# SECTION DI
# DRIVER INFORMATION SYSTEM

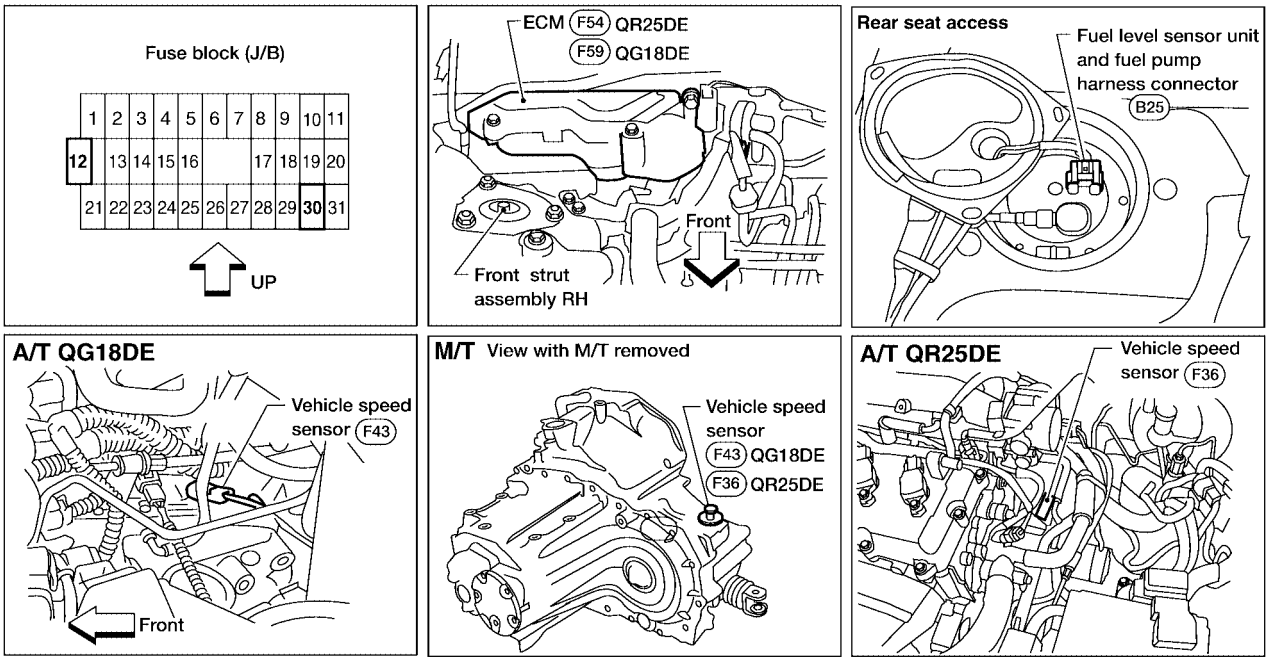
## CONTENTS

# METERS AND GAUGES

PFP:24814

## Component Parts and Harness Connector Location

EKS00399




WKIA1045E

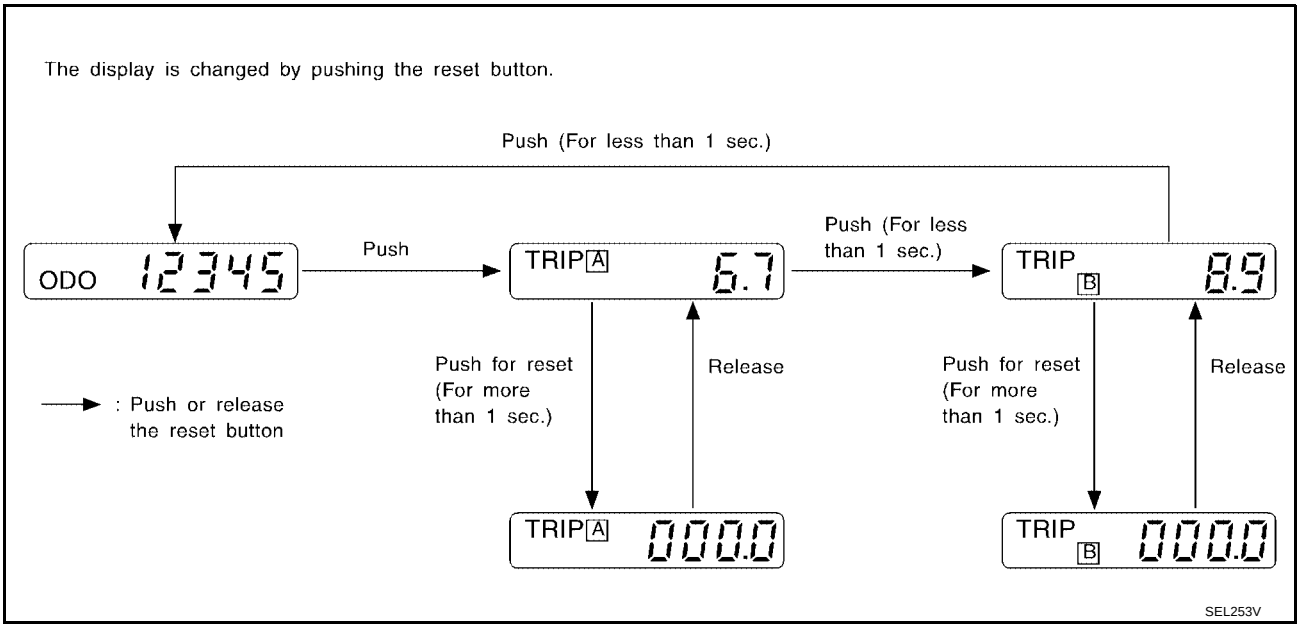
## System Description

EKS0039A

### UNIFIED CONTROL METER

- Speedometer, odo/trip meter, tachometer (if equipped), fuel gauge and water temperature gauge are controlled totally by control unit built-in combination meter.
- Digital meter is adopted for odo/trip meter.*
  *The record of the odometer is kept even if the battery cable is disconnected. The record of the trip meter is erased when the battery cable is disconnected.
- Odo/trip meter segment can be checked in diagnosis mode.
- Meter/gauge can be checked in diagnosis mode.

### HOW TO CHANGE THE DISPLAY FOR ODO/TRIP METER




**NOTE:**
Turn ignition switch to the ON position to operate odo/trip meter.

### POWER SUPPLY AND GROUND CIRCUIT

Power is supplied at all times:

- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to combination meter terminal 25 (without tachometer) or 42 (with tachometer).

With the ignition switch in the ON or START position, power is supplied:

- through 10A fuse [No. 30, located in the fuse block (J/B)]
- to combination meter terminal 26 (without tachometer), or
- to combination meter terminals 41 and 6 (with tachometer).

Ground is supplied:

- to combination meter terminal 27 (without tachometer) or 48 (with tachometer)
- through body grounds M28 and M54.

### WATER TEMPERATURE GAUGE

#### QG18DE

The water temperature gauge indicates the engine coolant temperature.
ECM provides a water temperature signal to combination meter for water temperature gauge with CAN communication line.

#### QR25DE

The water temperature gauge indicates the engine coolant temperature. The reading on the gauge is based on the signal from the ECM.
The water temperature gauge is regulated by a signal:

- from terminal 32 of the ECM

- to combination meter terminal 43 for the water temperature gauge.

### TACHOMETER

#### QG18DE Models

The tachometer indicates engine speed in revolutions per minute (rpm).
ECM provides an engine speed signal to combination meter for tachometer with CAN communication line.

#### QR25DE Models

The tachometer indicates engine speed in revolutions per minute (rpm).
The tachometer is regulated by a signal:

- from terminal 36 of the ECM
- to combination meter terminal 45 for the tachometer.

### FUEL GAUGE

The fuel gauge indicates the approximate fuel level in the fuel tank.
The fuel gauge is regulated by a variable ground signal supplied:

- to combination meter terminal 30 (without tachometer) or 44 (with tachometer) for the fuel gauge
- from terminal 2 of the fuel level sensor unit and fuel pump
- through terminal 5 of the fuel level sensor unit and fuel pump, and
- through body grounds B13 and B19.

### SPEEDOMETER

The combination meter receives a voltage signal from the vehicle speed sensor for the speedometer.
The voltage is supplied:

- to combination meter terminal 29 (without tachometer) or 47 (with tachometer) for the speedometer
- from terminal 1 (with QG18DE), or terminal + (with QR25DE) of the vehicle speed sensor.

The speedometer converts the voltage into the vehicle speed displayed.

## CAN Communication

EKS003LD

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

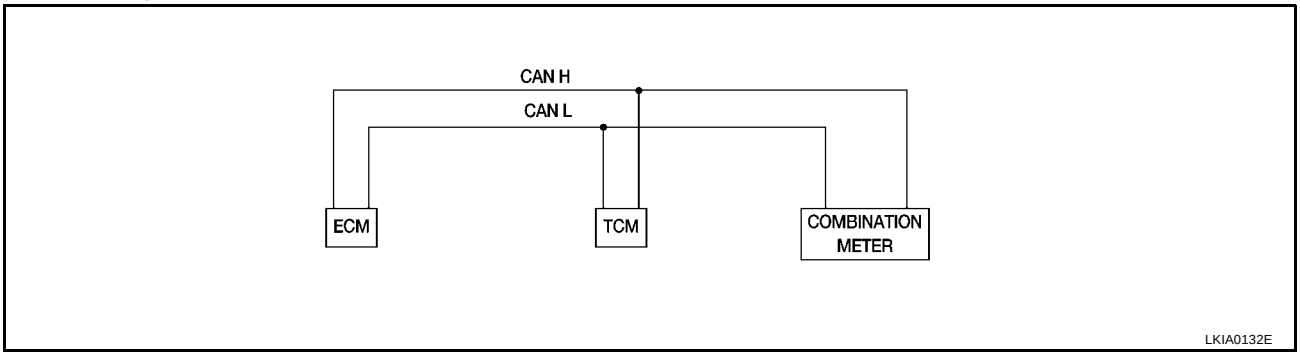
### CAN COMMUNICATION UNIT

| Body type | Sedan | | |
|---|---|---|---|
| Axle | 2WD | | |
| Engine | QG18DE | | QR25DE |
| Transmission | A/T | M/T | A/T |
| CAN communication unit | | | |
| ECM | × | × | × |
| TCM | × | | × |
| Combination meter | × | × | |
| CAN communication type | DI-6, "TYPE 1" | DI-6, "TYPE 2" | DI-7, "TYPE 3" |

×: Applicable

## TYPE 1

### System Diagram



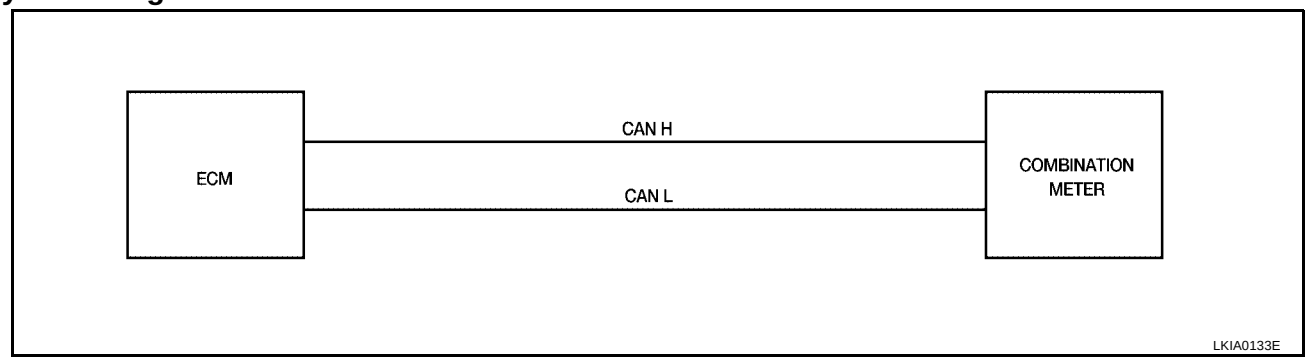

### Input/Output Signal Chart

T: Transmit R: Receive

| Signals | ECM | TCM | Combination Meter |
|---|---|---|---|
| Accelerator pedal position signal | T | R | |
| Output shaft revolution signal | R | T | |
| A/T self-diagnosis signal | R | T | |
| Closed throttle position signal | T | R | |
| Wide open throttle position signal | T | R | |
| Stop lamp switch signal | | R | T |
| Overdrive control switch signal | | R | T |
| O/D OFF indicator signal | | T | R |
| Engine speed signal | T | | R |
| Engine coolant temperature signal | T | | R |
| Vehicle speed signal | R | | T |
| Fuel level sensor signal | R | | T |
| Malfunction indicator lamp signal | T | | R |
| ASCD SET lamp signal | T | | R |
| ASCD CRUISE lamp signal | T | | R |

## TYPE 2

### System Diagram




### Input/Output Signal Chart

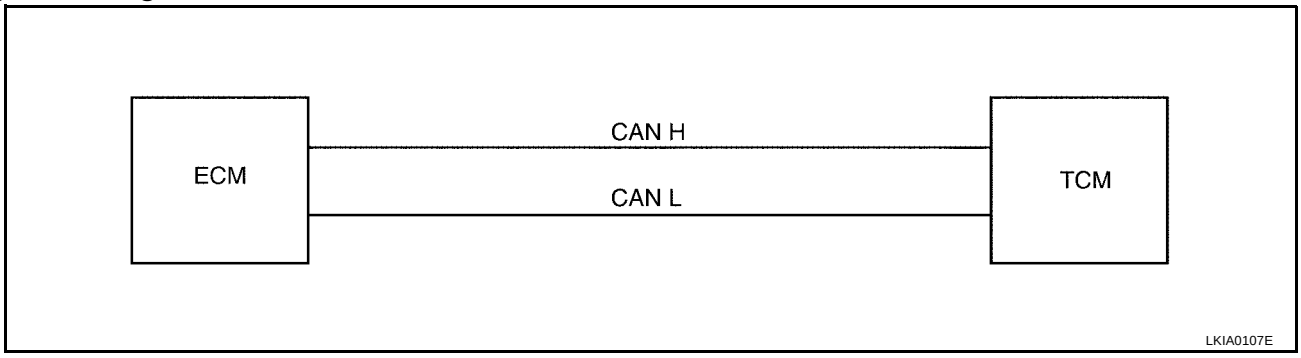
T: Transmit R: Receive

| Signals | ECM | Combination Meter |
|---|---|---|
| Engine speed signal | T | R |
| Engine coolant temperature signal | T | R |
| Vehicle speed signal | R | T |

| Signals | ECM | Combination Meter |
|---|---|---|
| Fuel level sensor signal | R | T |
| Malfunction indicator lamp signal | T | R |
| ASCD SET lamp signal | T | R |
| ASCD CRUISE lamp signal | T | R |

