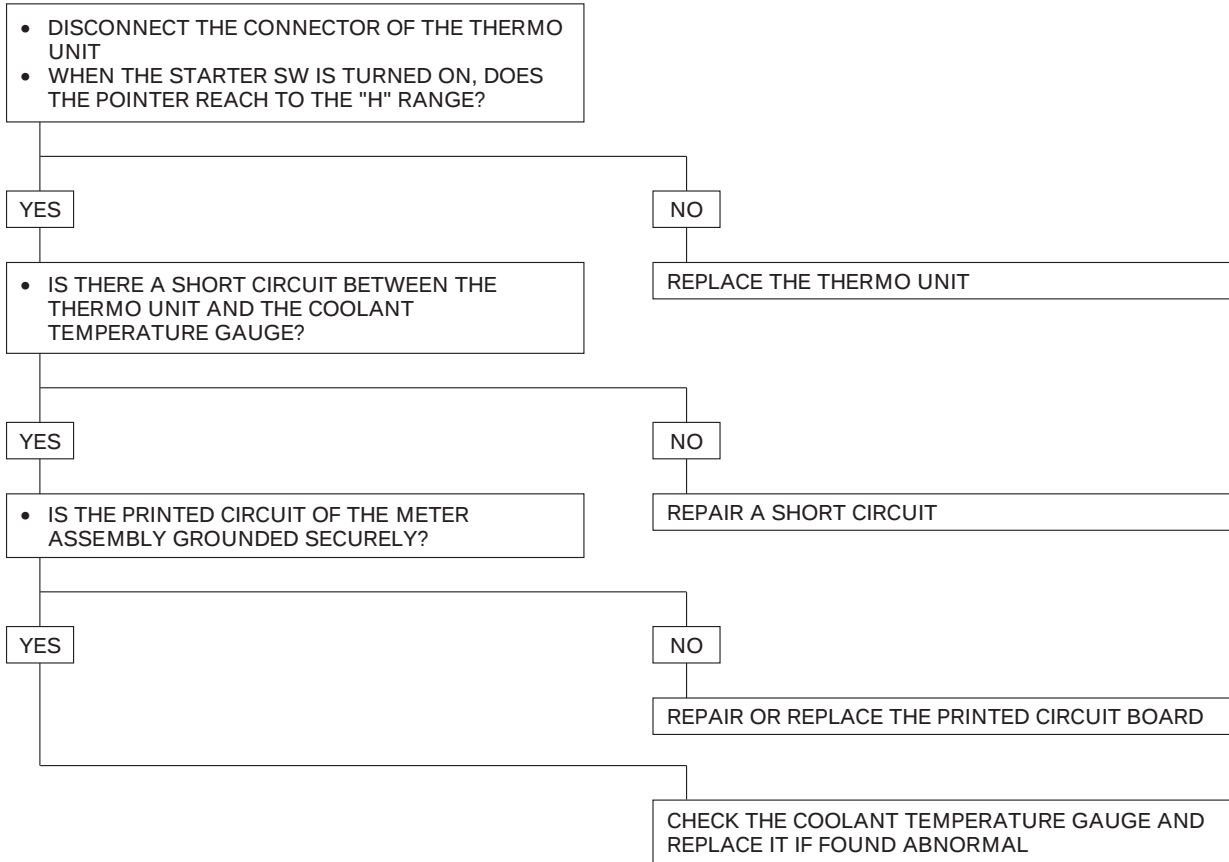


2-3 Tachometer Needle Jumps Erratically



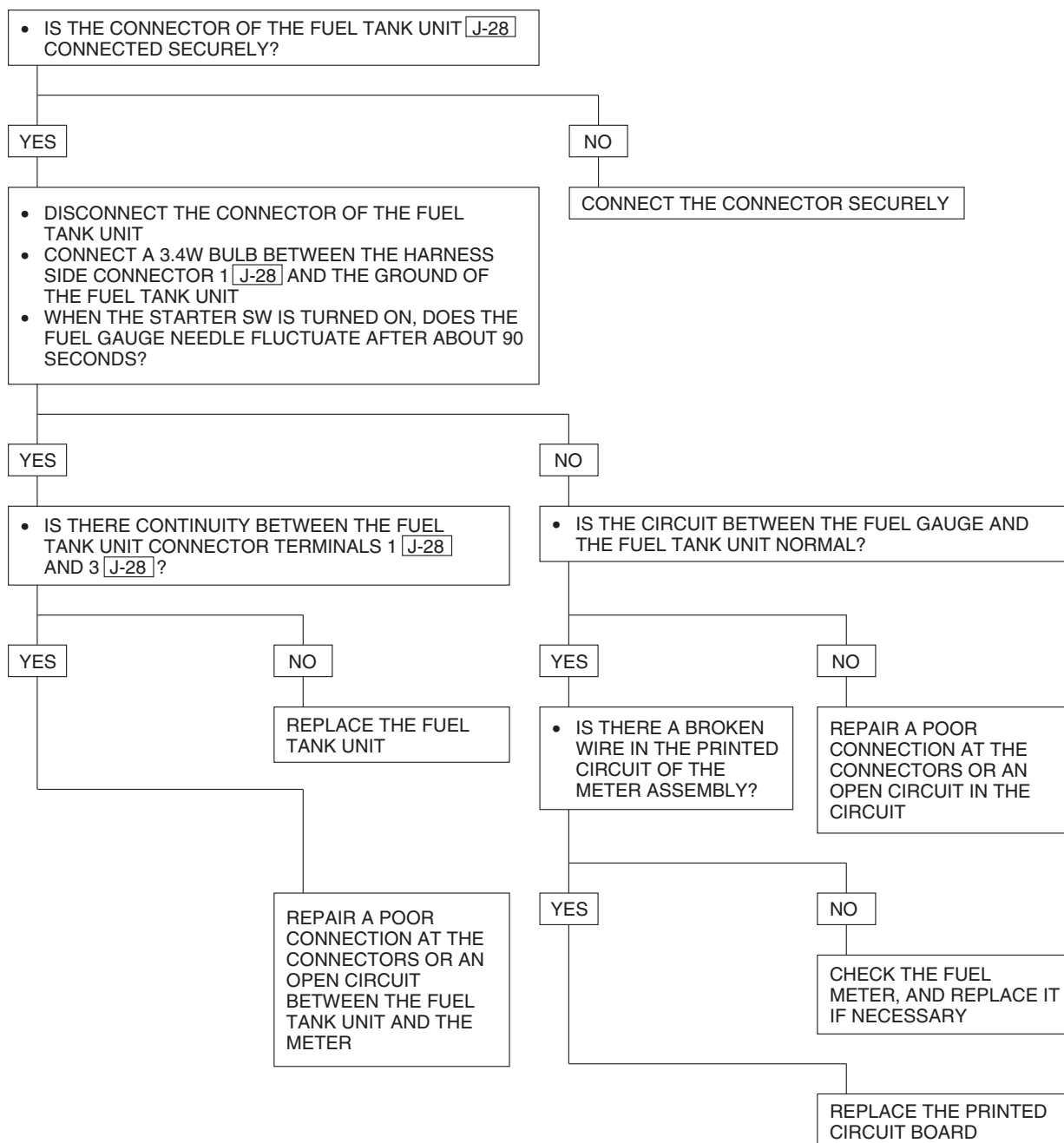
3. Coolant Temperature Gauge**3-1. Coolant Temperature Gauge Needle Does Not Move**

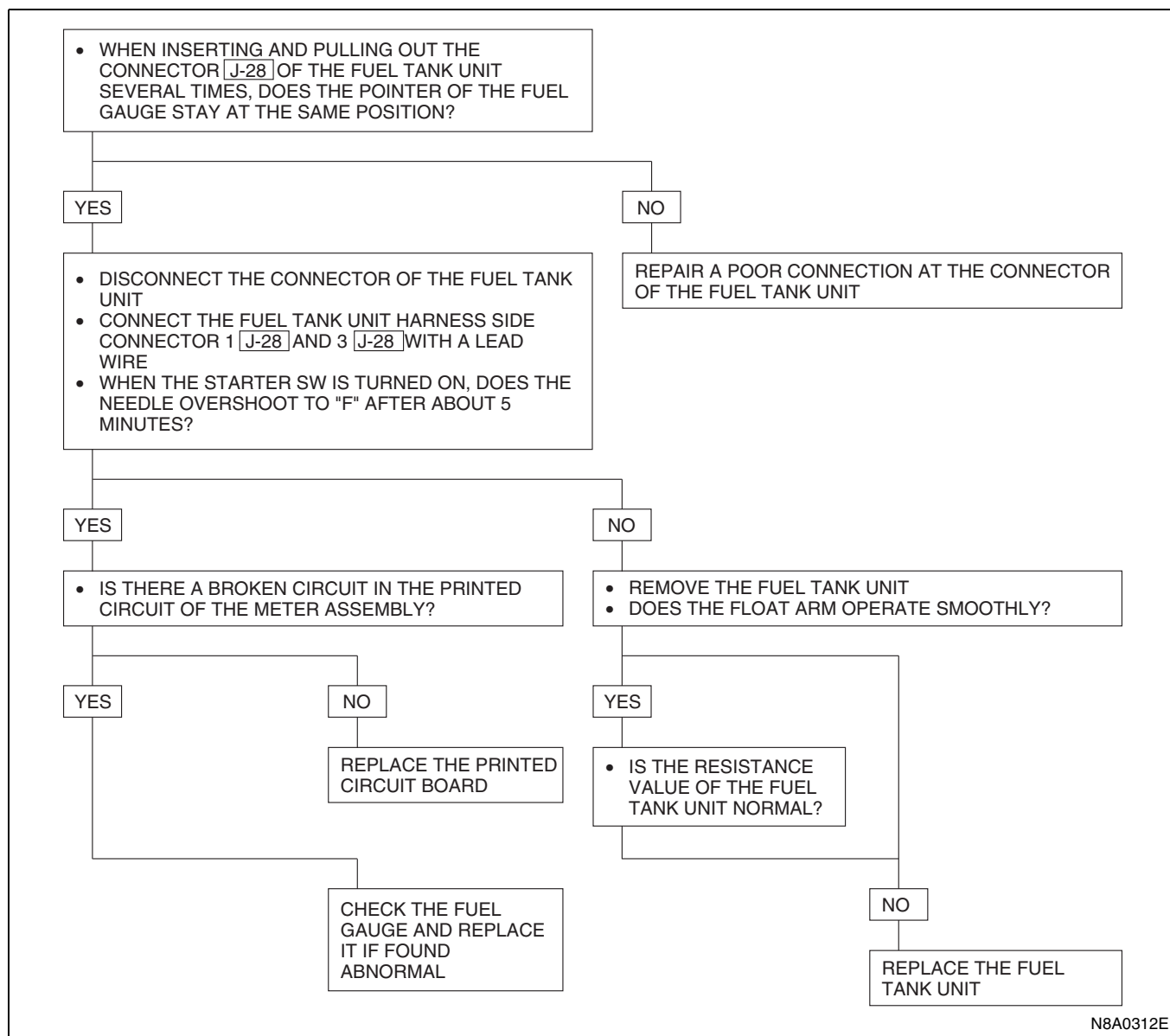
3-2. Coolant Temperature Gauge Reading Is Too Low (or High)

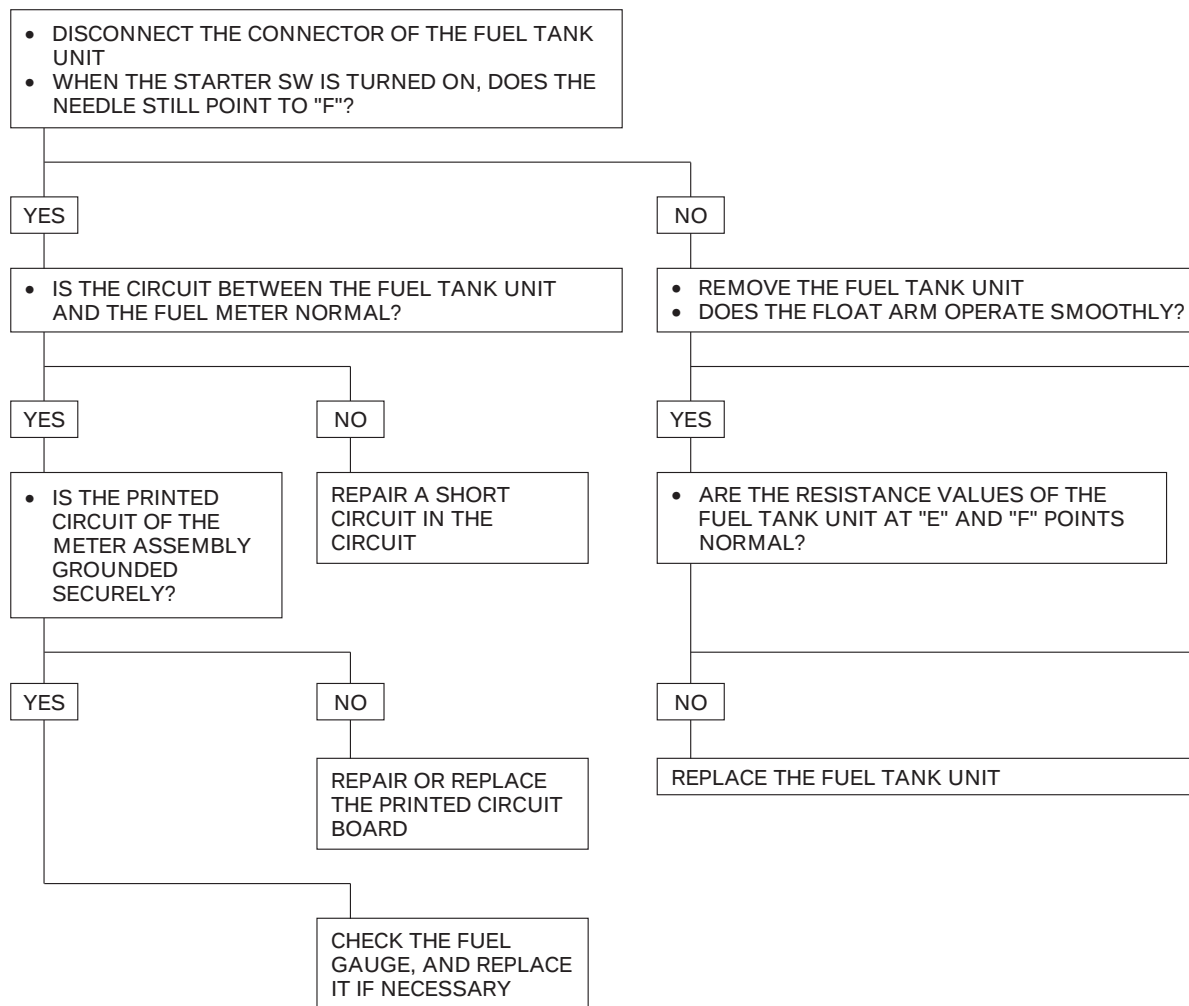
3-3. Needle Overshoots (or Goes Up to the "H" Range)

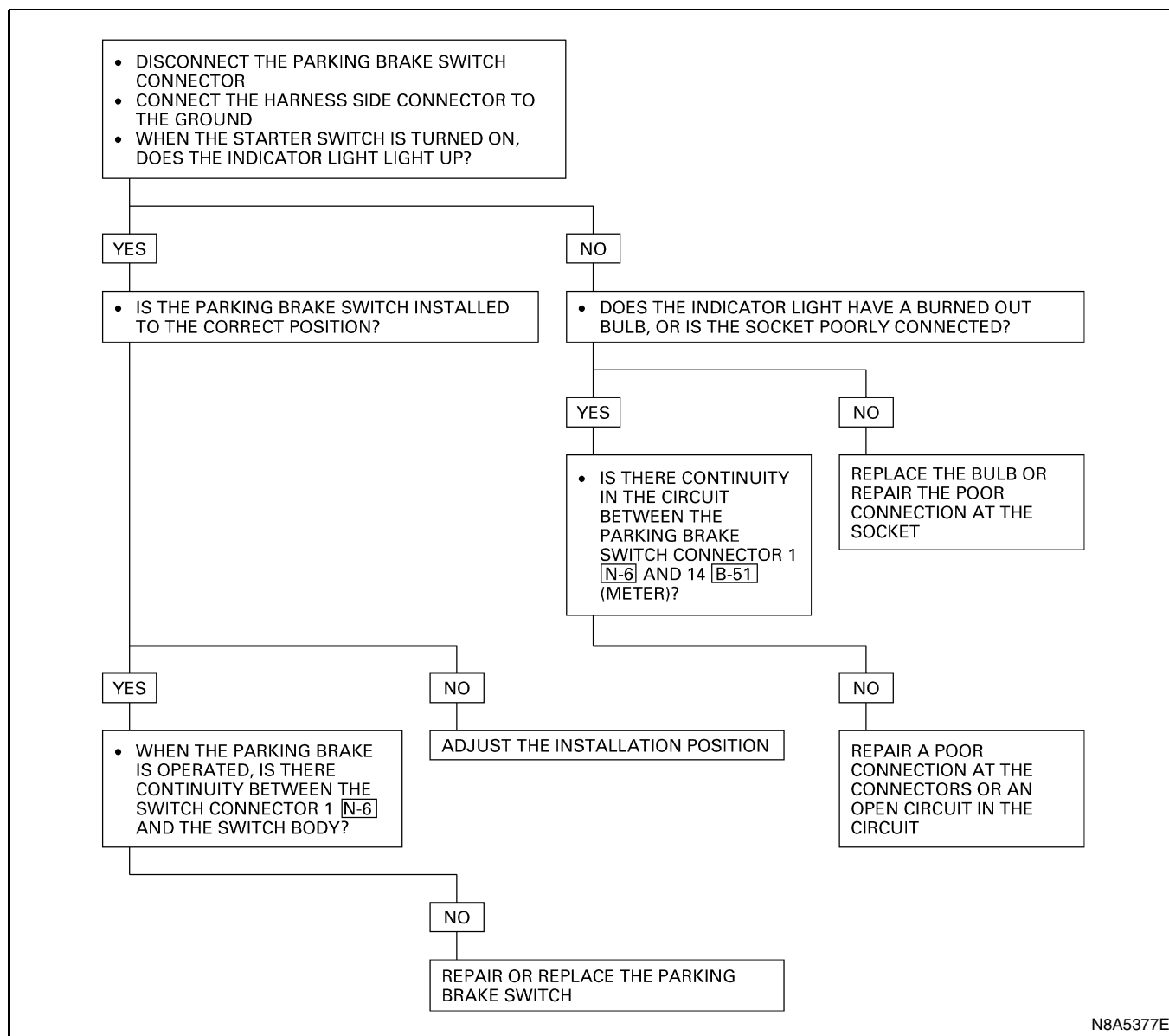
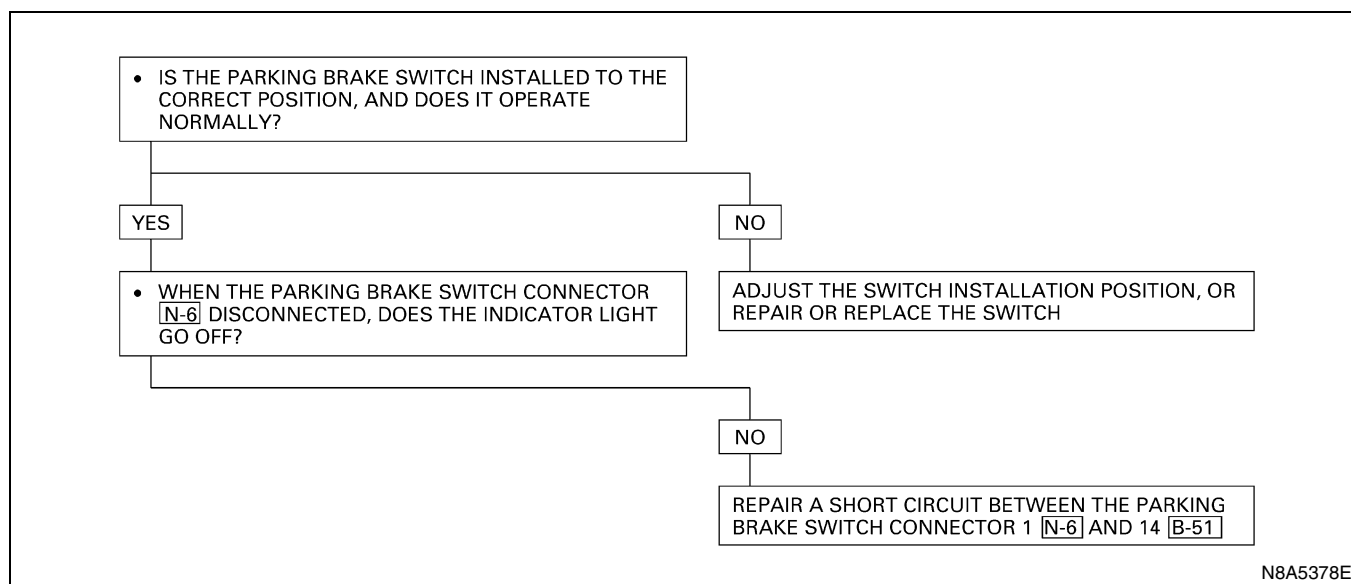
4. Fuel Gauge

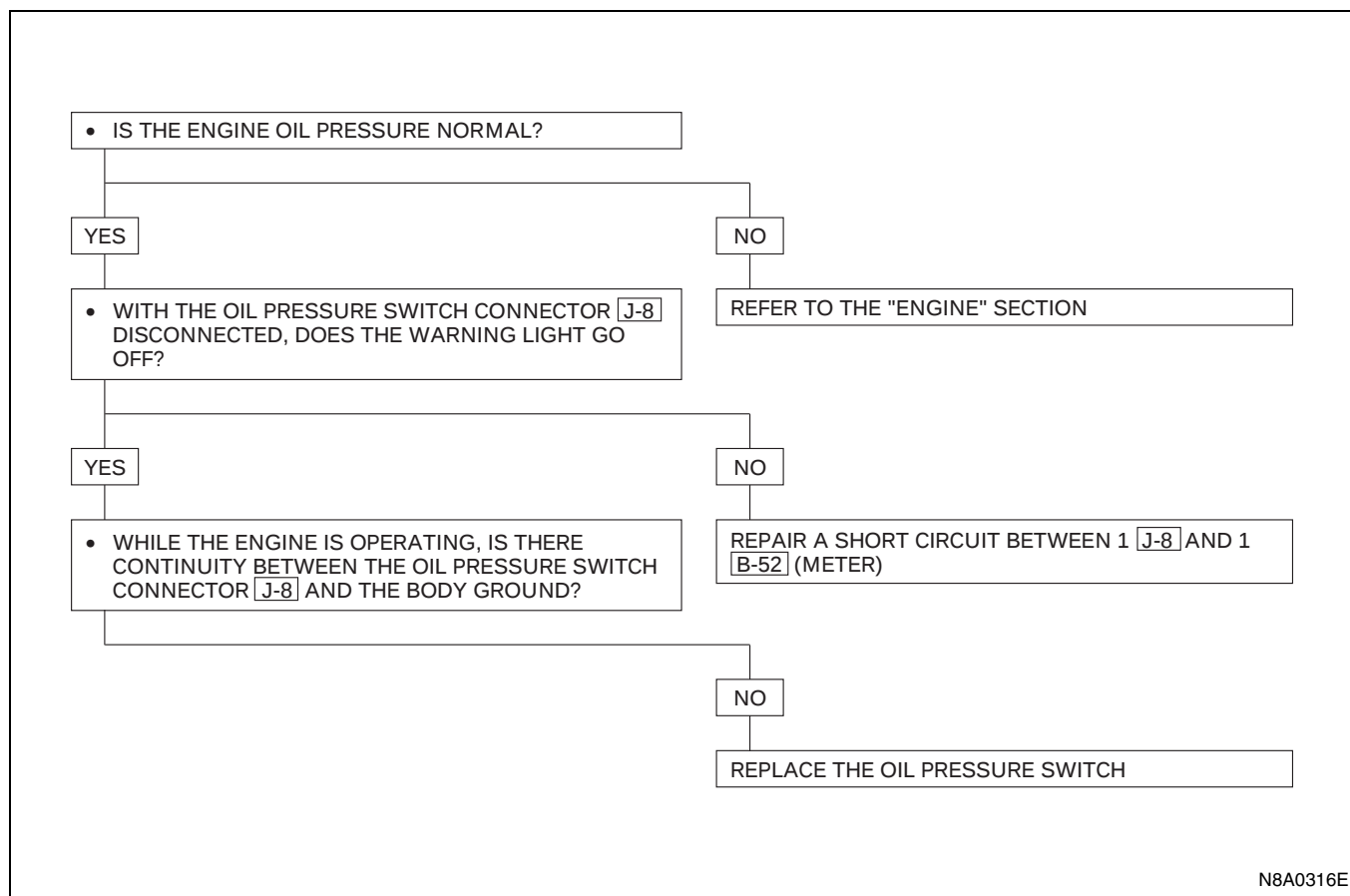
4-1. Fuel Gauge Needle Does Not Move



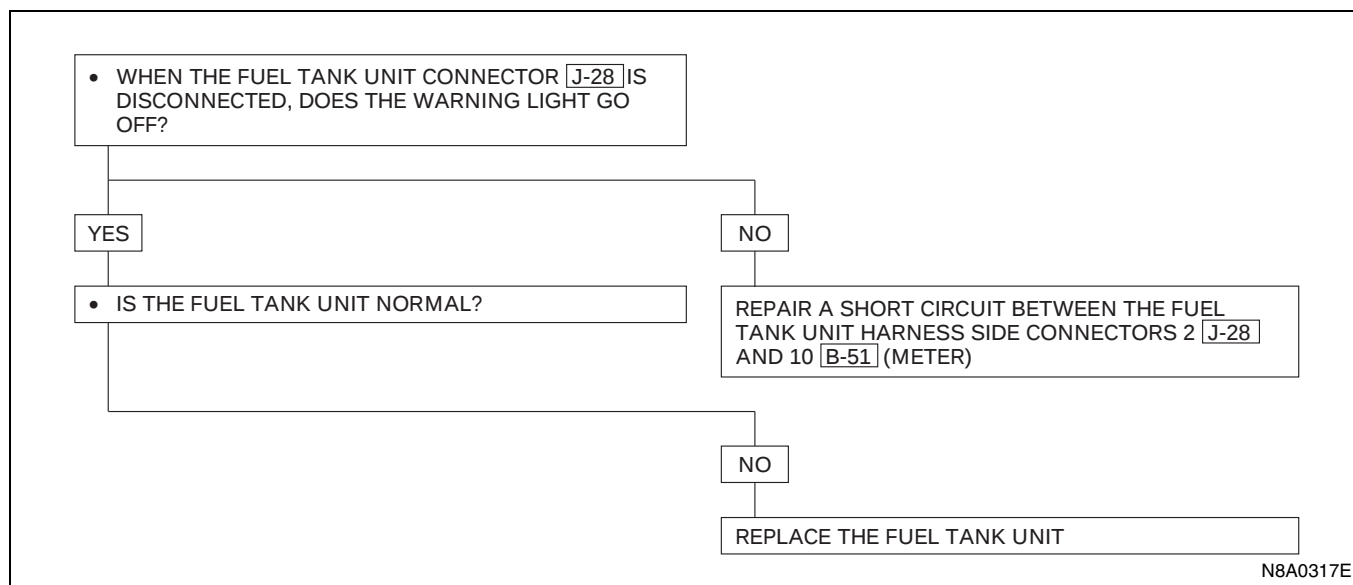
4-2. Even when the Tank Is Filled Up with Fuel, the Needle Does Not Reach "F"

4-3. When the Tank Is Not Full of Fuel, the Needle Overshoots (or Goes Up To "F")

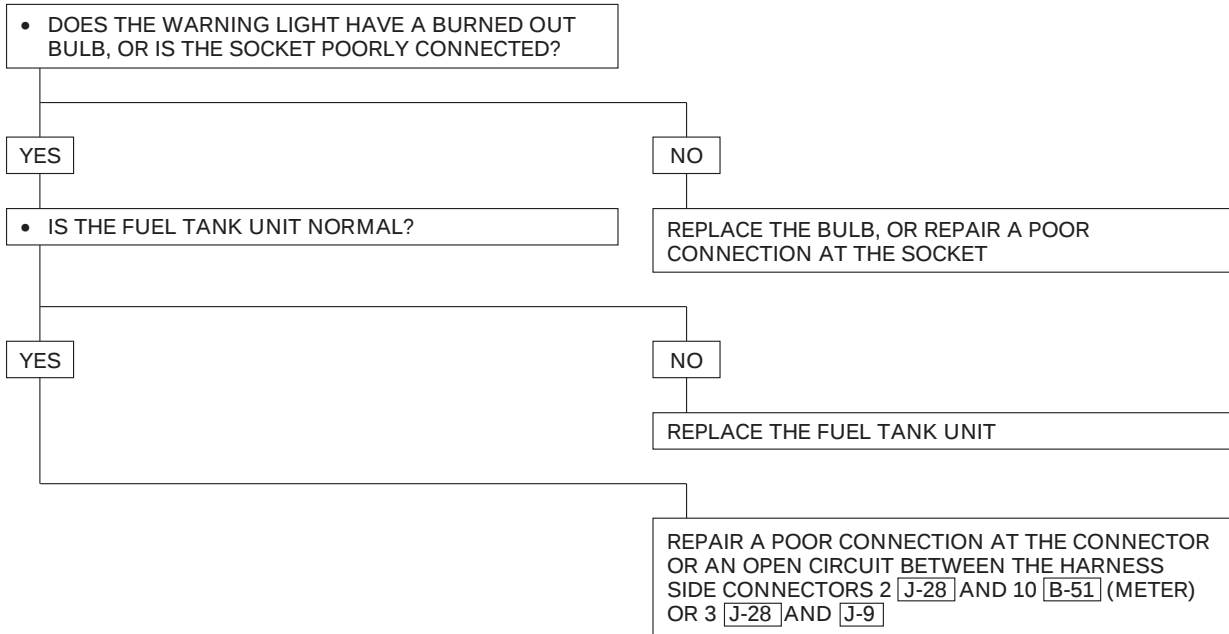
5. Warning/indicator Light**5-1. When the Parking Brake Lever Is Pulled, the Indicator Light Does Not Light Up****5-2. Even when the Parking Brake Lever Is Released, the Indicator Light Does Not Go Off**

5-3. While the Engine Is Operating, the Oil Pressure Warning Light Does Not Go Off

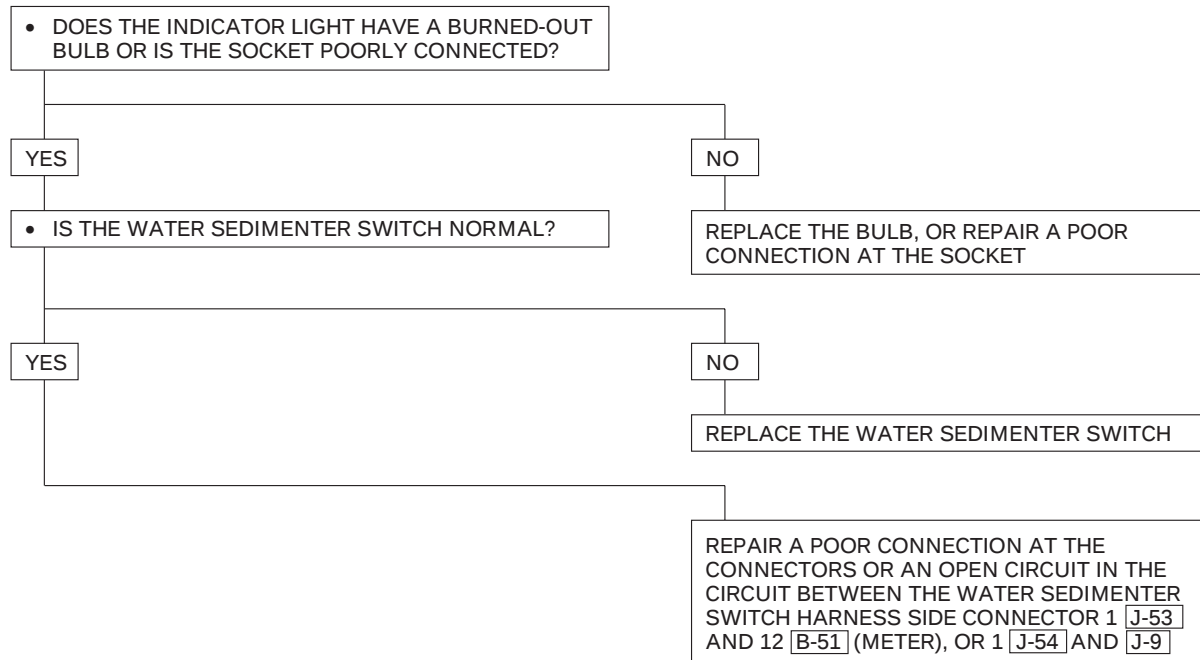
N8A0316E

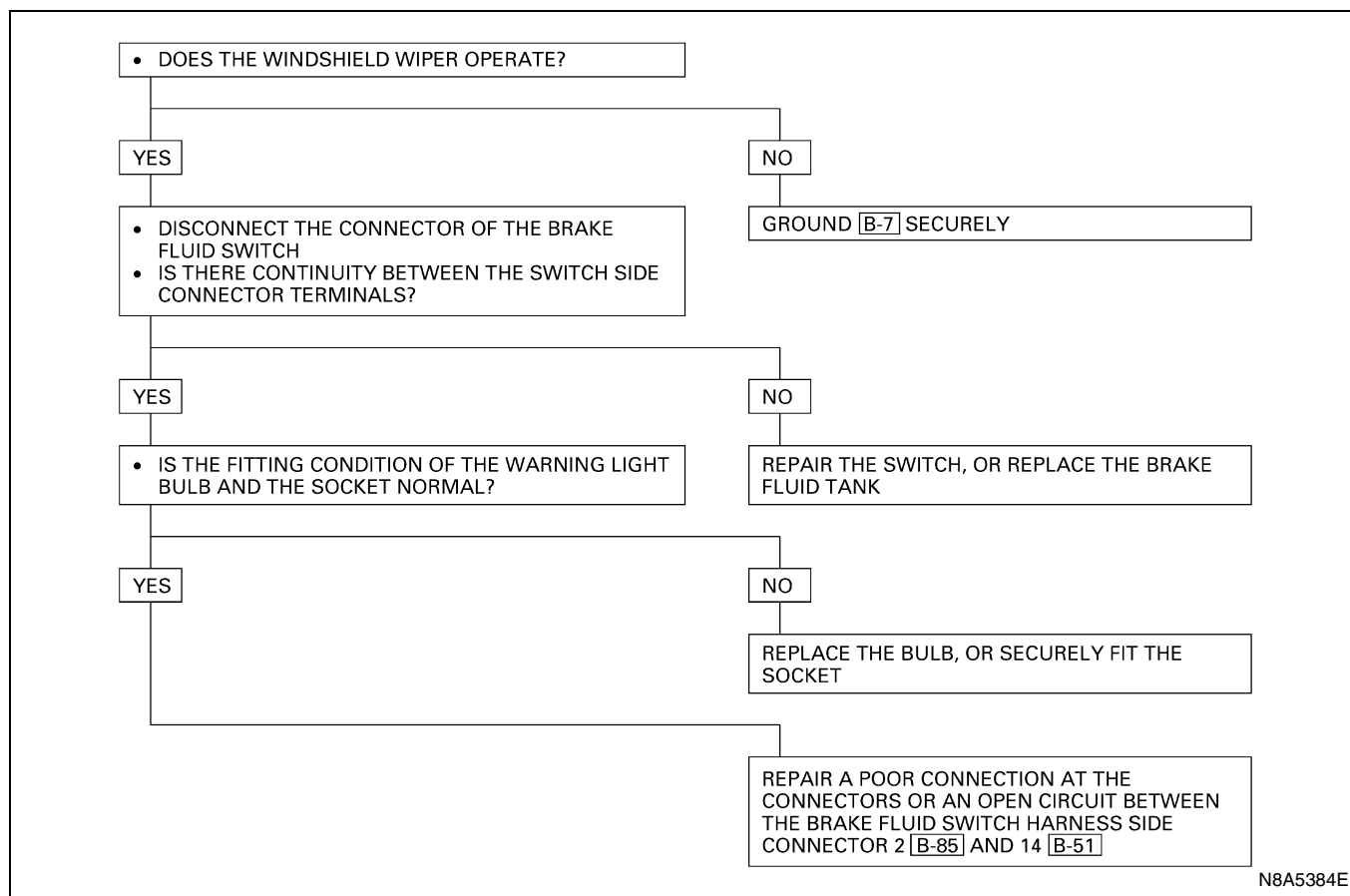
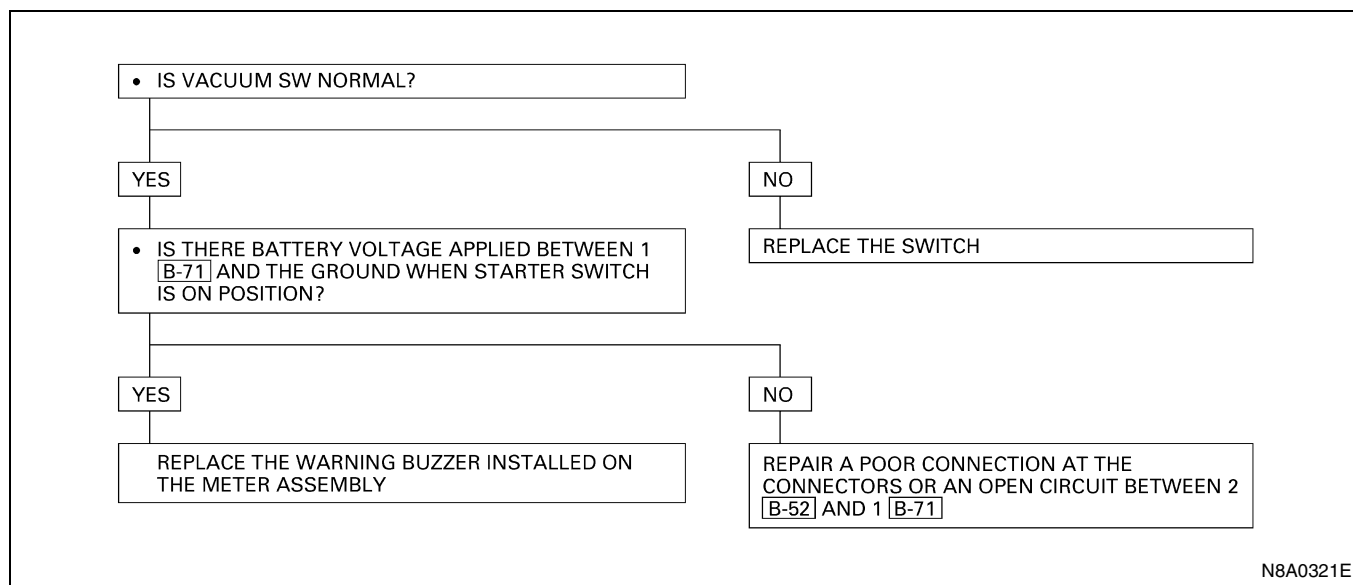
5-4. Even when the Fuel Tank Is Full with Fuel, the Fuel Warning Light Lights Up

N8A0317E

5-5. Even when the Fuel Tank Is Empty, the Low Fuel Warning Light Does Not Light Up

N8A0318E

5-6. Even when the Float in the Water Sedimeter Goes Up above the Drain Warning Level, the Indicator Light Does Not Light Up

5-7. Even when the Brake Fluid Is Lower than Specified Level, the Level Warning Light Does Not Light Up**5-8. Vacuum Warning Buzzer Does Not Sound****Starter Switch**

Refer to "START AND CHARGING" in this section.