## TYPE 3

### System Diagram




### Input/Output Signal Chart

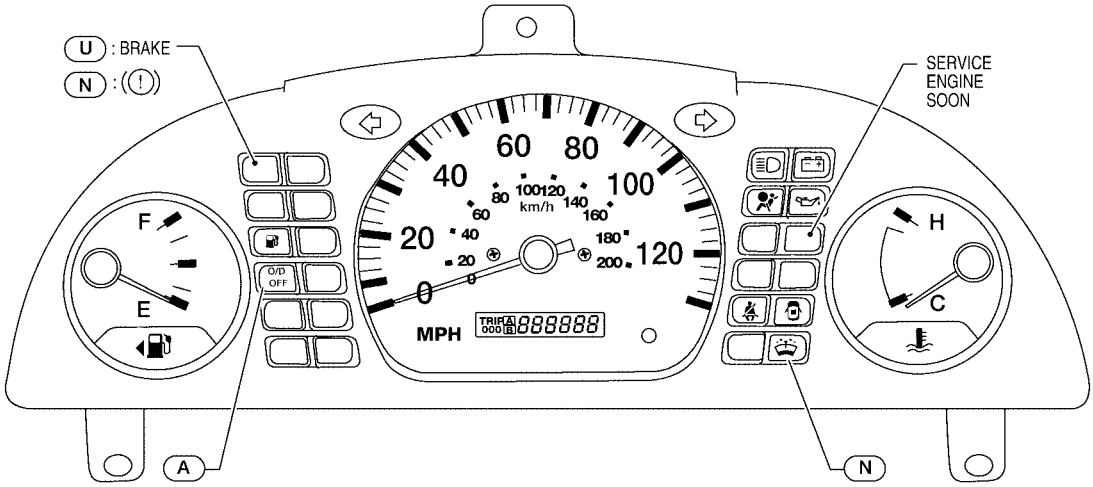
T: Transmit R: Receive

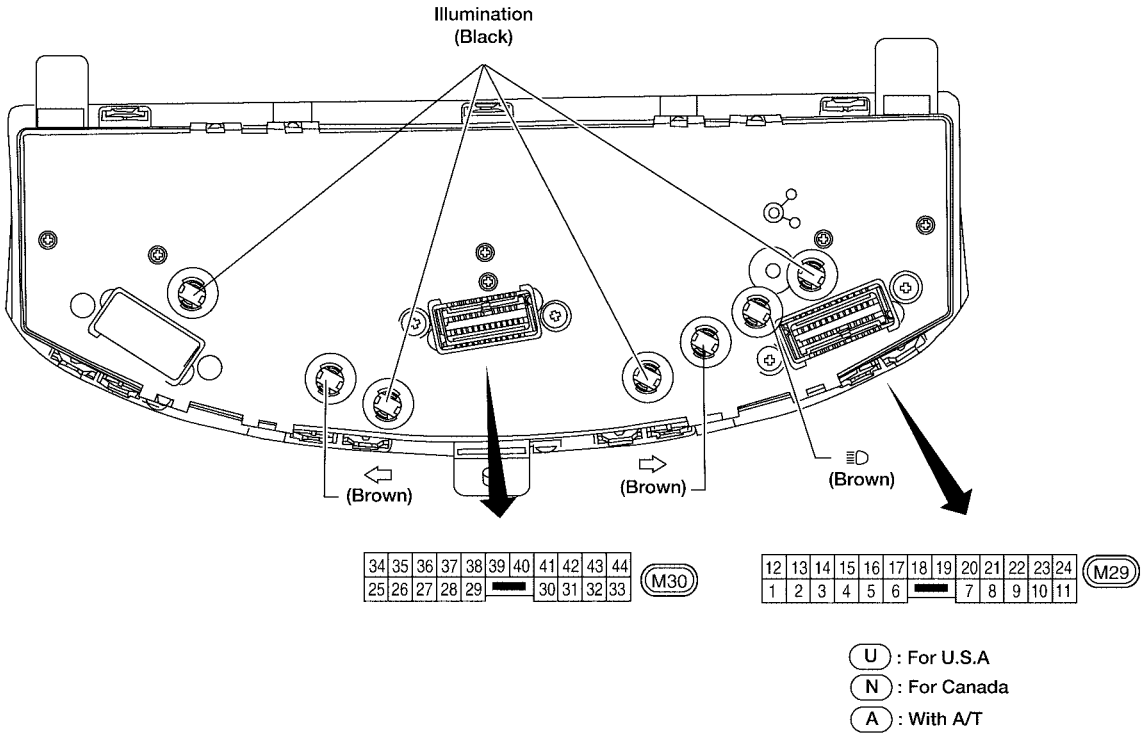
| Signals | ECM | TCM |
|---|---|---|
| Accelerator pedal position signal | T | R |
| Output shaft revolution signal | R | T |
| A/T self-diagnosis signal | R | T |
| Wide open throttle position signal | T | R |
| Overdrive cancel signal | T | R |

## Combination Meter

EKS0039B

### WITHOUT TACHOMETER



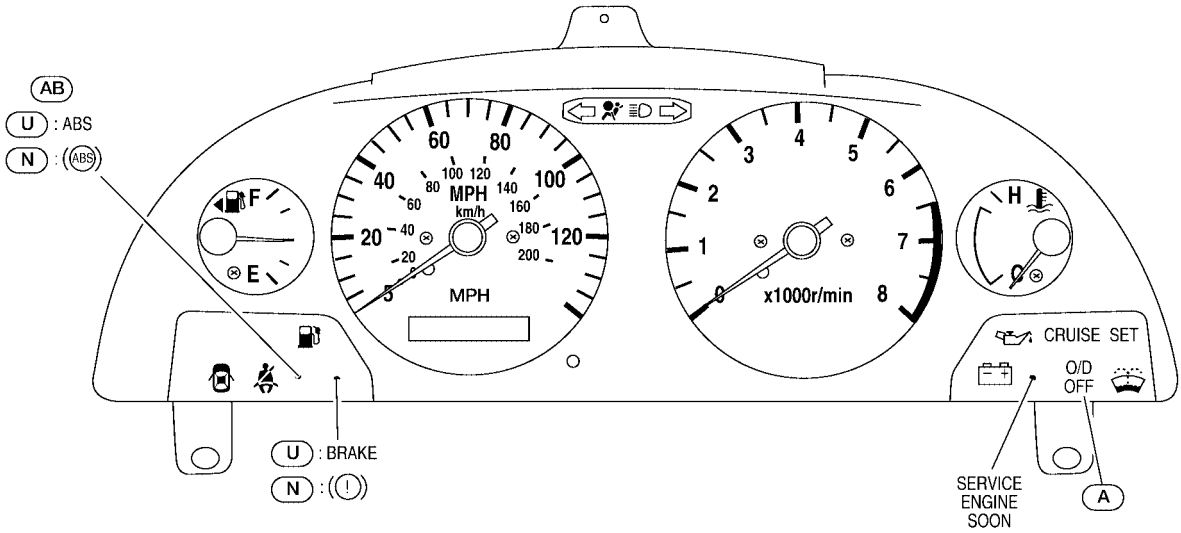



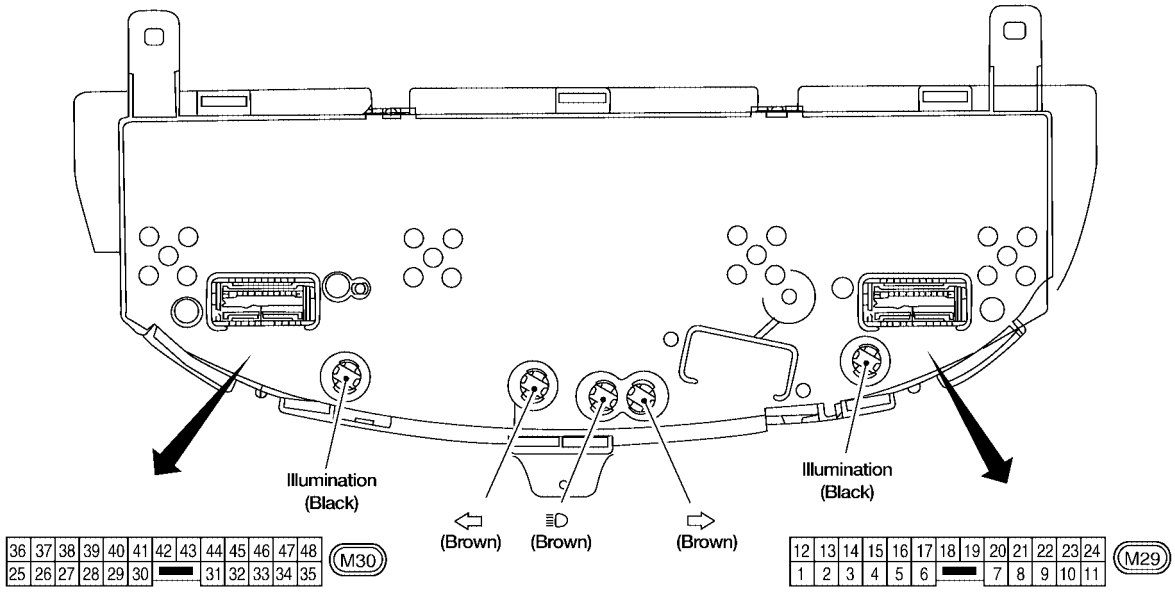

| Bulb socket color | Bulb wattage |
|---|---|
| Brown | 1.4W |
| Black | 3.0W |

( ): Bulb socket color

WKIA0289E

## WITH TACHOMETER (QG18DE MODELS)



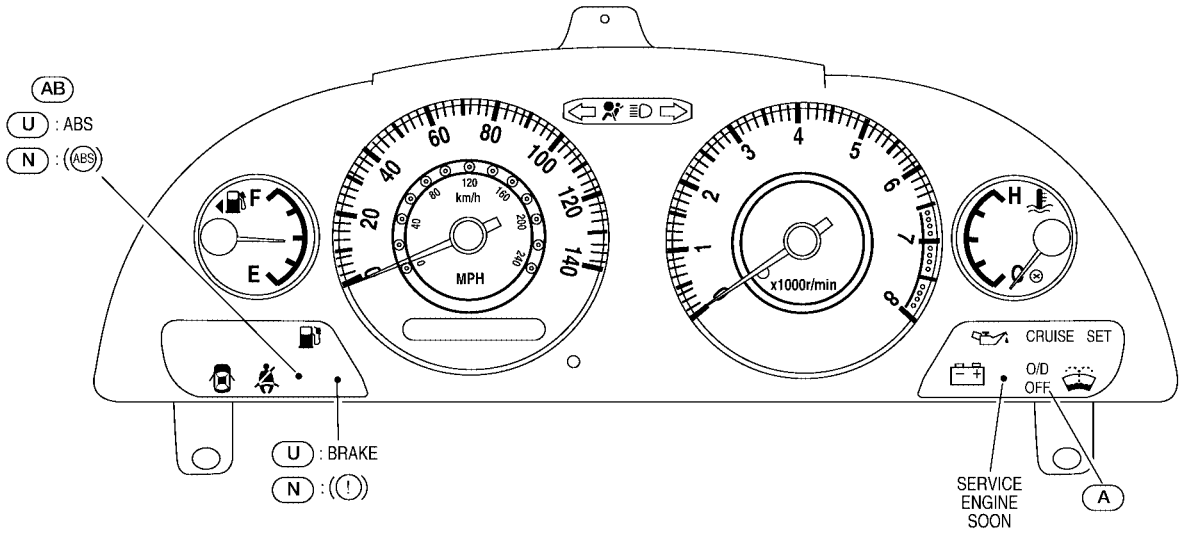

U : For USA
N : For Canada
A : With A/T
AB : With ABS

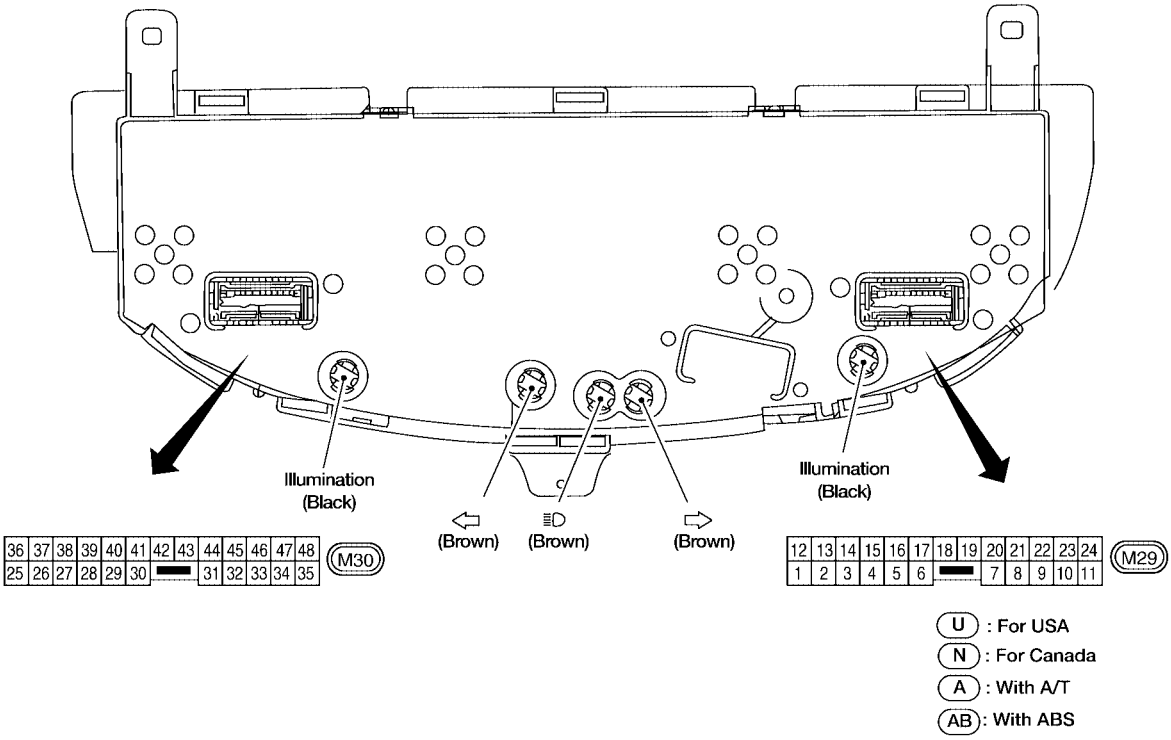
| Bulb socket color | Bulb wattage |
|---|---|
| Brown | 1.4W |
| Black | 3.0W |