Turn Signal Light Switch

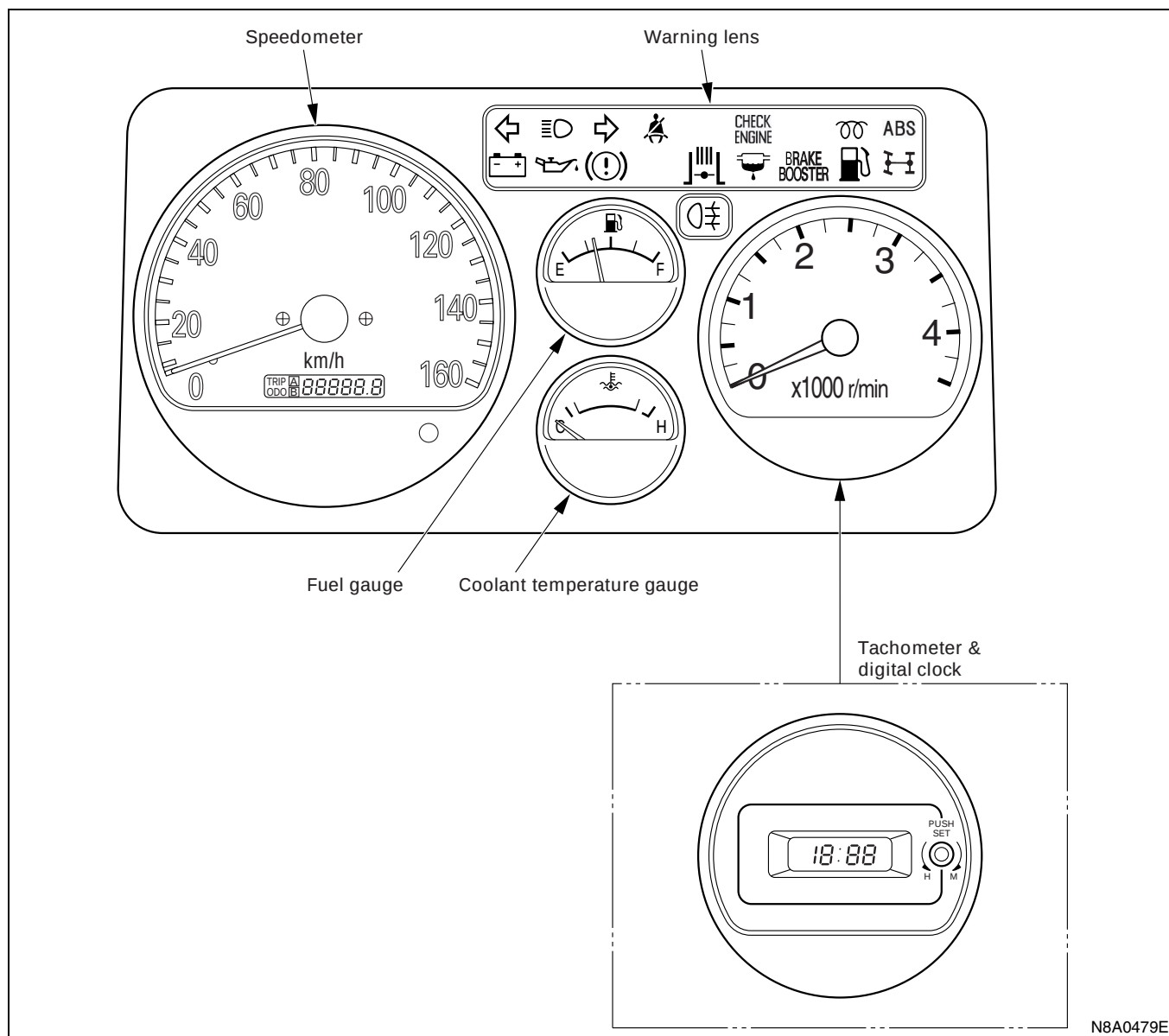
Refer to "TURN SIGNAL LIGHT, HAZARD WARNING LIGHT AND STOPLIGHT" in this section.

Exhaust Brake Switch

Refer to "EXHAUST BRAKE" in this section.

Meter Assembly

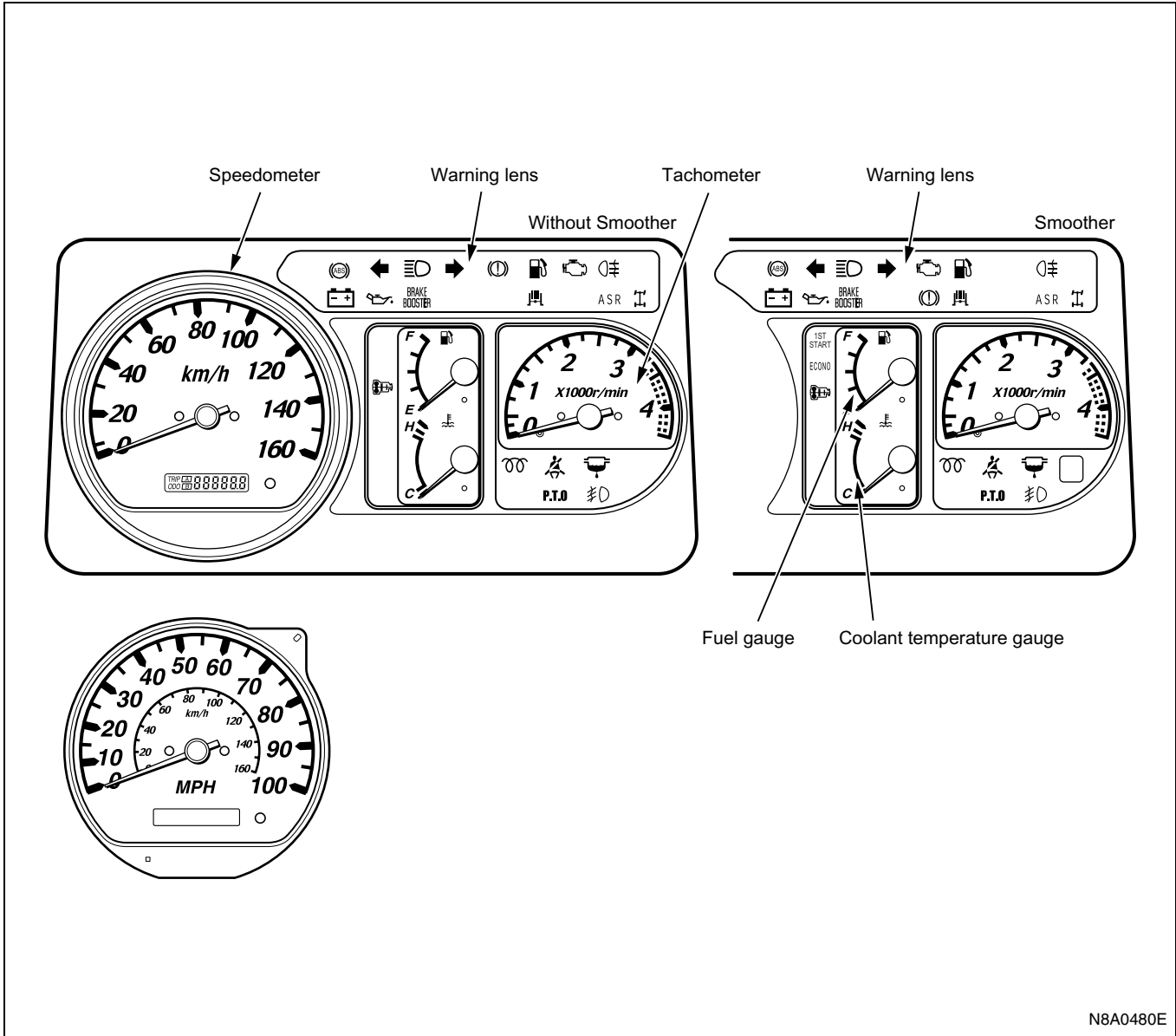
Layout for Gauges, Warning, Indicator and Illumination Lights Except 4HK1-TC



Notice:

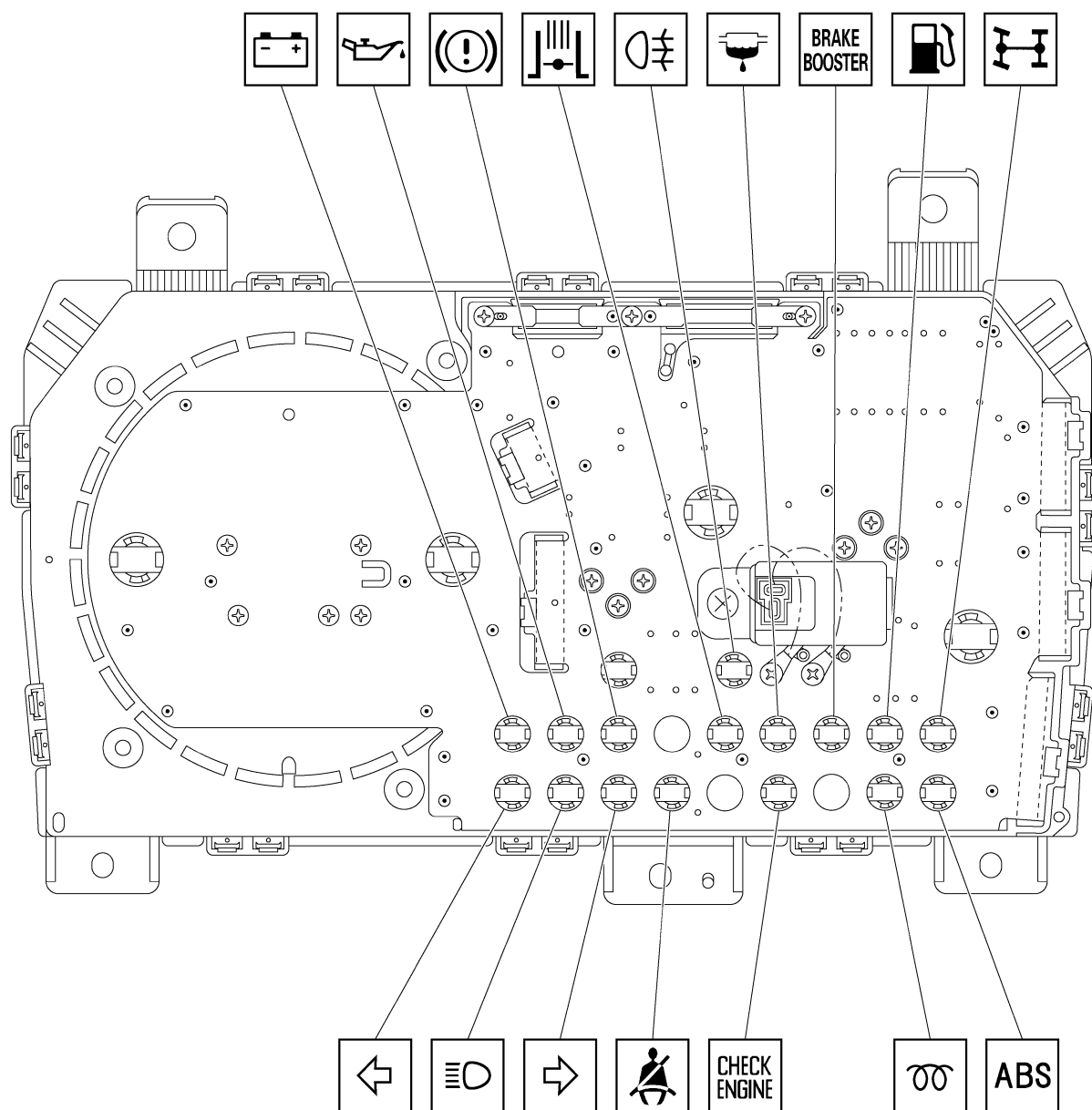
The calibration and the red zone of tachometer are various depending on the models fitted.

For 4HK1-TC

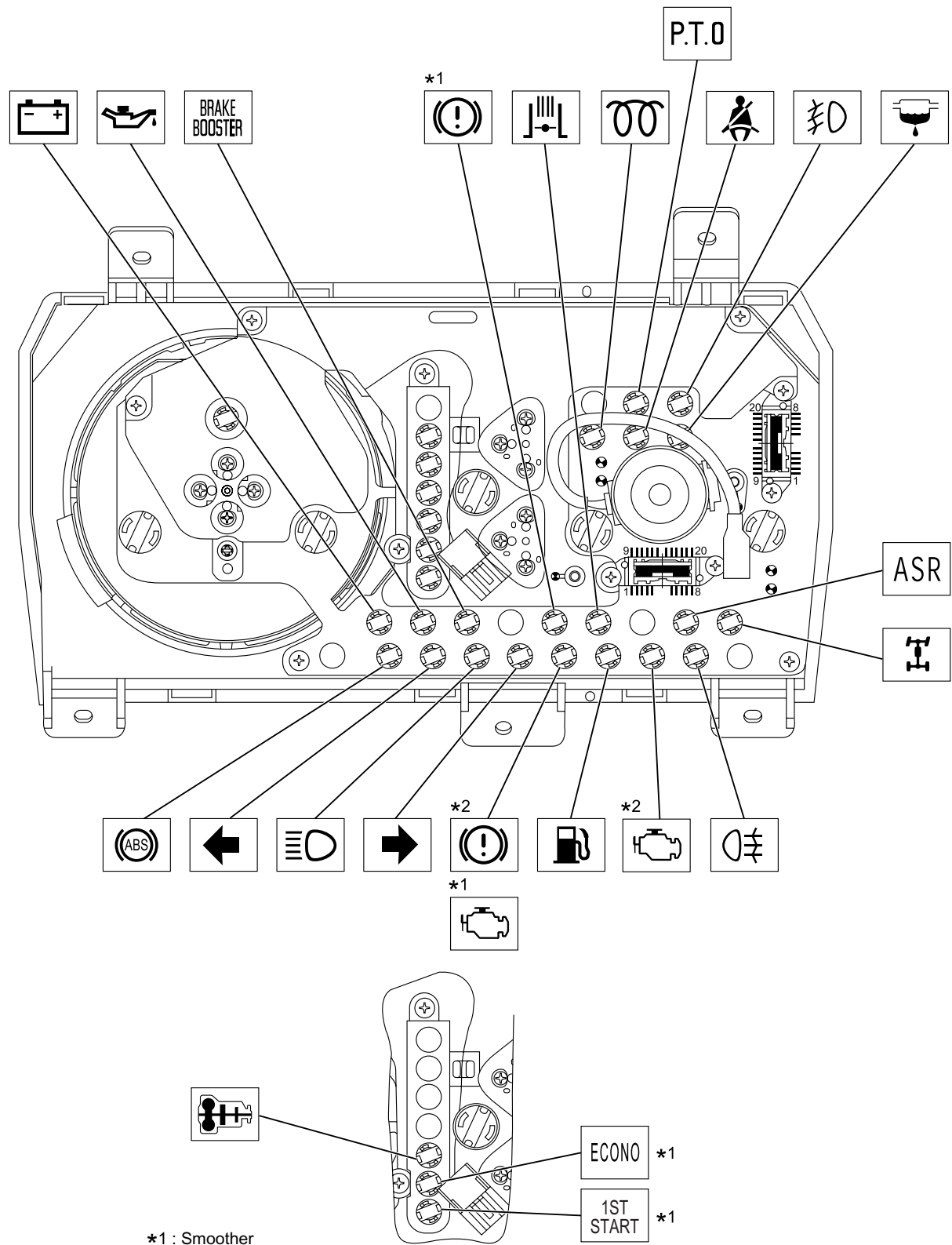


Bulb Location for Warning Lens

Except 4HK1-TC

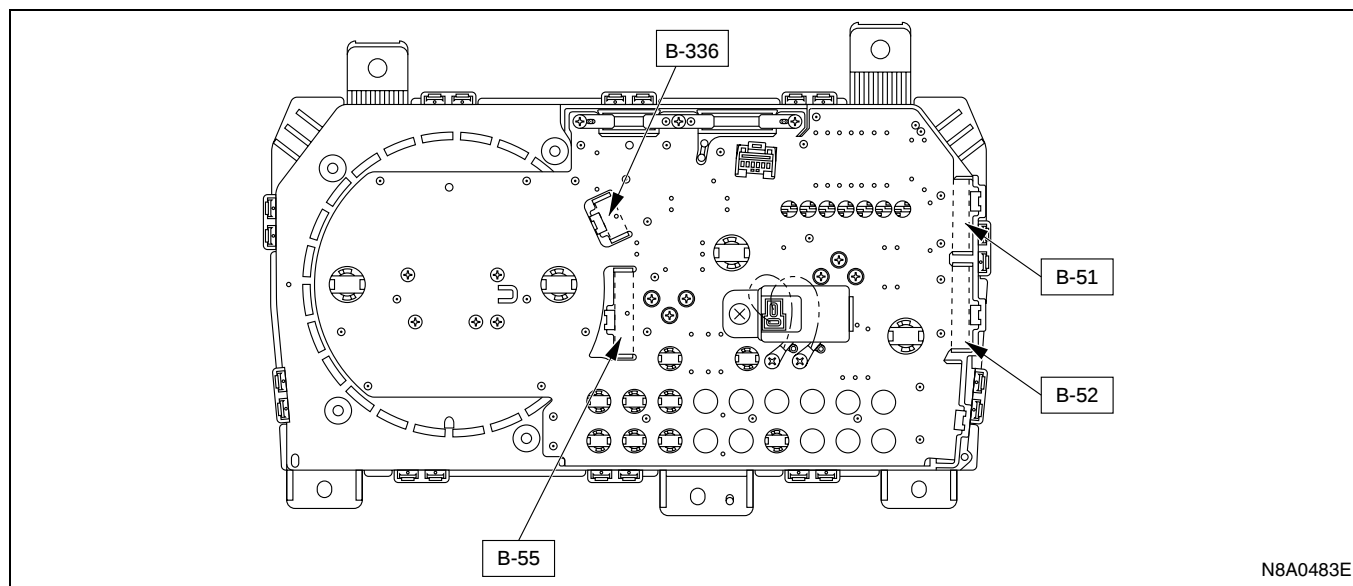


For 4HK1-TC



*1 : Smoother
*2 : Without Smoother

Table for Meter Connector Terminal Connections
Except 4HK1-TC

**B-336**

Terminal No.	Connected to
1	IGN (+)
2	—
3	Speed pulse input
4	—
5	Ground
6	Illumination (+)

B-51

Terminal No.	Connected to
1	Exh. Brake
2	Exh. Brake / Seat belt (GCC)
3	—
4	Check engine
5	PTO
6	Glow
7	ABS
8	IGN (+)
9	4WD
10	Fuel low
11	Vacuum / Booster
12	Sedimenter
13	Low coolant
14	Brake

B-55

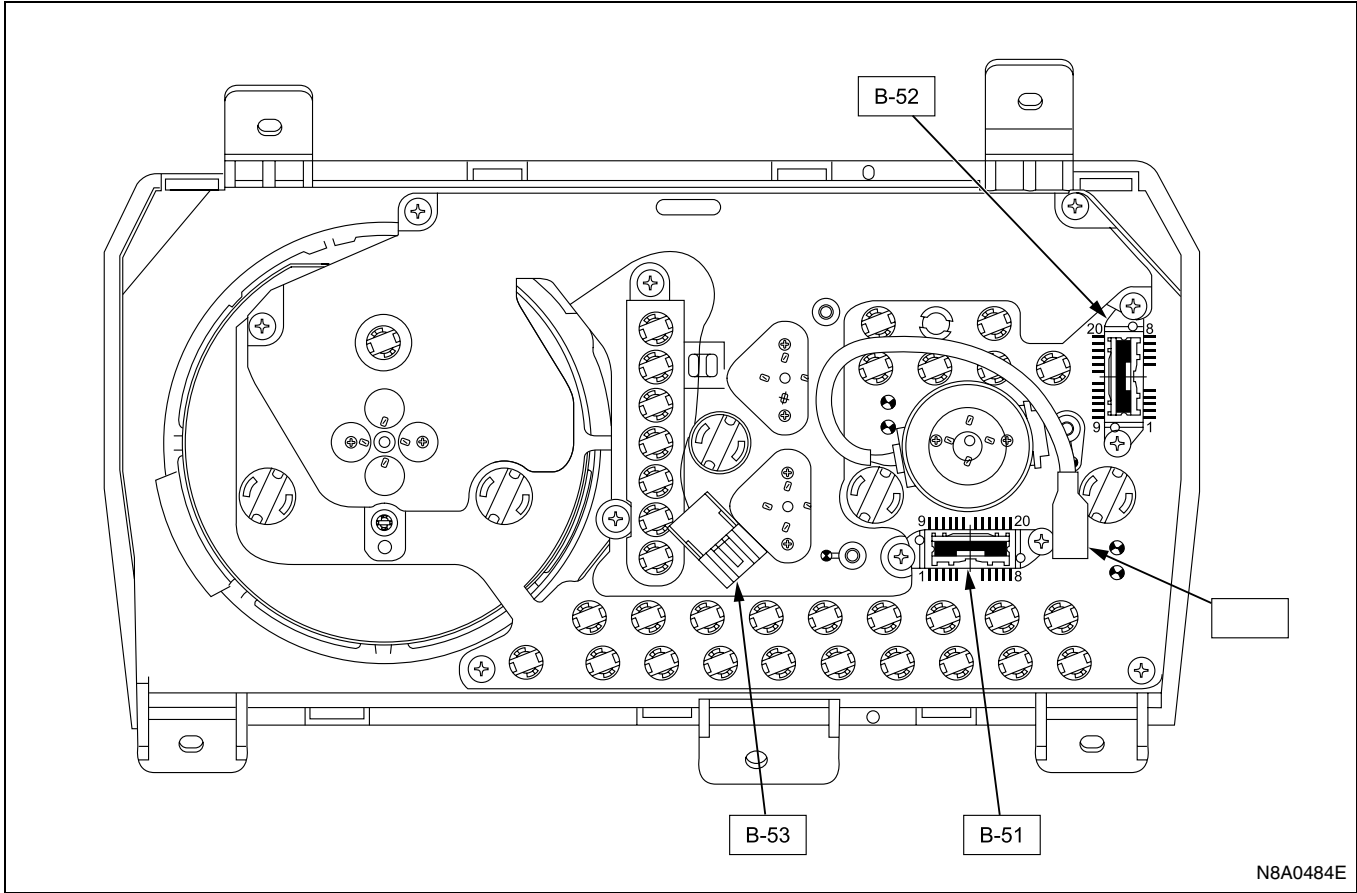
Terminal No.	Connected to
1	Speed pulse input
2	—
3	Power output (sensor)
4	ECT unit (GAUGE)
5	Fuel tank unit (GAUGE)
6	—
7	Ground
8	Turn signal (LH)
9	—
10	Beam (+)
11	Turn signal (RH)
12	—

ECT - Engine Coolant Temperature

B-52

Terminal No.	Connected to
1	Oil pressure
2	Vacuum SW
3	Charge
4	Parking / Rear fog
5	Illumination (+)
6	—
7	Illumination (–)
8	Signal (tacho)
9	Ground (tacho)
10	Ground
11	—
12	+B

For 4HK1-TC



B-53 (With Smoother)

Terminal No.	Connected to
1	TCM
2	—
3	—
4	—
5	—
6	1st Start
7	ECONO
8	Smoother
9	—
10	—
11	—
12	—

B-51

Terminal No.	Connected to
1	Turn LH
2	Beam
3	—
4	Brake (*1) / — (*2)
5	Check Engine (*1) / Brake (*2)
6	Exhaust Brake
7	—
8	—
9	Brake Booster
10	Charge
11	Oil Pressure
12	ABS
13	— (*1) / Check Engine (*2)
14	—
15	Ground
16	Vehicle Speed Signal Output
17	Illumination +
18	Ignition
19	Rear Fog
20	ASR

*1: With Smoother

*2: Without Smoother

B-52

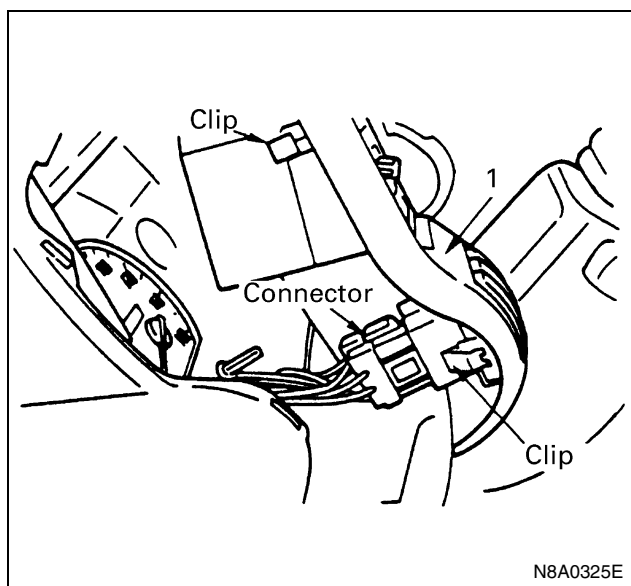
Terminal No.	Connected to
1	4WD
2	—
3	Turn RH
4	—
5	Thermal
6	Fuel
7	TAM Pulse (—)
8	TAM Pulse (+)
9	—
10	Sedimenter
11	Front Fog
12	—
13	—
14	—
15	Glow
16	Battery
17	Vehicle Speed Sensor
18	—
19	—
20	Ground

Terminal No.	Connected to
1	Battery
2	—
3	Ground

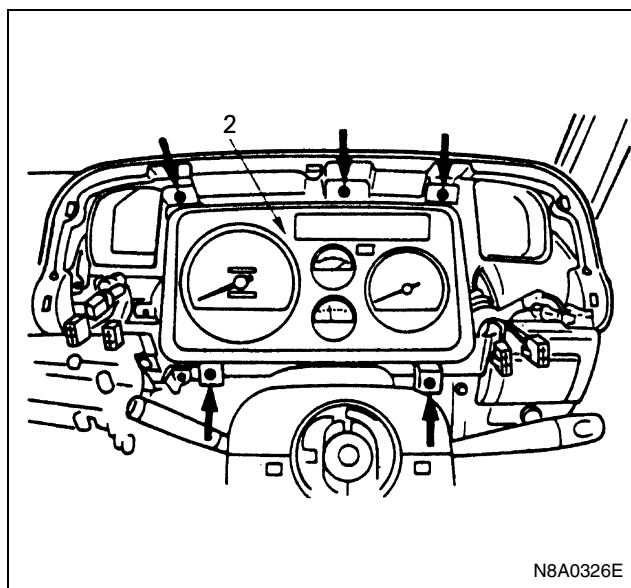
Removal**Preparation:**

Disconnect the battery ground cable.

1. Meter Cluster



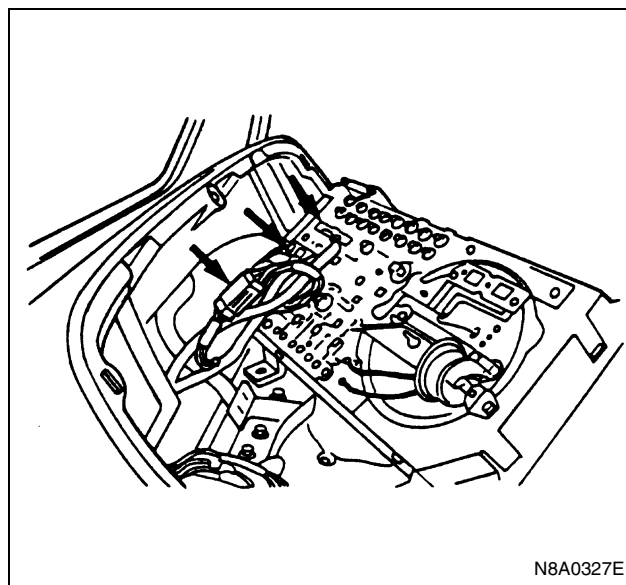
2. Meter Assembly
Remove the five screws.



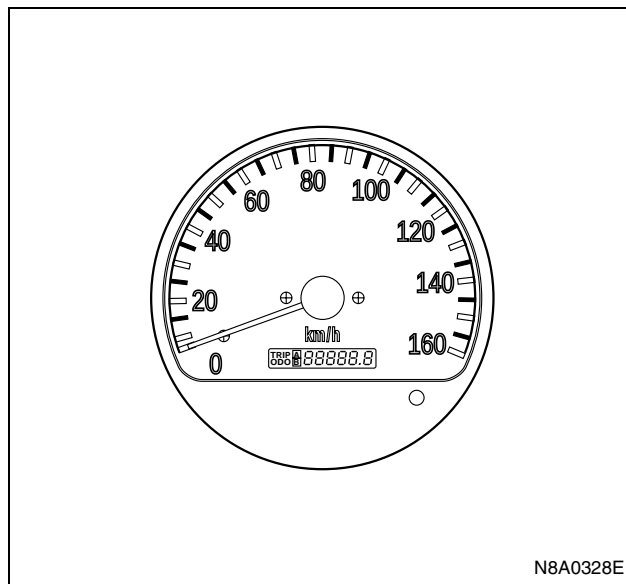
Disconnect the meter connectors.

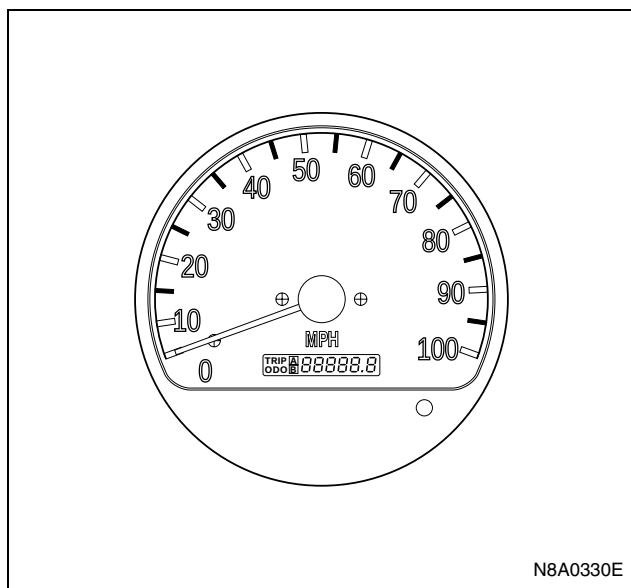
Installation

To install, follow the removal steps in the reverse order.

**Speedometer**

The speedometer is made up of the cross coil type ammeter (movement) that displays indications, the stepper motor that drives and adds up the odometer and trip meter, and the driving circuit (printed circuit board) that makes exchanges between the pulse signals and the current.





On-vehicle Service

Check the meter display accuracy and the operation of the odometer with the speedometer tester.

Notice:

Inappropriate tire inflation may affect the accuracy of the odometer.

(To conduct this test, refer to the tester manufacturer's instruction manual.)

Since the meter display permissible levels above are specifications solely for the meter, they are to be used as reference values when conducting on-vehicle service.

Except 4HK1-TC

Tester display speed	Meter display permissible level
20 km/h	17.5 — 22.5 km/h
40	37.5 — 42.5
60	57.5 — 62.5
80	77.5 — 82.5
100	97.6 — 103.4
120	117.6 — 123.4
140	137.6 — 143.4

Tester display speed	Meter display permissible level
20 MPH	18.3 — 21.7 MPH
40	38.3 — 41.7
60	58.3 — 61.7
80	77.8 — 82.8

For 4HK1-TC (General Export)

Tester display speed	Meter display permissible level
40 km/h	37 — 41 km/h
60	58 — 62
80	77.5 — 82.5
100	97.5 — 103
120	117 — 122.5
140	137.5 — 143

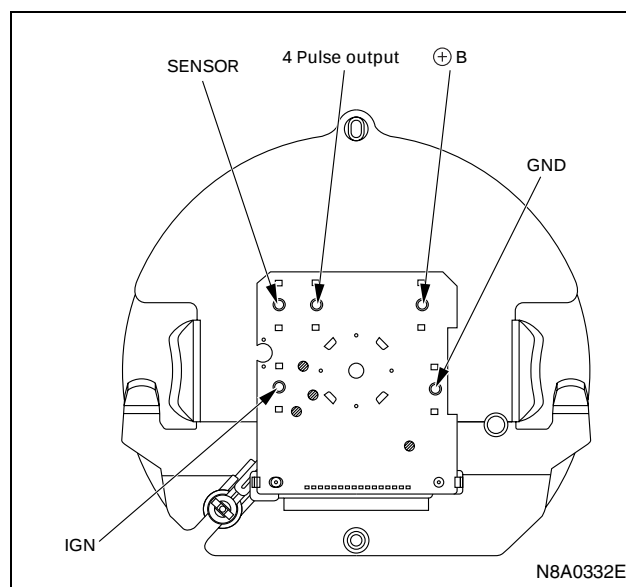
For 4HK1-TC (Europe)

Tester display speed	Meter display permissible level
20 km/h	20 — 22.5 km/h
40	40 — 42.5
60	60 — 63.2
80	79.7 — 83.4

Individual Inspection

Remove the speedometer from the meter assembly and measure the resistance and the current consumption between each terminals.

Replace the speedometer when the result of inspection is found abnormal.



Terminal symbol	Resistance value
IGN — GND	58±20 kΩ
SEN — GND	70±20 kΩ
4P — GND	∞

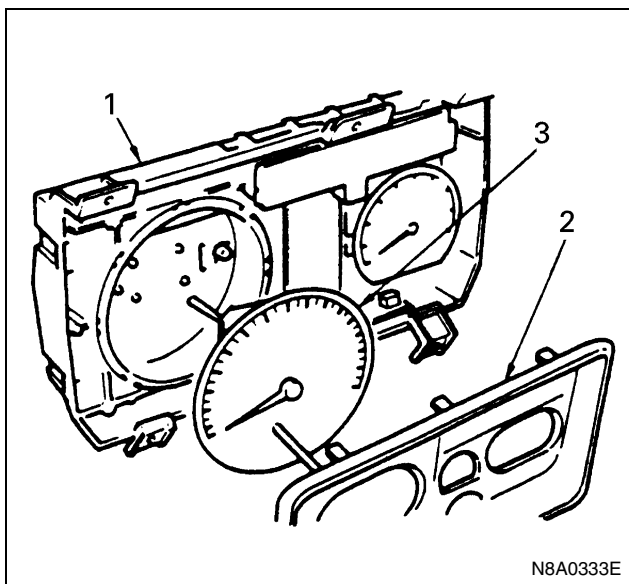
Removal

Preparation:

Disconnect the battery ground cable.

- Except 4HK1-TC

1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
2. Meter Glass
Remove it by pushing the catches with your finger.
3. Speedometer
Remove four screws securing the meter at the back side.



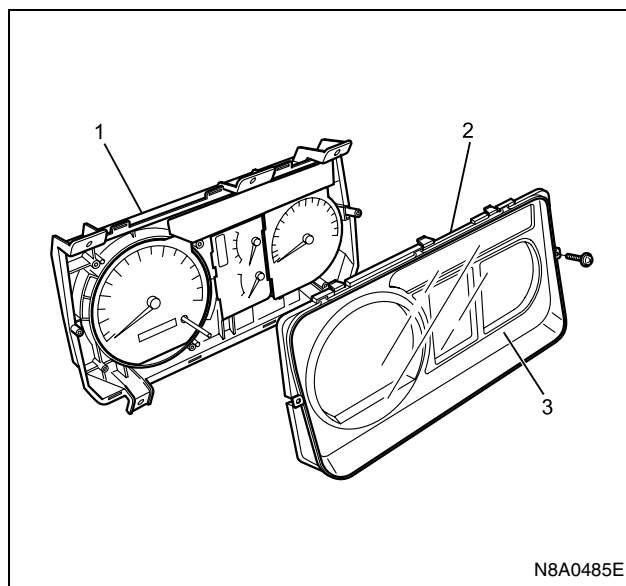
- For 4HK1-TC

1. Remove the meter assembly/speedometer (1).

Notice:

Speedometer cannot be removed as a single unit since it is integrated into the meter assembly.

- Refer to "Meter Assembly" in this section.
2. Remove the meter plate (2) and meter glass (3).
 - Remove the two installing screws on the meter surface.
 - Remove the meter plate by pushing the catches with your finger.

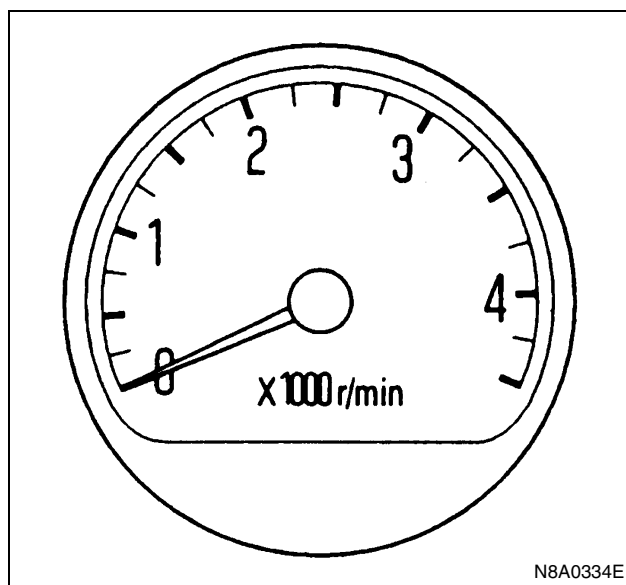


Installation

To install, follow the removal steps in the reverse order.

Tachometer

The tachometer is made up of the cross coil type ammeter (movement) that displays indications, and the drive circuit (printed board) that makes exchange between the pulse signals and the current.



On-vehicle Service Inspection

1. Set up the tune-up tester to the engine.
2. Start the engine and compare the readings displayed by the tachometer and the tester.
When the difference between these two readings differs largely from the specified value, replace it with a correct one.

Notice:

Since the meter display permissible levels above are specifications solely for the meter, they are to be used as reference values when conducting on-vehicle inspection.