( ): Bulb socket color

WKIA0006E

## WITH TACHOMETER (QR25DE MODELS)




| Bulb socket color | Bulb wattage |
|---|---|
| Brown | 1.4W |
| Black | 3.0W |

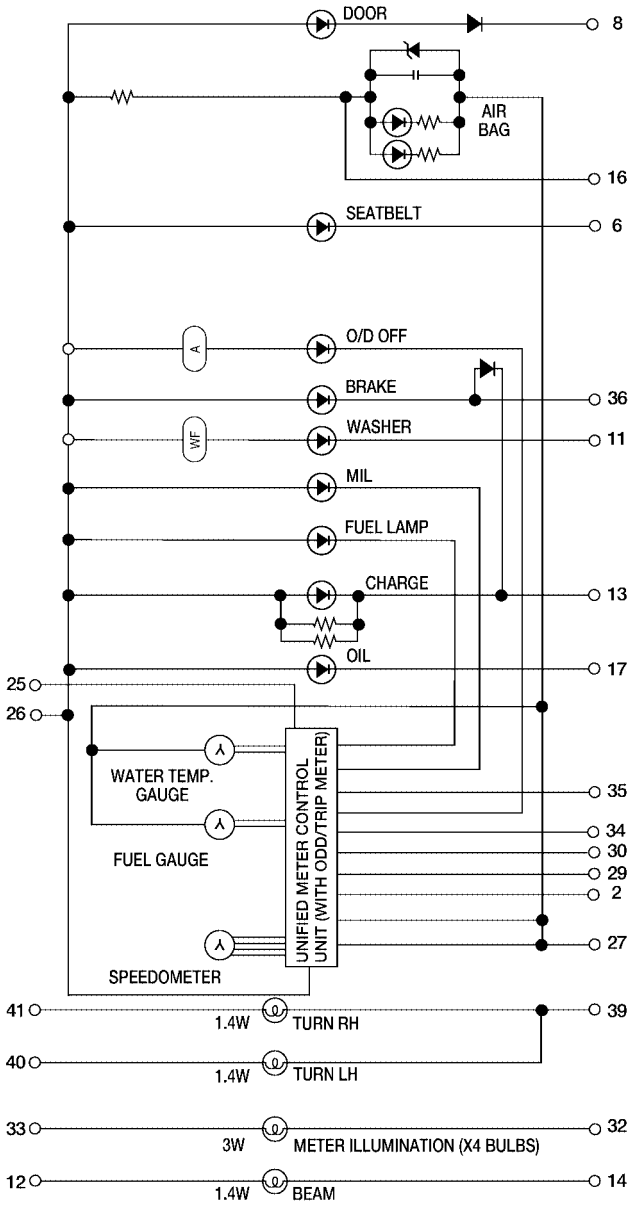
( ): Bulb socket color

WKIA0007E

## Schematic

EKS0039C

### WITHOUT TACHOMETER

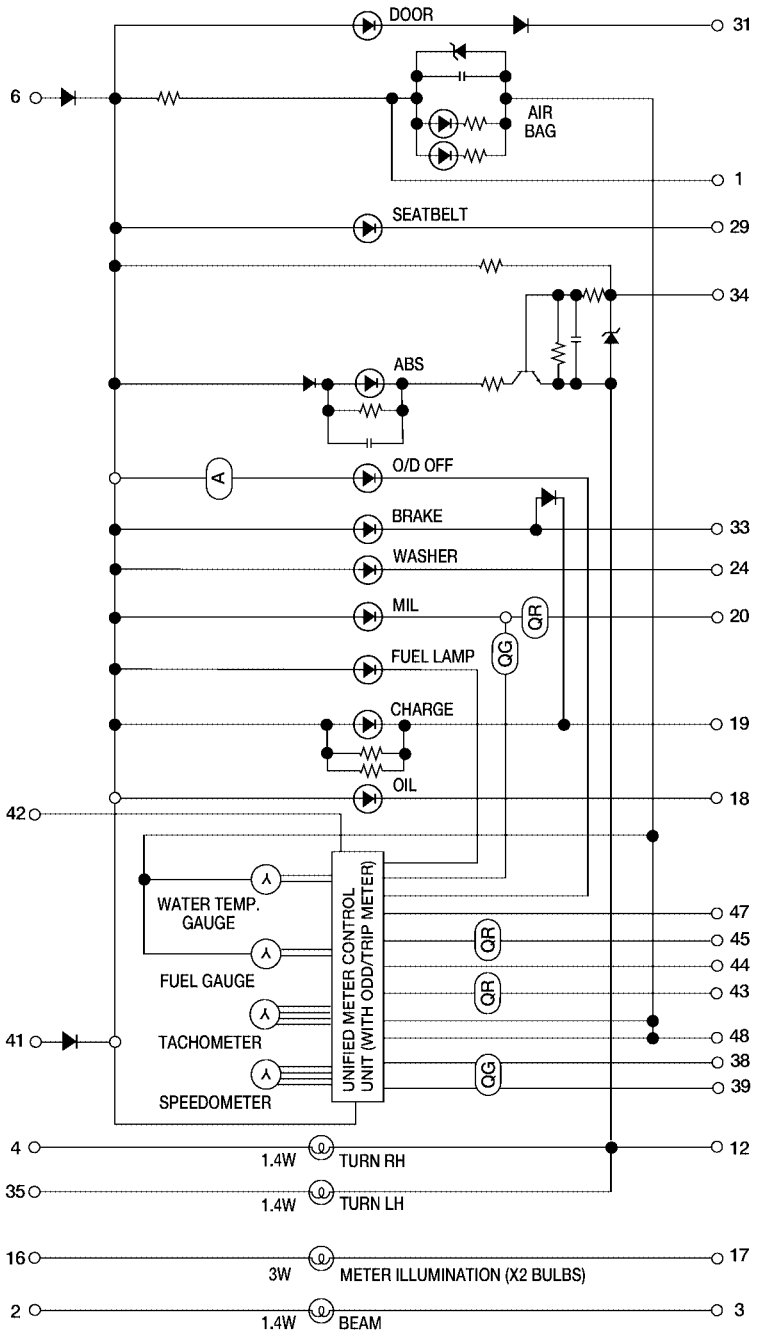



(A) : With A/T

(WF) : With washer fluid lever switch

WKWA0513E

## WITH TACHOMETER




(A) : With A/T

(QG) : With QG18DE

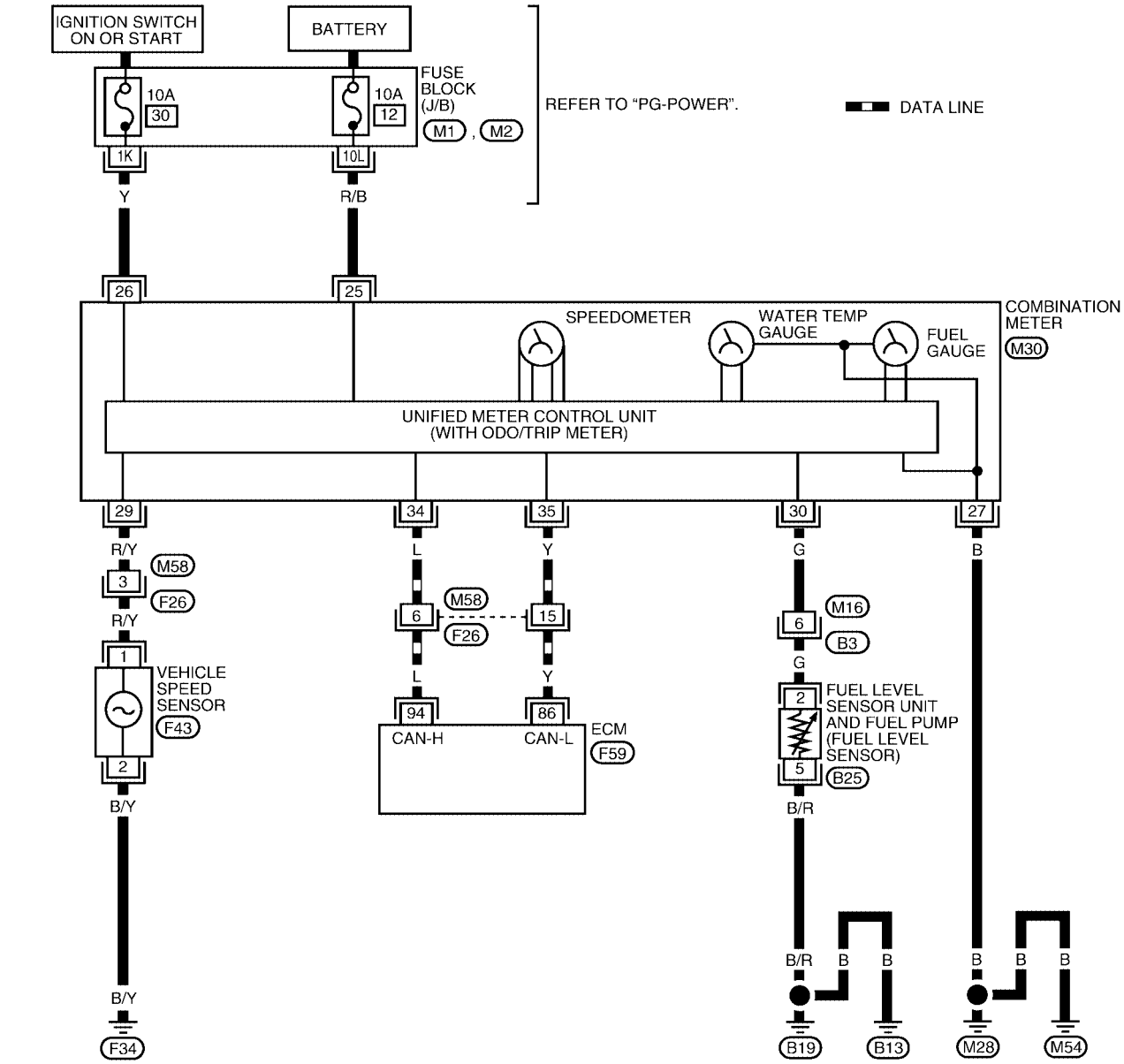
(QR) : With QR25DE

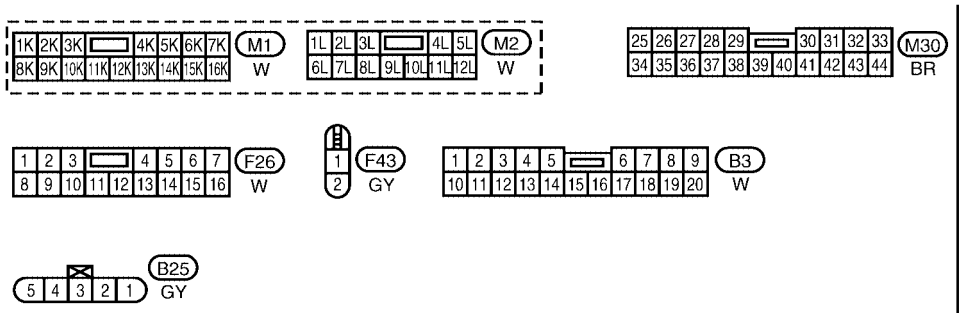
WKWA0506E

## Wiring Diagram — METER —
### WITHOUT TACHOMETER

EKS0039D

DI-METER-01

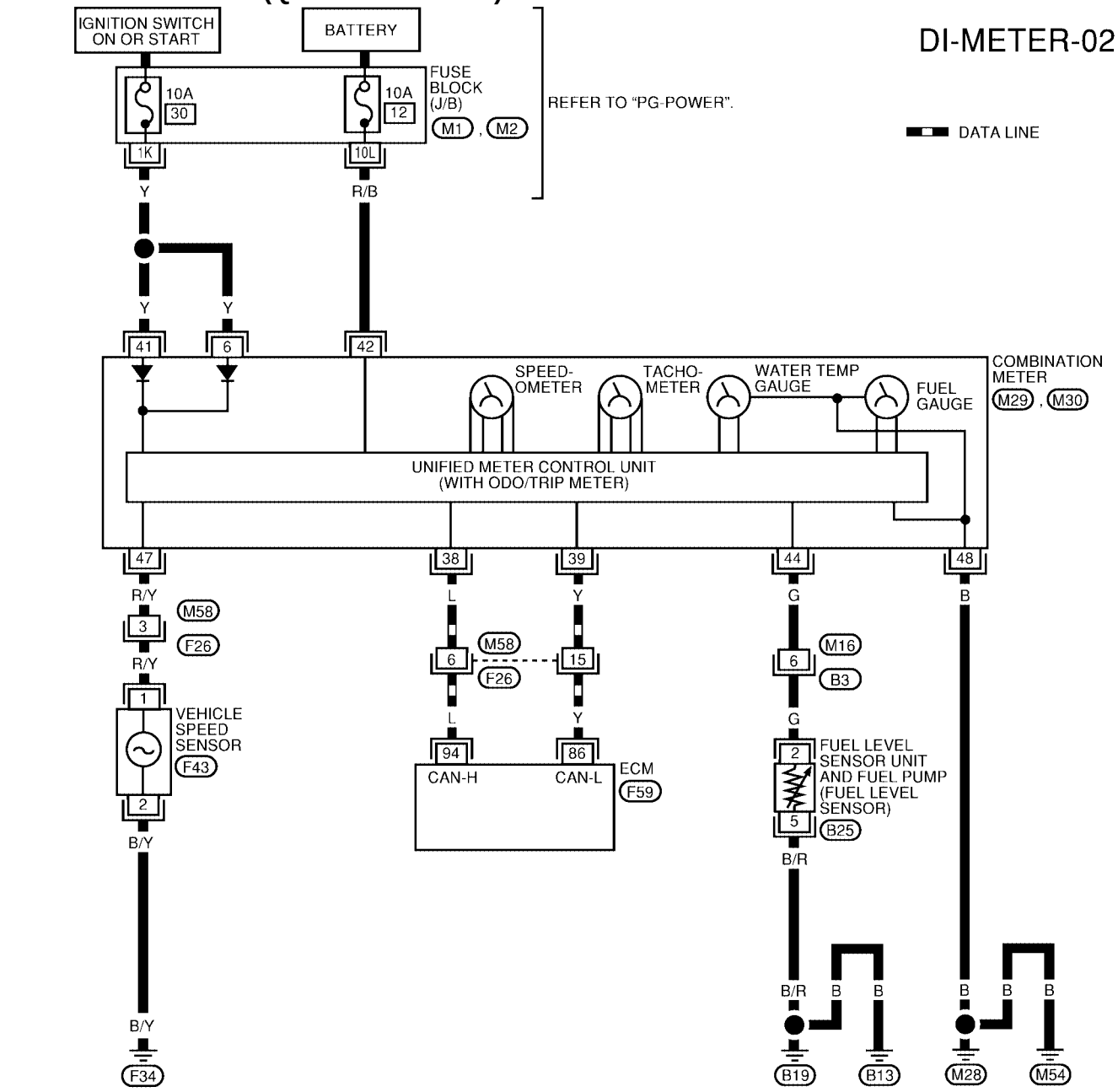


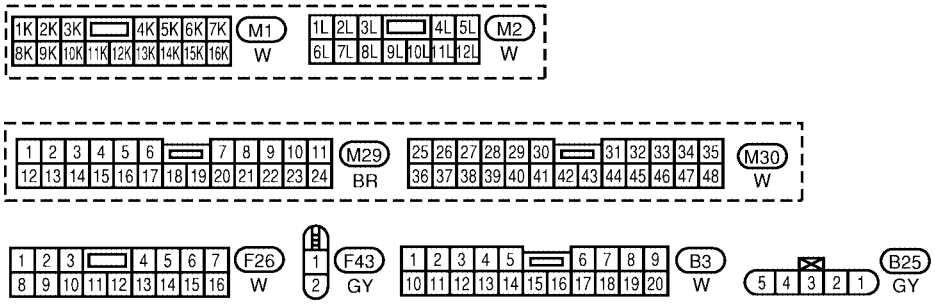




REFER TO THE FOLLOWING.
F59 - ELECTRICAL UNITS

WKWA0507E

## WITH TACHOMETER (QG18DE MODELS)



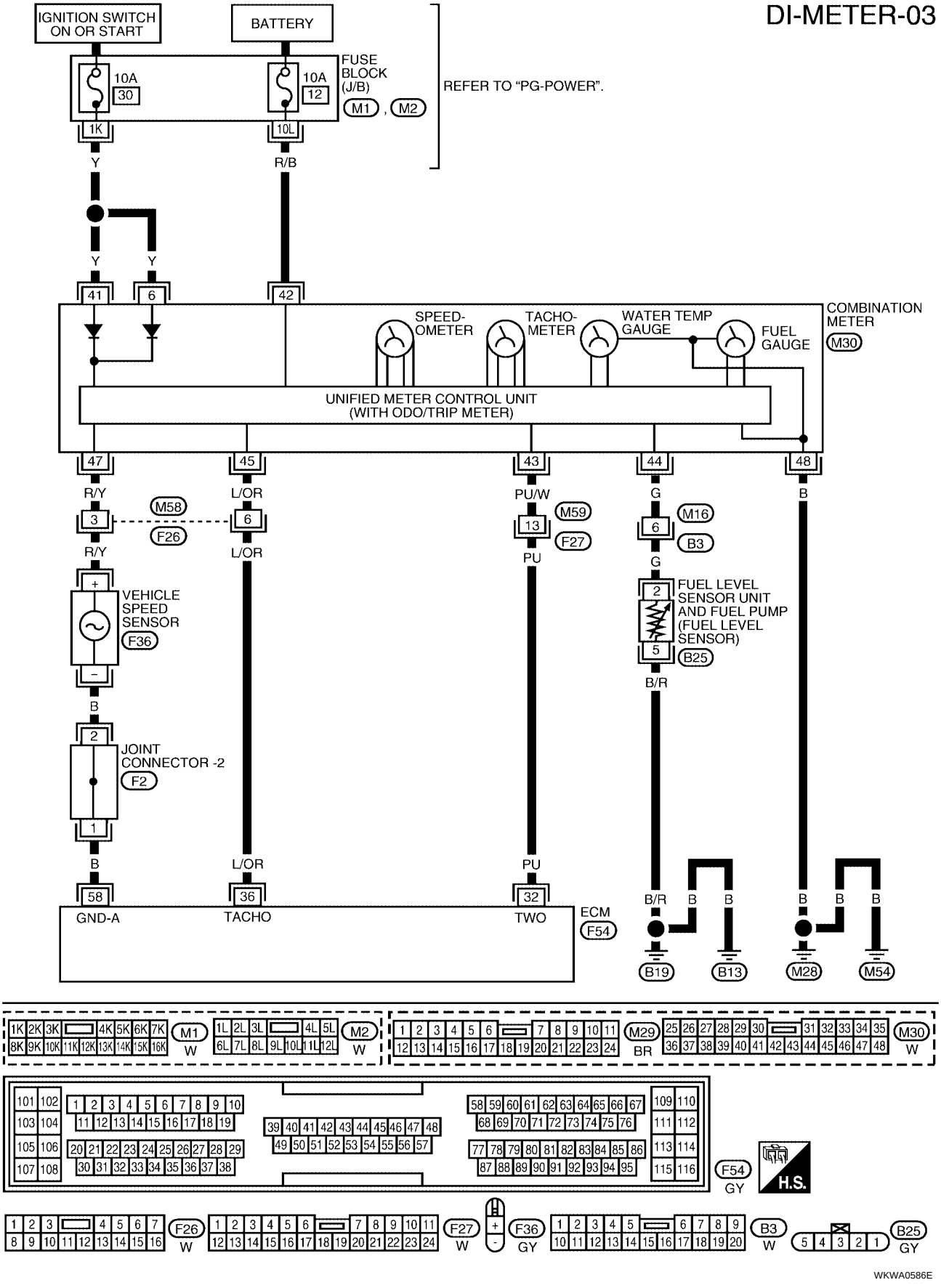




REFER TO THE FOLLOWING.
F59 - ELECTRICAL UNITS

WKWA0508E

## WITH TACHOMETER (QR25DE MODELS)

DI-METER-03




WKWA0586E

## Meter/Gauge Operation and Odo/Trip Meter Segment Check in Diagnosis Mode

EKS0039E

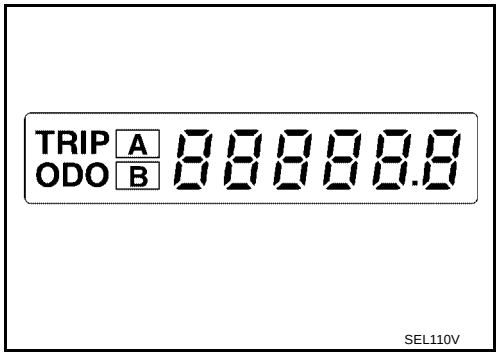
### DIAGNOSIS FUNCTION

- Odo/trip meter segment can be checked in diagnosis mode.
- Meters/gauges can be checked in diagnosis mode.

### HOW TO ALTERNATE DIAGNOSIS MODE

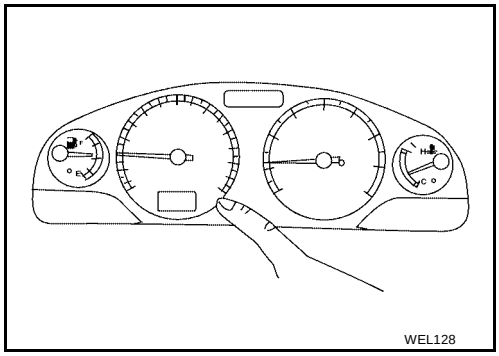
1. Turn ignition switch to ON and change odo/trip meter to “TRIP A” or “TRIP B”.
2. Turn ignition switch to OFF.
3. Turn ignition switch to ON when pushing odo/trip meter switch.
4. Release odo/trip meter switch 1 second after ignition switch is turned ON.
5. Push odo/trip meter switch three times within 7 seconds.
6. All odo/trip meter segments should be turned on.

   **NOTE:**
   If some segments are not turned on, combination meter should be replaced.
   At this point, the unified control meter is turned to diagnosis mode.



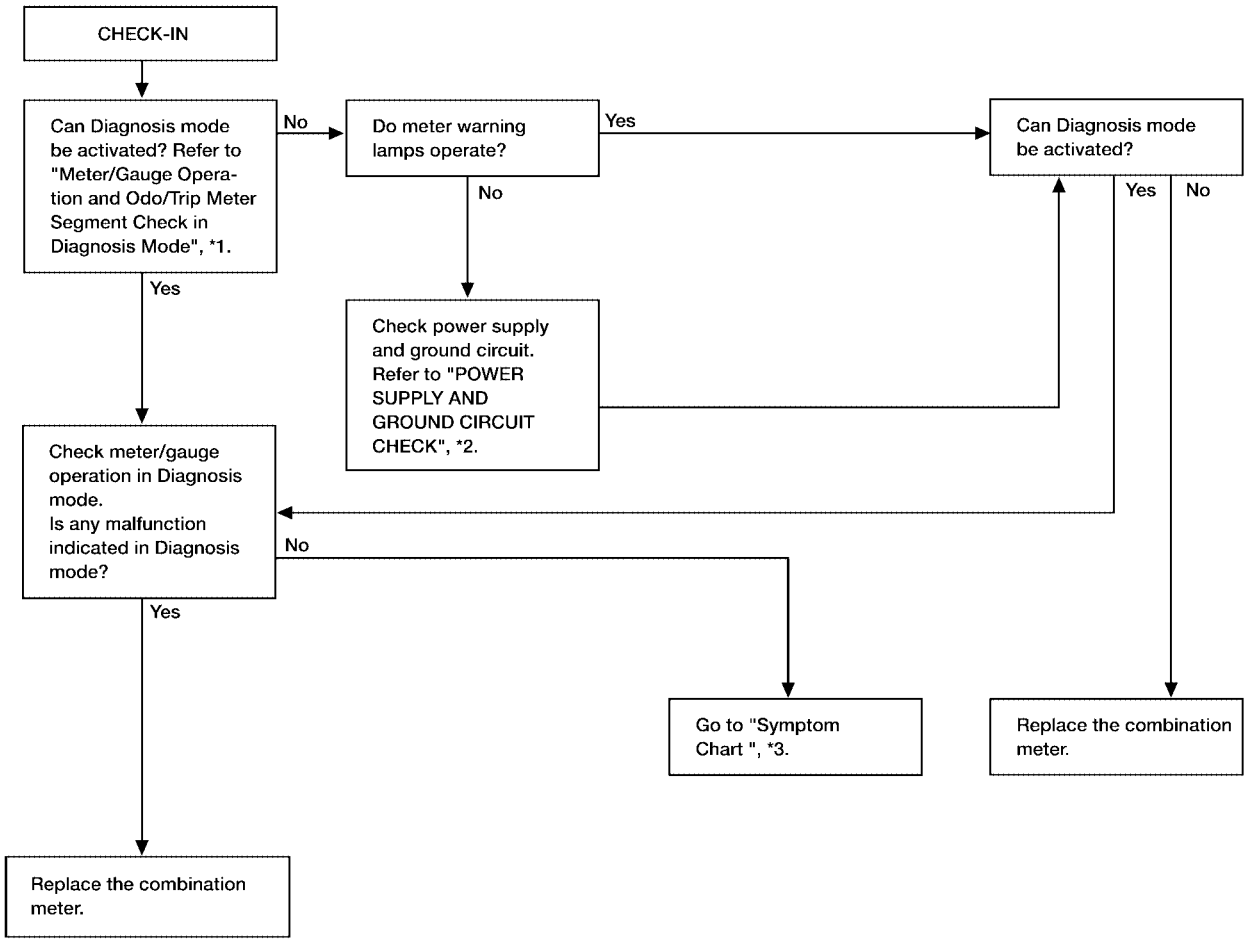

7. Push odo/trip meter switch. Indication of each meter/gauge should be as shown in figure during pushing odo/trip meter switch.

   **NOTE:**
   It takes a few seconds for indication of fuel gauge and water temperature gauge to become stable.
8. Turn ignition switch to OFF or start engine to cancel diagnosis mode.



## Trouble Diagnoses
### PRELIMINARY CHECK

EKS0039F




WKIA0159E

*1: DI-16 *2: DI-19 *3: DI-18

## SYMPTOM CHART

| Symptom | Possible causes | Repair order |
|---|---|---|
| One meter/gauge (speedometer/tachometer/fuel gauge/water temp. gauge) is malfunctioning.<br><br>Multiple meters/gauges (except odo/trip meter) are malfunctioning. | 1. Sensor signal<br>- Vehicle speed signal<br>- Engine revolution signal<br>- Fuel gauge<br>- Water temp. gauge<br>2. Unified meter control unit | 1. Check the sensor for malfunctioning meter/gauge.<br>DI-21, "INSPECTION/VEHICLE SPEED SENSOR"<br>DI-22, "INSPECTION/ENGINE REVOLUTION SIGNAL (QR25DE)"<br>DI-23, "INSPECTION/FUEL LEVEL SENSOR UNIT AND FUEL PUMP"<br>DI-24, "INSPECTION/WATER TEMPERATURE GAUGE (QG18DE MODELS)"<br>DI-25, "INSPECTION/WATER TEMPERATURE GAUGE (QR25DE MODELS)"<br>2. Replace combination meter assembly. |

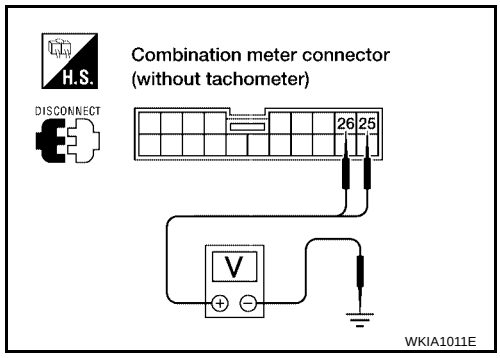
Before starting trouble diagnoses below, perform “PRELIMINARY CHECK”, DI-17, "PRELIMINARY CHECK" .

## POWER SUPPLY AND GROUND CIRCUIT CHECK

### Power Supply Circuit Check

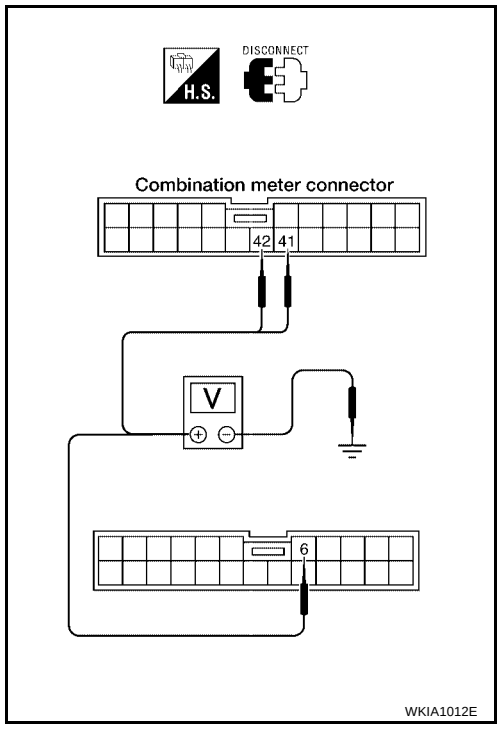
#### WITHOUT TACHOMETER

| Terminals | | | Ignition switch position | | |
|---|---|---|---|---|---|
| (+) | | (-) | | | |
| Connector | Terminal (Wire color) | | OFF | ACC | ON |
| M30 | 25 (R/B) | Ground | Battery voltage | Battery voltage | Battery voltage |
| M30 | 26 (Y) | Ground | 0V | 0V | Battery voltage |




#### WITH TACHOMETER

| Terminals | | | Ignition switch position | | |
|---|---|---|---|---|---|
| (+) | | (-) | | | |
| Connector | Terminal (Wire color) | | OFF | ACC | ON |
| M29 | 6 (Y) | Ground | 0V | 0V | Battery voltage |
| M30 | 41 (Y) | Ground | 0V | 0V | Battery voltage |
| M30 | 42 (R/B) | Ground | Battery voltage | Battery voltage | Battery voltage |




If NG, check the following.