Except 4HK1-TC

Tester display speed	Meter display permissible level
500	400 — 500
1000	800 — 1050
2000	1800 — 2050
3000	2800 — 3050
4000	3800 — 4050

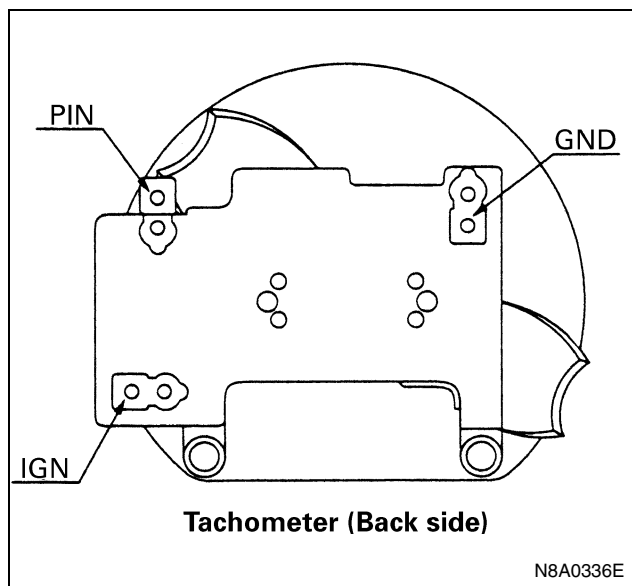
For 4HK1-TC

Tester display speed	Meter display permissible level
750	700 — 800
2000	1900 — 2150
3000	2950 — 3200
4000	3950 — 4200

Individual Inspection

Remove the tachometer from the meter assembly and measure the resistance value and the current consumption between each terminals.

Replace the tachometer when the result of inspection is found abnormal.

**1. Resistance value**

Use the analog type circuit tester. (Range: 1K)
For 12 Volt tachometer

Terminal symbol	Tester terminal			
	Red (+)	Black (-)	Black (-)	Red (+)
IGN — GND	IGN	GND	IGN	GND
	∞		30 $\pm$ 5 k Ω	
PIN — GND	PIN	GND	PIN	GND
	33 $\pm$ 5 k Ω		500 — 1000 k Ω	

For 24 Volt tachometer

Terminal symbol	Tester terminal			
	Red (+)	Black (-)	Black (-)	Red (+)
IGN — GND	IGN	GND	IGN	GND
	∞		30 $\pm$ 5 k Ω	
PIN — GND	PIN	GND	PIN	GND
	33 $\pm$ 5 k Ω		500 — 1000 k Ω	

2. Current value

Use the analog type circuit tester.

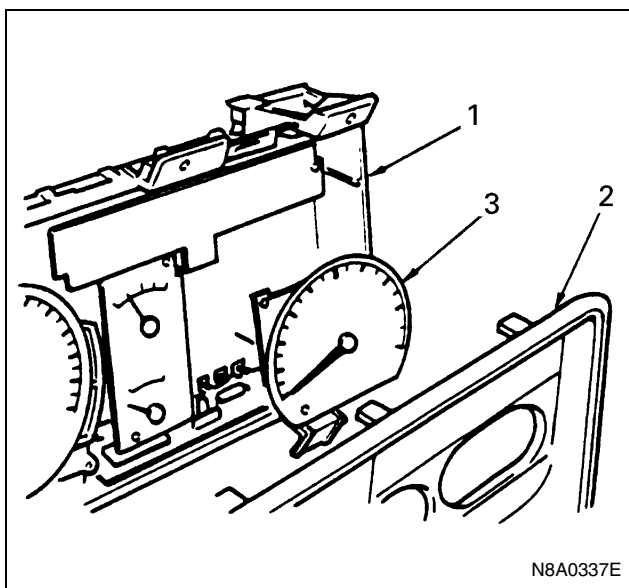
Since the current consumption fluctuates as the power voltage varies, check to be sure that the voltage applied is 12 $\pm$ 1 V or 24 $\pm$ 1 V.

Voltage	Connecting terminal	Current consumption	Remarks
12Volt	IGN — GND	12 $\pm$ 1 V (when 12 $\pm$ 1 V applied)	No signal input
24Volt		24 $\pm$ 1 V (when 24 $\pm$ 1 V applied)	No signal input

Removal**Preparation:**

Disconnect the battery ground cable.

- Except 4HK1-TC
1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
 2. Meter Glass
Remove it by pushing the catches with your finger.
 3. Tachometer
Remove three screws securing the meter at the back side.



- For 4HK1-TC

1. Remove the meter assembly/tachometer (1).

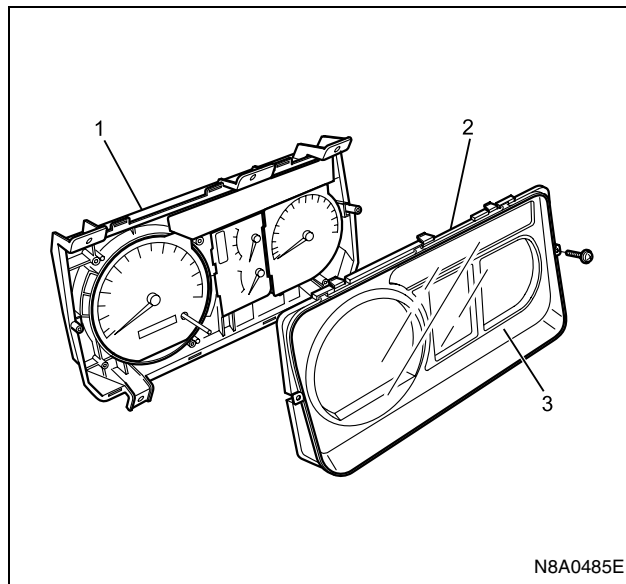
Notice:

Tachometer cannot be removed as a single unit since it is integrated into the meter assembly.

- Refer to "Meter Assembly" in this section.

2. Remove the meter plate (2) and meter glass (3).

- Remove the two installing screws on the meter surface.
- Remove the meter plate by pushing the catches with your finger.

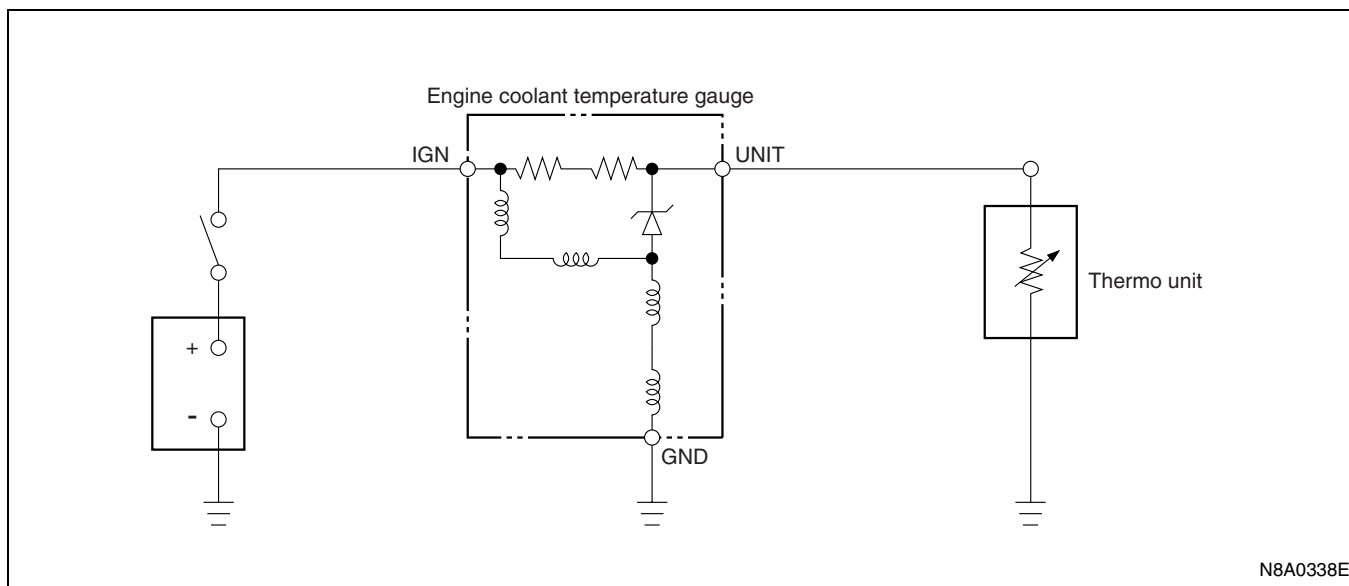


Installation

To install, follow the removal steps in the reverse order.

Coolant Temperature Gauge

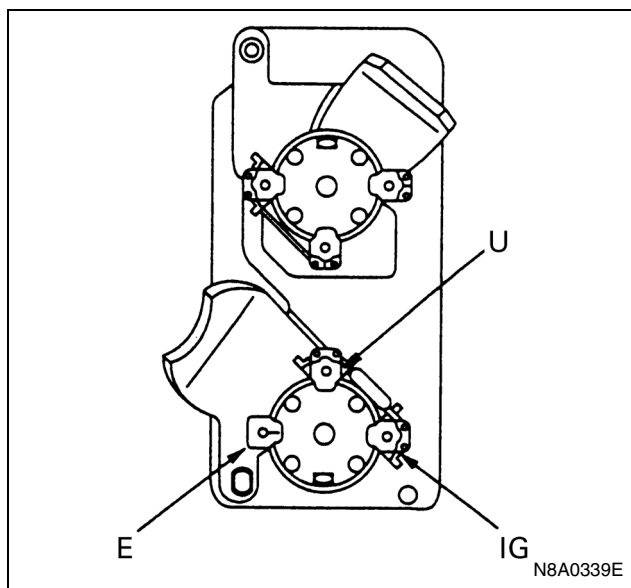
Circuit Diagram



Inspection

Remove the coolant temperature gauge from the meter assembly, and measure the resistance value between each terminal.

Replace the coolant temperature gauge when the result of inspection is found abnormal.



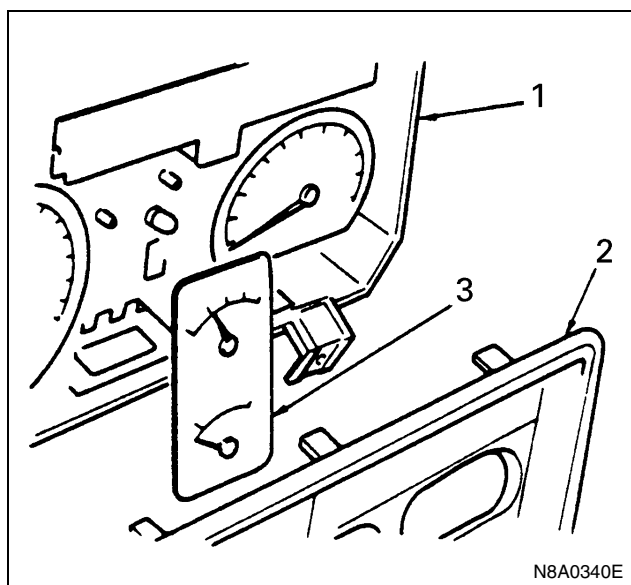
Terminal symbol	Resistance value
IG — U	169 $\Omega \pm 10\%$
U — E	333 $\Omega \pm 10\%$
IG — E	242 $\Omega \pm 10\%$

Removal

Preparation:

Disconnect the battery ground cable.

- Except 4HK1-TC
- 1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
- 2. Meter Glass
Remove it by pushing the catches with your finger.
- 3. Coolant Temperature Gauge
Remove six screws securing the meter at the back side.

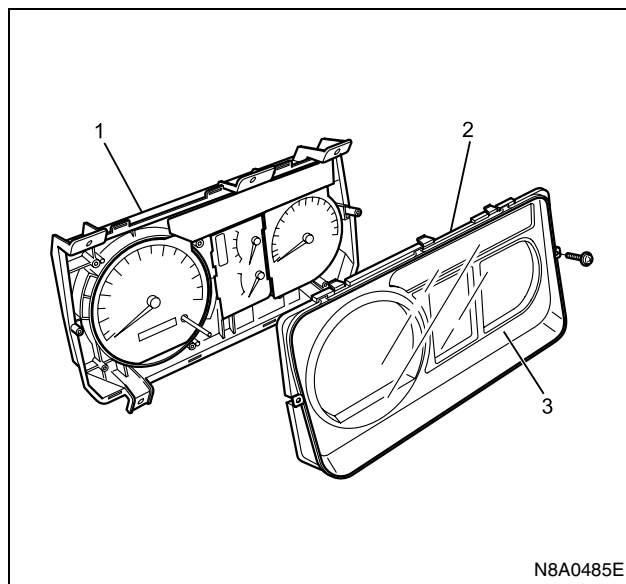


- For 4HK1-TC
- 1. Remove the meter assembly (1).

Notice:

Coolant temperature gauge and fuel gauge cannot be removed as a single unit since they are integrated into the meter assembly.

- Refer to "Meter Assembly" in this section.
- 2. Remove the meter plate (2) and meter glass (3).
 - Remove the two installing screws on the meter surface.
 - Remove the meter plate by pushing the catches with your finger.

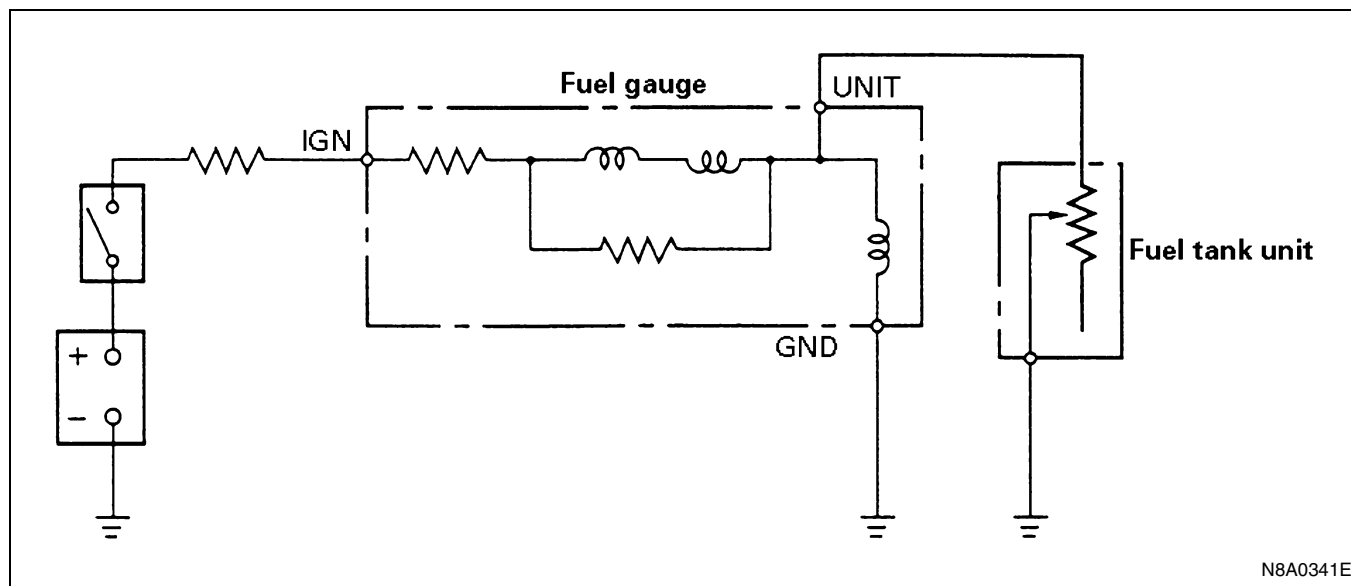


Installation

To install, follow the removal steps in the reverse order.

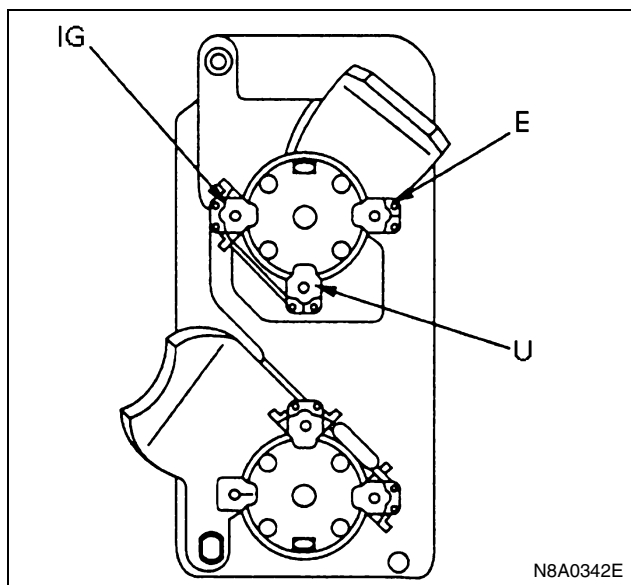
Fuel Gauge

Circuit Diagram



Inspection

Remove the fuel gauge from the meter assembly, and measure the resistance value between each terminal. Replace the meter when the result of inspection is found abnormal.



Terminal symbol	Resistance value
IG — U	108.1 $\Omega \pm 10\%$
U — E	103 $\Omega \pm 10\%$
IG — E	211.1 $\Omega \pm 10\%$

Removal and Installation

Refer to the "COOLANT TEMPERATURE GAUGE" in this section.

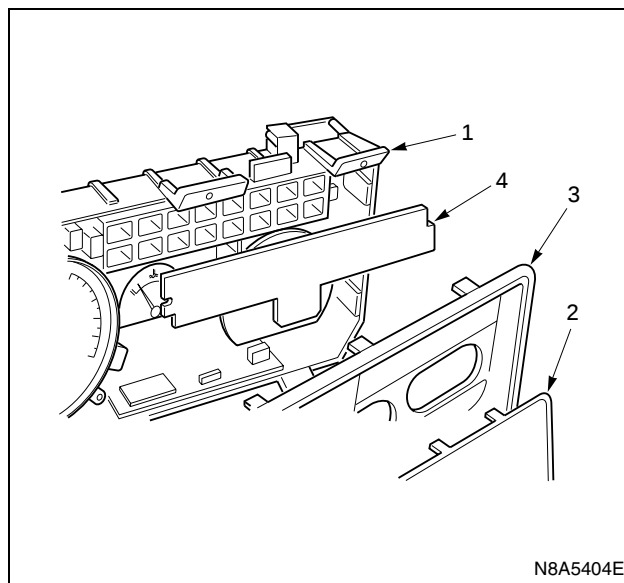
Warning Lens

Removal

Preparation:

Disconnect the battery ground cable.

1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
2. Meter Glass
Remove it by pushing the catches with your finger.
3. Meter Plate
Remove it by pushing the catches with your finger.
4. Warning Lens



Legend

1. Meter Assembly
2. Meter Glass
3. Meter Plate
4. Warning Lens

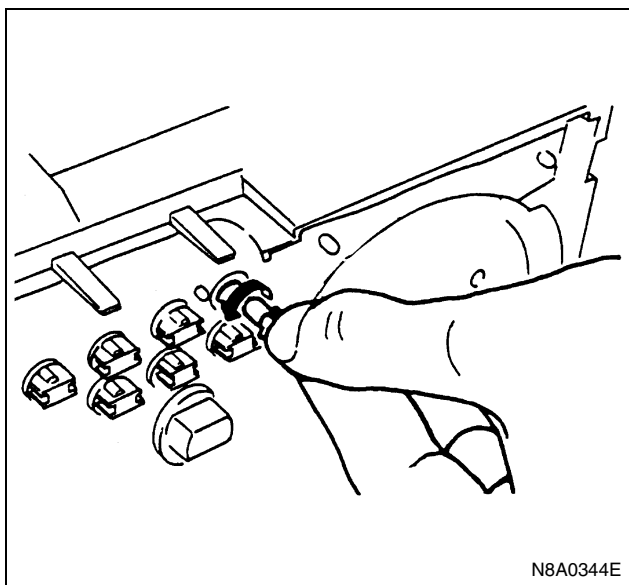
Installation

To install, follow the removal steps in the reverse order.

Warning Light Bulb, Indicator Light Bulb and Illumination Light Bulb**Removal****Preparation:**

Disconnect the battery ground cable.

1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
2. Socket and Bulb
Hold the bulb socket by hand and rotate it counter-clockwise to remove them from the meter body.
3. Bulb
Pull out the bulb from the socket.

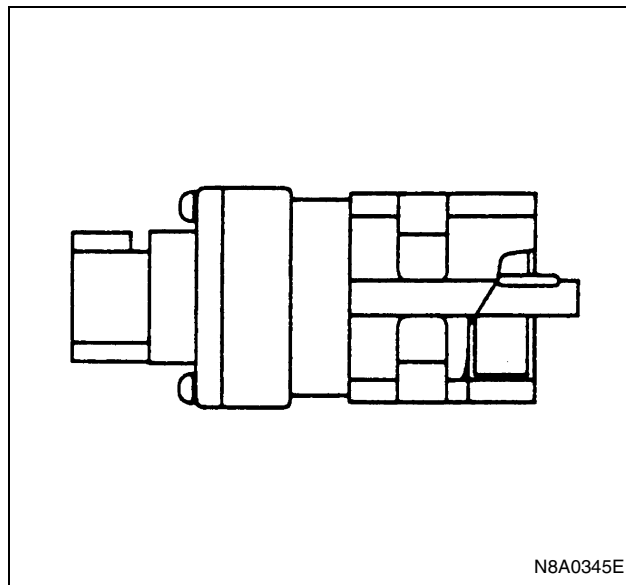
**Installation**

To install, follow the removal steps in the reverse order.

Vehicle Speed Sensor

The vehicle speed sensor is installed on the rear portion of the transmission or transfer case.

The number of pulses generated is four pulses per one rotation of the pinion shaft.

**Inspection**

1. Connect a resistance of $390 \Omega \pm 5\%$, 2W between connector terminal 1 [J-32] and battery (+) terminal and connect the connector terminal 2 [J-32] to the battery (-) terminal.

Caution:

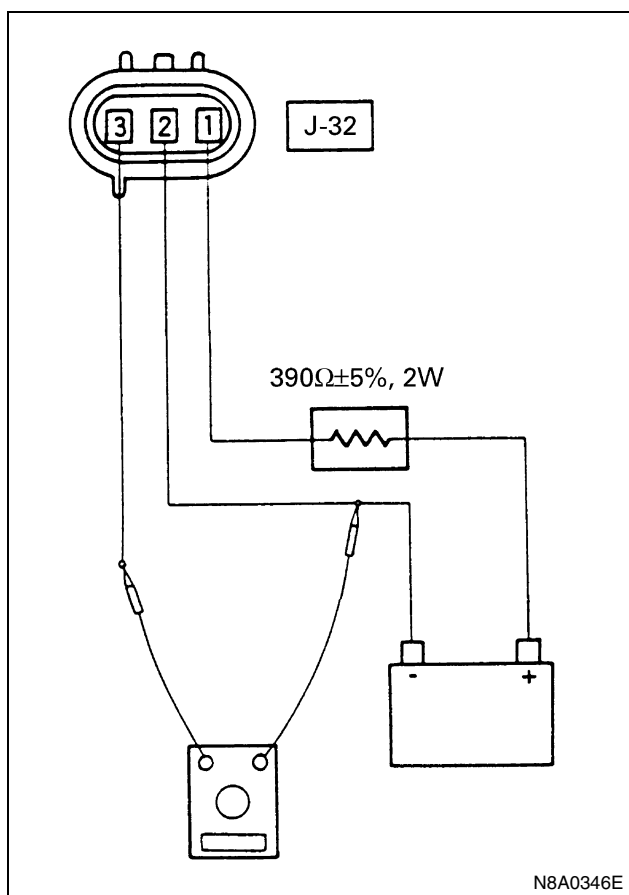
Be extremely careful not to connect the battery (+) terminal to the connector 3 [J-32].

This may damage the vehicle speed sensor.

2. Rotate the shaft of the vehicle speed sensor slowly and measure the voltage between 3 [J-32] and 2 [J-32] with a digital tester.

The voltage, with one rotation of shaft, fluctuates four times in the following range: 10 to 14V $\leftrightarrow$ 24 or less.

Replace the sensor when the result of inspection is found abnormal.

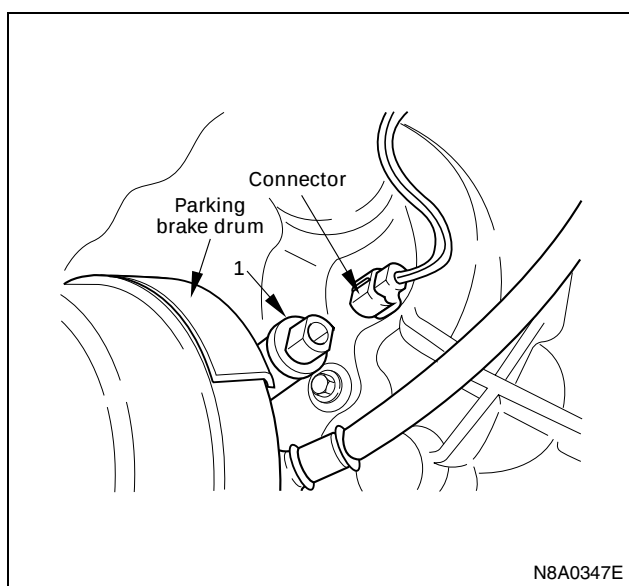


Removal

Preparation:

Disconnect the battery ground cable.

1. Vehicle Speed Sensor
Disconnect the connector.



Installation

1. Tighten the vehicle speed sensor to the specified torque.

Tighten:

Vehicle speed sensor to 25 N·m (2.5 kg·m/18 lb·ft)

Caution:

Tightening must be made at the hexagonal part of the sensor.

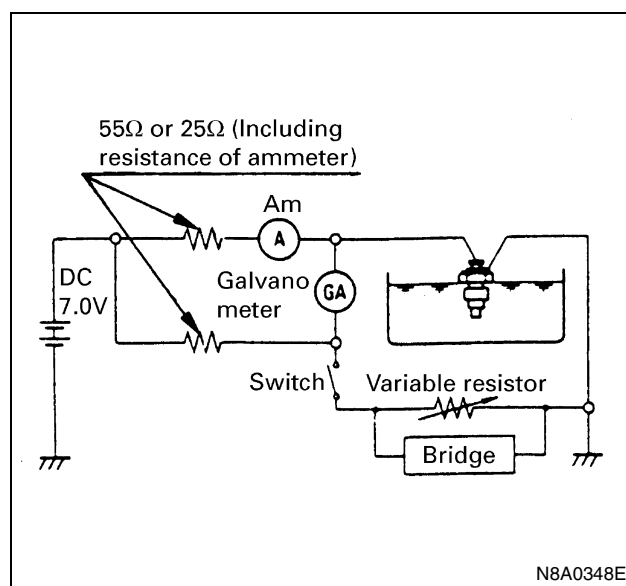
To tighten the connector itself would cause damage.

Thermo Unit

Inspection

The thermo unit is thermistor type and must be inspected under the conditions as shown below.

1. Put the deviation of the galvanometer to 0 by using the variable resistor, switch the thermo unit off and then measure the resistance of the resistor through the bridge.
Confirm that the resistance is continuously variable in any other points than those shown below.
2. Dip the thermo unit into 80 — 90°C (176 — 194°F) water and confirm that there is no bubble continuously coming out of inside of the unit.
Replace the unit when the result of inspection is found abnormal.

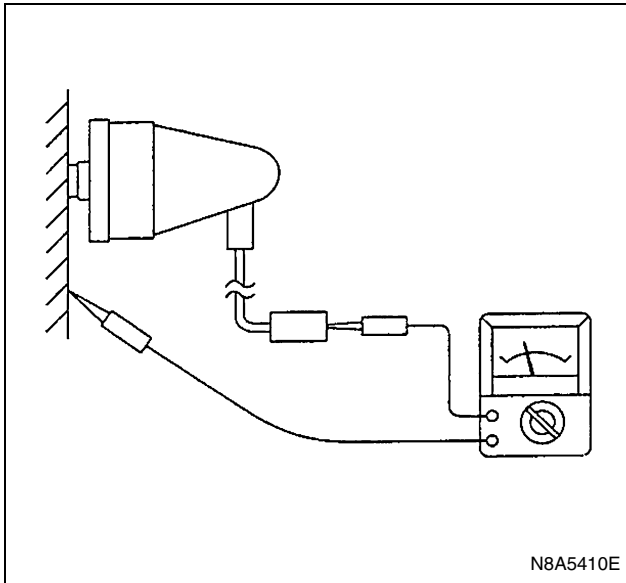


Check condition		Temperature	
		50°C (112°F)	115°C (239°F)
7 V 55 Ω Gauge	Resis- tance value (Ω)	+33.6 -33.6 226.0	+1.71 -2.21 26.4
7 V 25 Ω Gauge		—	+2.68 -3.68 24.3

Oil Pressure Switch

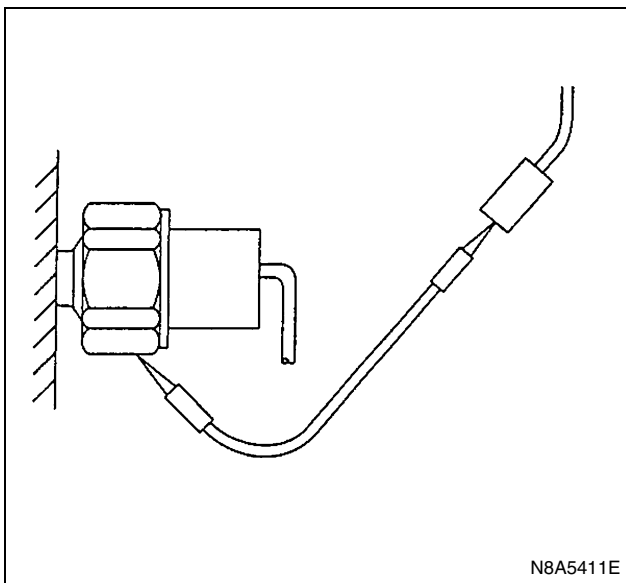
Inspection

Check the continuity between the switch terminal and the body ground with the starter switch is OFF position. Replace the switch when the result of inspection is found abnormal.



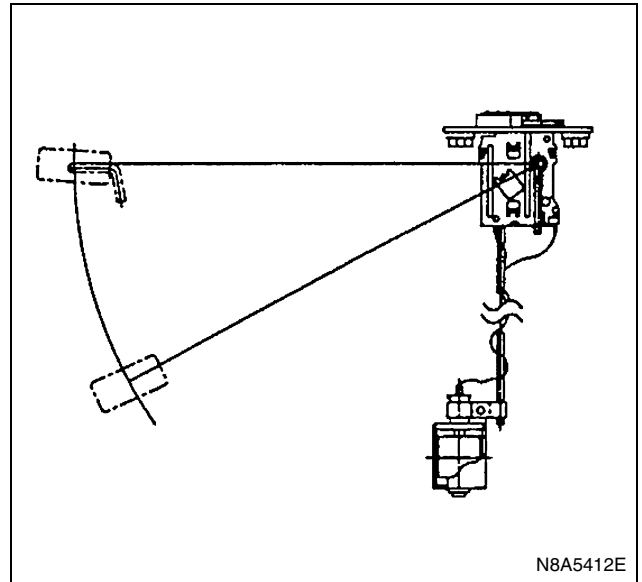
Circuit Inspection

1. Start the engine.
2. When disconnecting the oil pressure switch connector then connecting the harness side connector to the ground, check to see if the oil pressure warning light lights up. When the light will not light up, check the circuit between the meter and the oil pressure switch, and repair an open circuit if necessary.



Fuel Tank Unit

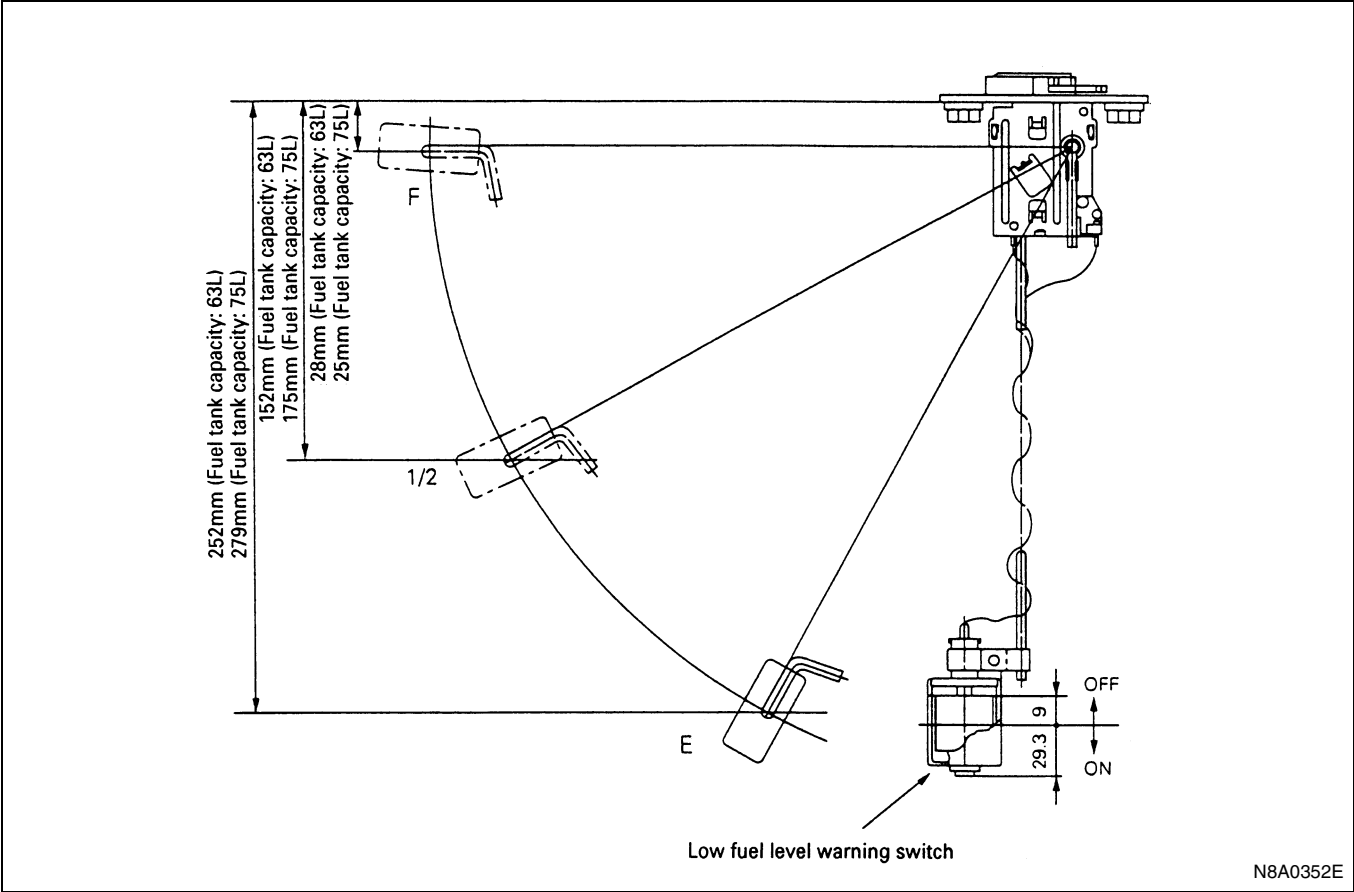
The tank unit varies the internal resistance according to the float position (fluid level) to operate the fuel meter needle. Also available is the build-in switch type to warn the driver of low fuel level (about 5 liters left in the tank) by illuminating the fuel warning light.



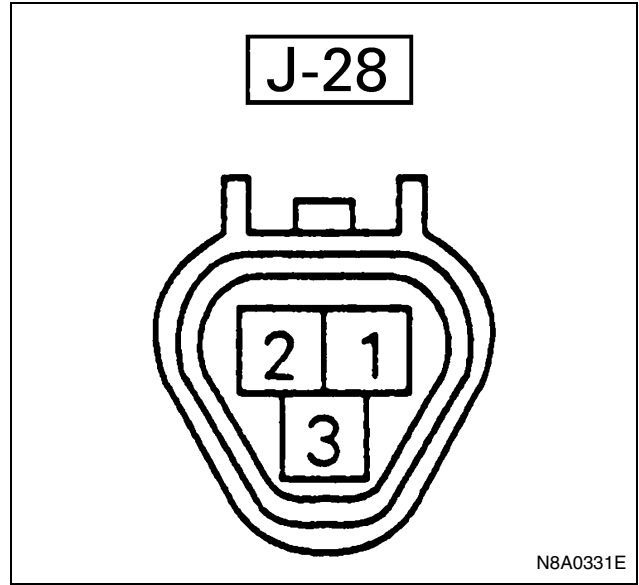
Inspection

(Level Switch type of warn low fuel level)

1. Check the resistance between the connector terminals 1 J-28 and 3 J-28 while shifting the float from "E" to "F" point.
2. Check if the low fuel warning switch turns on and off at the specified positions. If found defective, replace the fuel tank unit.