- 10A fuse [No. 12, located in fuse block (J/B)]
- 10A fuse [No. 30, located in fuse block (J/B)]
- Harness for open or short between fuse and combination meter

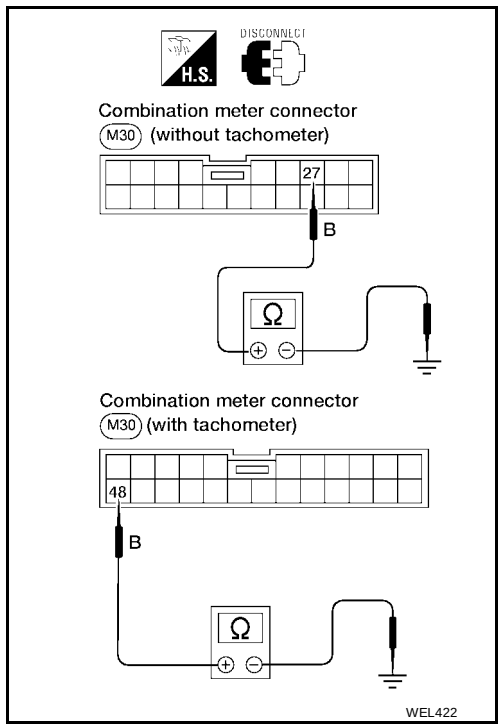
## Ground Circuit Check

### WITHOUT TACHOMETER

| Terminals | | | Continuity |
|---|---|---|---|
| (+) | | (-) | |
| Connector | Terminal (Wire color) | | |
| M30 | 27 (B) | Ground | Yes |

### WITH TACHOMETER

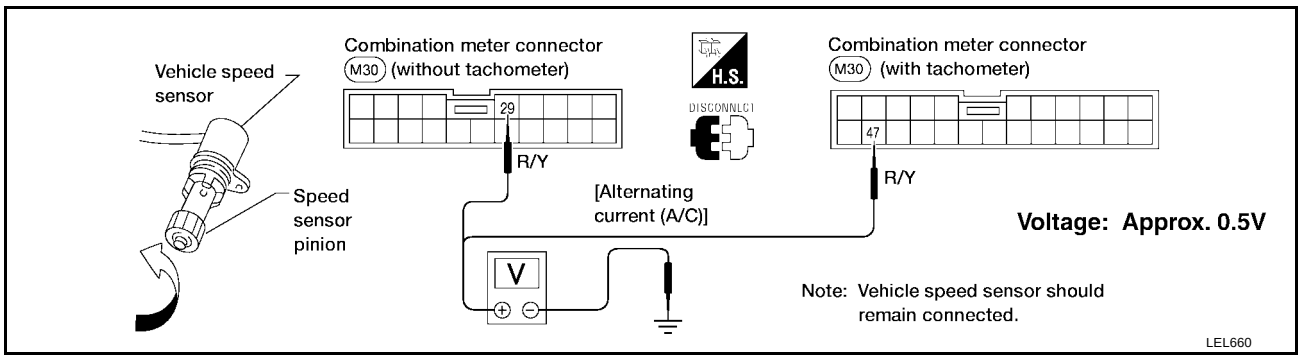
| Terminals | | | Continuity |
|---|---|---|---|
| (+) | | (-) | |
| Connector | Terminal (Wire color) | | |
| M30 | 48 (B) | Ground | Yes |



## INSPECTION/VEHICLE SPEED SENSOR

### 1. CHECK VEHICLE SPEED SENSOR OUTPUT

1. Remove vehicle speed sensor from transmission.
2. Check voltage between combination meter terminal 29 (without tachometer) or 47 (with tachometer) and ground while quickly turning speed sensor pinion.




OK or NG

OK >> Vehicle speed sensor is OK.
NG >> GO TO 2.

### 2. CHECK VEHICLE SPEED SENSOR

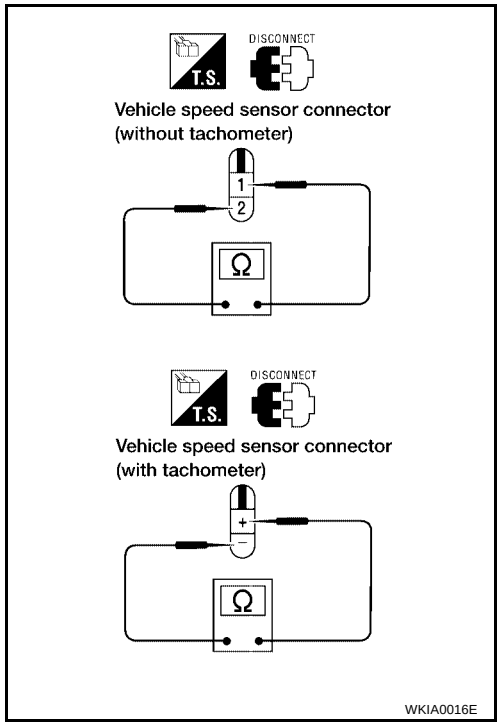
Check resistance between vehicle speed sensor connector F43 terminals 1 and 2 (with QG18DE), or connector F36 terminals + and - (with QR25DE).

**Resistance Approx. 250Ω**

OK or NG

OK >> Check the following.
- Harness between combination meter and vehicle speed sensor.
- Vehicle speed sensor ground circuit.

NG >> Replace vehicle speed sensor.




## INSPECTION/ENGINE REVOLUTION SIGNAL (QG18DE)

### 1. CHECK ECM SELF-DIAGNOSIS

Perform ECM self diagnosis. Refer to EC-113 (ULEV Models), EC-694 (SULEV Models).

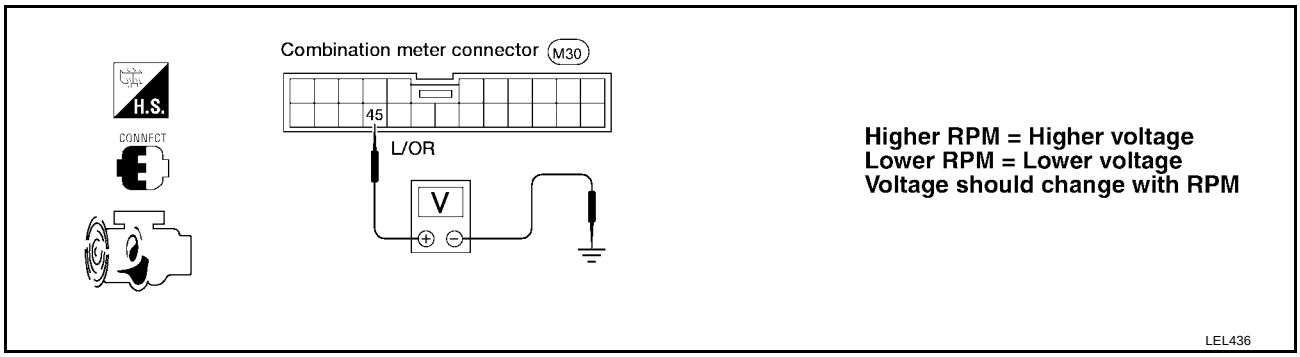
OK or NG

OK >> Replace combination meter.
NG >> Go to ECM trouble diagnosis. Refer to EC-113 (ULEV Models), EC-694 (SULEV Models).

## INSPECTION/ENGINE REVOLUTION SIGNAL (QR25DE)

### 1. CHECK ECM OUTPUT

1. Start engine.
2. Check voltage between combination meter terminal 45 and ground at idle and 2,000 rpm.




OK or NG

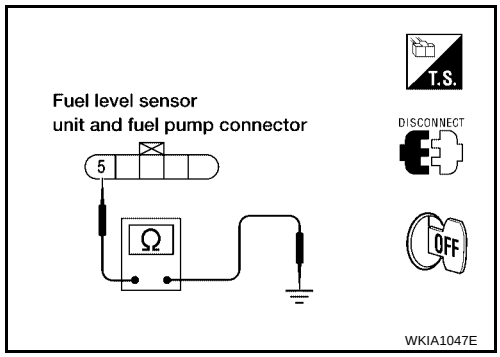
OK >> Engine revolution signal is OK.
NG >> Harness for open or short between ECM and combination meter.

## INSPECTION/FUEL LEVEL SENSOR UNIT AND FUEL PUMP

### 1. CHECK GROUND CIRCUIT FOR FUEL LEVEL SENSOR UNIT

Check harness continuity between fuel level sensor unit and fuel pump connector terminal 5 and ground.

| Terminals | | | Continuity |
|---|---|---|---|
| (+) | | (-) | |
| Connector | Terminal (Wire color) | | |
| MB25 | 5 (B/R) | Ground | Yes |




OK or NG

OK >> GO TO 2.
NG >> Repair harness or connector.

### 2. CHECK FUEL LEVEL SENSOR UNIT

Refer to DI-26, "FUEL LEVEL SENSOR UNIT CHECK" .

OK or NG

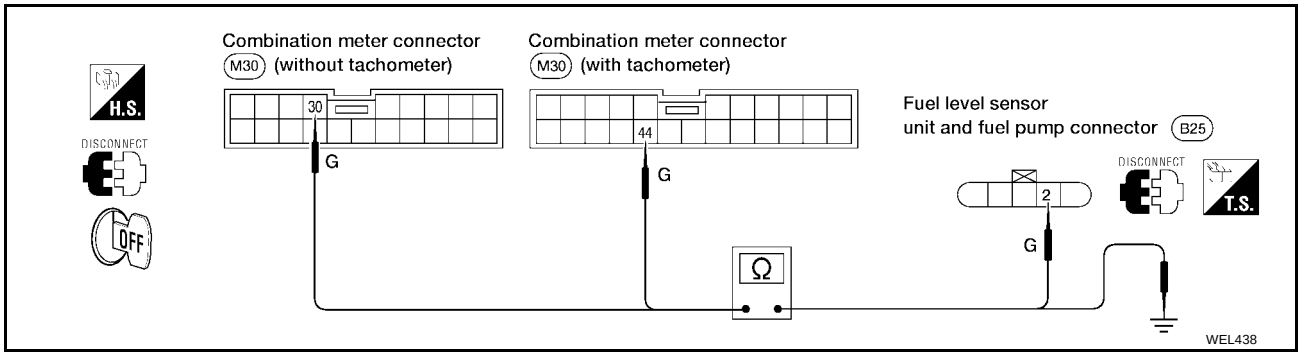
OK >> GO TO 3.
NG >> Replace fuel level sensor unit.

### 3. CHECK HARNESS FOR OPEN OR SHORT

1. Disconnect combination meter connector and fuel level sensor unit and fuel pump connector.
2. Check continuity between combination meter terminal 30 (without tachometer) or terminal 44 (with tachometer) and fuel level sensor unit and fuel pump connector terminal 2.

**Continuity should exist.**

3. Check continuity between combination meter terminal 30 (without tachometer) or terminal 44 (with tachometer) and ground.




**Continuity should not exist.**

OK or NG

OK >> Fuel level sensor unit is OK.
NG >> Repair harness or connector.

## INSPECTION/WATER TEMPERATURE GAUGE (QG18DE MODELS)

### 1. CHECK ECM SELF-DIAGNOSIS

Perform ECM self diagnosis. Refer to EC-113 (ULEV Models), EC-694 (SULEV Models).

OK or NG

OK >> Replace combination meter.
NG >> Go to ECM trouble diagnosis. Refer to EC-113 (ULEV Models), EC-694 (SULEV Models).

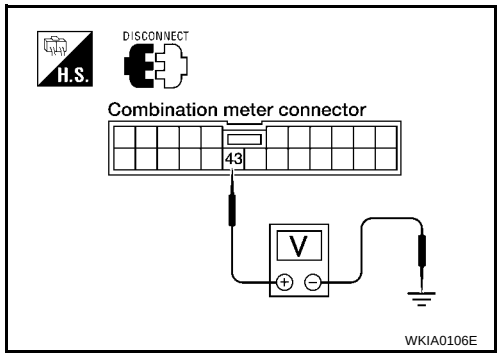
## INSPECTION/WATER TEMPERATURE GAUGE (QR25DE MODELS)

### 1. CHECK ECM OUTPUT

1. Disconnect combination meter.
2. Check voltage between combination meter harness connector M30 terminal 43 (PU/W) and ground.
   **Battery voltage should exist.**

OK or NG

OK >> GO TO 3.
NG >> GO TO 2.

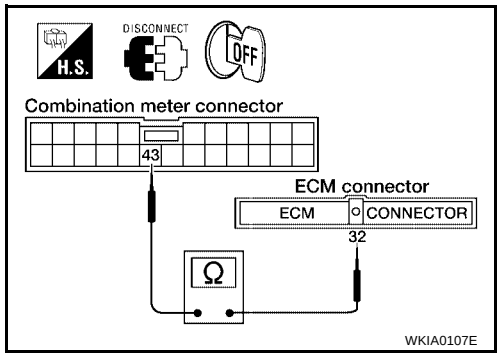



### 2. CHECK HARNESS FOR OPEN OR SHORT

1. Disconnect ECM connector.
2. Check continuity between combination meter harness connector M30 terminal 43 (PU/W) and ECM harness connector F54 terminal 32 (PU).
   **Continuity should exist.**
3. Check continuity between combination meter harness connector M30 terminal 43 (PU/W) and ground.
   **Continuity should not exist.**

OK or NG

OK >> GO TO 3.
NG >> Repair harness or connector.

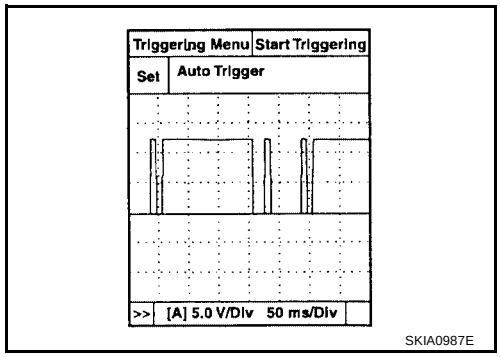



### 3. CHECK WATER TEMPERATURE OUTPUT SIGNAL

1. Connect combination meter connector and ECM connector.
2. Start engine.
3. Check output signal between combination meter harness connector M30 terminal 43 (PU/W) and ground. (Use "SIMPLE OSCILLOSCOPE" in "SUB MODE" with CONSULT-II.)
   **Reading should be as shown.**

OK or NG

OK >> Replace combination meter.
NG >> Check ECM.



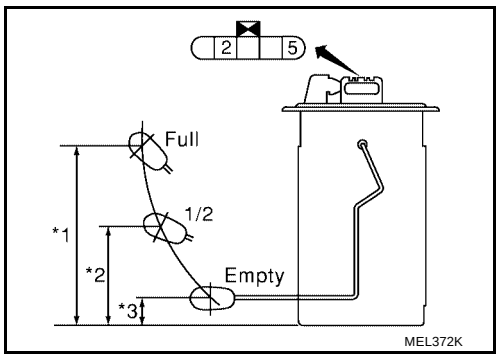
## Electrical Components Inspection

EKS0039G

### FUEL LEVEL SENSOR UNIT CHECK

- For removal, refer to FL-3, "Removal and Installation" .

Check the resistance between terminals 2 and 5.

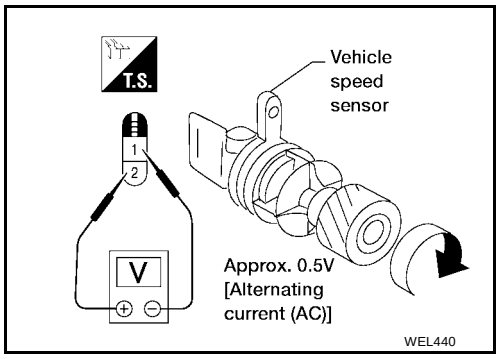



| Ohmmeter | | Float position mm (in) | | | Resistance (Approximate) |
|---|---|---|---|---|---|
| (+) | (–) | | | | |
| 2 | 5 | *1 | Full | 136.1 (5.358) | 4.5 - 5.5 Ω |
| | | *2 | 1/2 | 89.8 (3.535) | 31.5 - 33.5 Ω |
| | | *3 | Empty | 31.3 (1.232) | 80 - 83 Ω |

*1 and *3: When float rod is in contact with stopper.

### VEHICLE SPEED SENSOR SIGNAL CHECK

1. Remove vehicle speed sensor from transmission.
2. Turn vehicle speed sensor pinion quickly and measure voltage across terminals 1 and 2 (with QG18DE), or terminals + and - (with QR25DE).



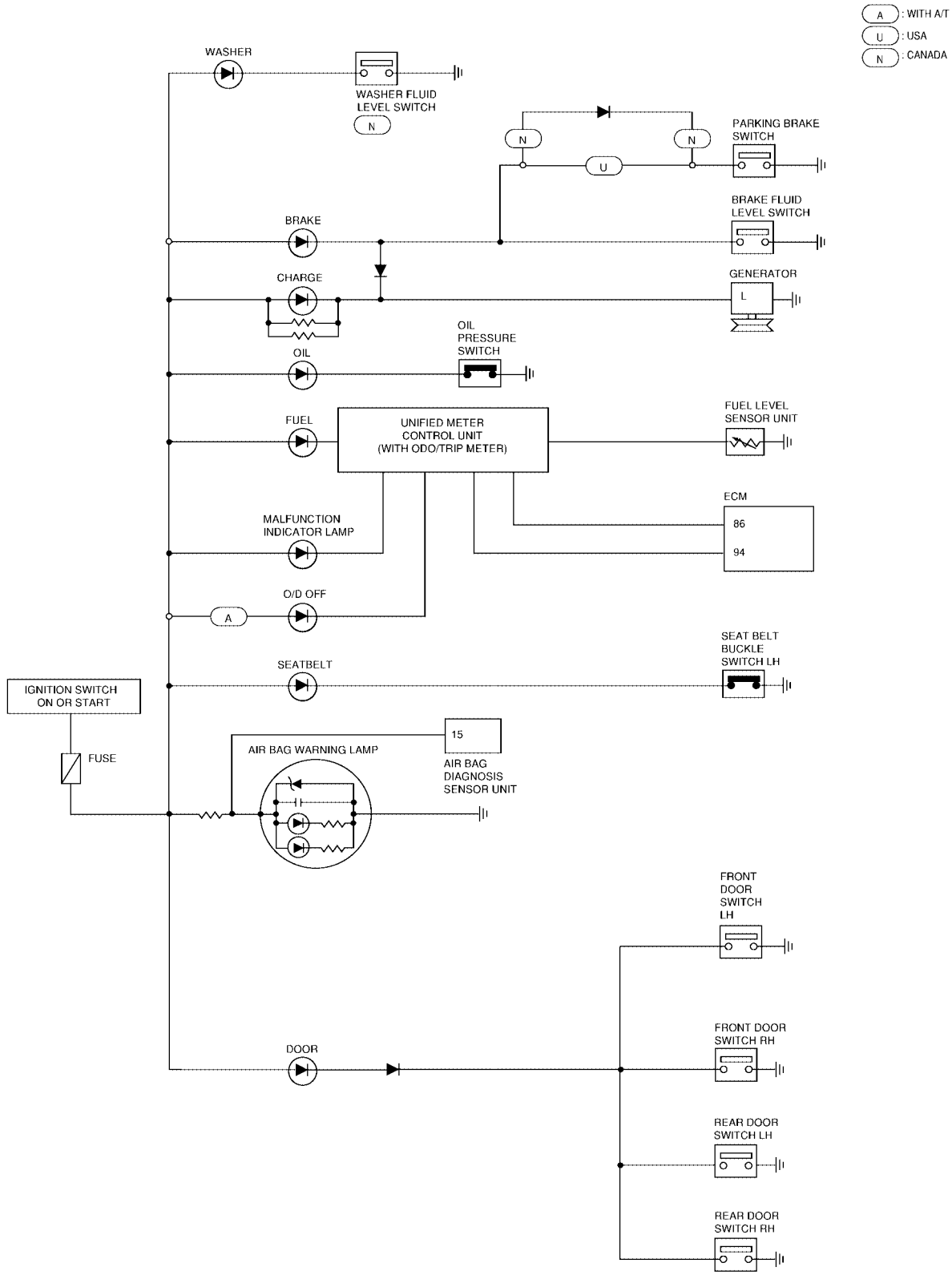
# WARNING LAMPS

PFP:24814

## Schematic

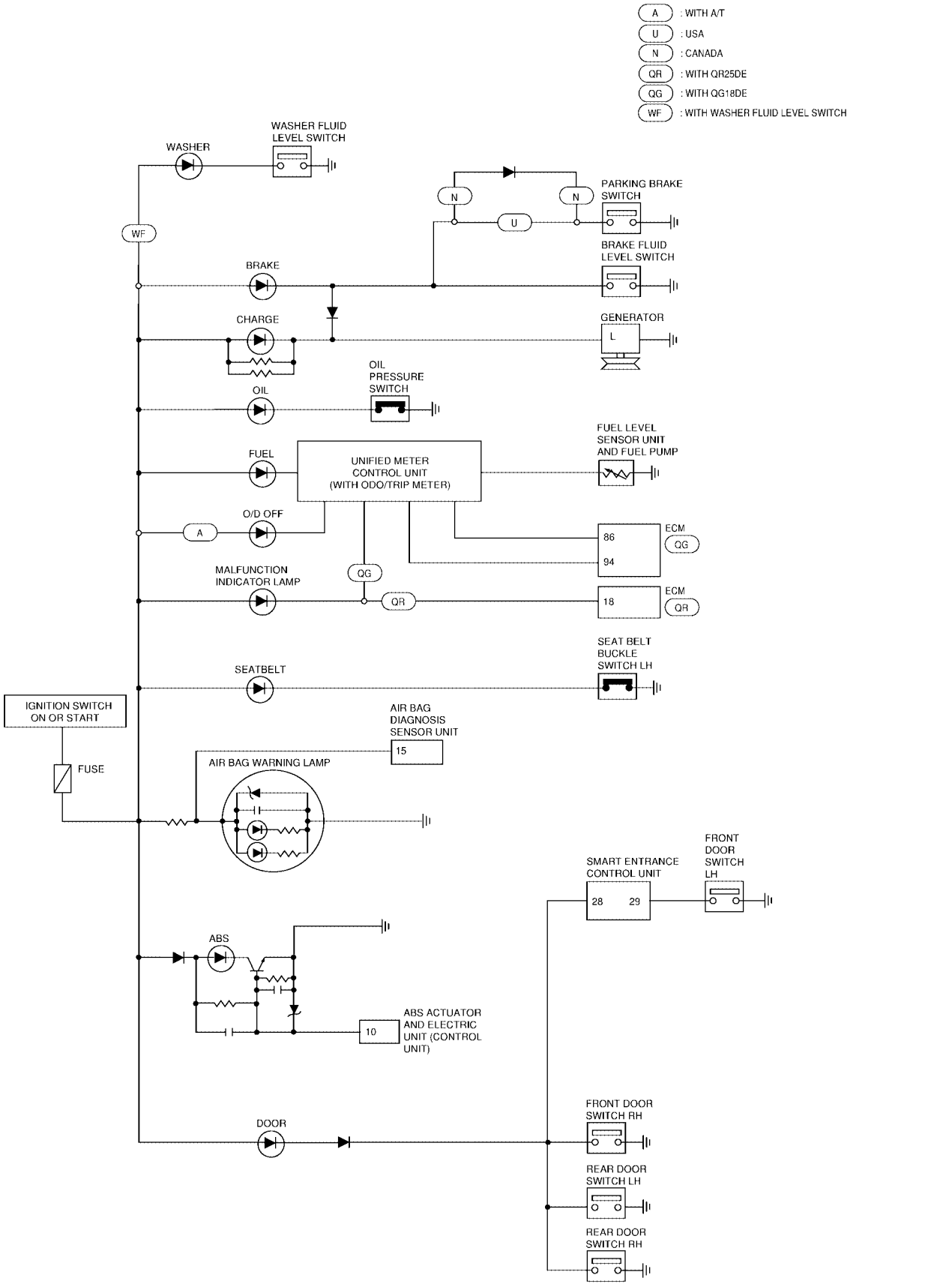
EKS0039H

### WITHOUT TACHOMETER




WKWA0509E

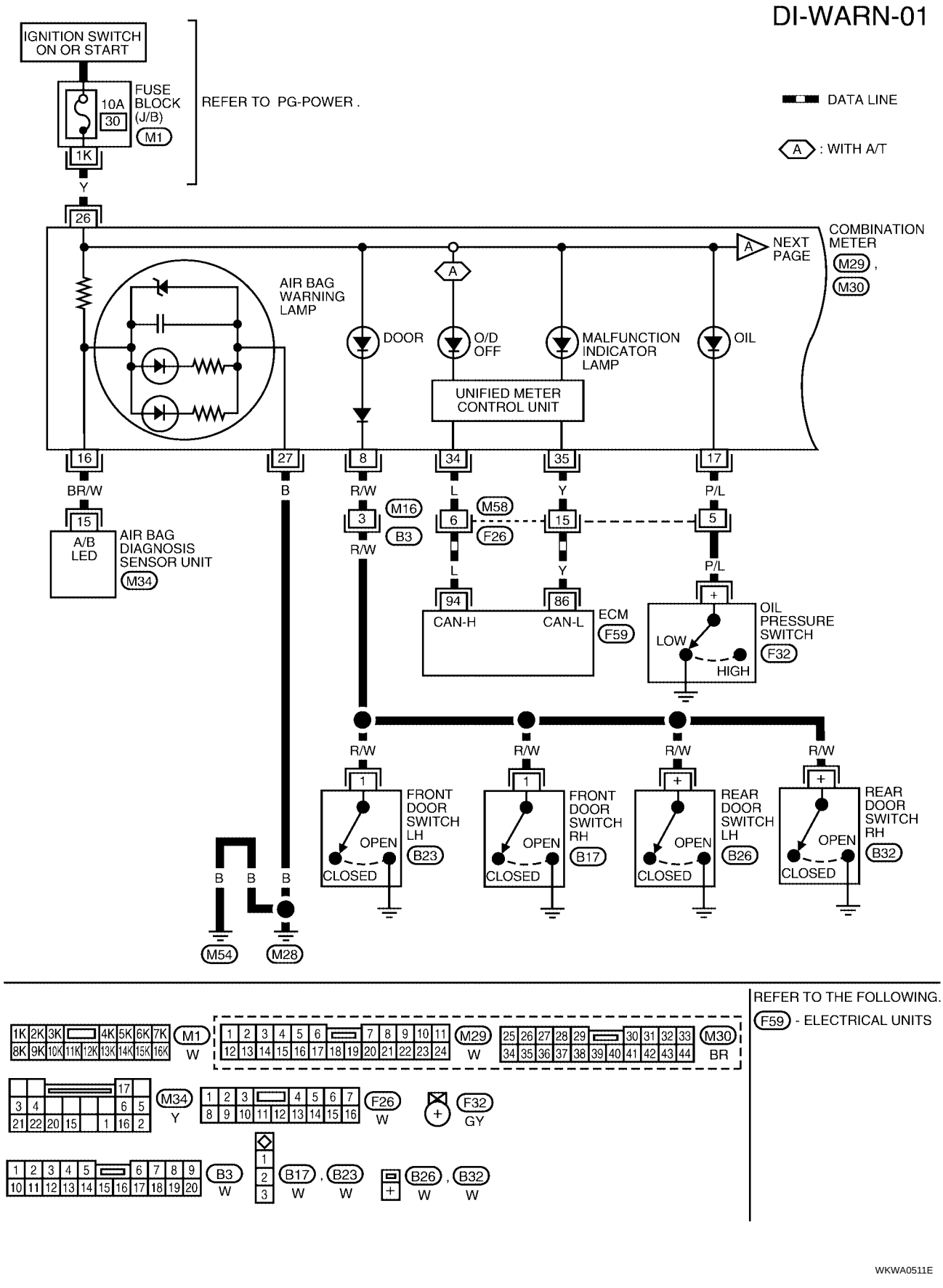
## WITH TACHOMETER




WKWA0510E

## Wiring Diagram — WARN —
### WITHOUT TACHOMETER

EKS0039I

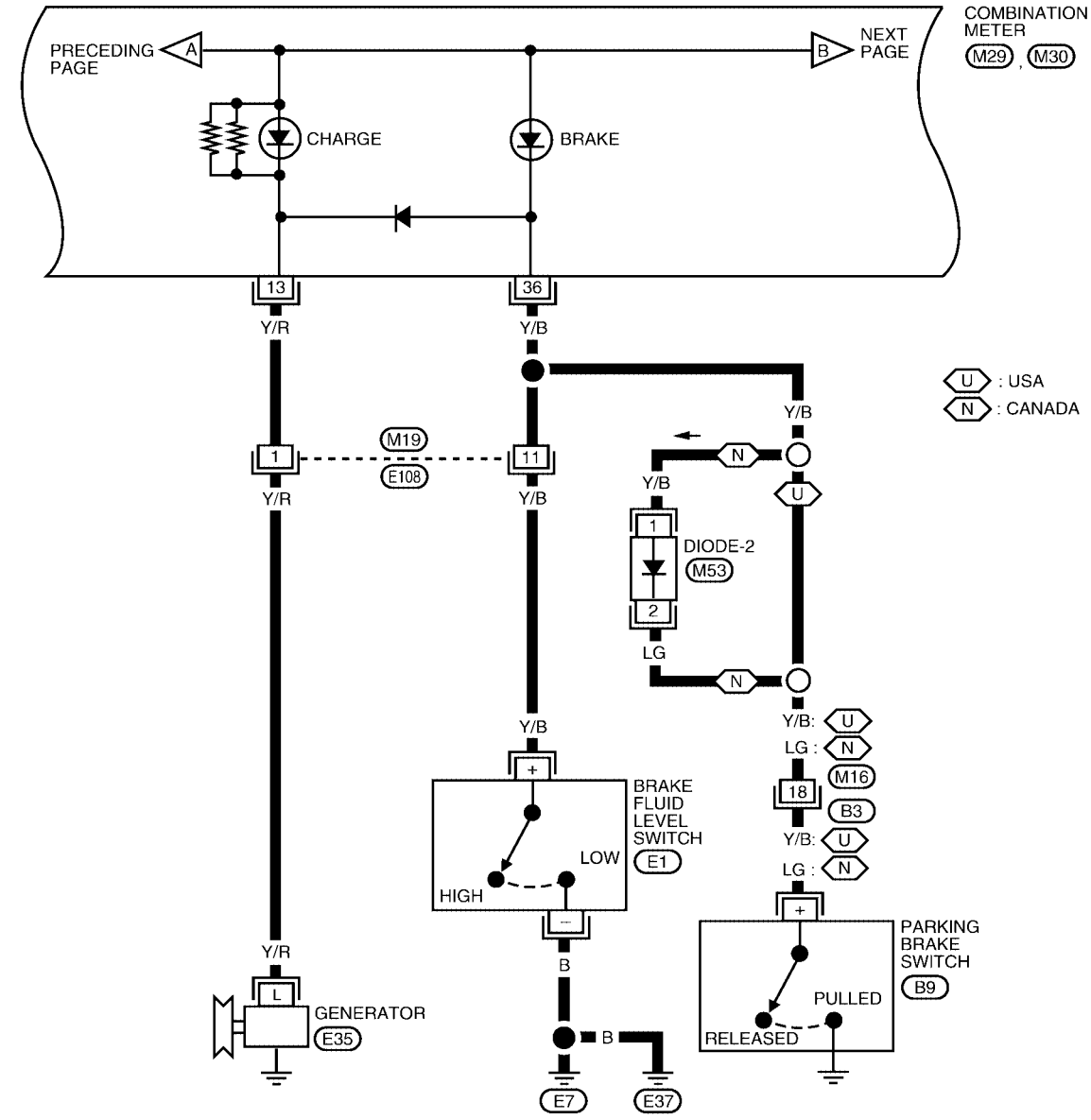


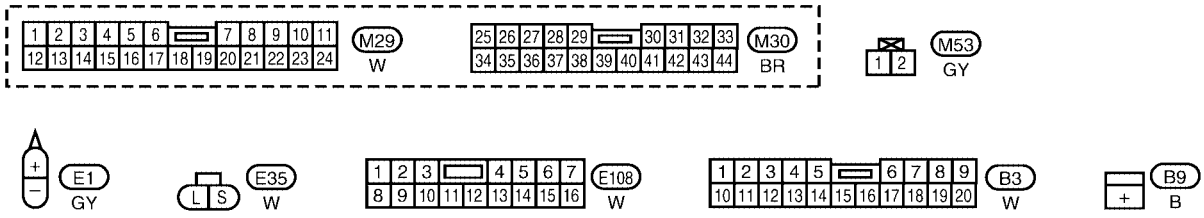




WKWA0511E

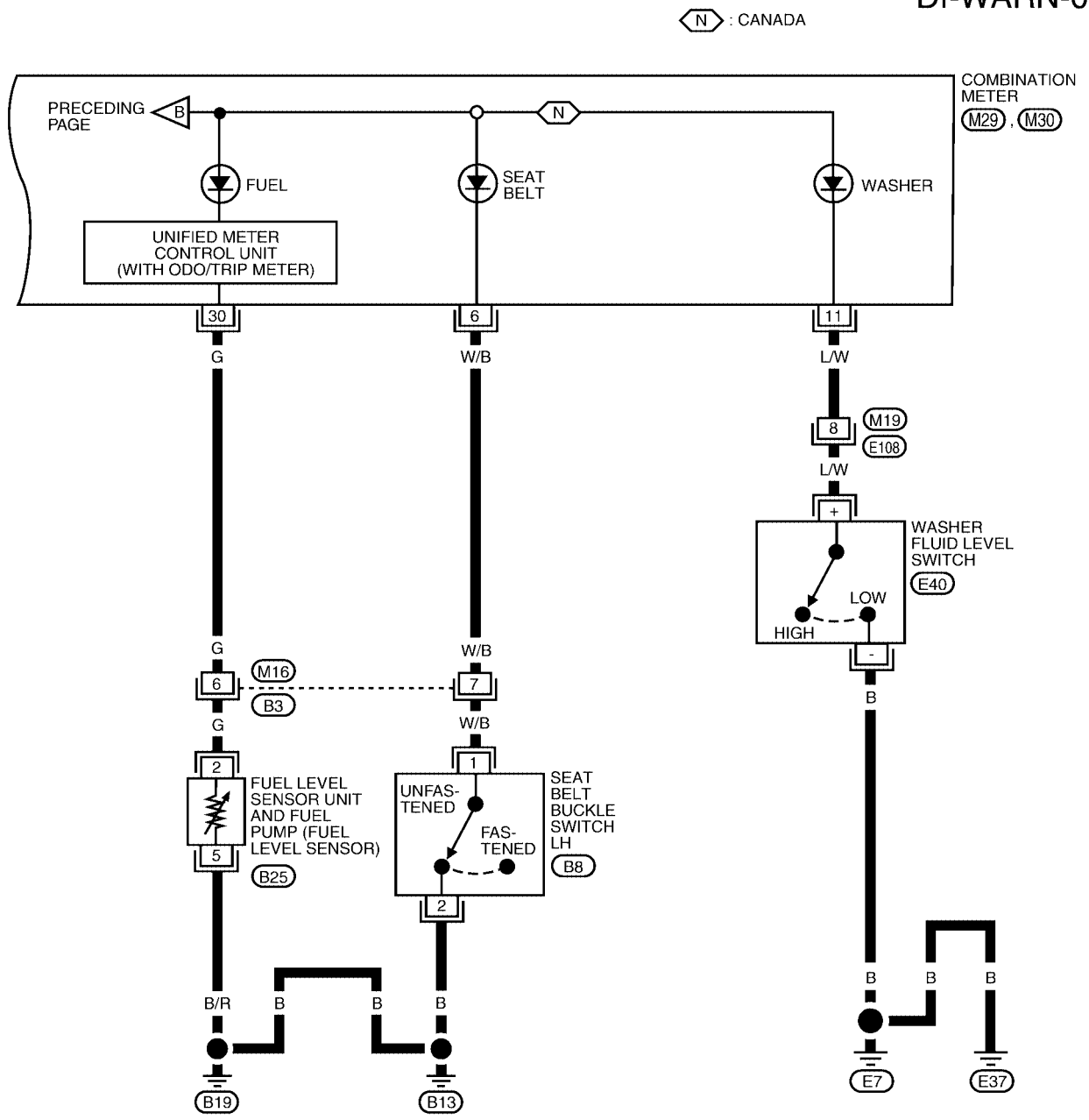
DI-WARN-02

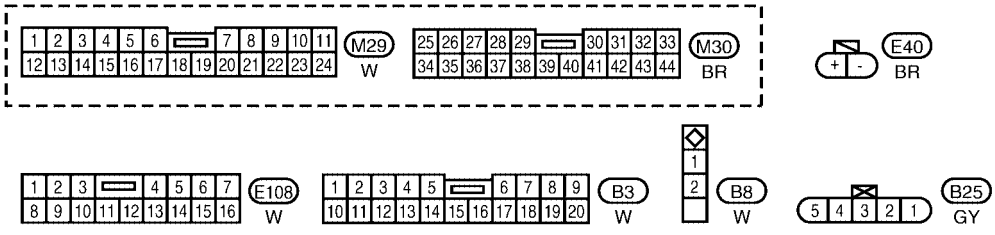



WKWA0238E

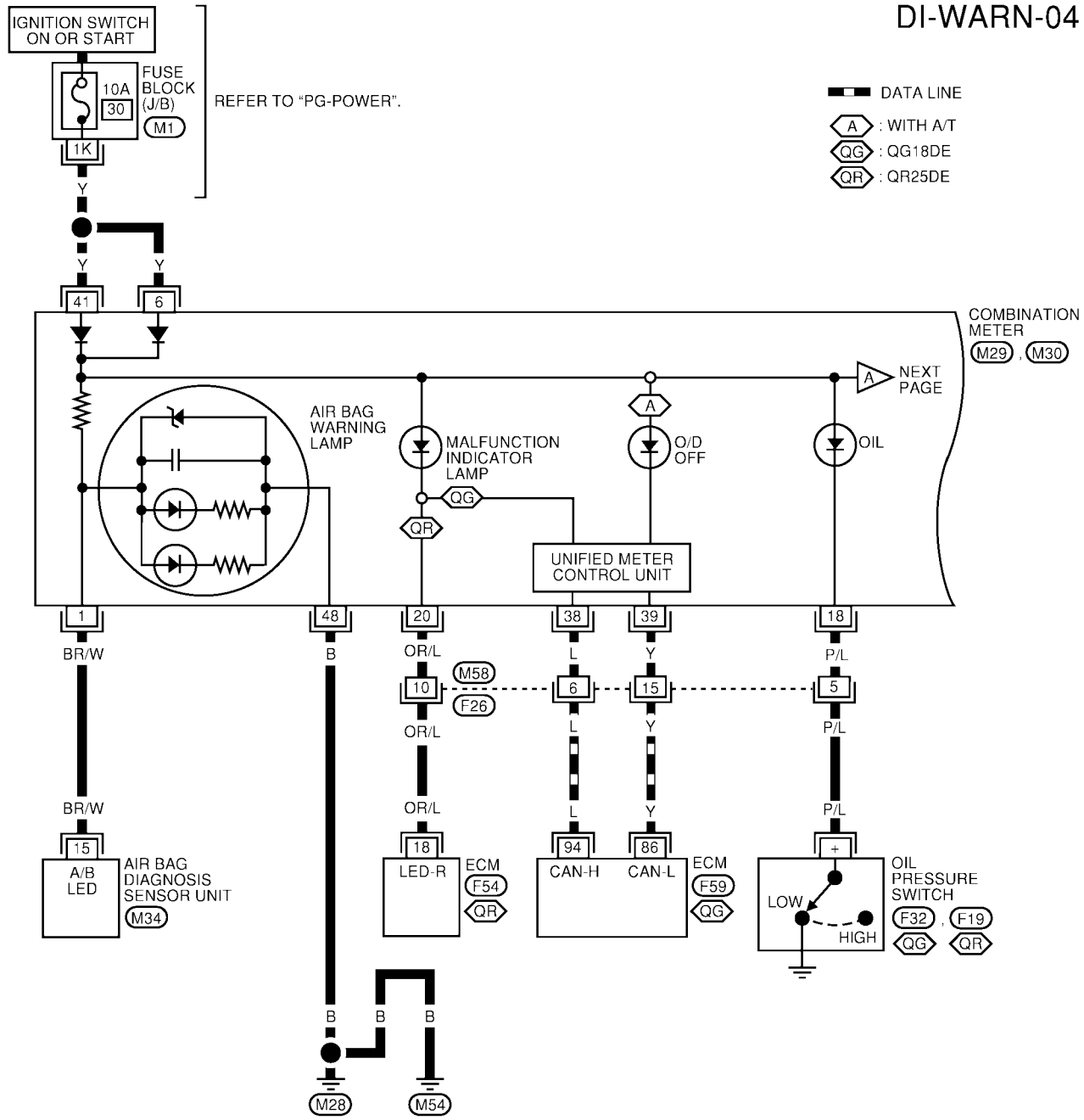
DI-WARN-03

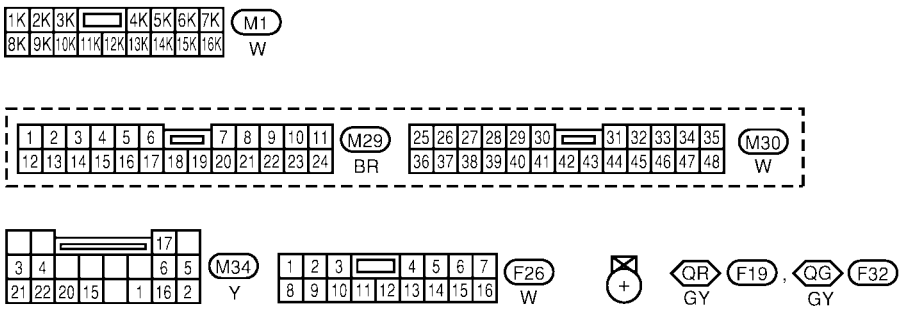



WKWA0239E

## WITH TACHOMETER

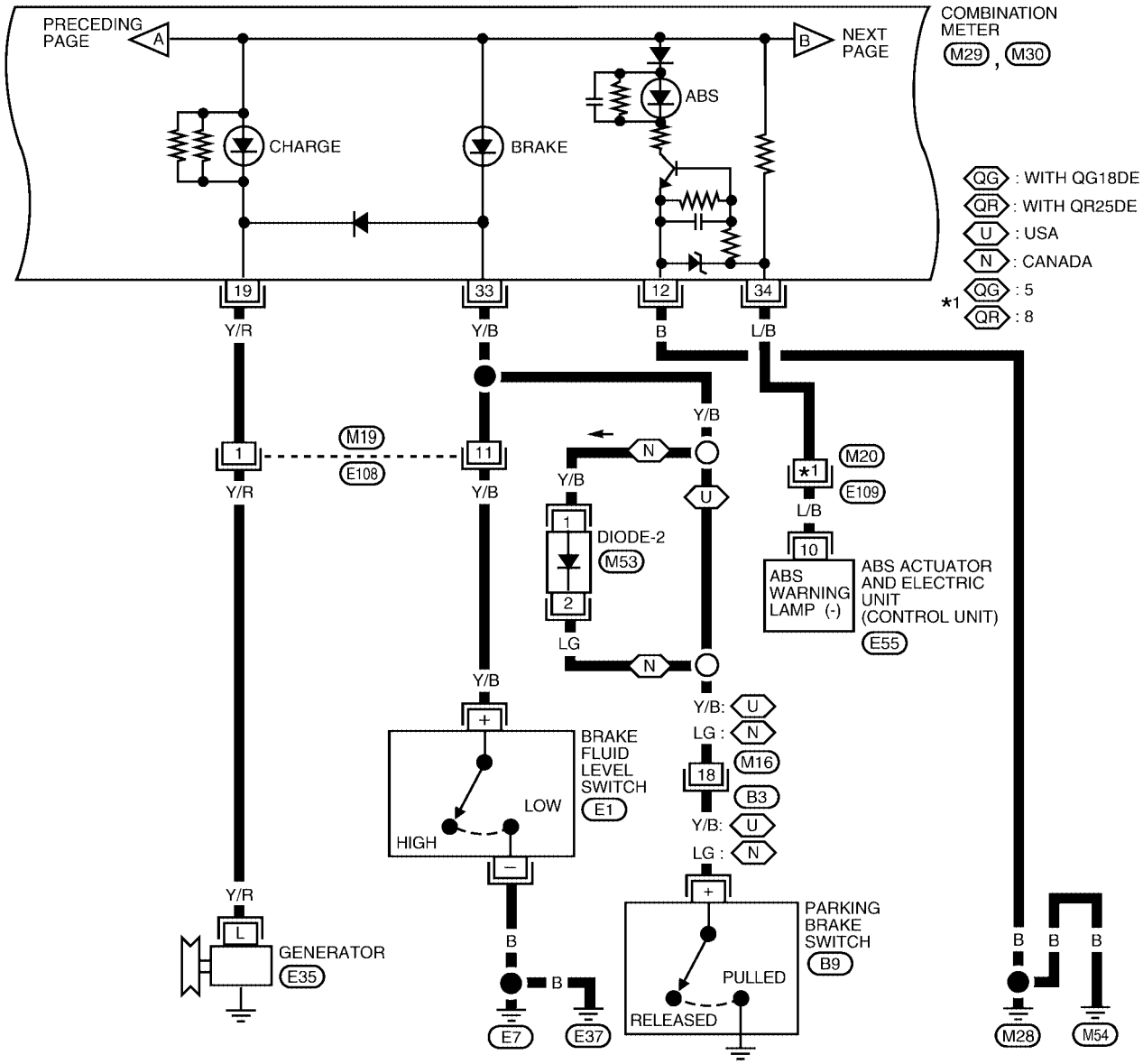


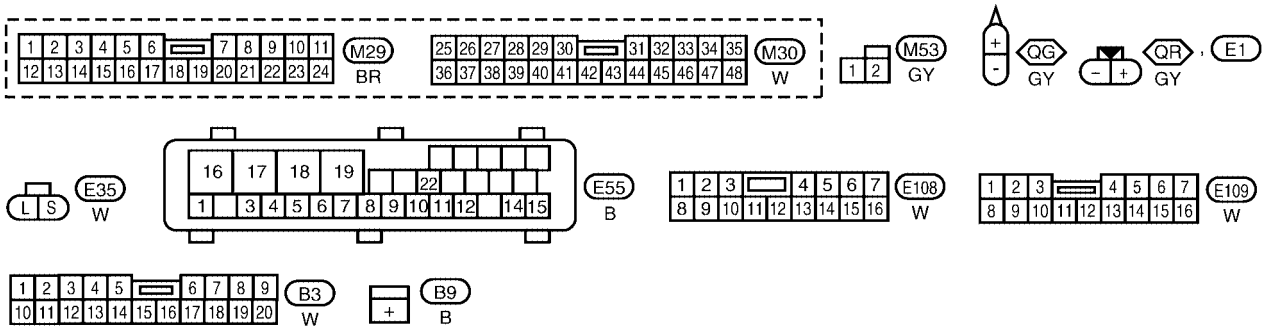




REFER TO THE FOLLOWING.
F54 - ELECTRICAL UNITS
F59 - ELECTRICAL UNITS

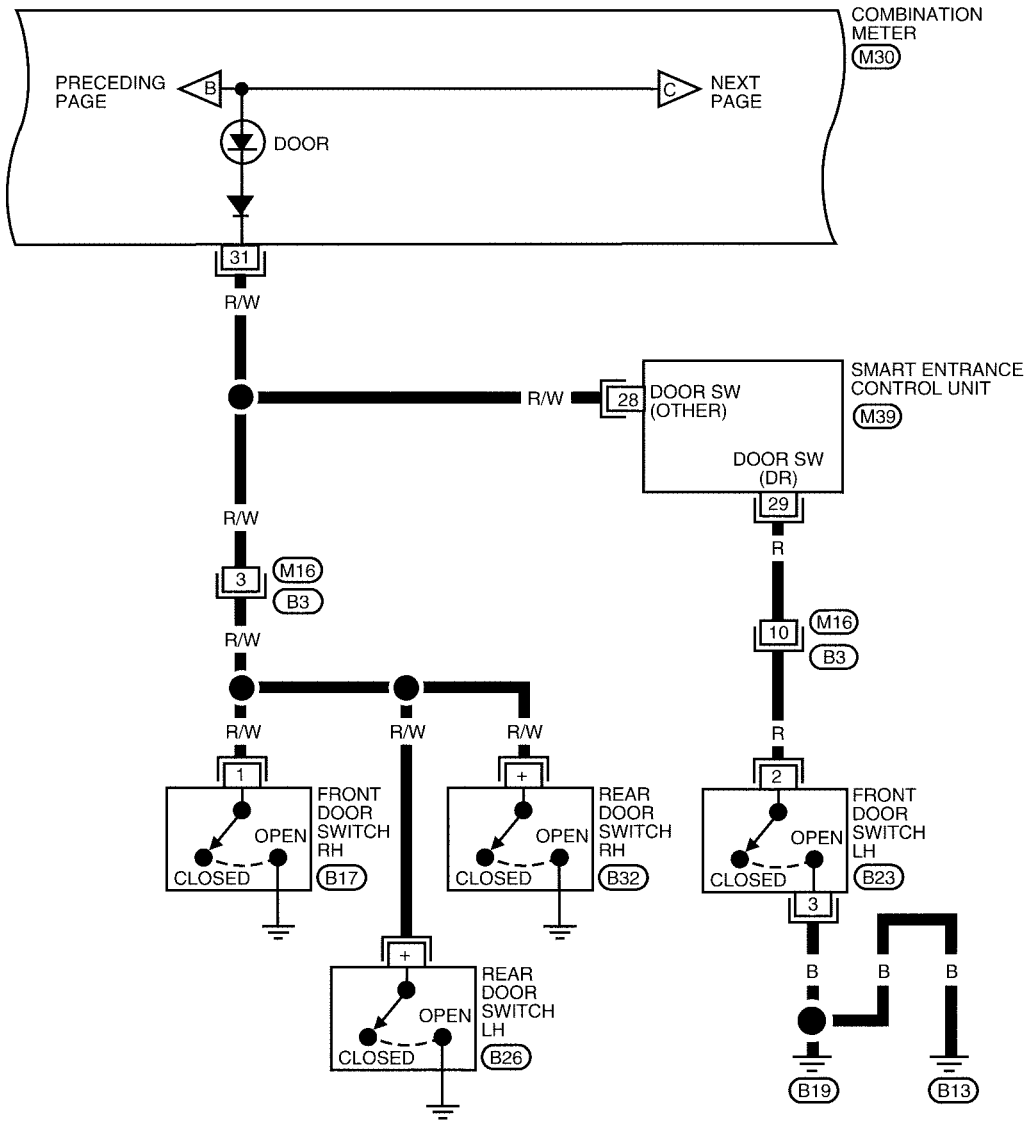
WKWA0512E

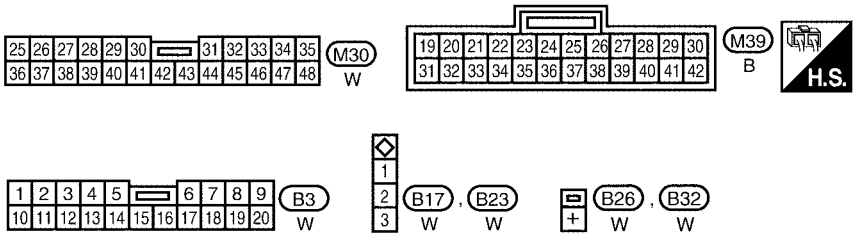
DI-WARN-05




WKWA0241E

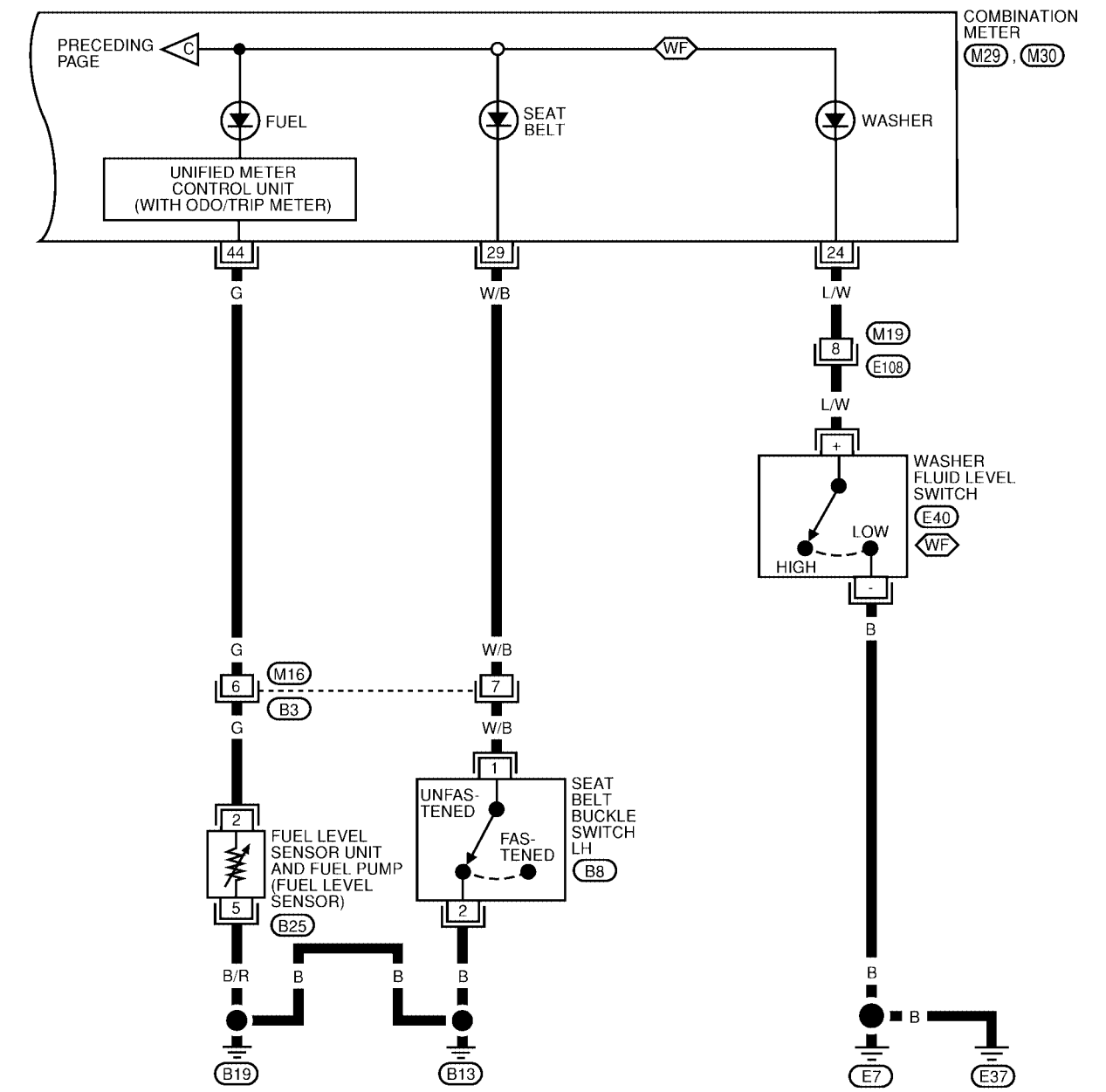

COMBINATION METER
M30
PRECEDING PAGE
B
C
NEXT PAGE
DOOR
31
R/W
R/W
28
DOOR SW (OTHER)
SMART ENTRANCE CONTROL UNIT
M39
DOOR SW (DR)
29
R
R/W
3
M16
B3
10
M16
B3
R/W
R/W
R/W
R
1
2
FRONT DOOR SWITCH RH
OPEN
CLOSED
B17
+
REAR DOOR SWITCH RH
OPEN
CLOSED
B32
FRONT DOOR SWITCH LH