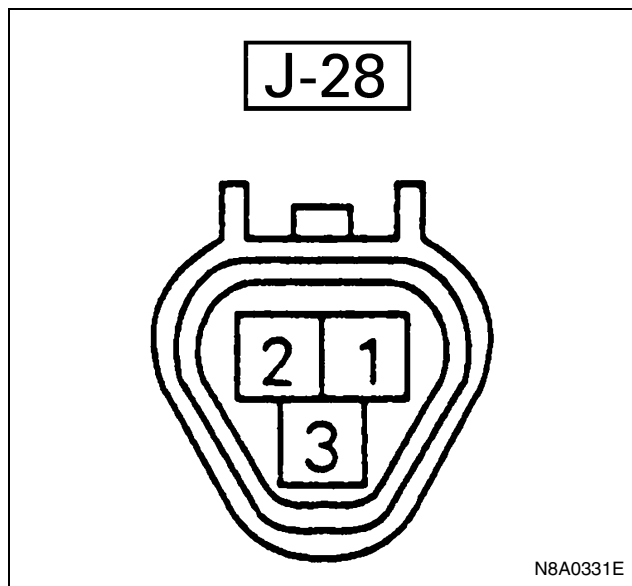
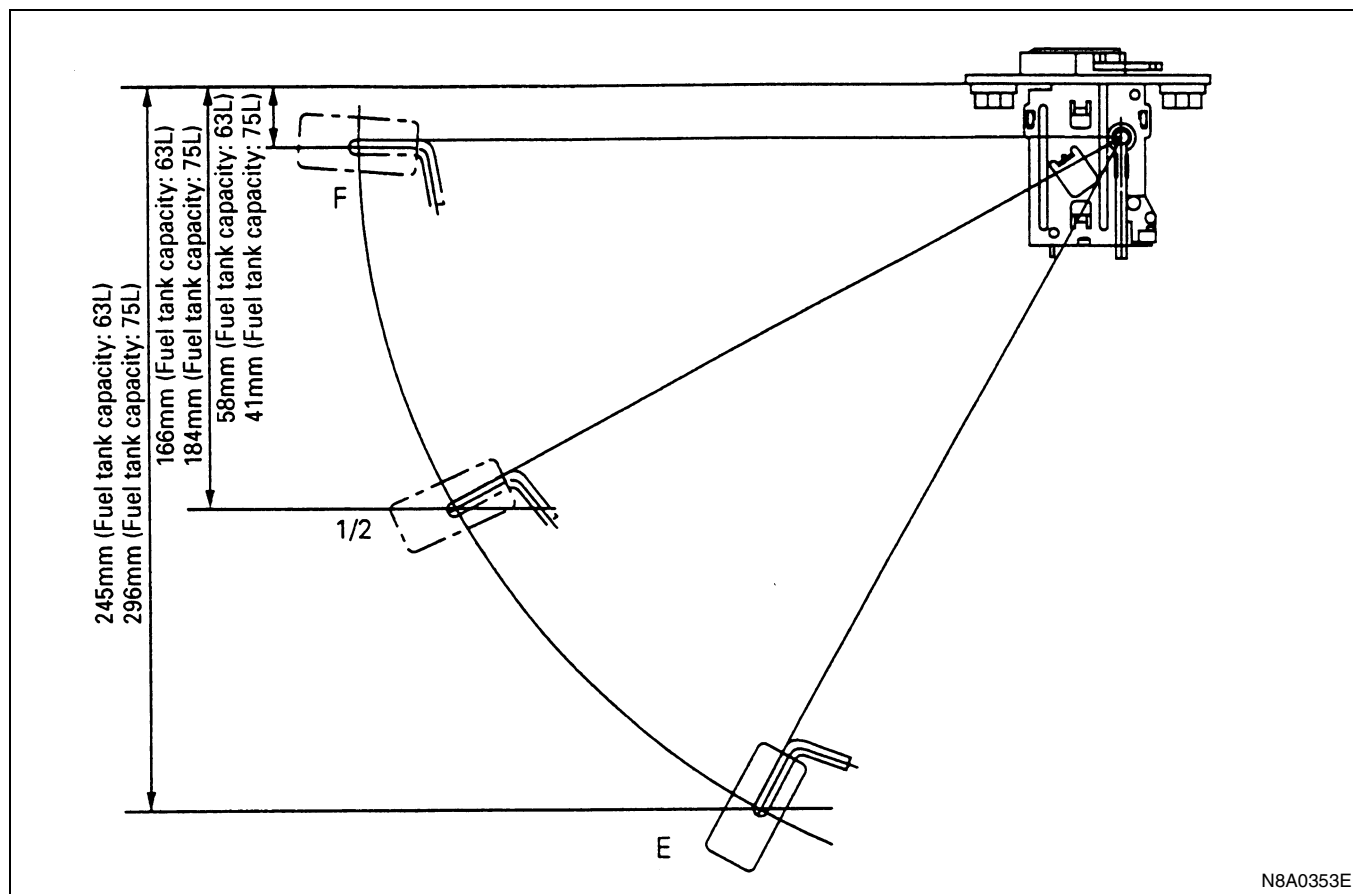
2. Check if the low fuel warning light turns on when the float is at "E" position. If found defective replace the fuel tank unit.



Float position	Resistance value (Ω)
F	3 ± 2.1
1/2	32.5 ± 4.8
E	110 ± 7.7

(Float type of warn low fuel level)

1. Check the resistance between the connector terminals 1 **J-28** and 3 **J-28** while shifting the float from "E" to "F" point.



Float position	Resistance value (Ω)
F	3 ± 2.1
1/2	32.5 ± 4.8
E	110 ± 7.7

Removal

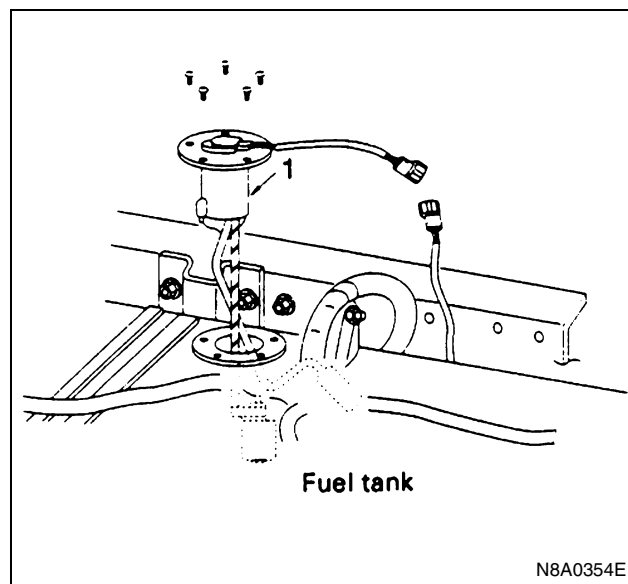
Preparation:

Disconnect the battery ground cable.

1. Fuel Tank Unit

- 1) Disconnect the connector.

- 2) Remove five screws.



Installation

To install, follow the removal steps in the reverse order.

Engine Speed Sensor

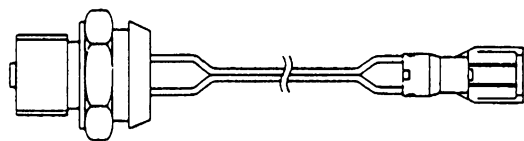
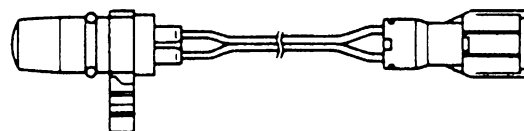
Inspection

Measure the resistance value between the engine speed sensor connector terminals.

Replace the engine speed sensor when the result of inspection is found abnormal.

4J Series engine = $1.36 - 1.86 \text{ K}\Omega$

4H Series engine = $0.57 - 0.86 \text{ K}\Omega$

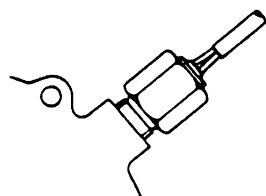
4J Series engine**4H Series engine**

N8A0355E

Removal**Preparation:**

Disconnect the battery ground cable.

1. Engine Speed Sensor
 - 1) Disconnect the connector.
 - 2) Remove the engine speed sensor.

4H Series engine

Timing gear case

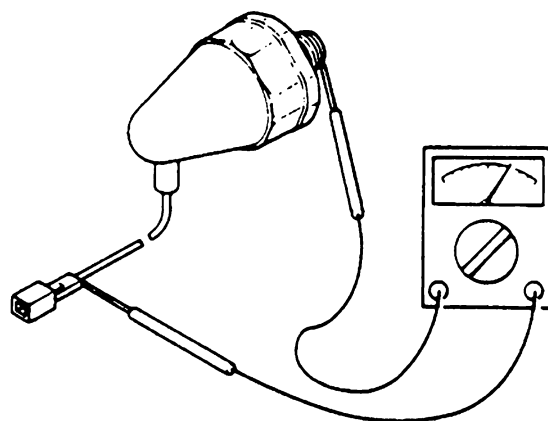
N8A0356E

Installation

To install, follow the removal steps in the reverse order.

Vacuum Switch**Inspection**

When the pressure value is below 250 ± 30 mm Hg (33.3 ± 4.0 kPa), check to see if there is continuity between the terminal and the ground. If no continuity, replace the switch with a normal one.



N8A0357E

Removal**Preparation:**

Disconnect the battery ground cable.

1. Vacuum Switch
 - 1) Disconnect the connector.
 - 2) Remove the vacuum switch.

Installation

Apply liquid gasket to the screw portion of the switch to prevent vacuum leak.

Vacuum Warning Buzzer**Inspection**

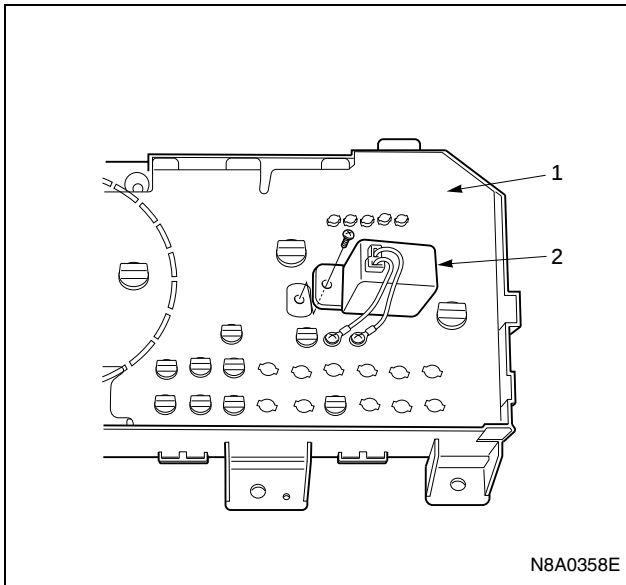
Apply battery voltage to the buzzer connector terminals to check the buzzer sound.

Replace the buzzer when the result of inspection is found abnormal.

Removal**Preparation:**

Disconnect the battery ground cable.

1. Meter Assembly
Refer to "METER ASSEMBLY" in this section.
2. Vacuum Warning Buzzer
 - 1) Disconnect the connector.
 - 2) Remove the buzzer fixing screw.

**Legend**

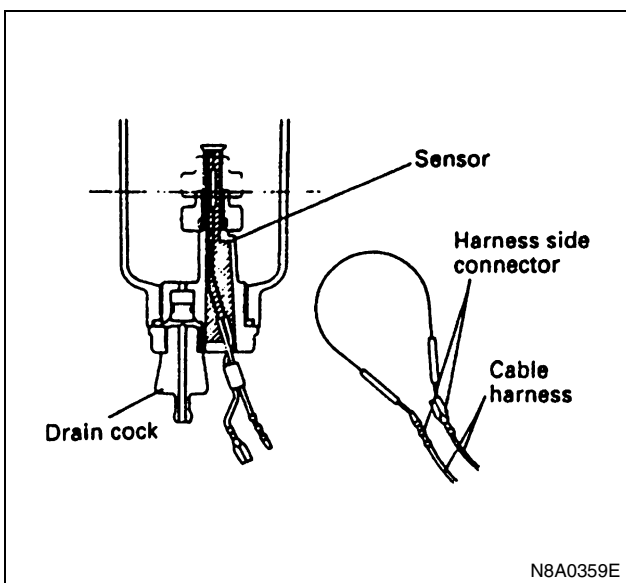
1. Meter Assembly
2. Vacuum Warning Buzzer

Installation

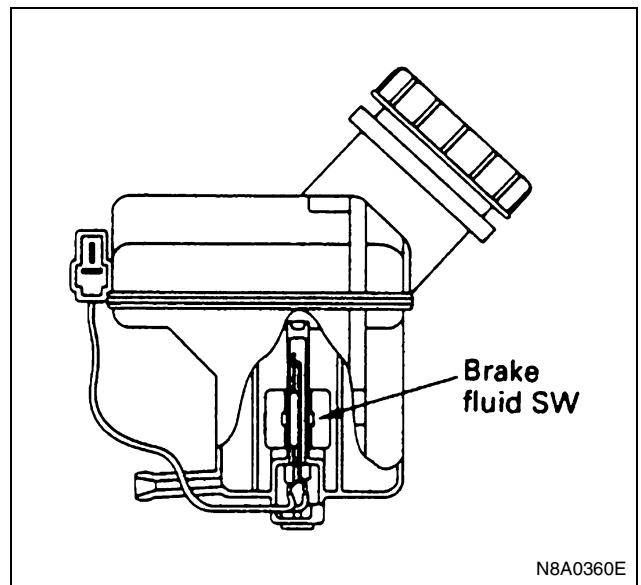
To install, follow the removal steps in the reverse order.

Water Sedimenter Switch**Inspection**

1. When the float in the water sedimenter is above the drain warning level, confirm if there is continuity between the switch connector terminals.
2. Turn the starter switch on, disconnect the water sedimenter connector and connect the harness side connector terminals. Then confirm that the sedimenter warning light turns on.
If found defective, replace the switch or repair a poor connection or an open circuit between the connector terminals.

**Brake Fluid Switch****Inspection**

1. Confirm there is continuity between the switch connector terminals when the brake fluid in the tank is between 60 — 75 cc level.
2. Turn the switch on, disconnect the brake fluid switch connector and connect the harness side connector terminals. Then confirm that brake warning light turns on.
If found defective, replace the tank, or repair a poor connection or an open circuit between the connector terminals.

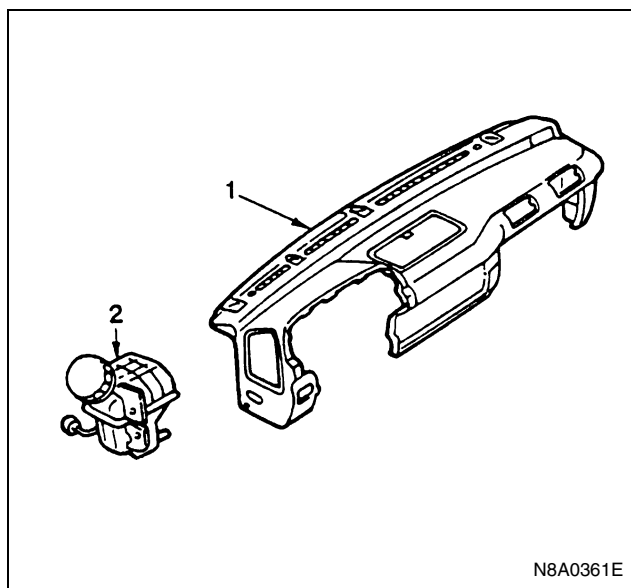
**Removal****Preparation:**

Disconnect the battery ground cable.

1. Instrument Panel Assembly
Refer to "INSTRUMENT PANEL" of section 2.
2. Brake Fluid Tank (Brake Fluid Switch)
 - 1) Disconnect the switch connector.
 - 2) Remove four fixing nuts.
 - 3) Drain brake fluid in the tank.
 - 4) Disconnect the tubes.

Caution:

Be very careful not to allow the brake fluid to come in contact with painted surfaces or resin parts surfaces.



Installation

To install, follow the removal steps in the reverse order, noting the following points.

1. Bleed the air from brake and clutch fluid pipe line.
2. Check to see if the brake fluid level in the tank with-in specified level.
3. Check to see if brake warning light comes on when starter switch is turned on and then warning light goes off after the engine running.

Parking Brake Indicator Light

The parking brake indicator light is connected in series with the parking brake switch installed to the parking brake lever bracket.

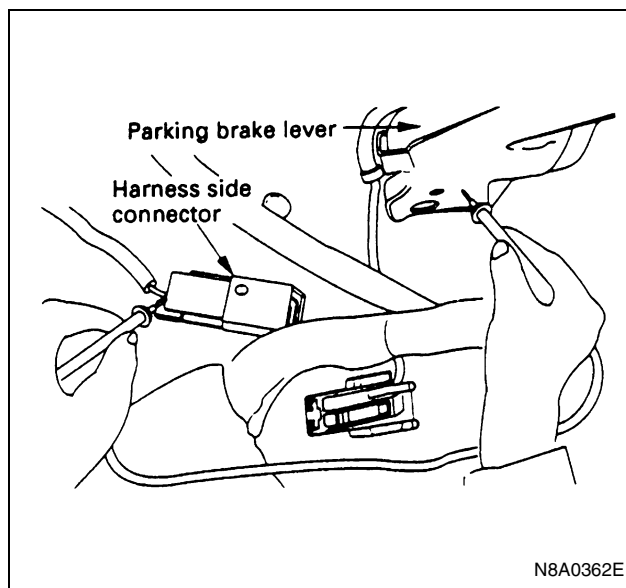
The light comes on when the parking brake lever is pulled, and goes out when the parking brake lever is fully released.

Notice:

The parking brake indicator light illuminates to warn the driver that the parking brake is on. This light does not indicate the condition of the operability of the parking brake.

Circuit Inspection

1. Disconnect the parking brake switch connector.
2. Connect the harness side connector terminal to the ground.
3. Check to see if the indicator light comes on with the starter switch "ON".
Check the bulb or the harness when the result of inspection is found abnormal.



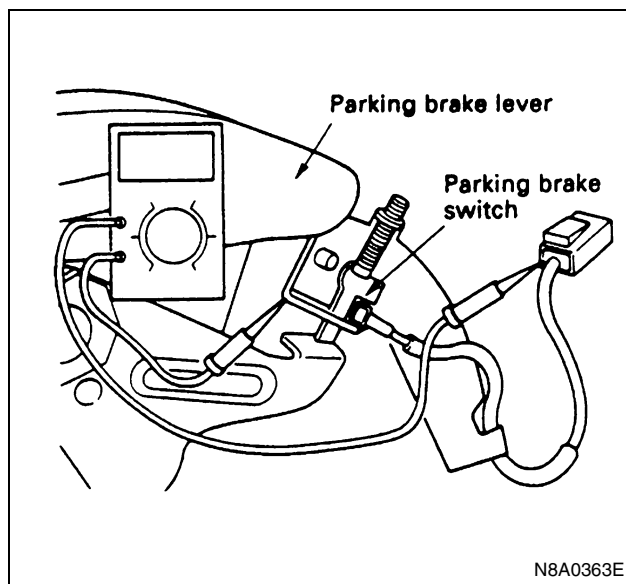
Parking Brake Switch

Inspection

1. Disconnect the parking brake switch connector.
2. Check to see if there is any continuity between the switch terminal and the body ground with the circuit tester connected between them.

When parking brake applied	Continuity
When parking brake released	No continuity

Repair the parking brake switch or replace it when the result of inspection is found abnormal.

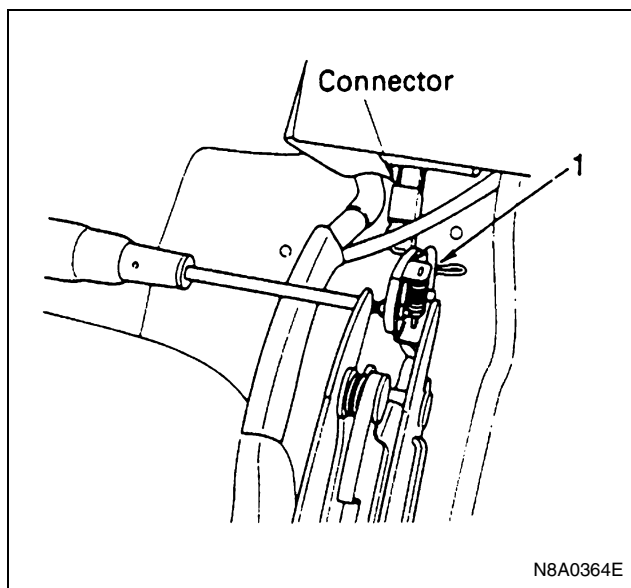


Removal

Preparation:

Disconnect the battery ground cable.

1. Parking Brake Switch
 - 1) Disconnect the connector.
 - 2) Remove the fixing screw.



Installation

To install, follow the removal steps in the reverse order.

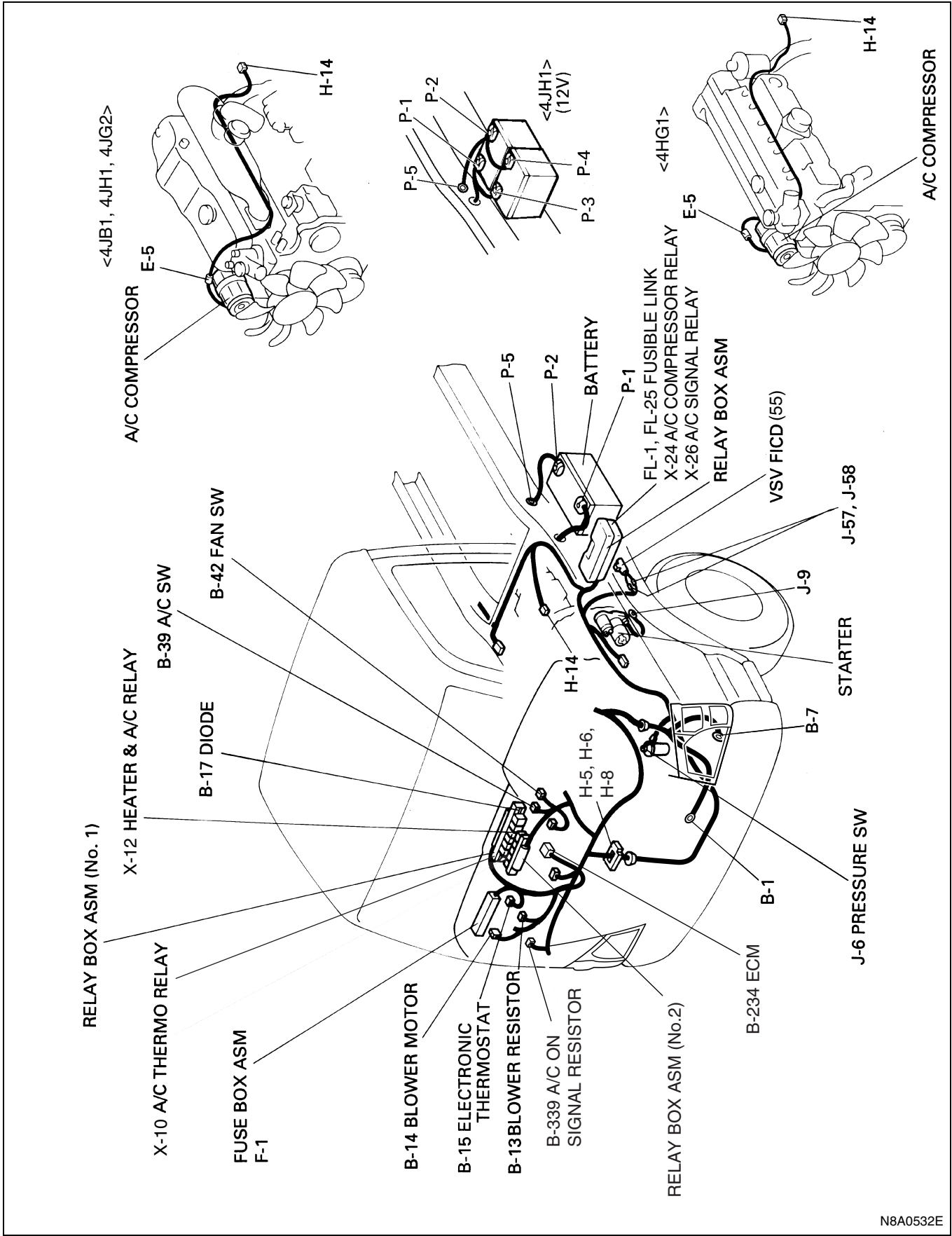
Heater and Air Conditioning

General Description

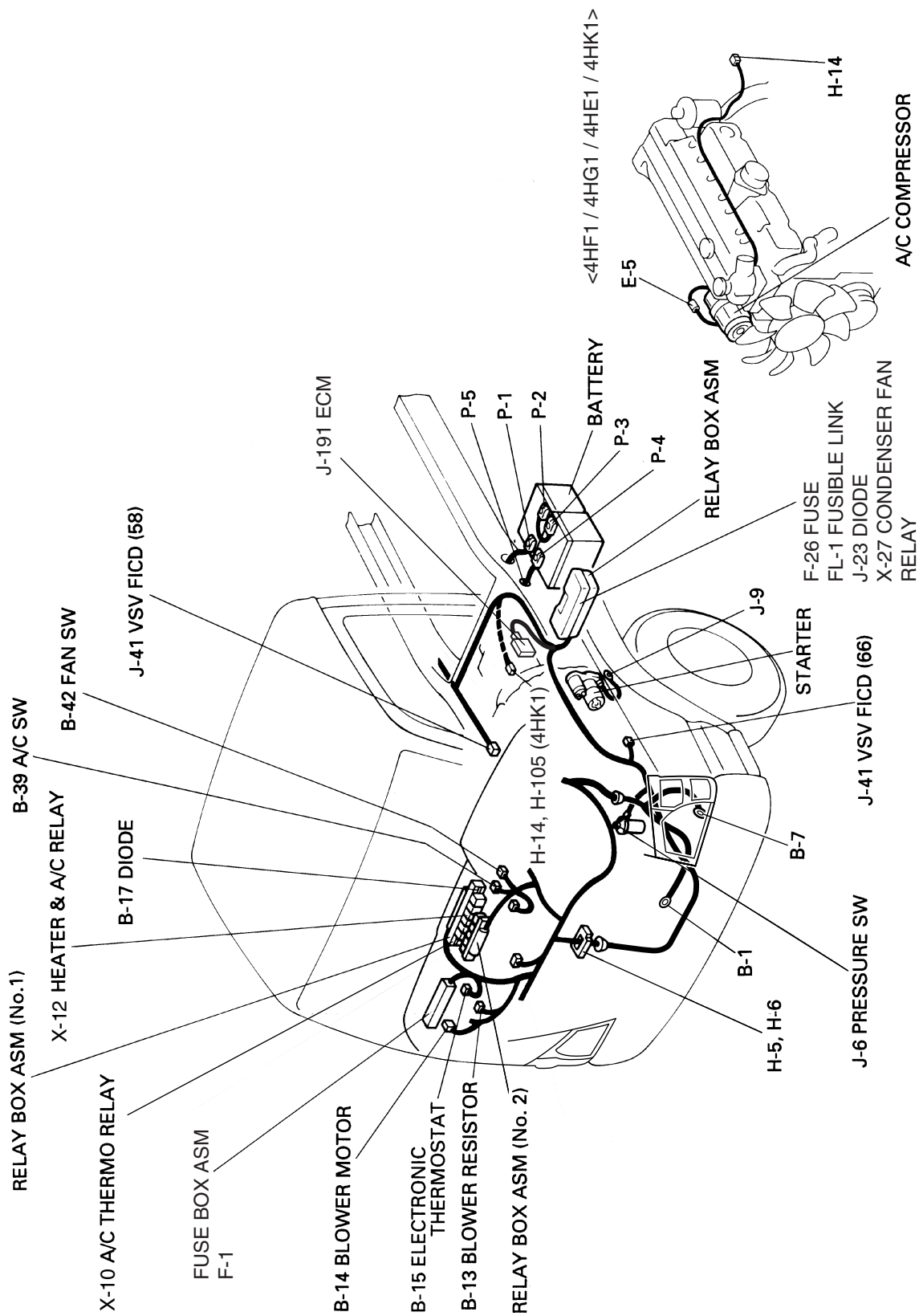
The air conditioning consists of compressor, evaporator, condenser, A/C switch, fan switch, etc. When the engine is rotating, the A/C starts to work with both the A/C and fan switches "ON", followed by the engagement of the magnetic clutch. It stops to work when either the fan switch or the A/C switch turns "OFF". In addition to the switches, the A/C has the function of temporary stop of its operation by the sensing system in the A/C cycle, such as:

- sensing abnormal rise of the refrigerant pressure by means of the pressure switch.
- sensing temperature of the blowing-off air by means of the thermo switch preventing the evaporator from freezing.
- sensing the coolant temperature by the thermo switch (available for limited models only).

Parts Location
For 12 Volt

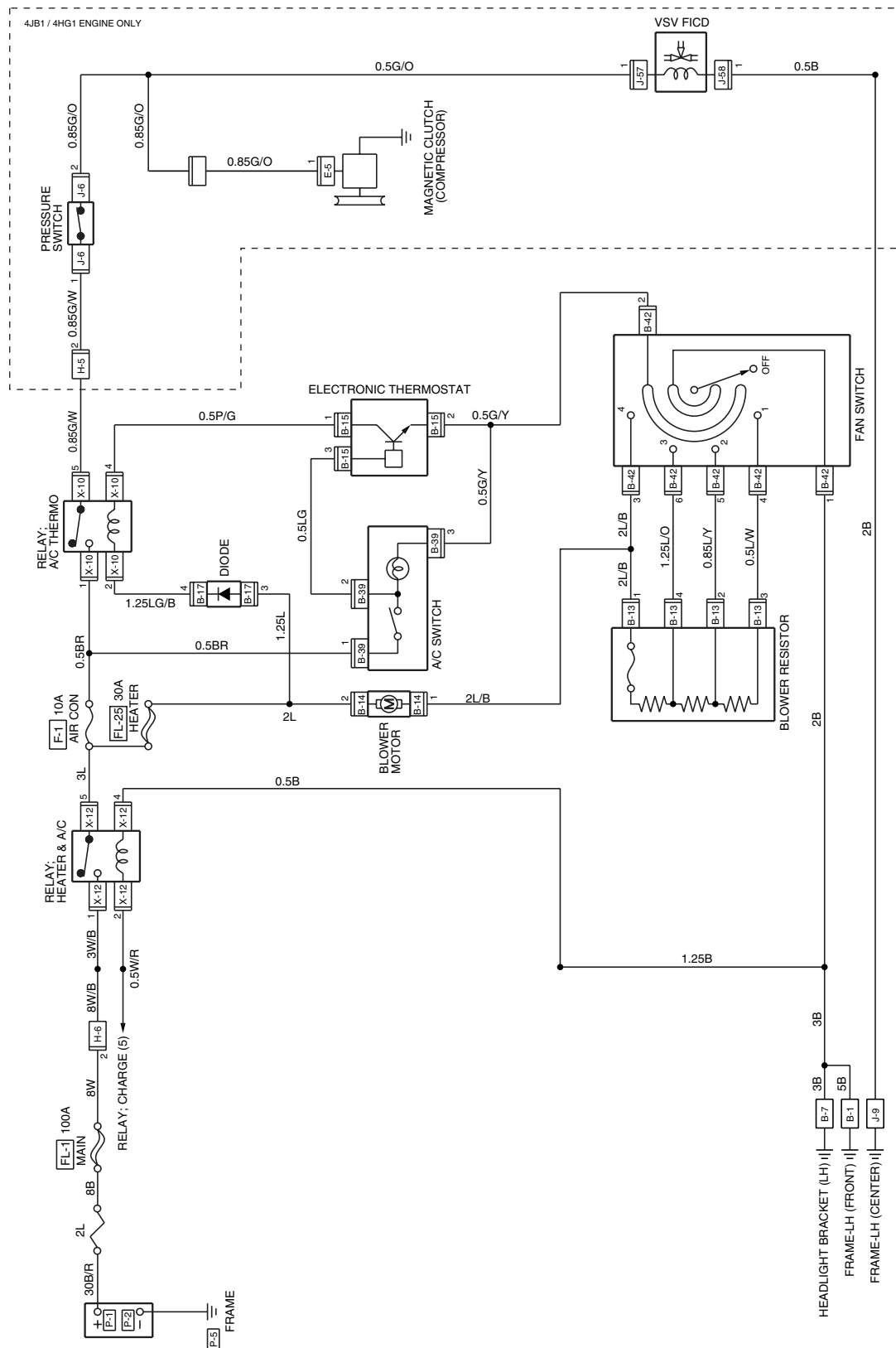


For 24 Volt

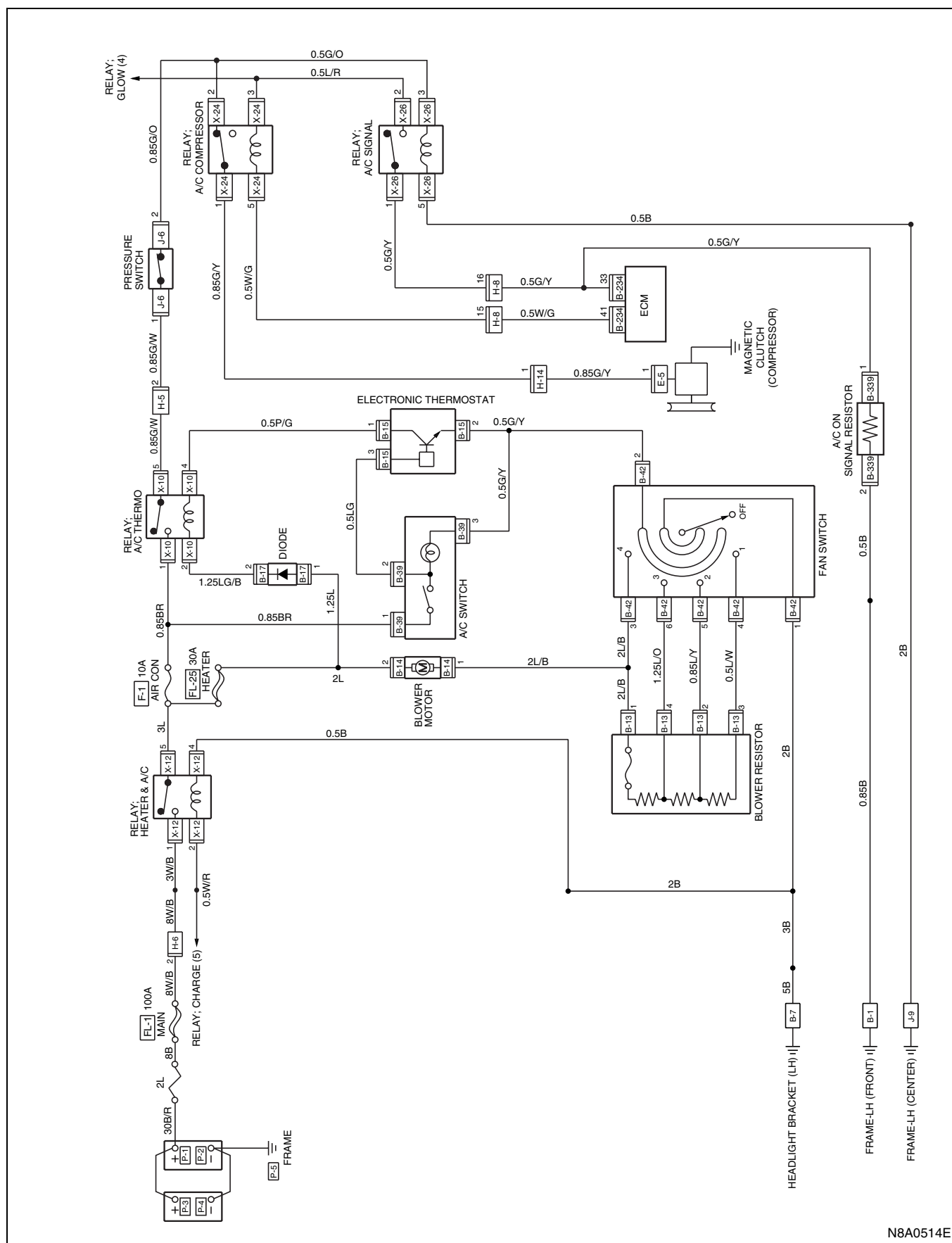


Circuit Diagram

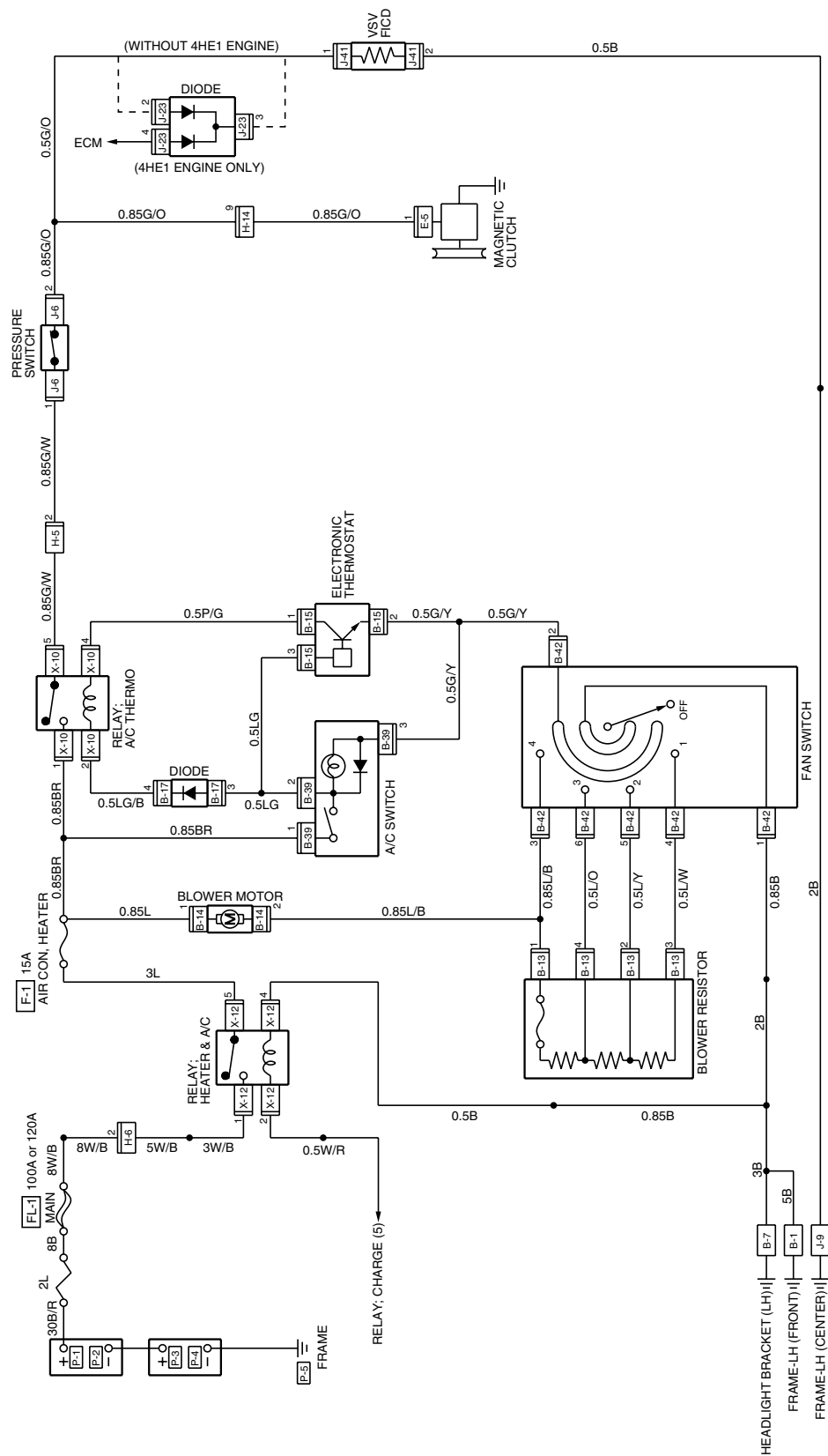
For 12 Volt - Except 4JH1



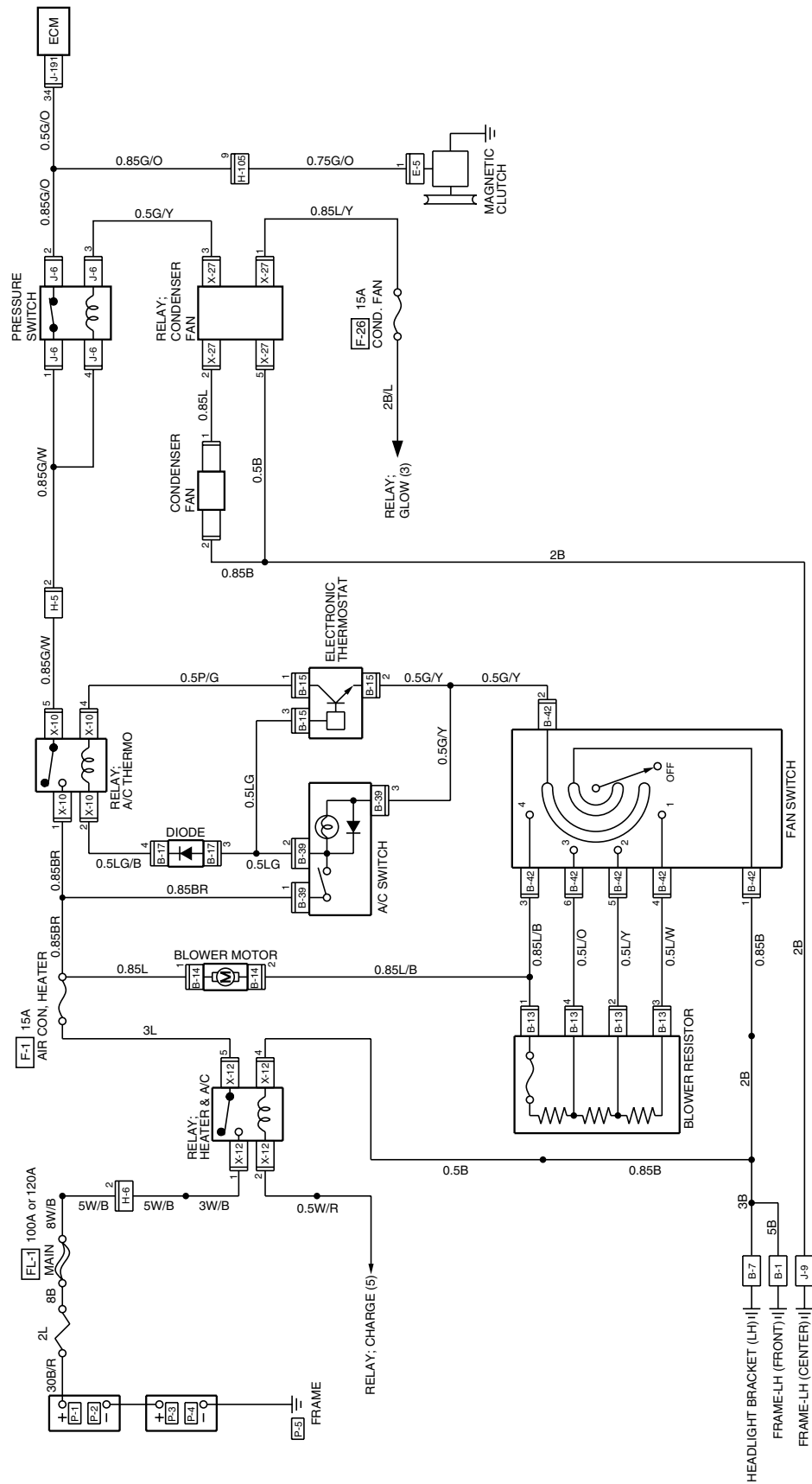
N8A0518E



For 24 Volt - Except 4HK1 Engine



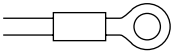
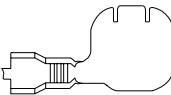
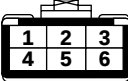
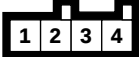
For 24 Volt - 4HK1 Engine

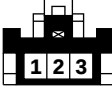
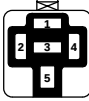
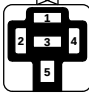
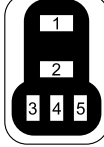
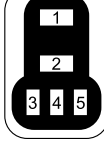
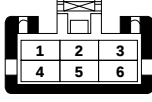
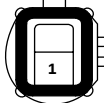


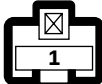
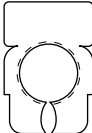
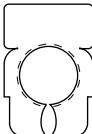
N8A0519E

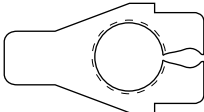
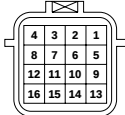
8-338 CAB AND CHASSIS ELECTRICAL

Connector List
For 12 Volt

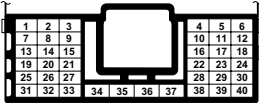
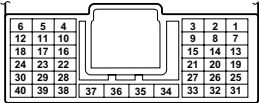
No.	Connector Face
B-1	 000-001
B-7	 000-012
B-13	 004-010
B-13 (For Tai- wan)	 006-010
B-14	 002-009
B-17	 004-004
B-234	 121-001
B-339	 004-010

No.	Connector Face
B-15	 003-009
X-12	 005-001
X-10	 005-001
X-24	 005-006
X-26	 005-006
B-39	 003-019
B-42	 006-001
E-5	 001-013

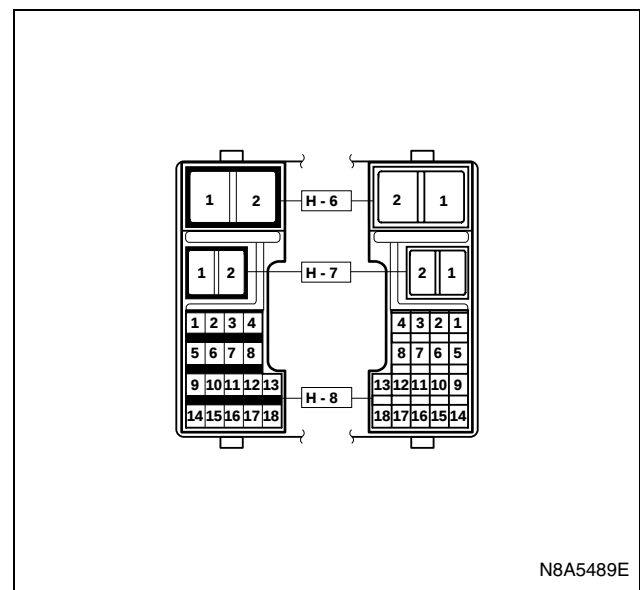
No.	Connector Face
E-5	 001-014
J-6	 004-011
J-9	 000-001
J-57	 001-009
J-58	 001-009
P-1	 000-003
P-2	 000-004
P-4	 000-004

No.	Connector Face
P-3	 000-006
P-5	 000-007
H-14	 016-001
H-14	 016-002

H-5

	
N8A5488E	

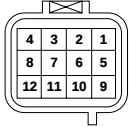
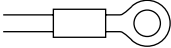
H-6

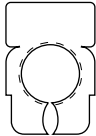
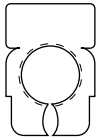
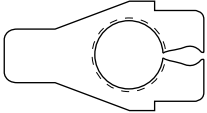
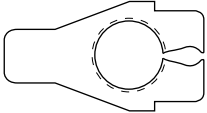
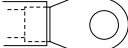


For 24 Volt

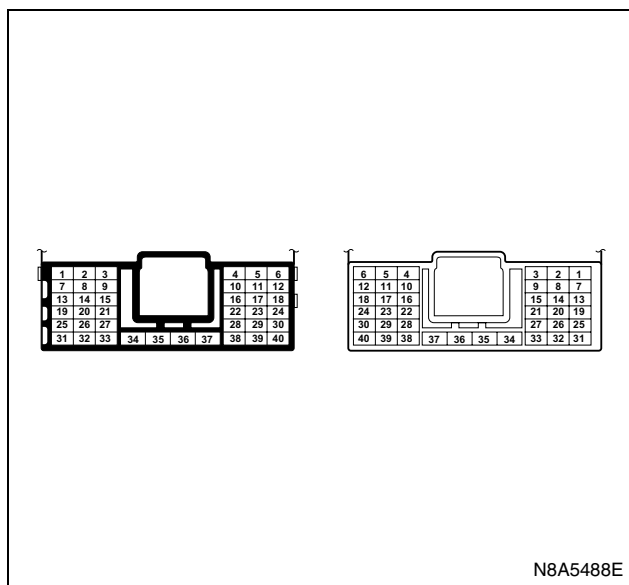
No.	Connector Face
B-1	000-001
B-7	000-012
B-13	004-010
B-14	002-009
B-17	004-004

No.	Connector Face
J-23	004-004
J-191	081-001
B-15	003-009
X-12	005-001
X-10	005-001
X-27	005-006
B-39	003-019
B-42	006-001

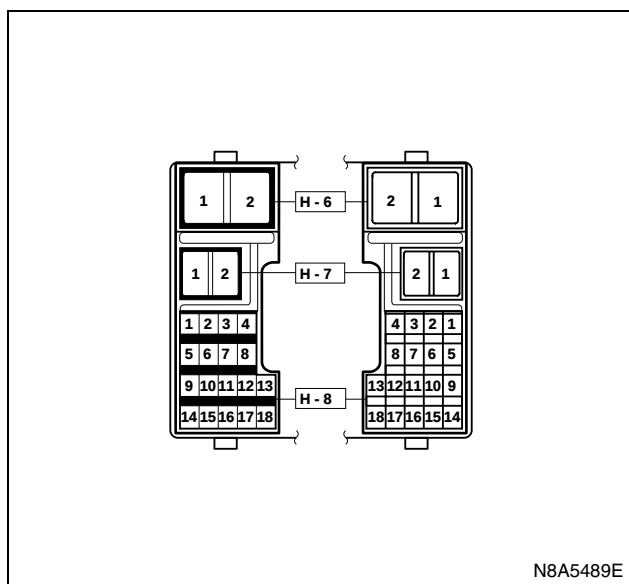
No.	Connector Face
E-5	 001-013
E-5	 001-014
H-14	 016-003
H-14	 016-004
H-105	 012-001
H-105	 012-002
J-6	 004-011
J-9	 000-001

No.	Connector Face
J-41	 002-015
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006
P-5	 000-002
J-23	 001-009

H-5



H-6



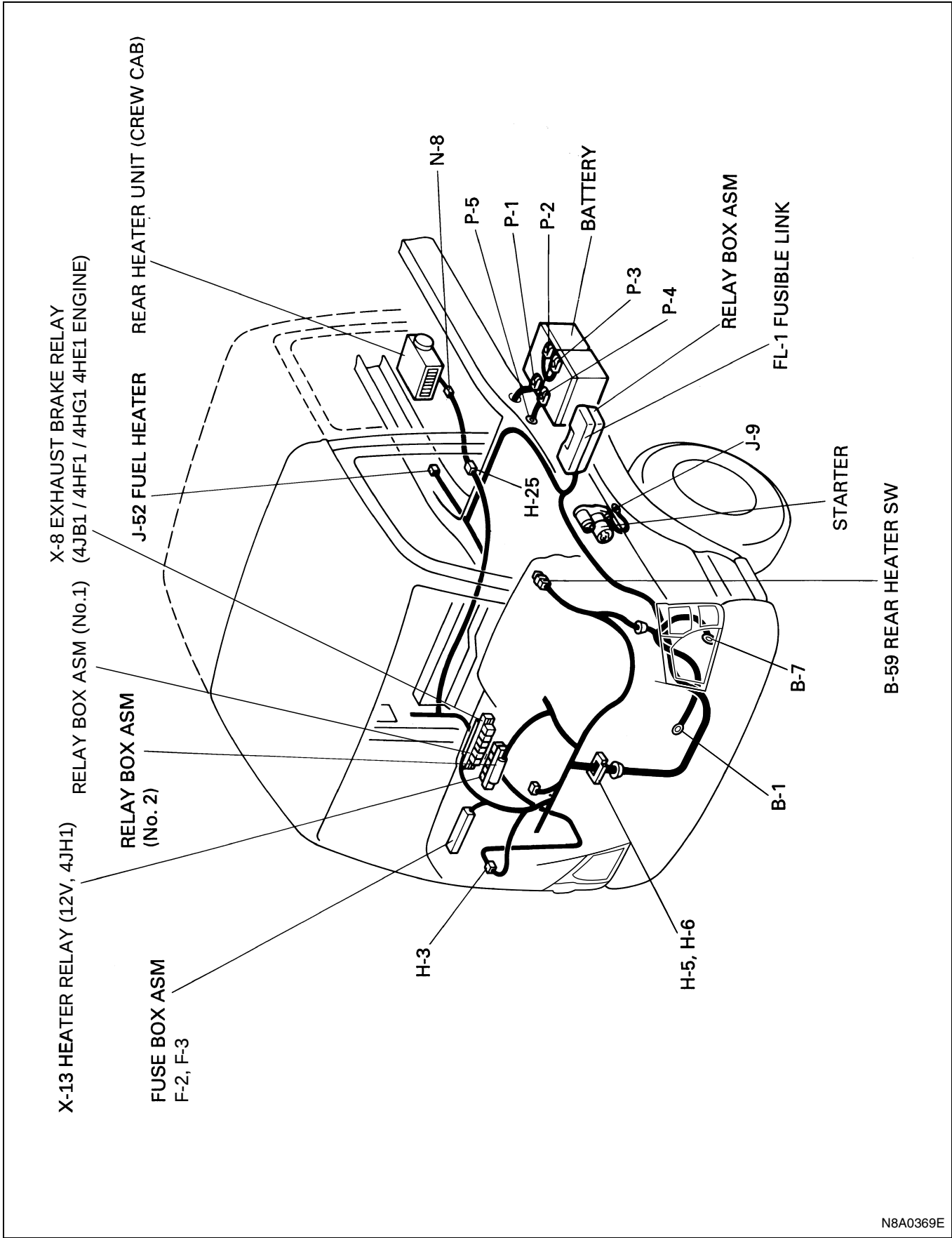
Fuel Heater and Rear Heater

General Description

The circuit consists of fuel heater, rear heater, rear heater switch and the exhaust brake relay.

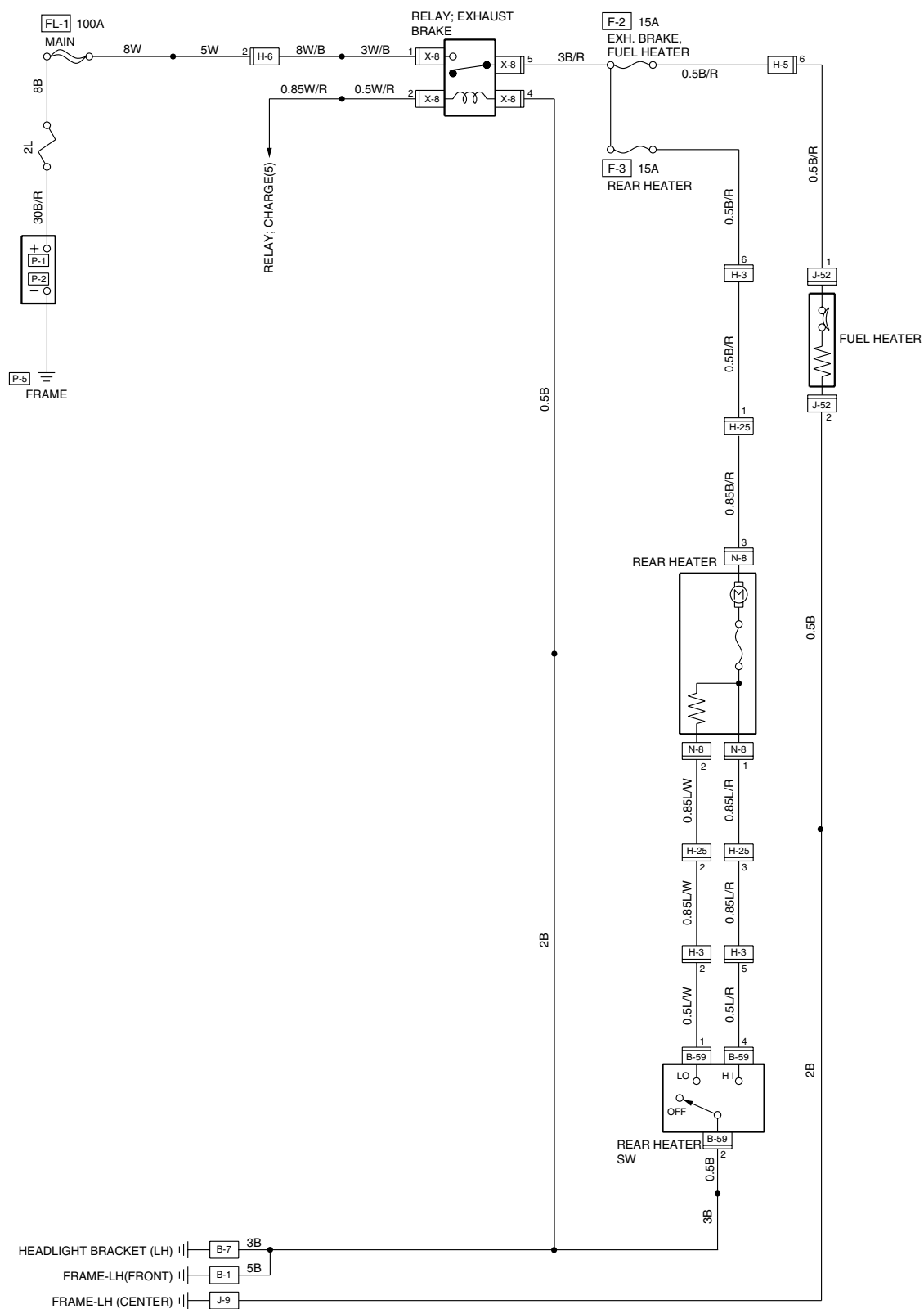
The fuel heater circuit is always in "ON" position when the generator is charging and its temperature is automatically controlled by the circuit breaker built in the fuel heater.

Parts Location

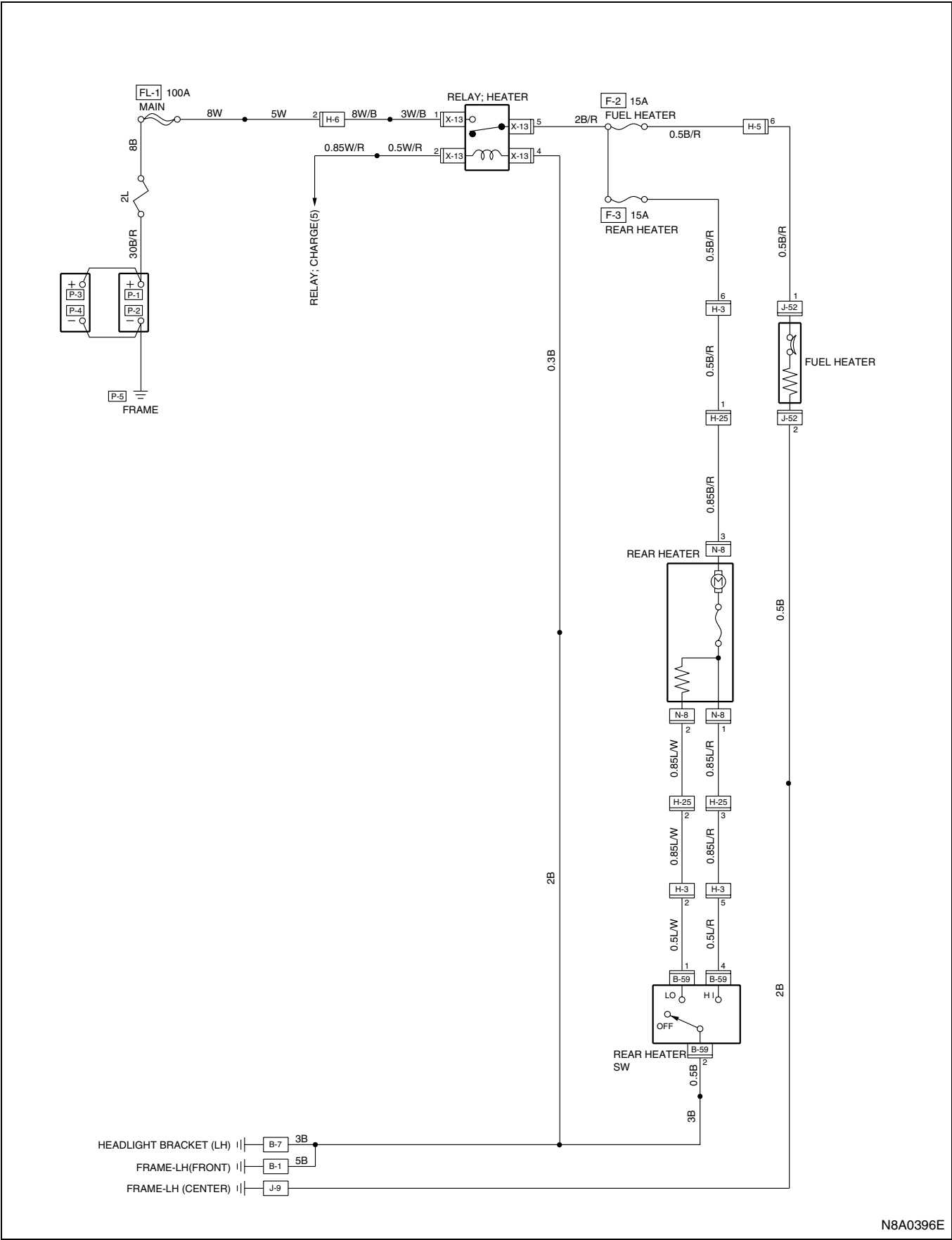


Circuit Diagram

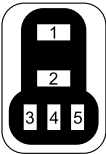
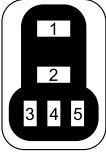
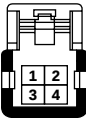
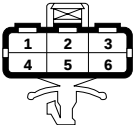
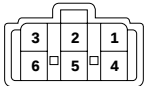
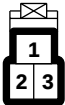
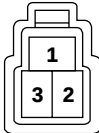
Except 4JH1 Engine

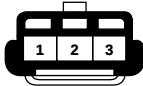
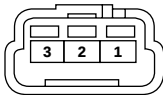
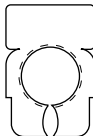
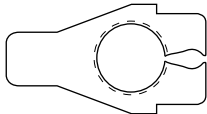


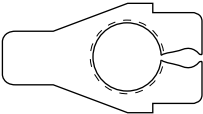
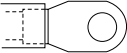
4JH1 Engine



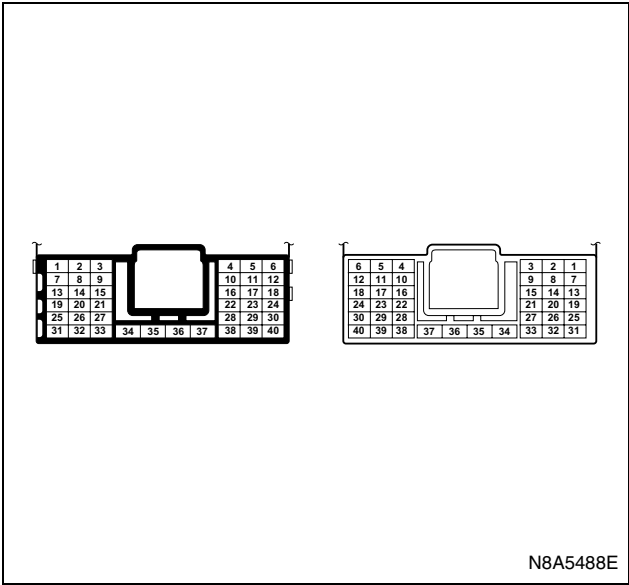
Connector List

No.	Connector Face
X-8	 005-006
X-13	 005-006
B-59	 004-015
H-3	 006-014
H-3	 006-015
H-25	 003-020
H-25	 003-021
J-52	 002-033

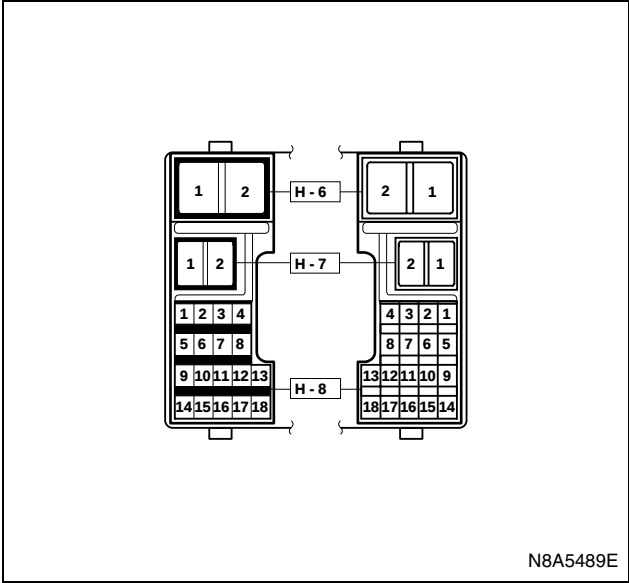
No.	Connector Face
J-52	 002-034
N-8	 003-022
N-8	 003-023
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004
P-4	 000-004
P-2 (24 V)	 000-006

No.	Connector Face
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002

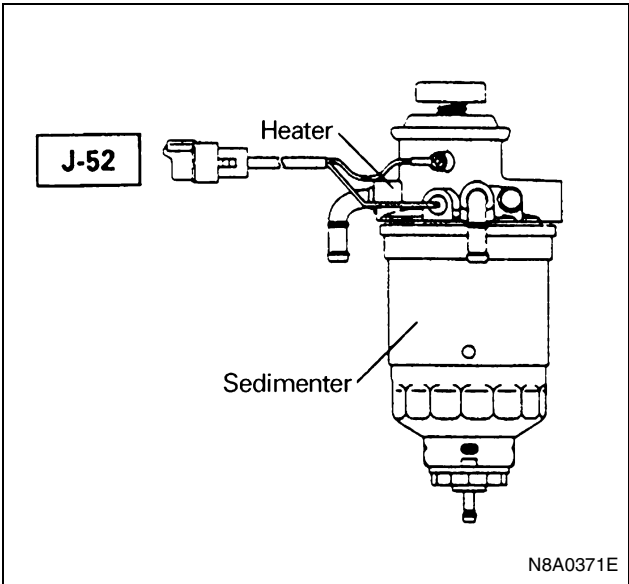
H-5



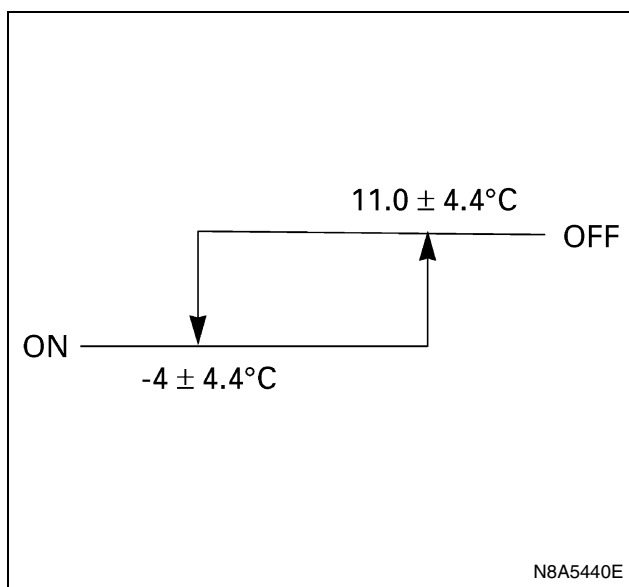
H-6



Fuel Heater

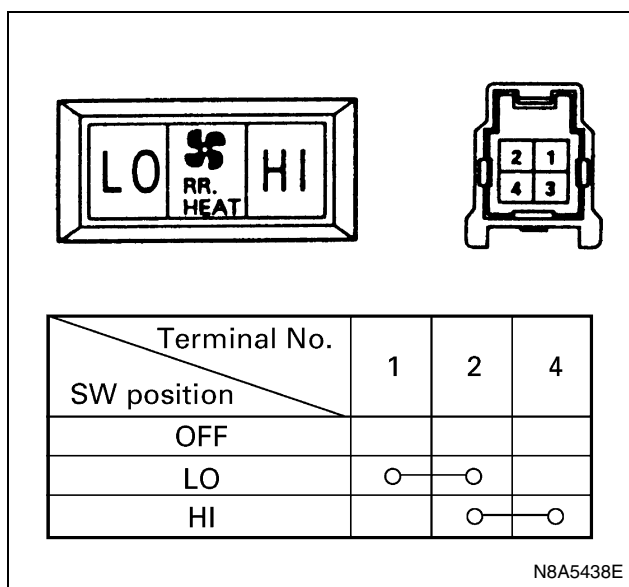


Characteristic of fuel heater

**Rear Heater Switch****Inspection**

Check the continuity between the connector terminals while operating the switch.

Replace the switch when the result of inspection is found abnormal.

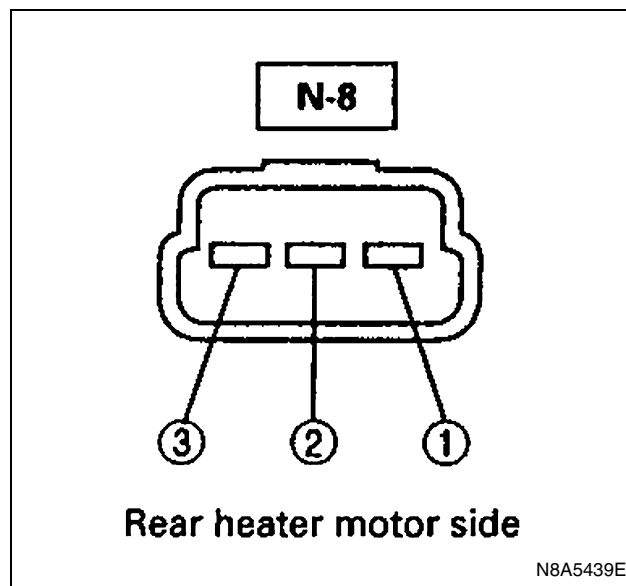
**Rear Heater Motor****Inspection**

Disconnect the rear heater connector.

Connect the battery positive terminal to the NO.3 terminal of the rear heater motor side connector and negative to the NO.2. Check to see if rear heater motor operates low-speed correctly.

Connect the battery positive terminal to the NO.3 terminal of the rear heater motor side connector and negative to the NO.1. Check to see if rear heater motor operates high-speed correctly.

Replace the rear heater motor when the result of inspection is found abnormal.

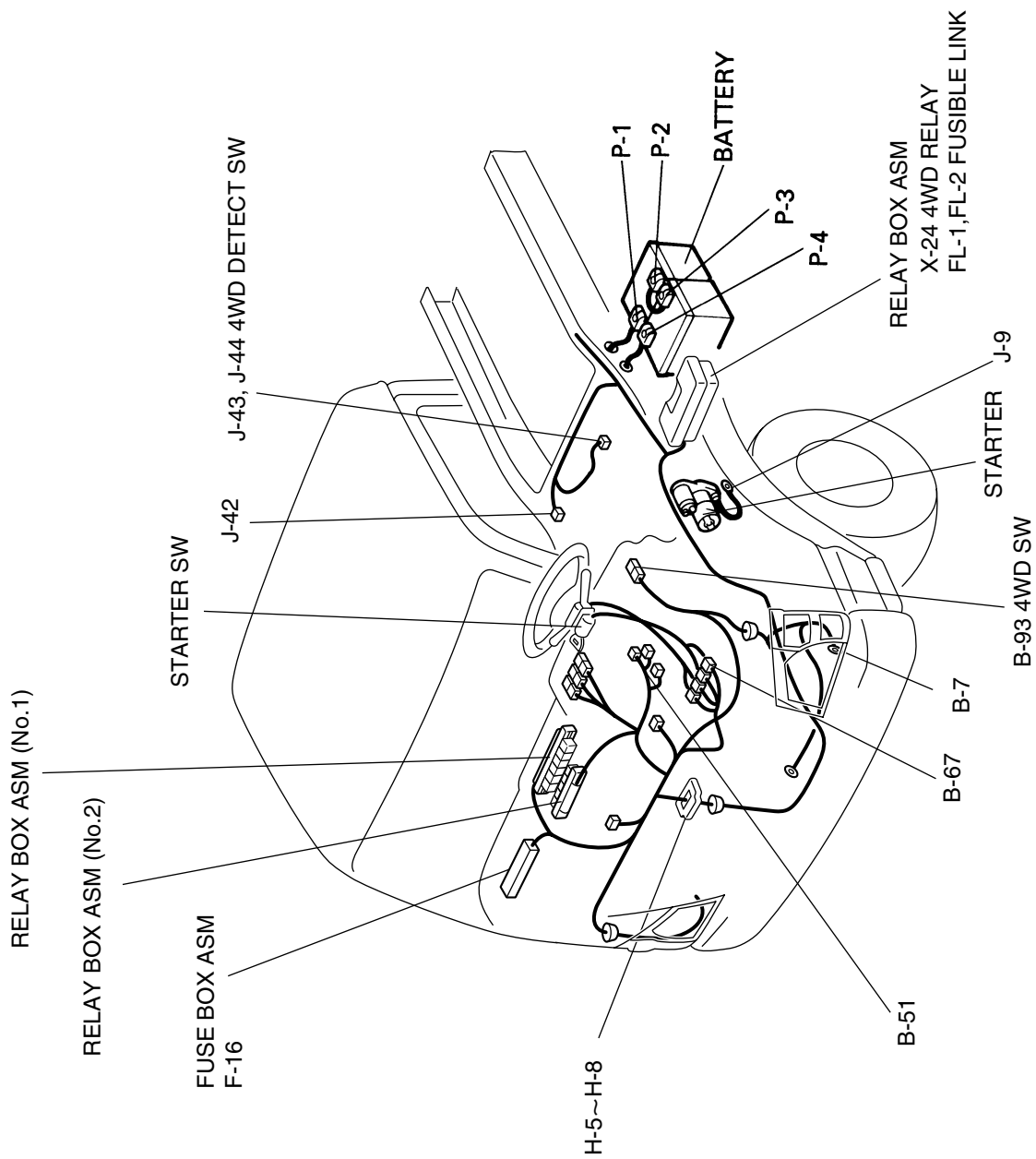
**4WD Transfer (Vacuum Control)****General Description**

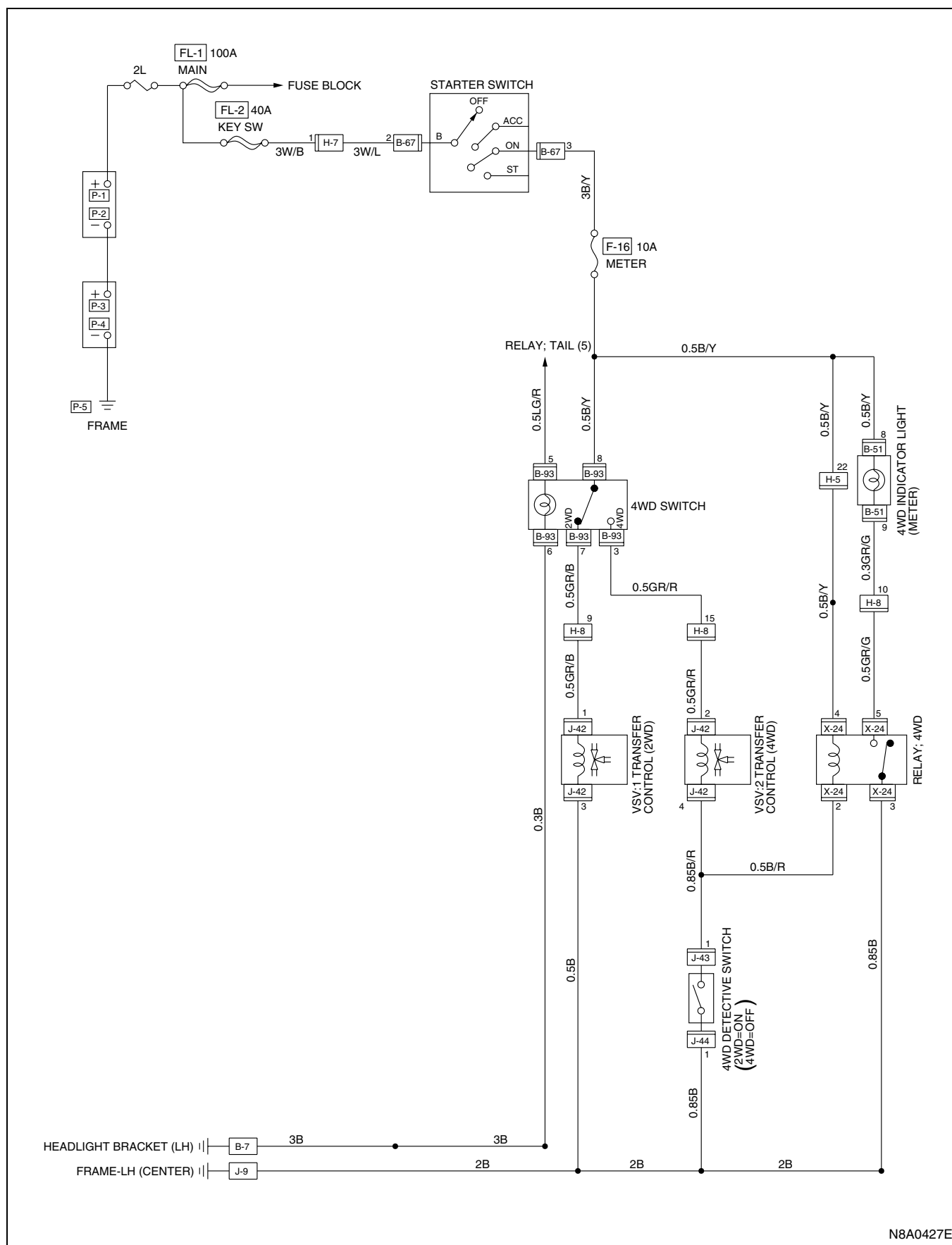
The circuit consists of the starter switch, 4WD switch, 4WD detect switch, 4L switch, vacuum switching valve, 4WD indicator light, neutral switch and the relay.

When the 4WD switch is turned on to drive in the 4WD mode, the vacuum switching valve for the transfer control is activated through the 4WD relay, and the transfer shift rod connected to the vacuum actuator is shifted to the 4WD side to turn on the 4WD detect switch. At the same time, the indicator light in the meter lights on to tell that the mode is transferred to 4WD mode.

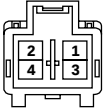
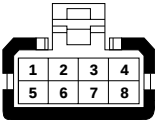
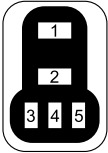
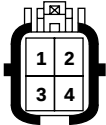
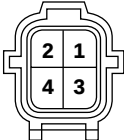
However, when running in the normal mode (2WD), the 4WD switch is not operated. Accordingly, no current flows through the 4WD vacuum switching valve for the transfer control, with the 4WD detect switch left in the "OFF" condition (2WD mode).