OPEN
CLOSED
B23
3
+
REAR DOOR SWITCH LH
OPEN
CLOSED
B26
B
B
B
B19
B13

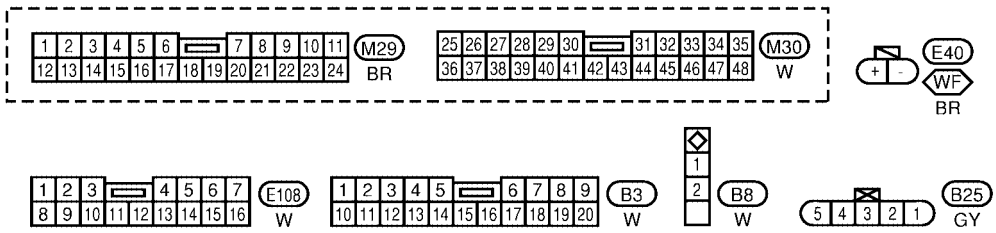

25 26 27 28 29 30 31 32 33 34 35
36 37 38 39 40 41 42 43 44 45 46 47 48
M30
W
19 20 21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40 41 42
M39
B
H.S.
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20
B3
W
1
2
3
B17
W
B23
W
+
B26
W
B32
W

WKWA0242E

DI-WARN-07

WF : With washer fluid level switch



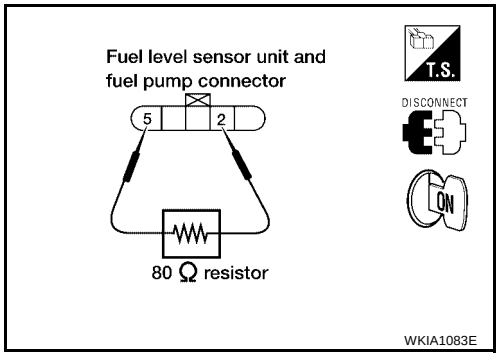

WKWA0585E

## Electrical Components Inspection

EKS0039J

### FUEL WARNING LAMP OPERATION CHECK

1. Turn ignition switch OFF.
2. Disconnect fuel level sensor unit and fuel pump harness connector B25.
3. Connect a resistor (80Ω) between fuel level sensor unit and fuel pump harness connector terminal 2 (G) and 5 (B/R).
4. Turn ignition switch ON.



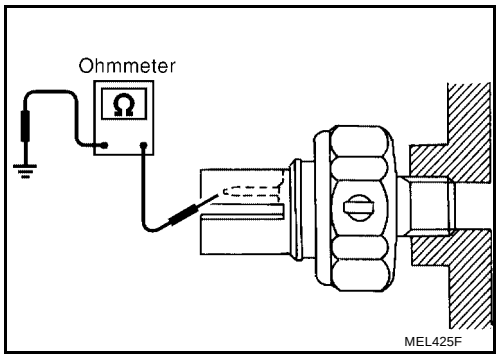

**The fuel warning lamp should come on.**

**NOTE:**
ECM might store the 1st trip DTC P0180 and the 1st trip DTC P0464 during this inspection.
If the DTC is stored in ECM memory, erase the DTC after reconnecting fuel level sensor unit and fuel pump harness connector.