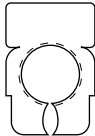
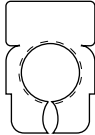
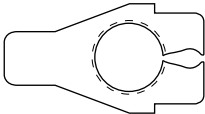
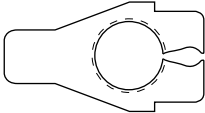
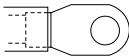
Parts Location

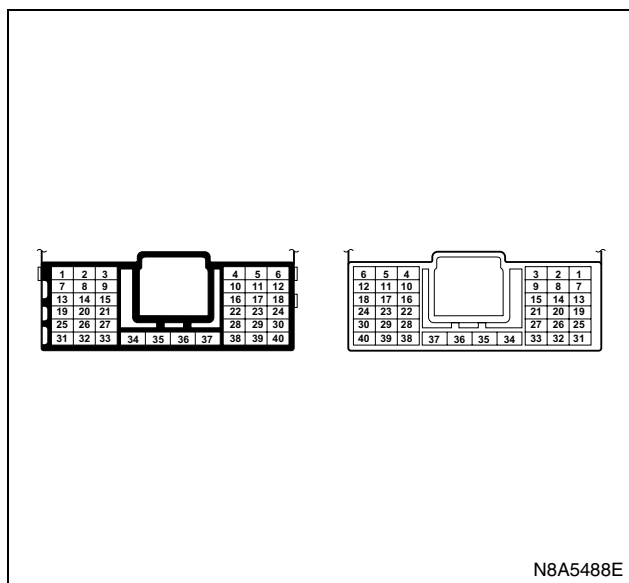
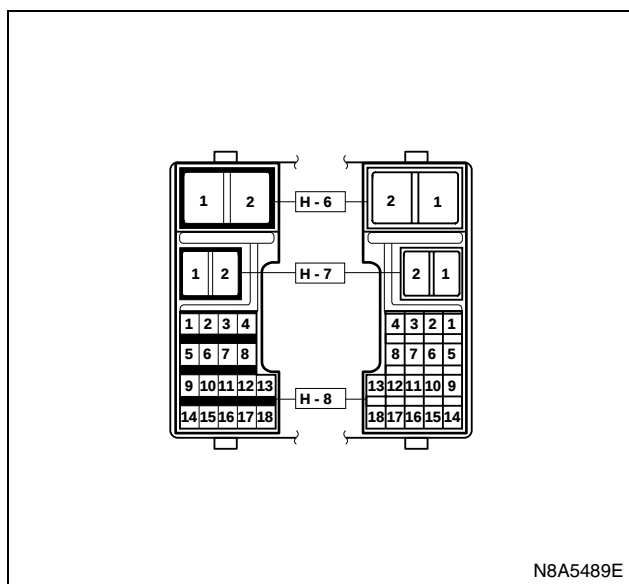




Connector List

No.	Connector Face
B-51	 014-001
B-67	 004-001
B-67	 004-002
B-93	 008-005
X-24	 005-006
J-42	 004-012
J-42	 004-013
J-43	 001-002

No.	Connector Face
J-43	 001-003
J-44	 001-002
J-44	 001-003
P-1	 000-004
P-4	 000-004
P-2	 000-006
P-3	 000-006
P-5	 000-002

H-5**H-7****Starter Switch**

Refer to "START AND CHARGING" in this section.

Neutral Switch

Refer to "START AND CHARGING" in this section.

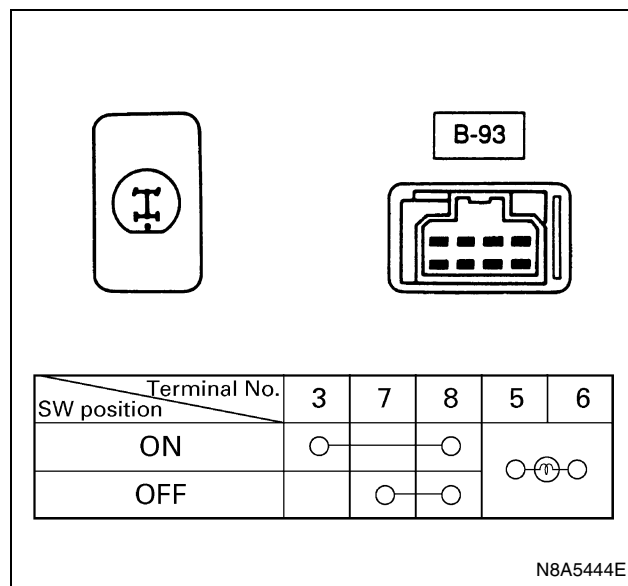
4WD Indicator Light

Refer to "METER AND WARNING/INDICATOR LIGHT" in this section.

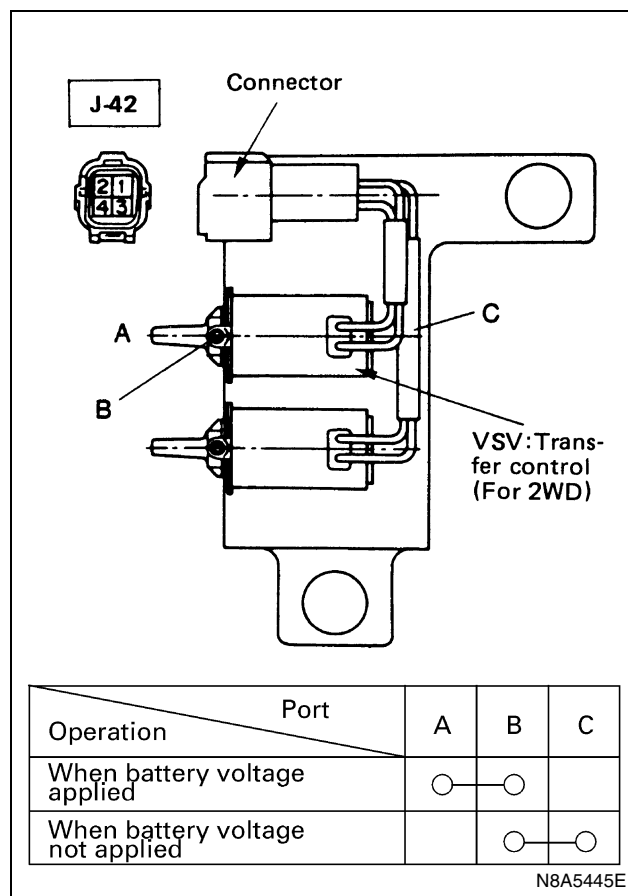
4WD Switch**Inspection**

Check the continuity between the connector terminals while operating the switch.

Replace the switch when the result of inspection is found abnormal.

**Vacuum Switching Valve: Transfer Control (for 2WD)****Inspection**

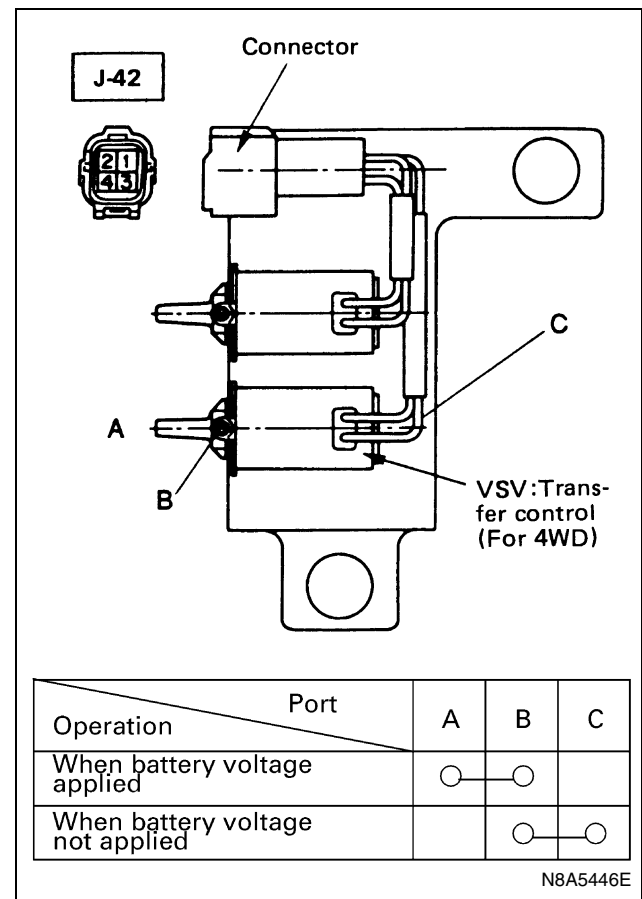
Connect the vacuum switching valve connector terminal No. 1 to the battery (+) terminal and terminal No. 3 to the (-) terminal and then check the continuity among each port.



Vacuum Switching Valve: Transfer Control (for 4WD)

Inspection

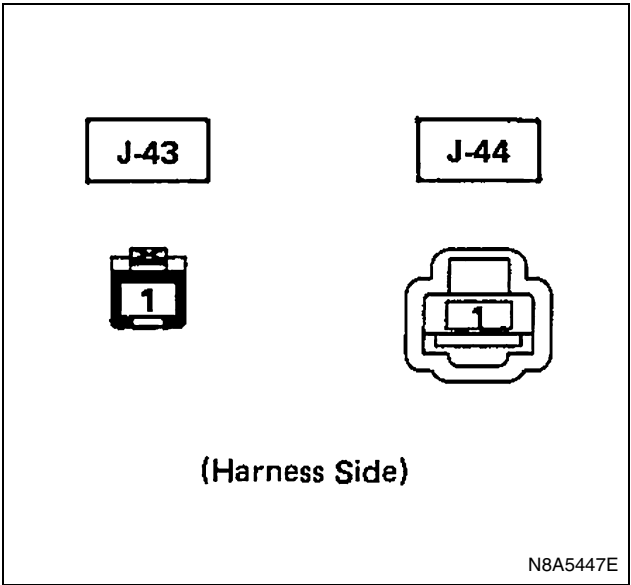
Connect the vacuum switching valve connector terminal No. 2 to the battery (+) terminal and terminal No. 4 to the (-) terminal and then check the continuity among each port.



4WD Detective Switch

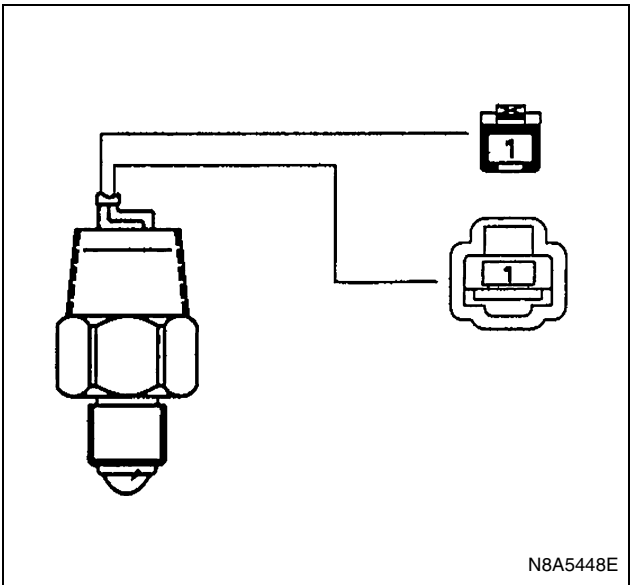
Inspection of the 4WD Warning Light Circuit

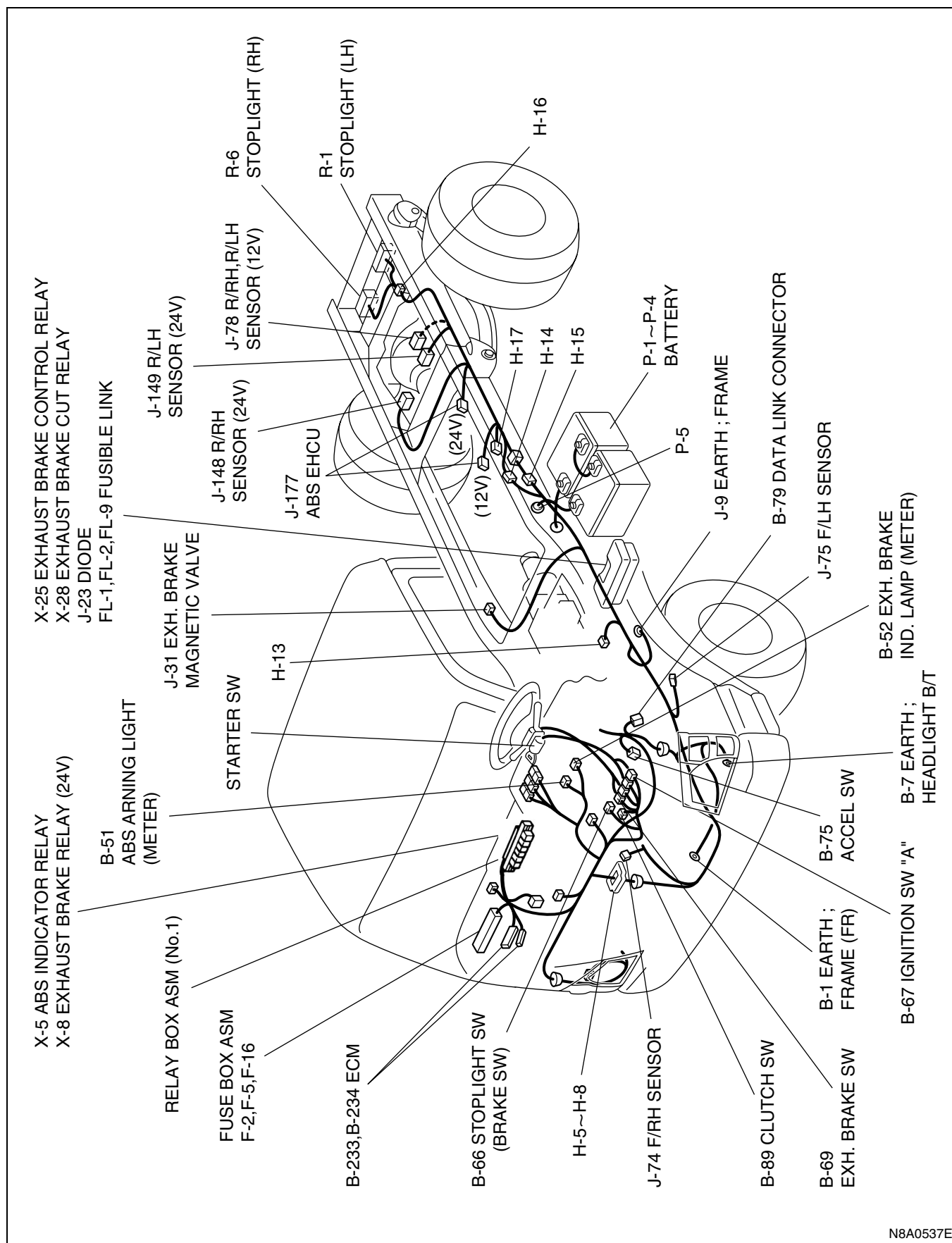
1. Disconnect the 4WD switch connectors.
 2. Connect the harness side connector terminals.
 3. Check to see if the indicator light comes on with the starter switch "ON".
- Check the bulb or harness when the result of inspection is found abnormal.



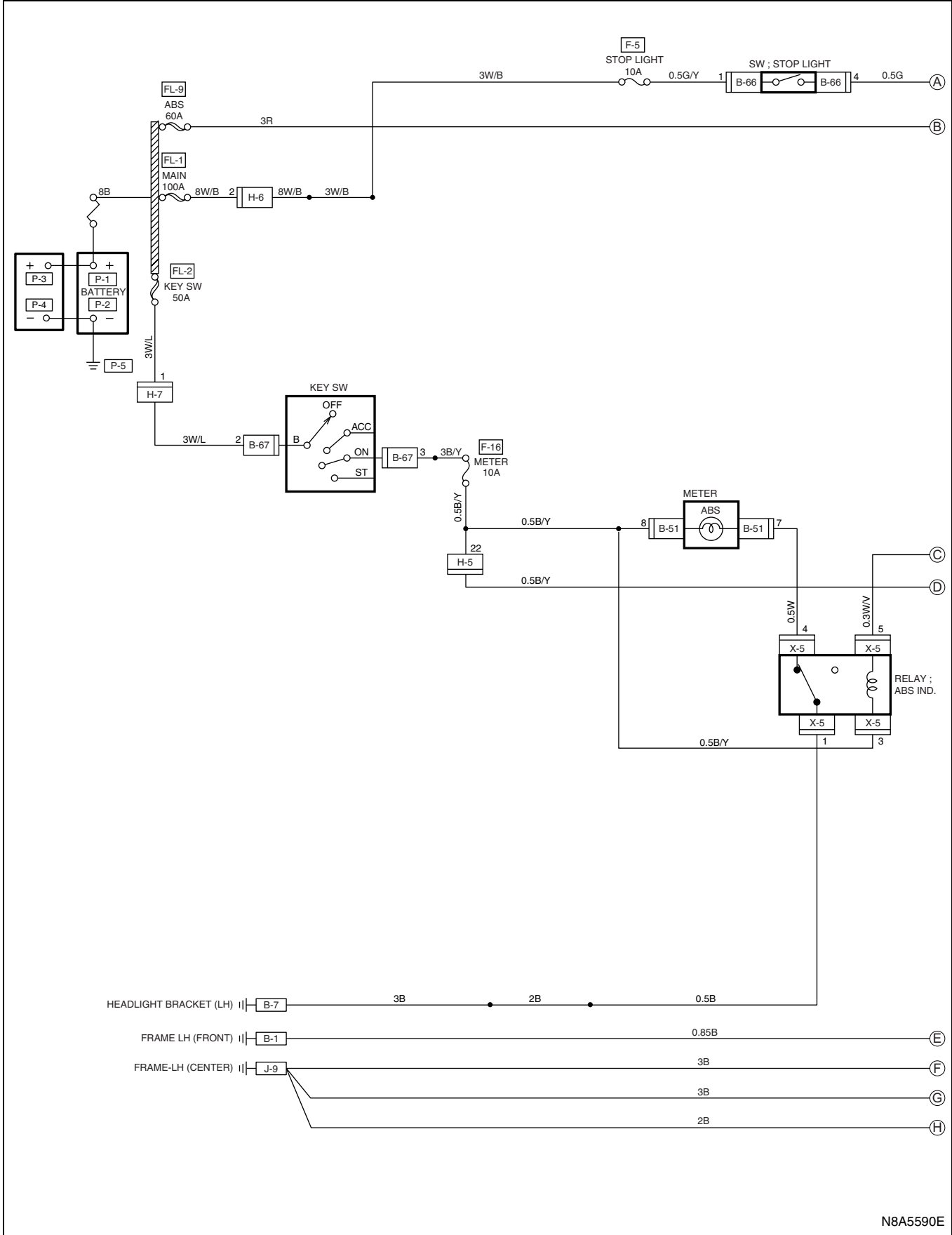
Inspection

1. Shift the transfer lever to the 4H (4L) position.
 2. Check to see if there is continuity between the 4WD switch connectors.
- Replace the switch when the result of the inspection is found abnormal.

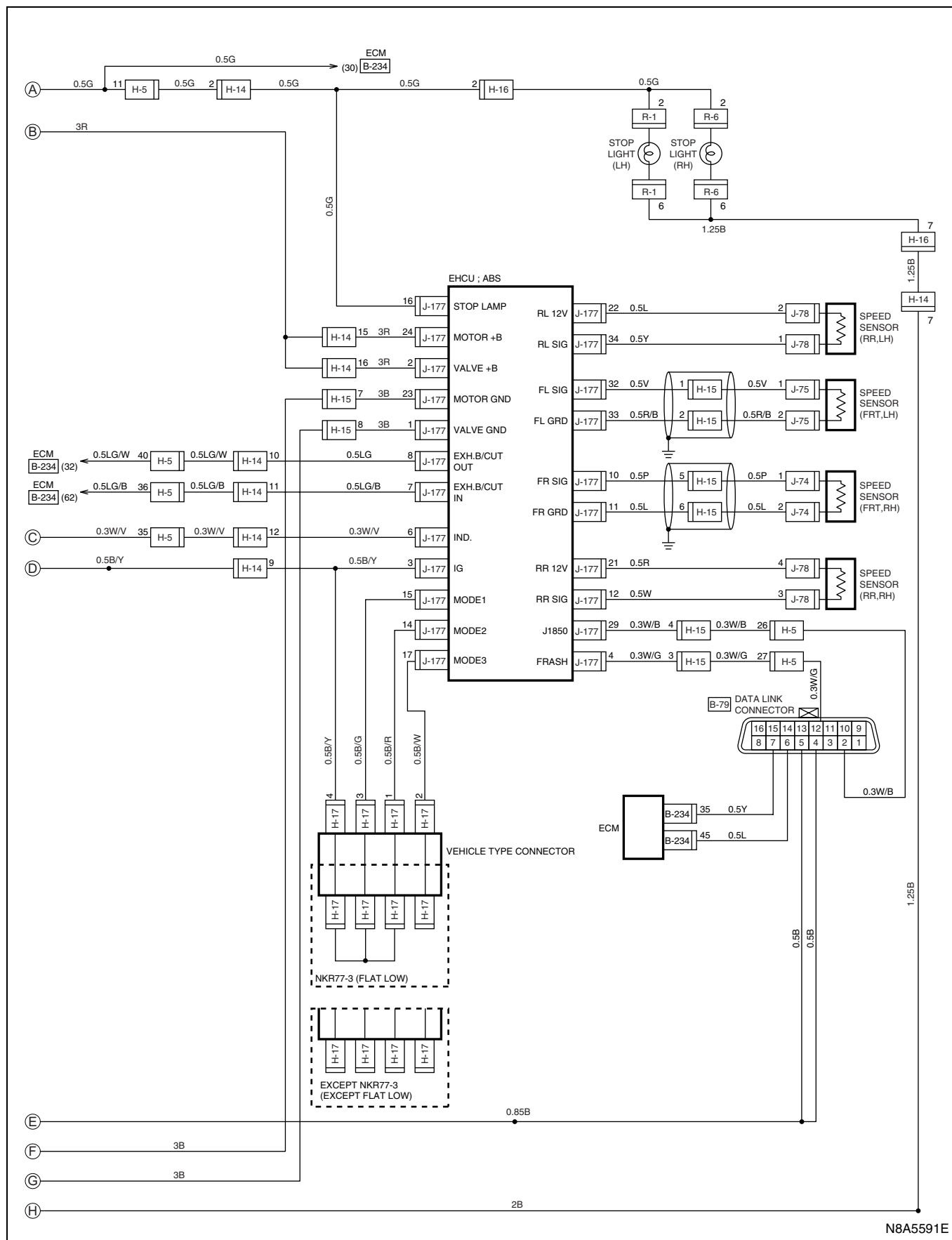


ABS (Anti-lock Brake System, Without ASR)**Parts Location**

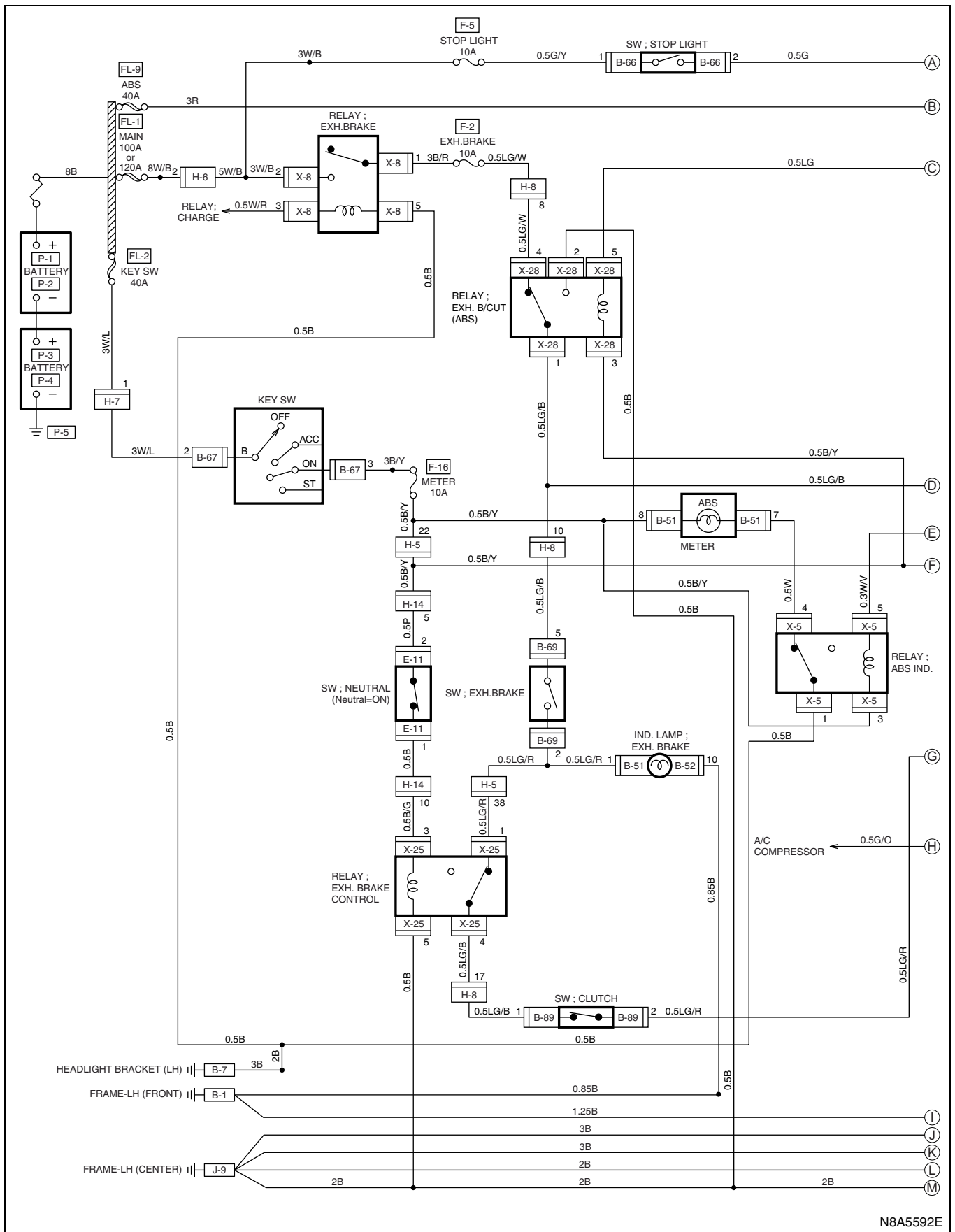
Circuit Diagram
For 12 Volt (4JH1 Engine)



8-356 CAB AND CHASSIS ELECTRICAL

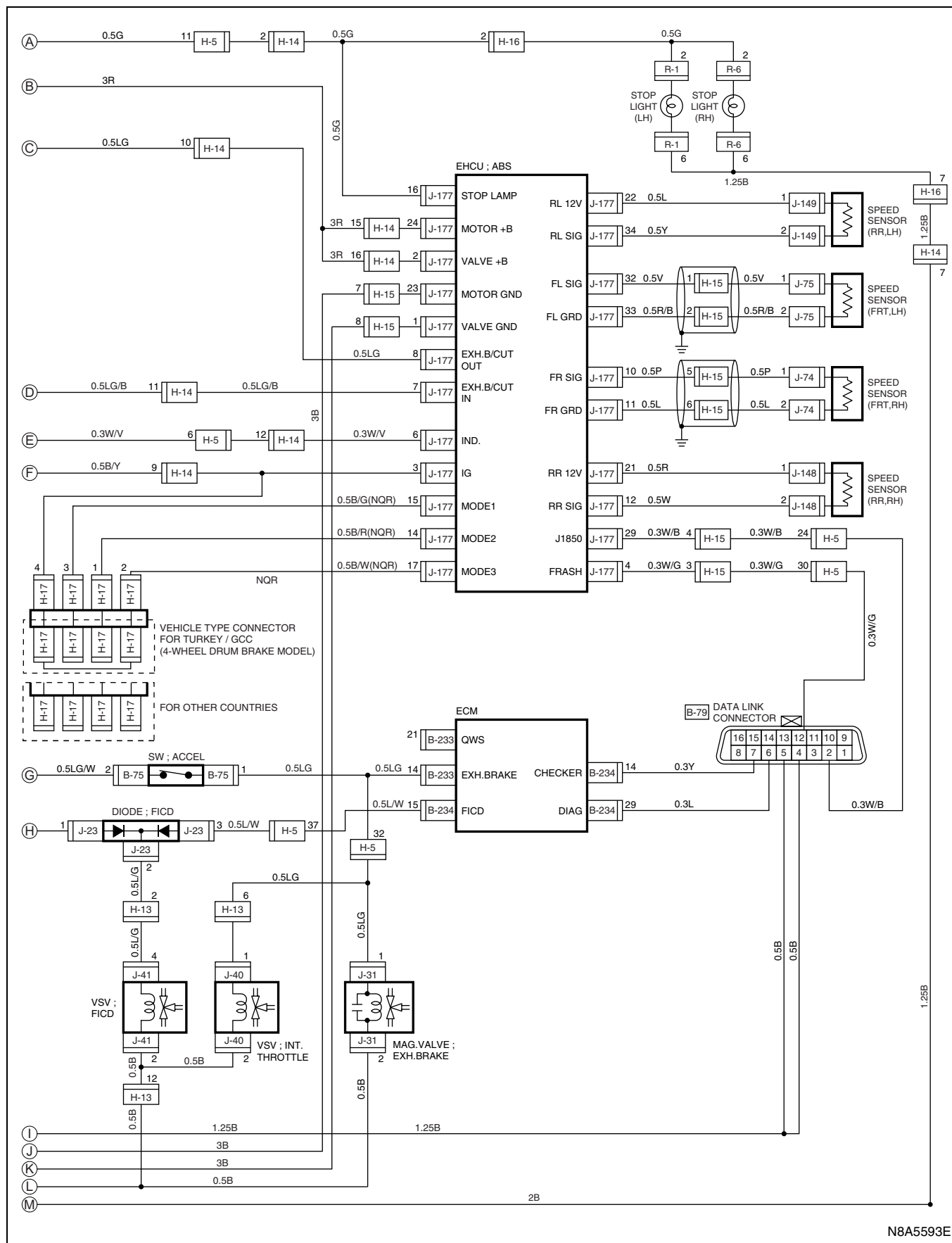


For 24 Volt



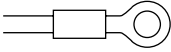
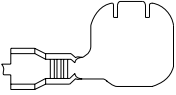
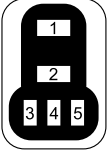
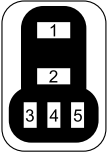
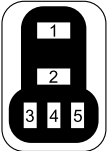
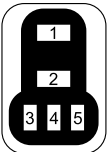
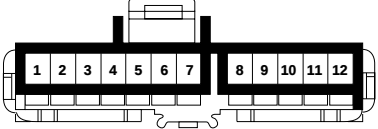
N8A5592E

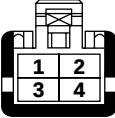
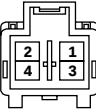
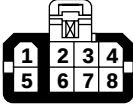
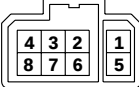
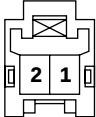
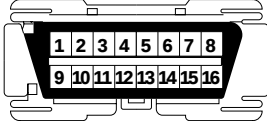
8-358 CAB AND CHASSIS ELECTRICAL



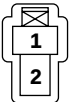
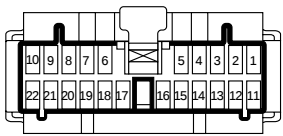
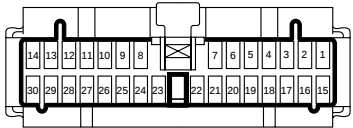
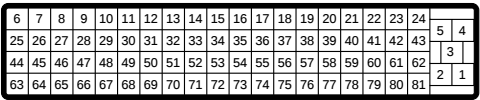
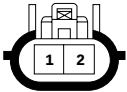
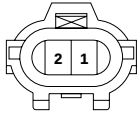
N8A5593E

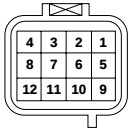
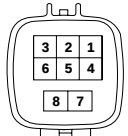
Connector List

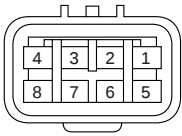
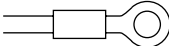
No.	Connector Face
B-1	 000-001
B-7	 000-012
X-5	 005-006
X-8	 005-006
X-25	 005-006
X-28	 005-006
B-51	 014-001
B-52	 012-005

No.	Connector Face
B-66	 004-010
B-67	 004-001
B-67	 004-002
B-69	 008-001
B-69	 008-002
B-75	 002-022
B-75	 002-023
B-79	 016-005

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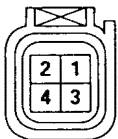
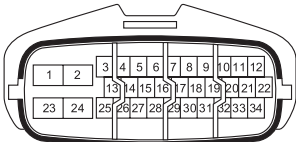
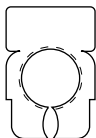
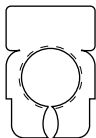
No.	Connector Face
B-89	 002-009
B-89	 002-010
B-233 (24 V)	 022-002
B-234 (24 V)	 030-002
B-234 (12 V)	 121-001
E-11	 002-001
E-11	 002-002
H-13	 012-001

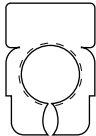
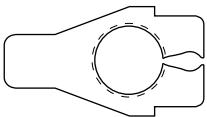
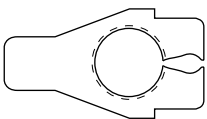
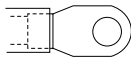
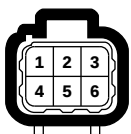
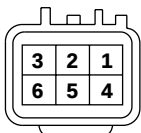
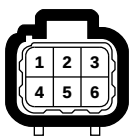
No.	Connector Face
H-13	 012-002
H-14 (12 V)	 014-004
H-14 (12 V)	 014-005
H-14 (24 V)	 016-003
H-14 (24 V)	 016-004
H-15 (12 V)	 008-023
H-15 (12 V)	 008-024
H-15 (24 V)	 016-003

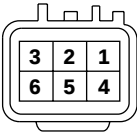
No.	Connector Face
H-15 (24 V)	 016-004
H-16	 008-003
H-16	 008-004
H-17	 004-011
J-9	 000-001
J-23	 004-009
J-31	 002-011
J-31	 002-012

No.	Connector Face
J-40	 002-015
J-41	 002-015
J-74	 002-011
J-74	 002-012
J-75	 002-011
J-75	 002-012
J-148	 002-011
J-148	 002-012

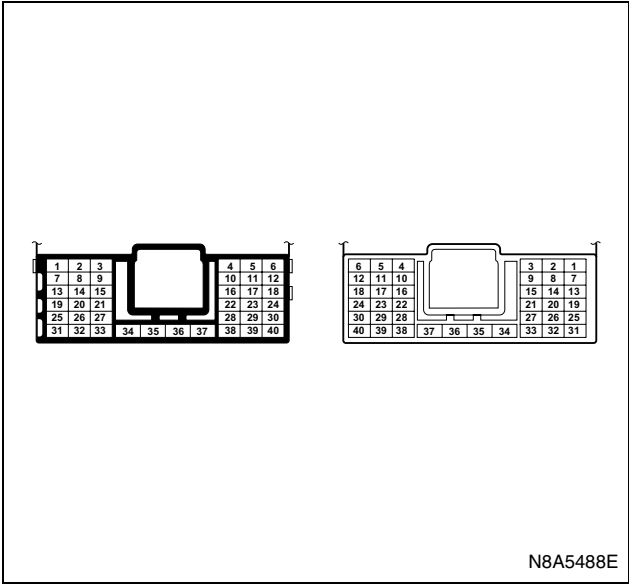
8-362 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
J-149 (24 V)	 002-011
J-149 (24 V)	 002-012
J-78 (12 V)	 004-011
J-78 (12 V)	 004-018
J-177	 034-001
P-1 (12 V)	 000-003
P-2	 000-004
P-1 (24 V)	 000-004

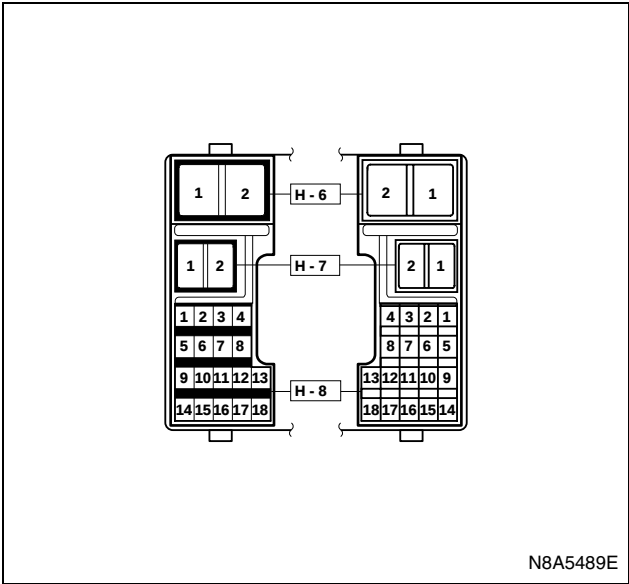
No.	Connector Face
P-4	 000-004
P-2 (24 V)	 000-006
P-3	 000-006
P-5 (12 V)	 000-007
P-5 (24 V)	 000-002
R-1	 006-004
R-1	 006-005
R-6	 006-004

No.	Connector Face
R-6	 006-005

H-5



H-6, H-7, H-8



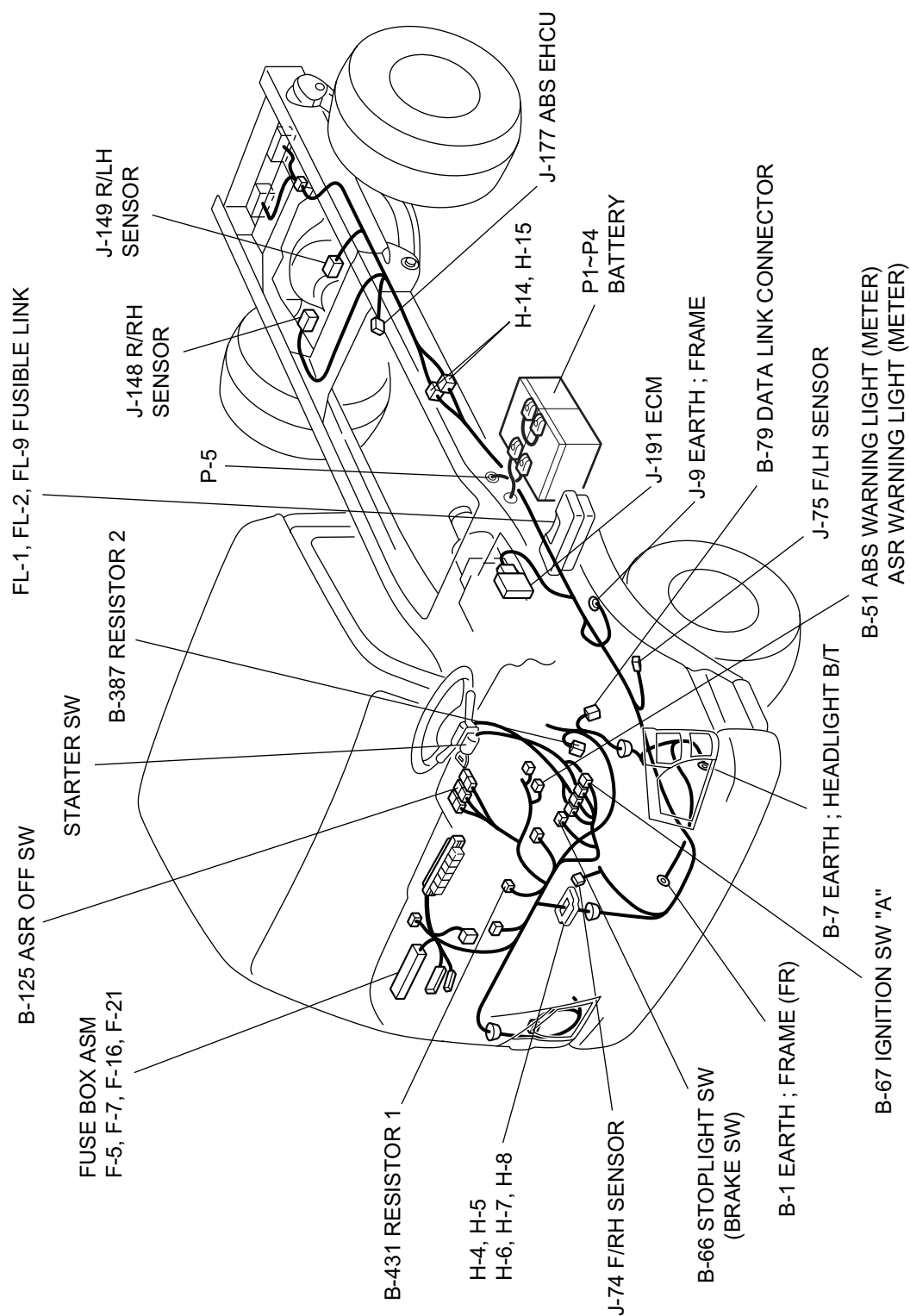
ABS/ASR System

General Description

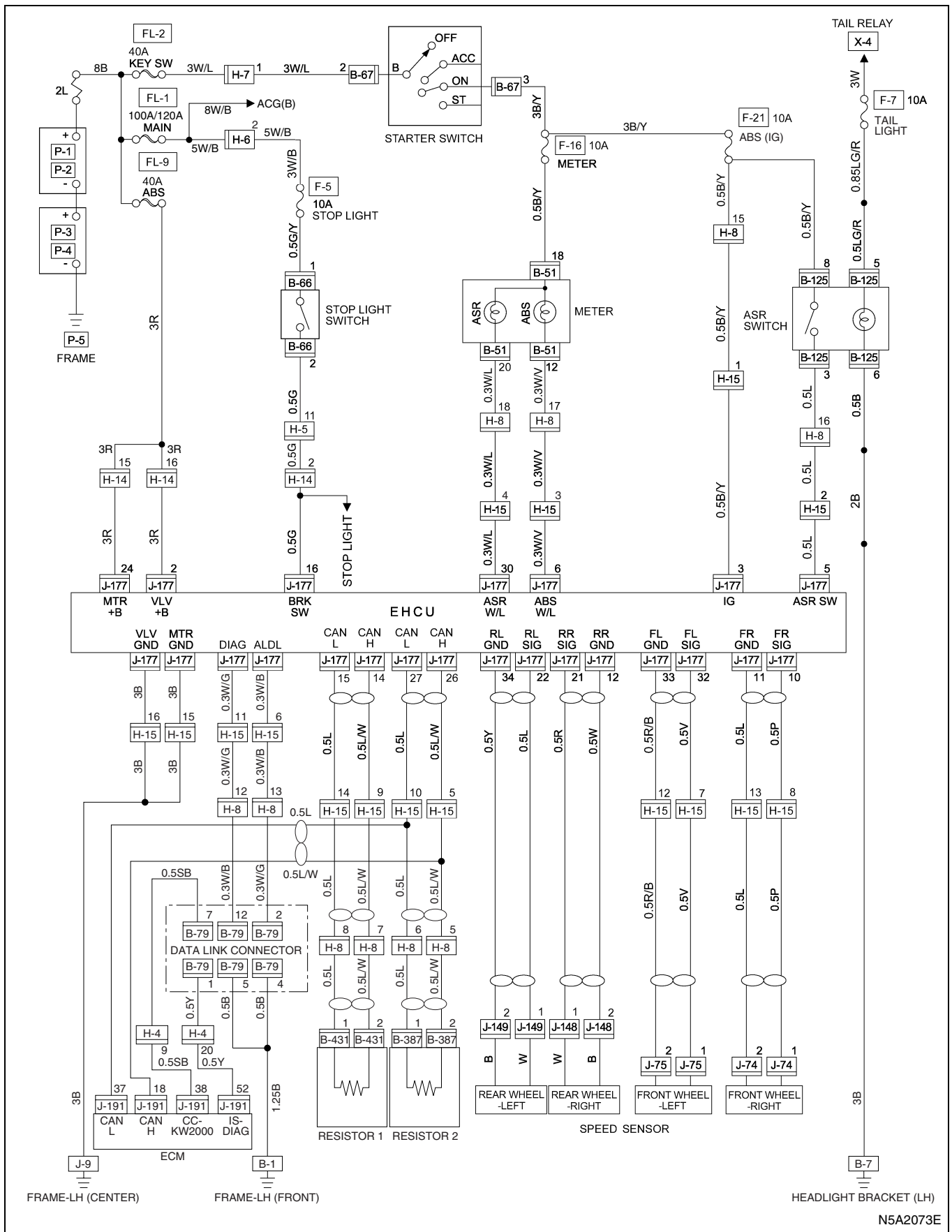
ABS (Anti-lock Brake System) and ASR (Anti-Slip Regulator) are the system to prevent the wheels from locking and wheel spin, and to assure stability and steering ability of the vehicle.

When a malfunction occurs in the system, fail-safe deactivate the ABS and ASR, and the warning lamp comes on. Also, the self-diagnosis function is equipped to improve serviceability.

Parts Location

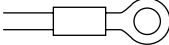
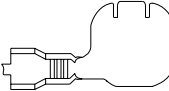
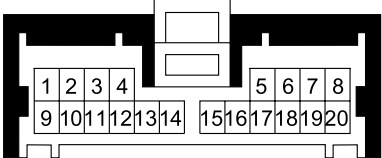
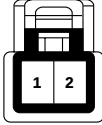
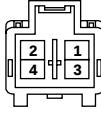
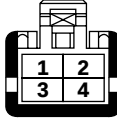
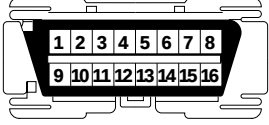
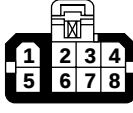


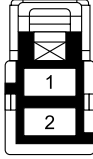
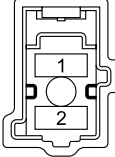
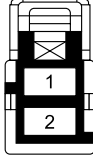
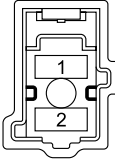
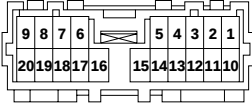
Circuit Diagram

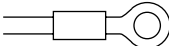


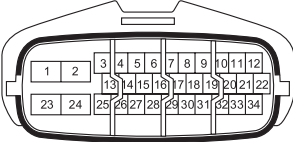
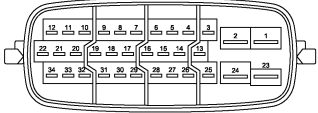
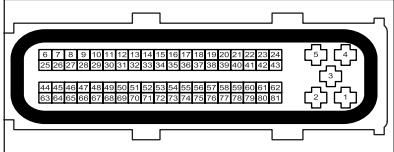
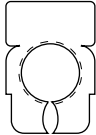
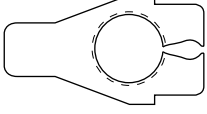
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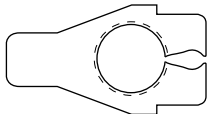
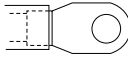
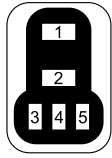
Connector List

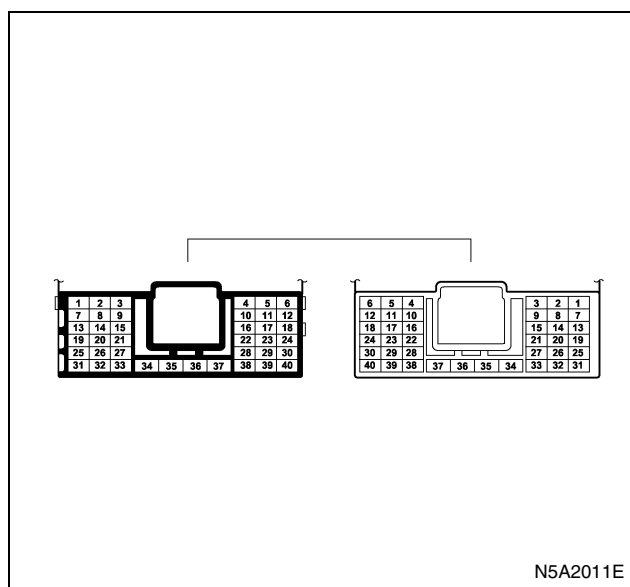
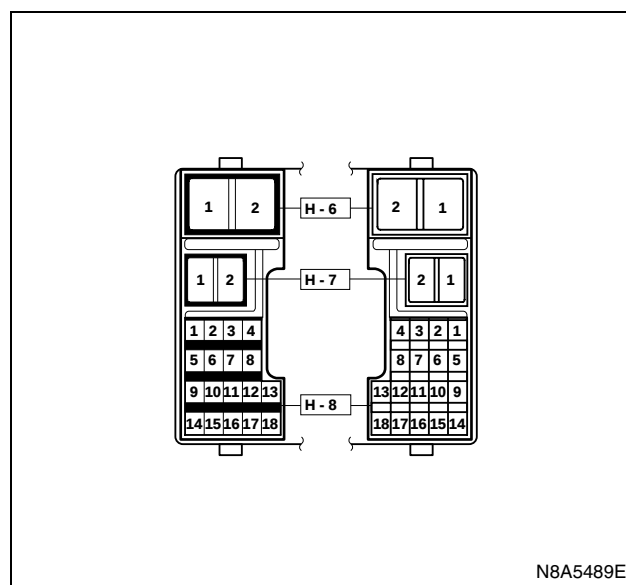
No.	Connector Face
B-1	 000-001
B-7	 000-012
B-51	 020-004
B-66	 002-031
B-67	 004-002
B-67	 004-001
B-79	 016-005
B-125	 008-001

No.	Connector Face
B-387	 002-038
B-387	 002-039
B-431	 002-038
B-431	 002-039
H-4	 020-002
H-4	 020-003
H-14	 016-004
H-14	 016-003

No.	Connector Face
H-15	 016-003
H-15	 016-004
J-9	 000-001
J-74	 002-012
J-74	 002-011
J-75	 002-012
J-75	 002-011
J-148	 002-012

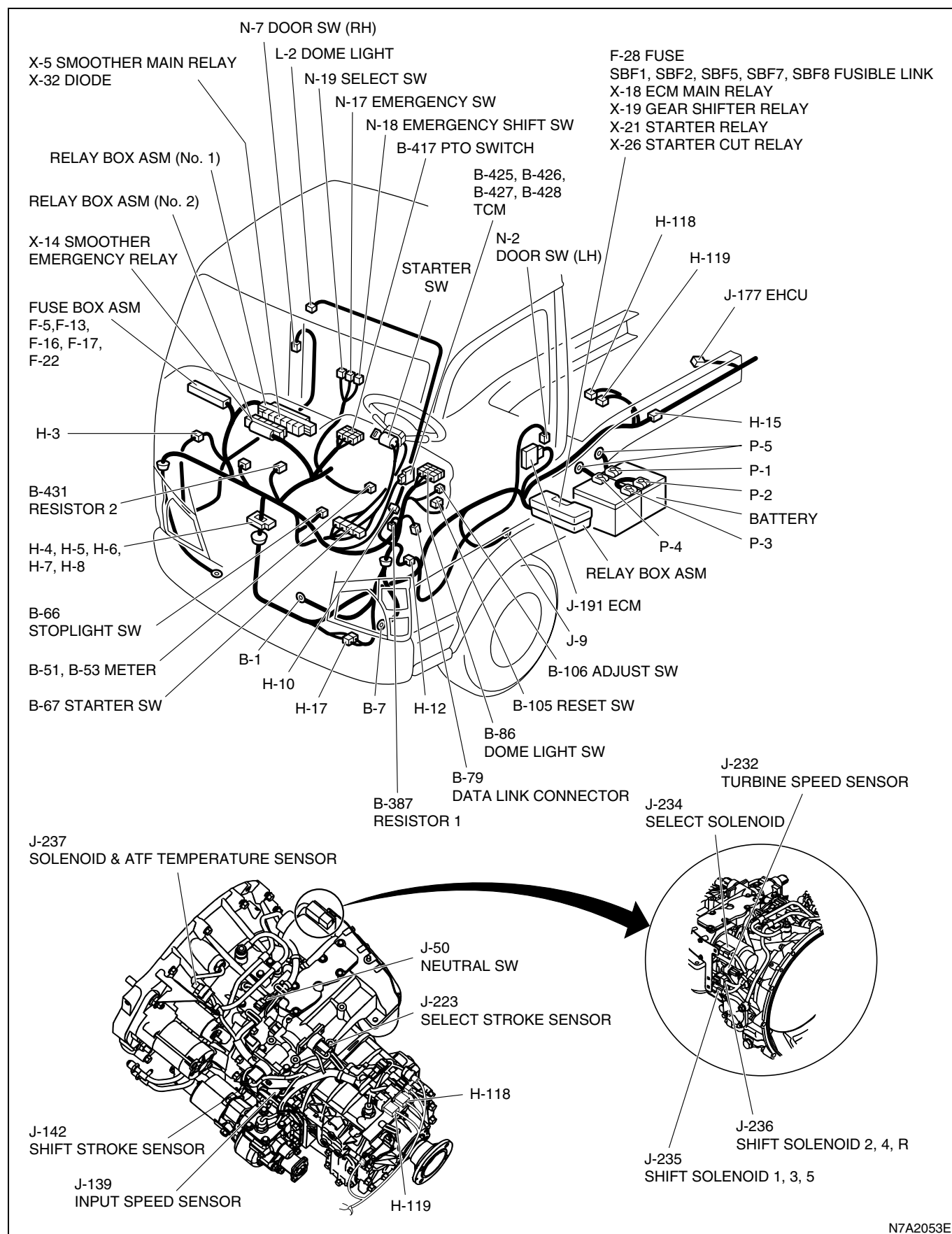
No.	Connector Face
J-148	 002-011
J-149	 002-012
J-149	 002-011
J-177	 034-001
J-177	 034-002
J-191	 081-001
P-1	 000-004
P-2	 000-006

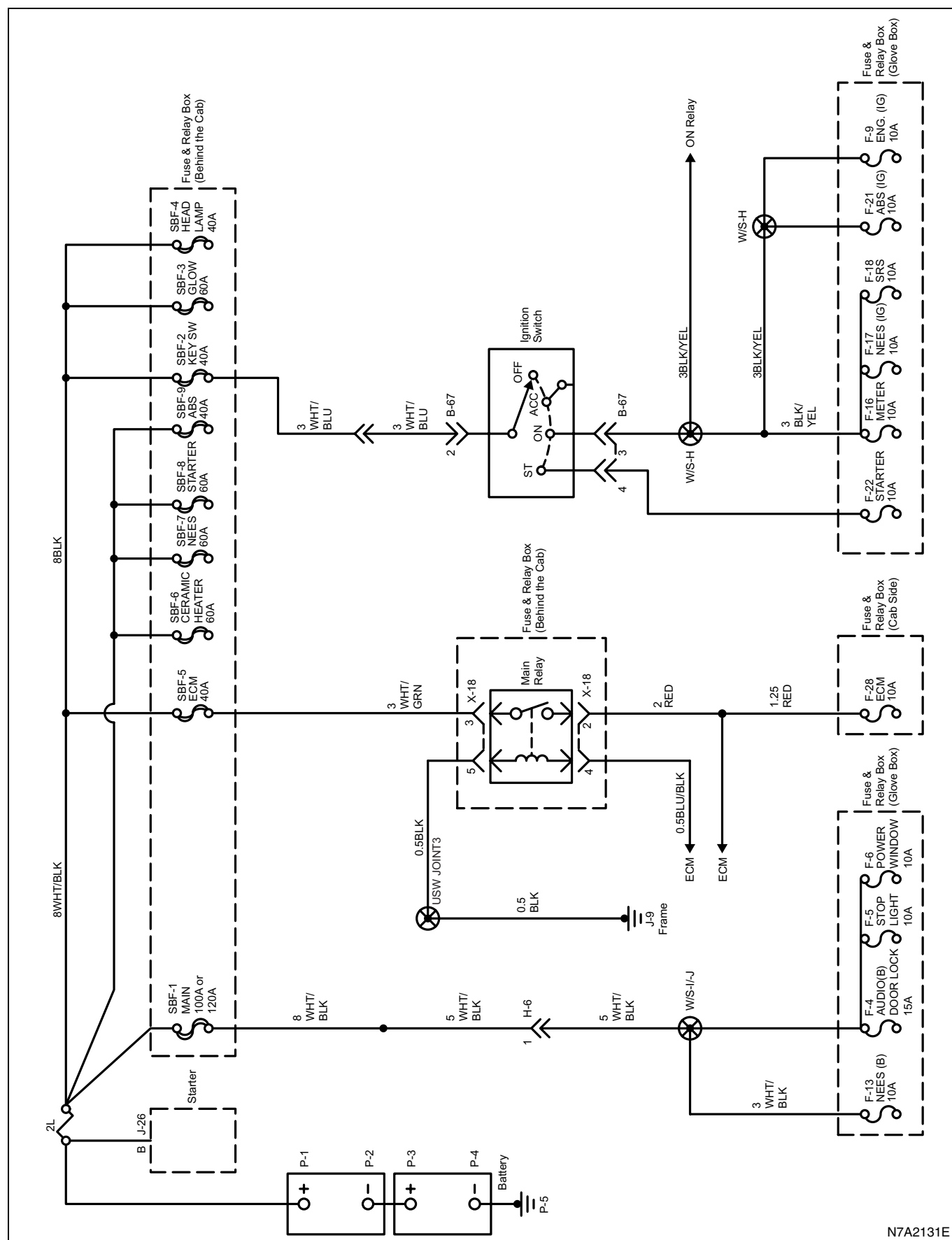
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P-4	 000-004
P-5	 000-002
X-4	 005-006

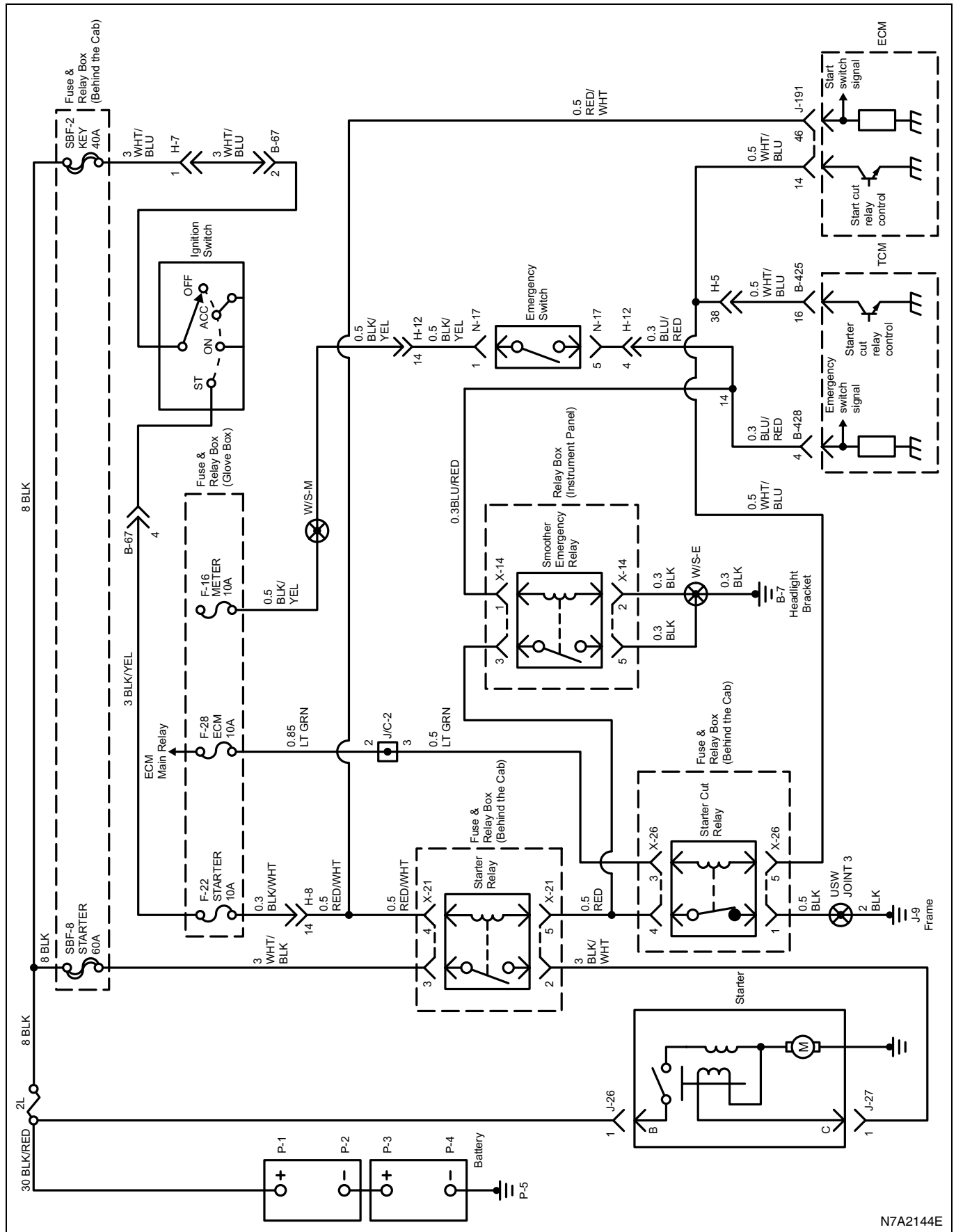
H-5**H-6, H-7, H-8****Transmission Control System (Smoother)****General Description**

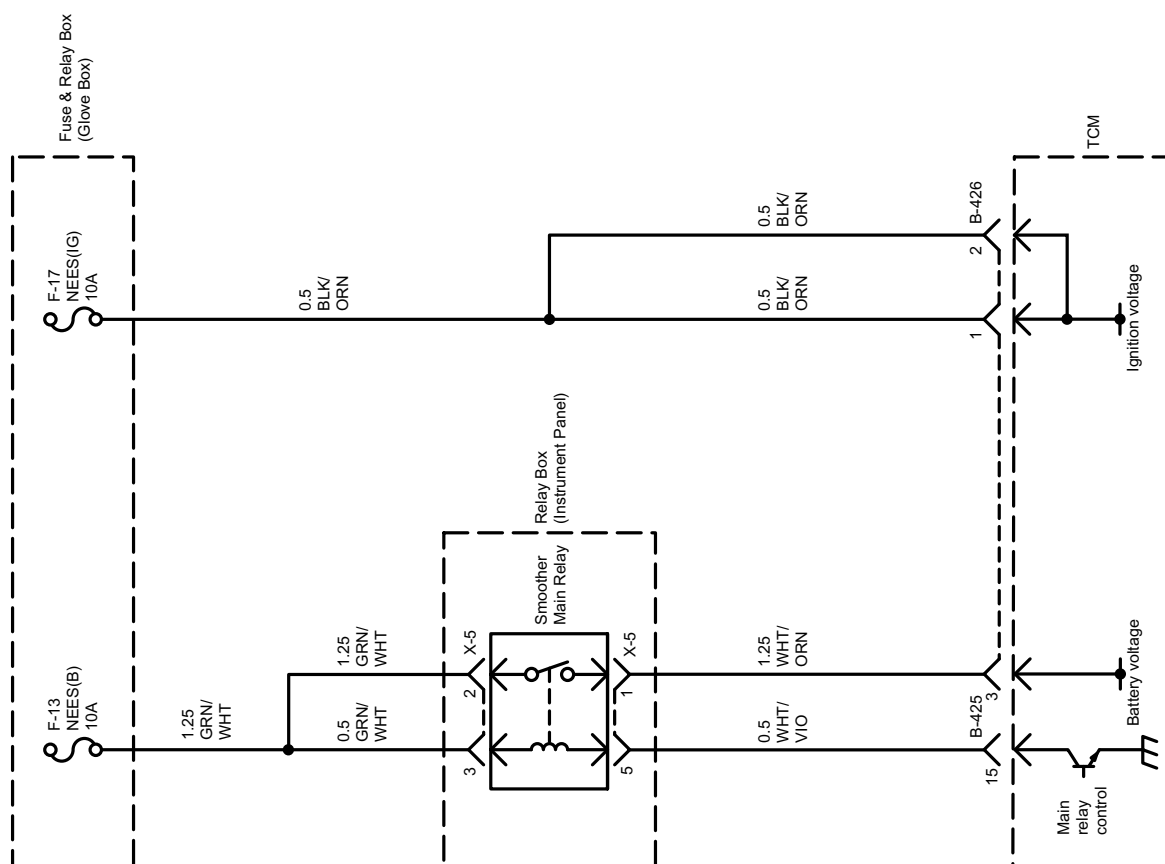
“Smoother” is the name of a new-generation drive train that provides benefits in terms of both life cycle costs (low initial cost and maintenance cost, lower fuel consumption, etc.) and easy driving. Smoother is a system that adds an automatic transmission to the existing Smoother, for even better fuel consumption and easier driving. This is accomplished by installing a solenoid system shift control box on the Smoother, which combines a manual transmission with fluid coupling, so all shifting is performed automatically in accordance with signals from the transmission control module (TCM). When starting moving the vehicle, depressing the brake pedal and operating the change lever as on an automatic vehicle causes a change lever position signal to be detected by the TCM. This actuates the shift control box solenoid and shifts the gear into the starting position or the reverse position, and then engages the shift change clutch (wet multi-disc clutch). (After the shift clutch engages, creep force is generated the same as on an AT vehicle.) Releasing the foot from the brake pedal and pressing the accelerator pedal starts the vehicle moving forward. If there is an up-shift or down-shift while running, the control unit determines the vehicle status based on vehicle speed, accelerator opening angle, and other factors, and shifts to the optimal gear automatically. If the driver moves the change lever in the “+” or “-” direction, a gear change is indicated, so sequential manual shifting is also possible. (Even during sequential manual shifting, the transmission shifts to the starting position when the vehicle is stopped.)

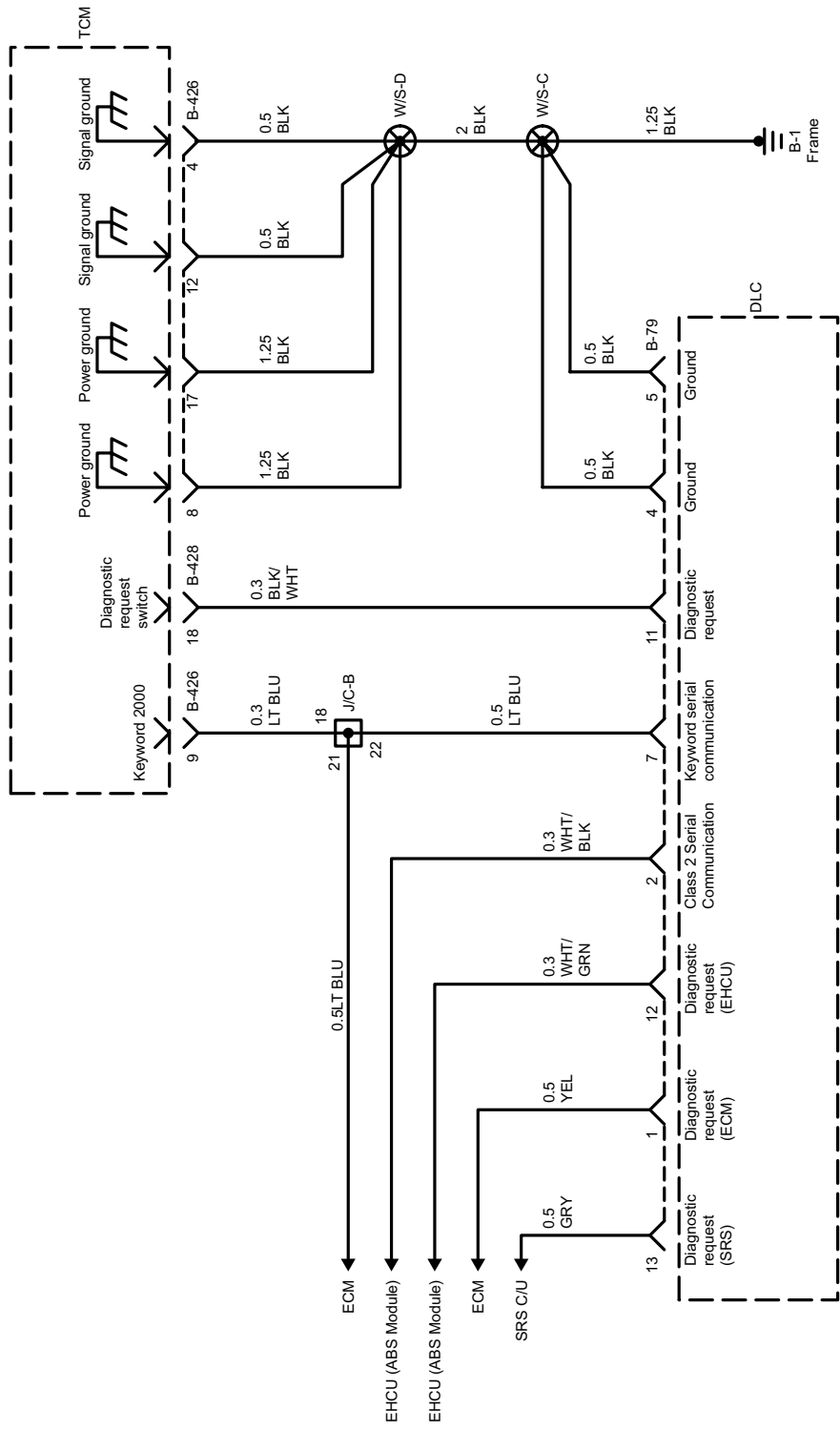
Parts Location

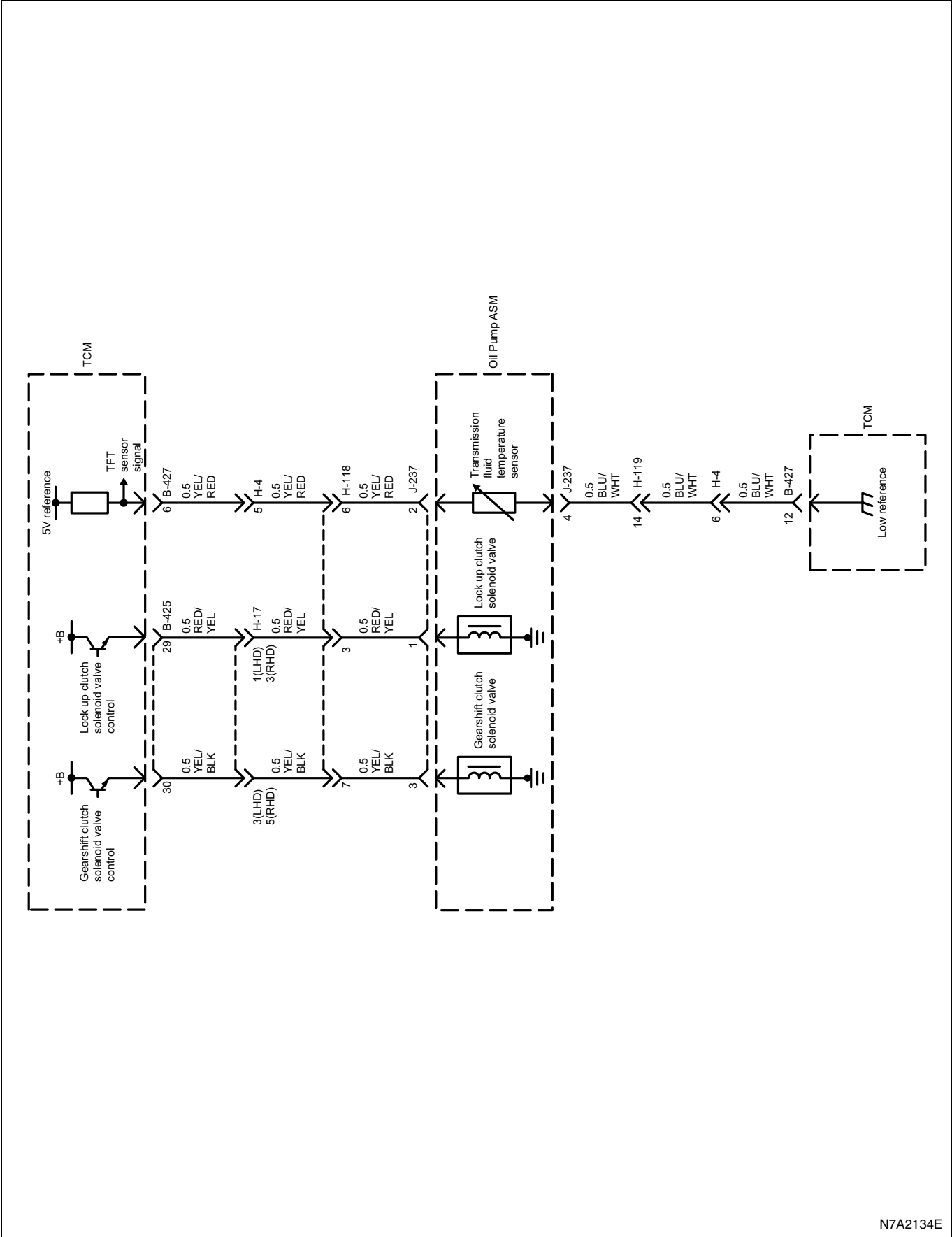


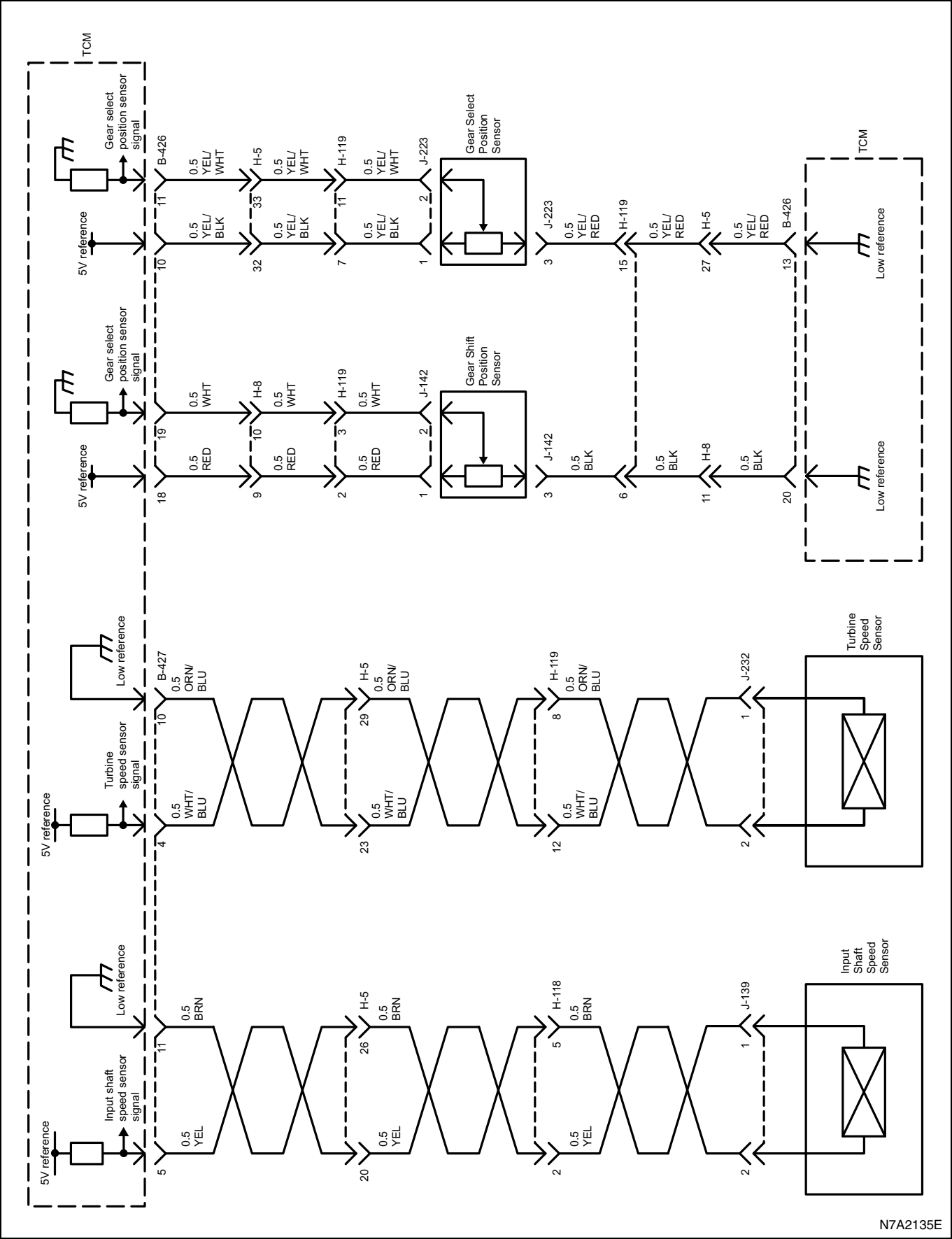


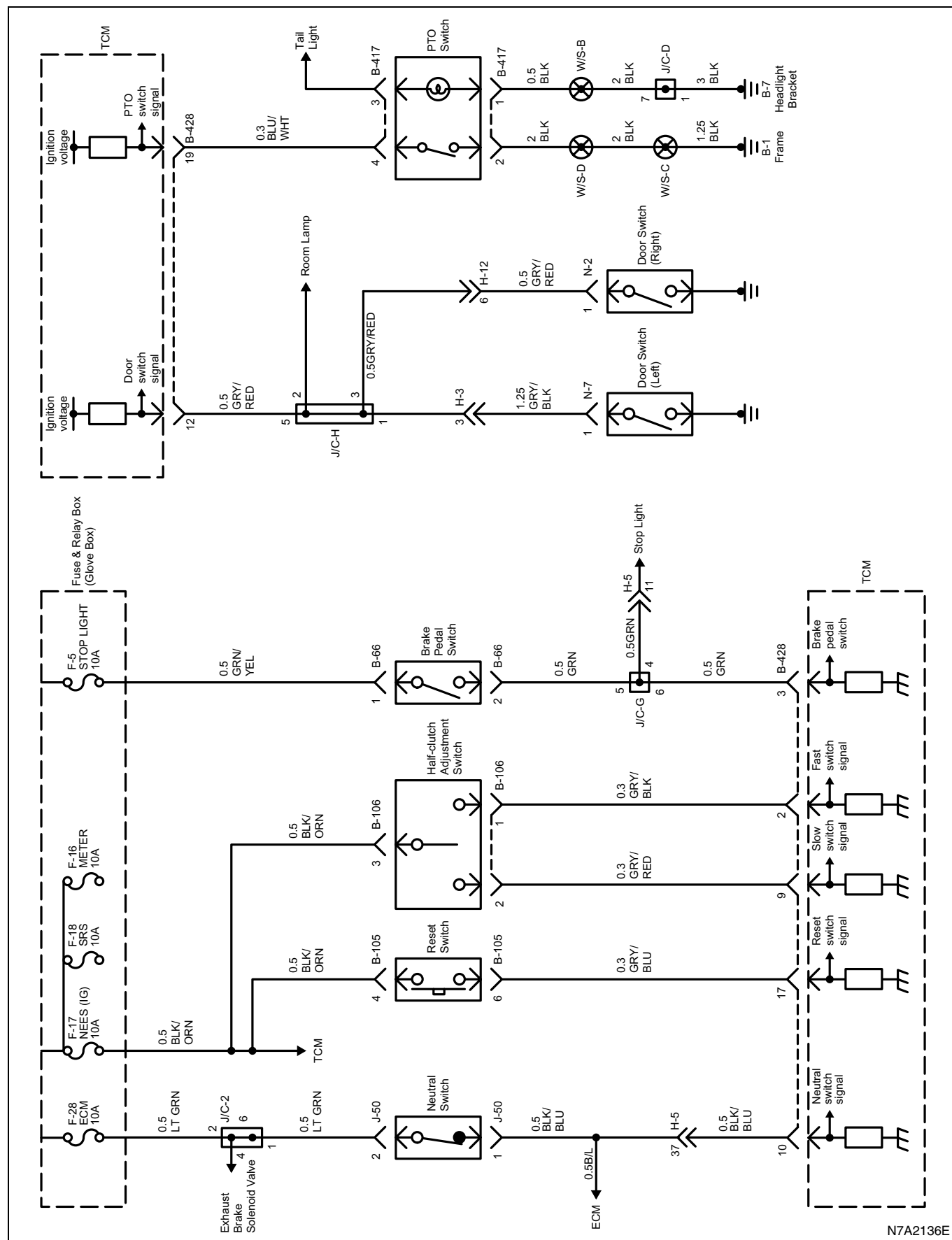




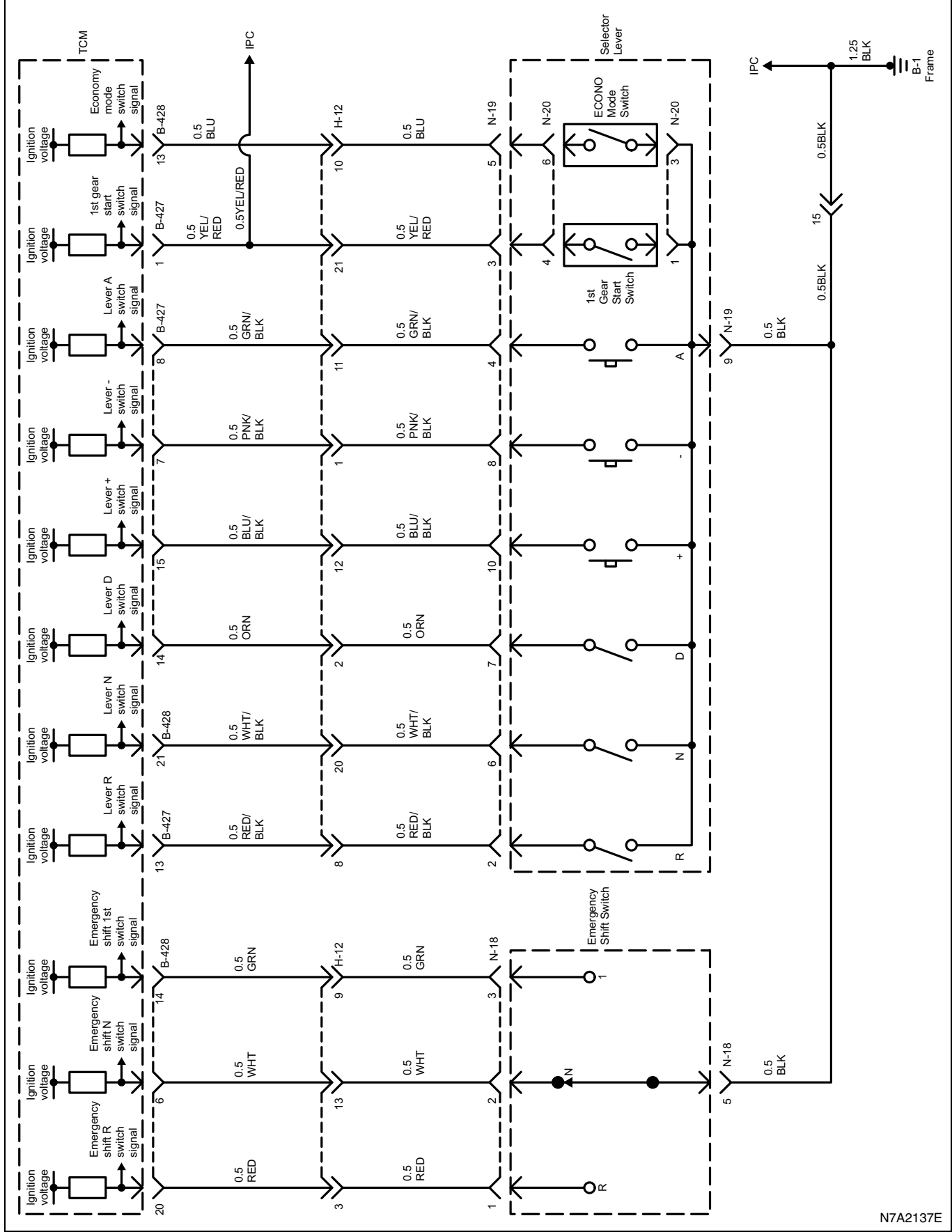


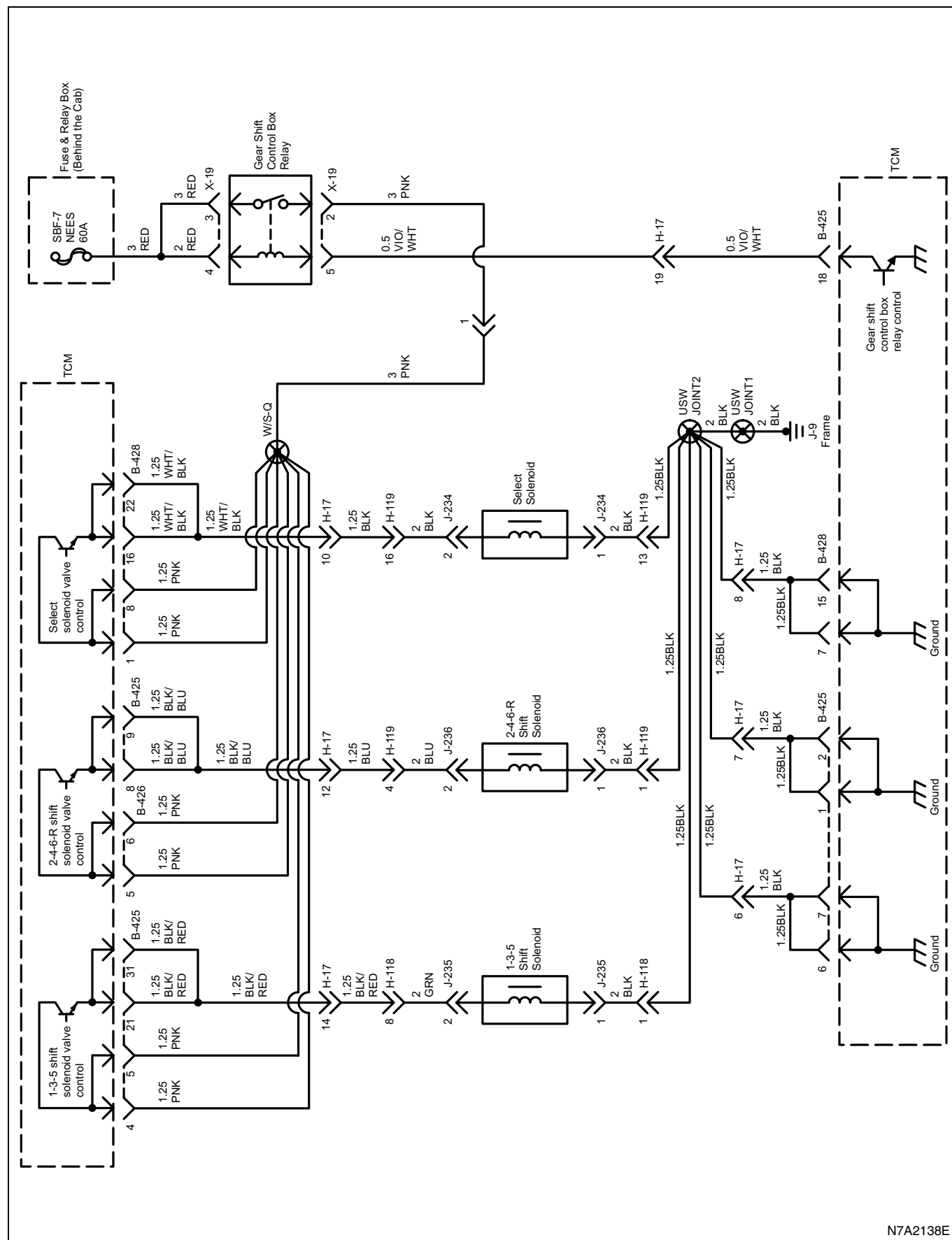


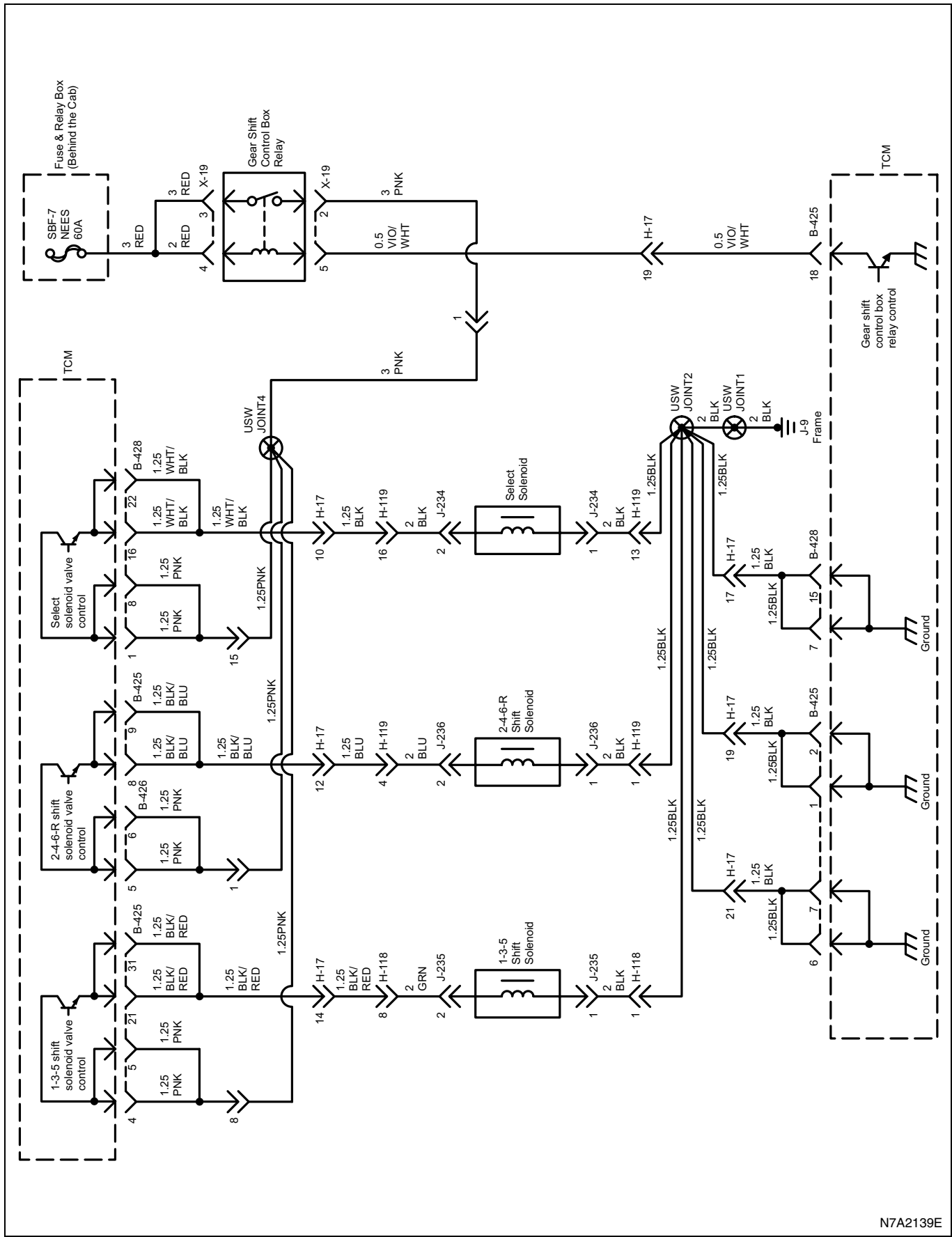


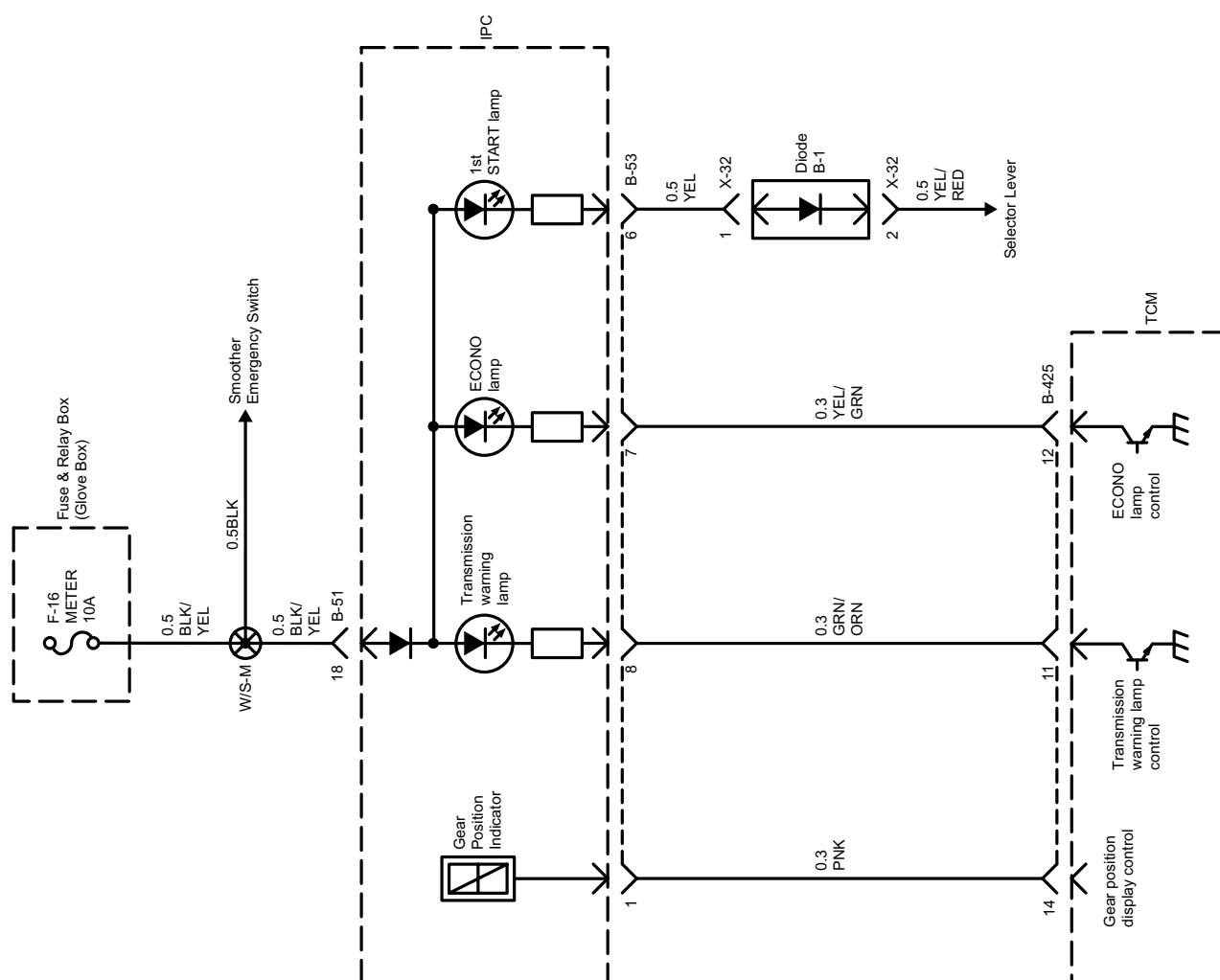


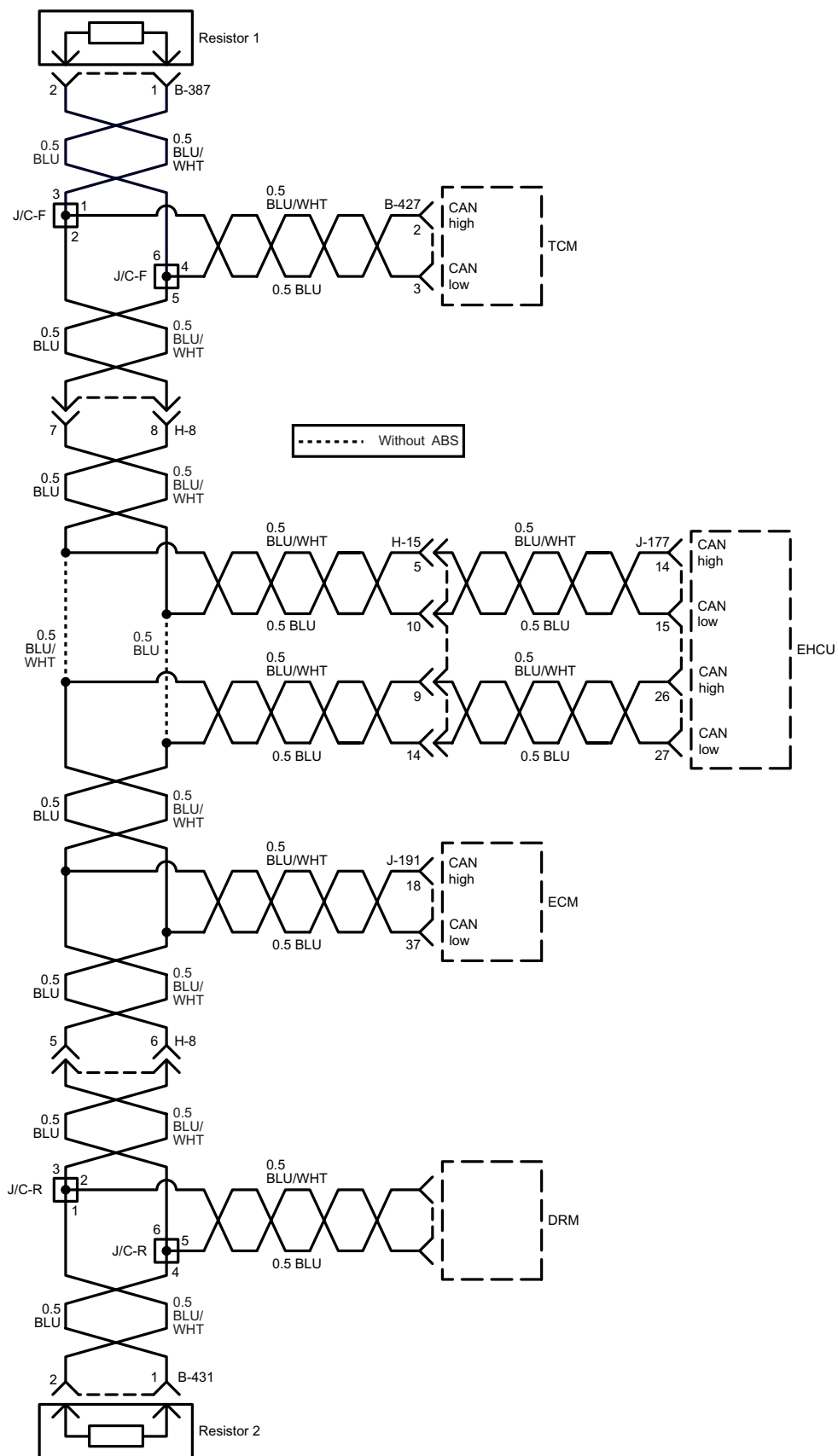
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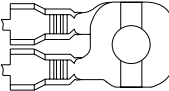
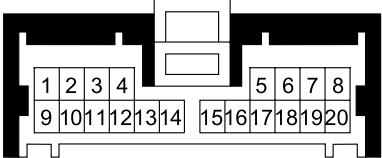
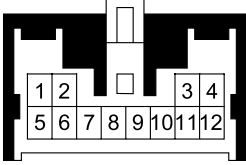
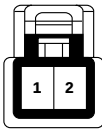
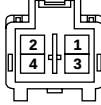
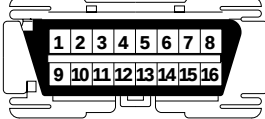


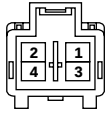
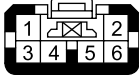
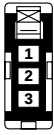
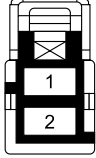
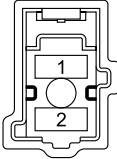
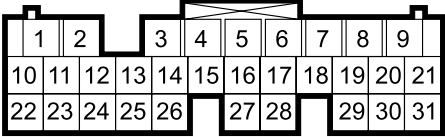


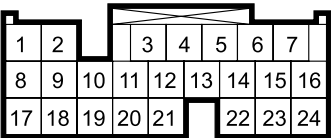
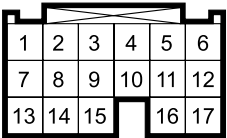
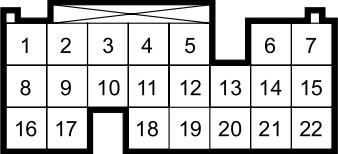
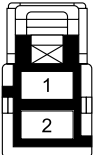
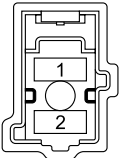
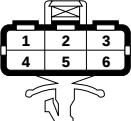
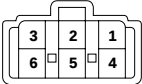
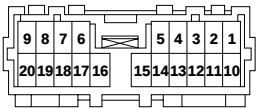


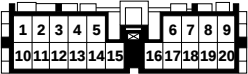
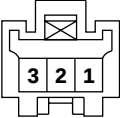
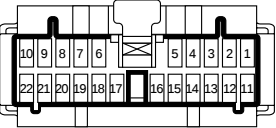
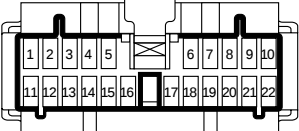
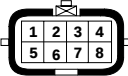


Connector list

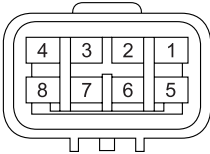
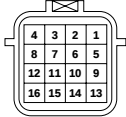
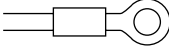
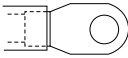
No.	Connector Face
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B-7	 000-018
B-51	 020-004
B-53	 012-009
B-66	 002-031
B-67	 004-002
B-67	 004-001
B-79	 016-005

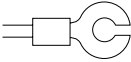
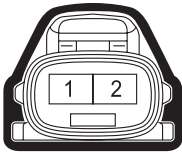
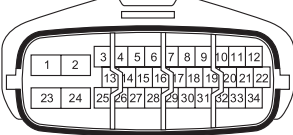
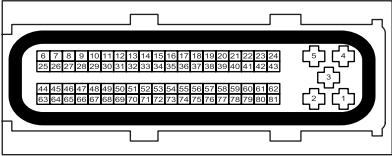
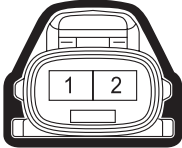
No.	Connector Face
B-86	 004-001
B-86	 004-002
B-105	 006-021
B-106	 003-014
B-387	 002-038
B-387	 002-039
B-417	 004-001
B-425	 031-001

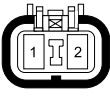
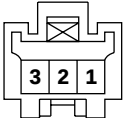
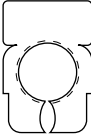
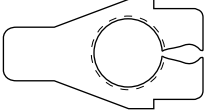
No.	Connector Face
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B-427	 017-001
B-428	 022-006
B-431	 002-038
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H-3	 006-014
H-3	 006-015
H-4	 020-003

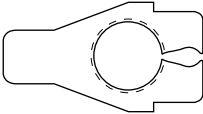
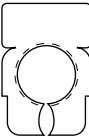
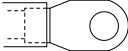
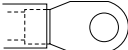
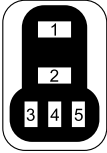
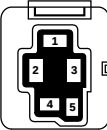
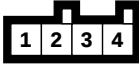
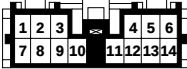
No.	Connector Face
H-4	 020-002
H-10	 003-009
H-10	 003-010
H-12	 022-002
H-12	 022-001
H-15	 016-003
H-15	 016-004
H-17	 008-007

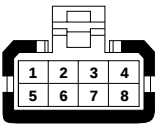
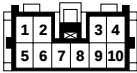
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No.	Connector Face
H-17	 008-008
H-118	 008-003
H-118	 008-018
H-119	 016-001
H-119	 016-002
H-xx	 001-002
J-9	 000-001
J-26	 000-002

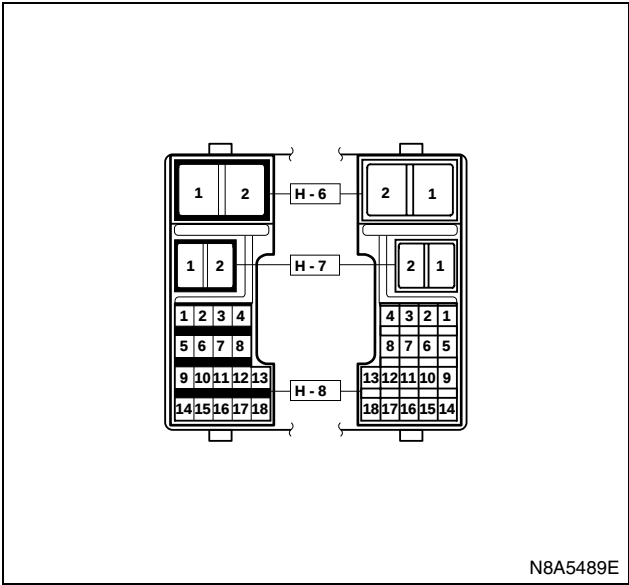
No.	Connector Face
J-27	 000-009
J-50	 002-035
J-139	 002-040
J-142	 003-005
J-177	 034-001
J-191	 081-001
J-223	 003-005
J-232	 002-040

No.	Connector Face
J-234	 002-003
J-235	 002-003
J-236	 002-042
J-237	 004-020
L-2	 003-009
L-2	 003-010
P-1	 000-004
P-2	 000-006

No.	Connector Face
P-3	 000-006
P-4	 000-004
P-5	 000-002
P-6	 000-002
X-5, 14, 18, 26	 005-006
X-19, 21	 005-003
X-32	 004-004
X-33	 014-002

No.	Connector Face
N-2	 001-020
N-7	 001-020
N-17	 008-005
N-18	 006-007
N-19	 010-003

H-6, H-7, H-8



Electronic Control Type PTO

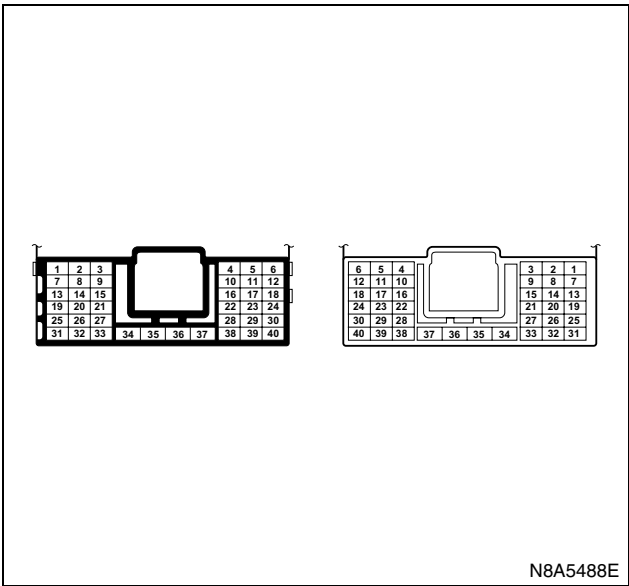
General Description

This circuit consists of starter switch, PTO switch (for dump vehicle, it shares with dump control switch), relay, diodes, solenoid and control unit.

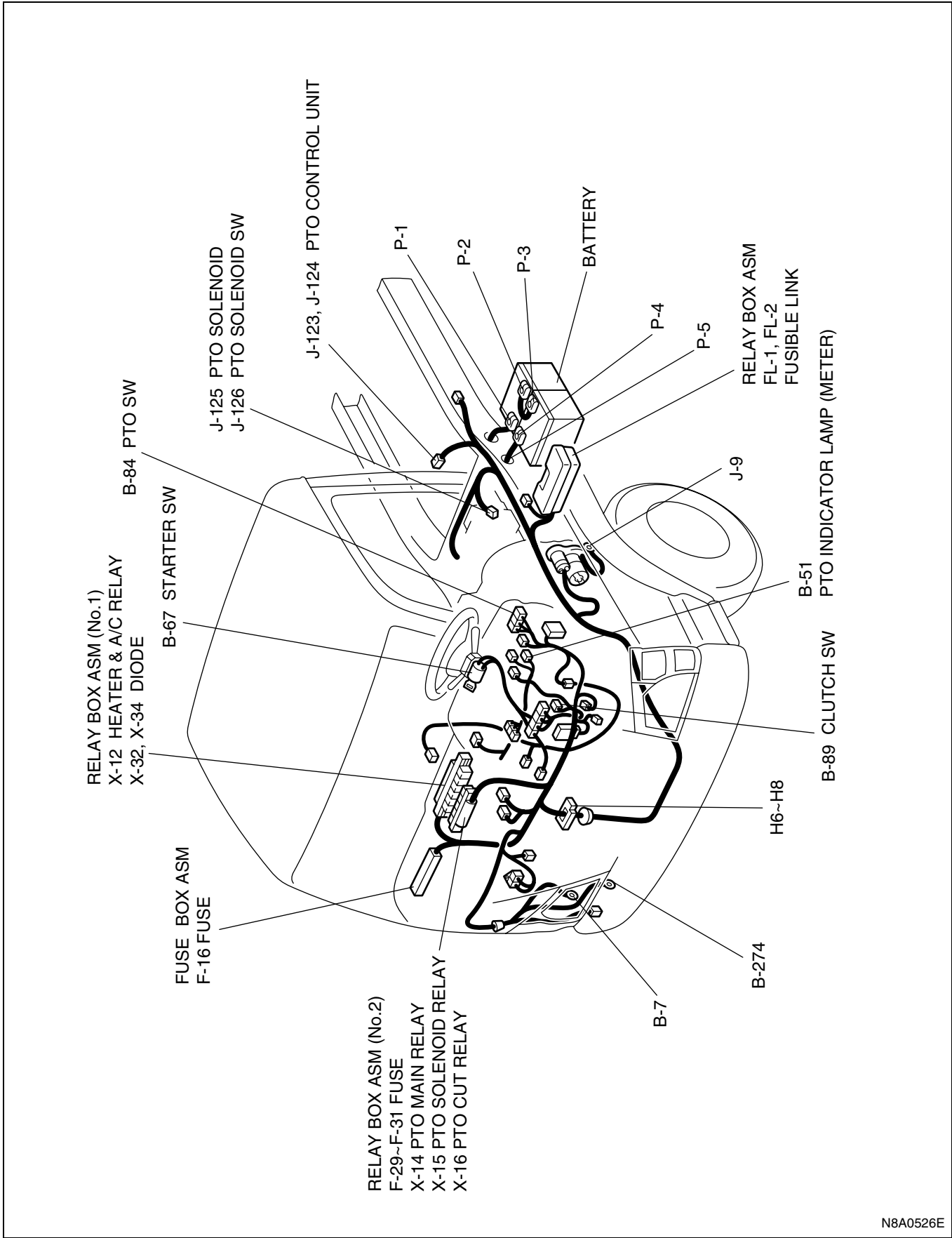
Electronic control type PTO is installed on the left side of transmission.

PTO's gears are engaged at any time. There is a sleeve installed on the output shift, and the sleeve is shifted by the solenoid through the shift rods(s) and shift arm(s). This causes turning the power on or off.

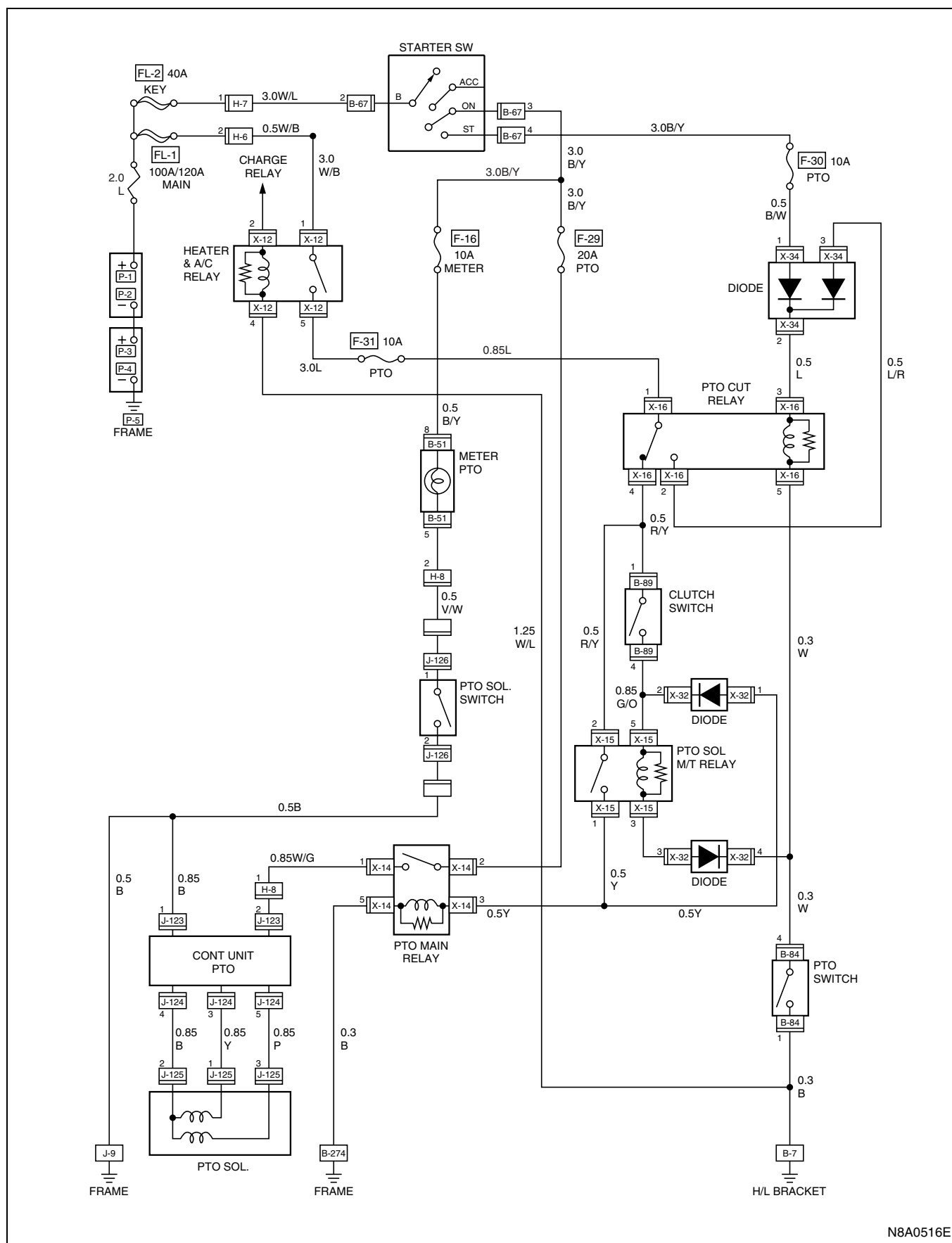
H-5



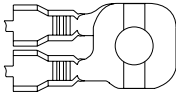
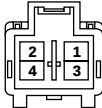
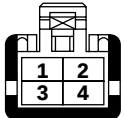
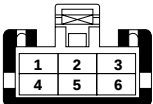
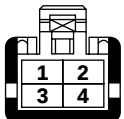
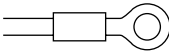
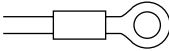
Parts Location

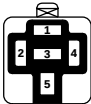
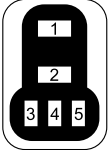
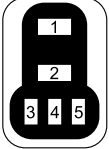
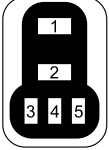


Circuit Diagram

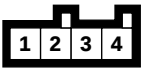
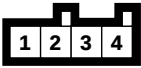


Connector List

No.	Connector Face
B-7	 000-018
B-51	 014-001
B-67	 004-002
B-67	 004-001
B-84	 006-001
B-89	 004-001
B-274	 000-001
J-9	 000-001

No.	Connector Face
J-123	 002-012
J-123	 002-011
J-126	 002-012
J-126	 002-011
X-12	 005-001
X-14	 005-006
X-15	 005-006
X-16	 005-006

8-390 CAB AND CHASSIS ELECTRICAL

No.	Connector Face
X-32	 004-004
X-34	 004-004

H-6, H-7, H-8