Refer to EC-71, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" [QG18DE (ULEV Model)], EC-651, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" [QG18DE (SULEV Model)], or EC-1273, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" (QR25DE).

### OIL PRESSURE SWITCH CHECK

| | Oil pressure kPa (kg/cm$^2$ , psi) | Continuity |
|---|---|---|
| Engine running | More than 10 - 20 (0.1 - 0.2, 1 - 3) | No |
| Engine not running | Less than 10 - 20 (0.1 - 0.2, 1 - 3) | Yes |

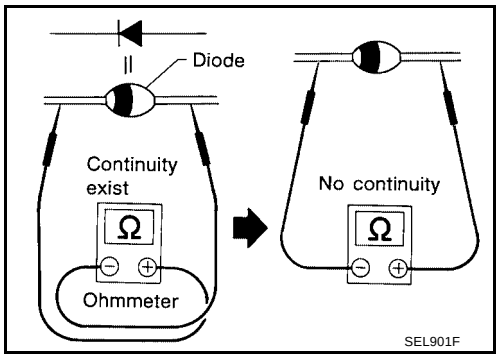
Check the continuity between the terminals of oil pressure switch and body ground.




### DIODE CHECK

- Check continuity using an ohmmeter.
- Diode is functioning properly if test results are as shown in the figure.
- Check diodes at the combination meter harness connector instead of on the combination meter assembly. Refer to DI-29, "Wiring Diagram — WARN —" .

  **NOTE:**
  Specification may vary depending on the type of tester. Before performing this inspection, be sure to refer to the instruction manual for the tester to be used.

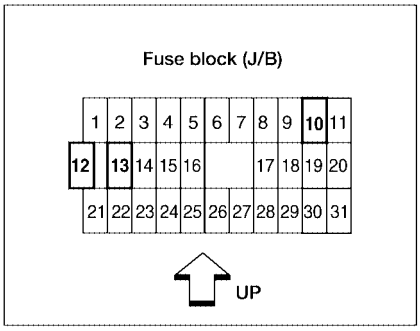


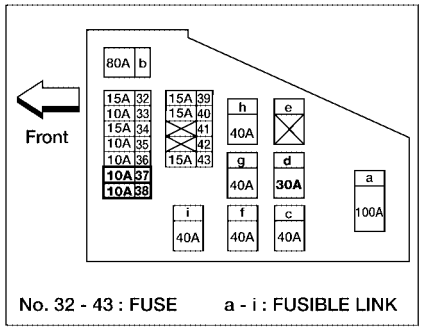
# WARNING CHIME

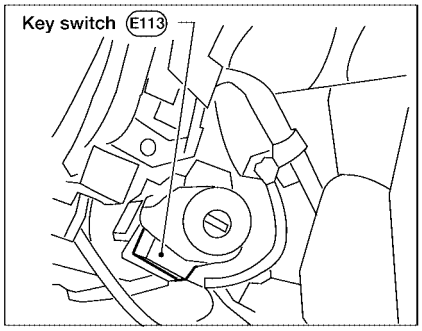
PFP:24814

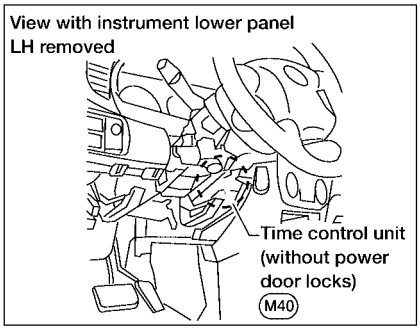
## Component Parts and Harness Connector Location

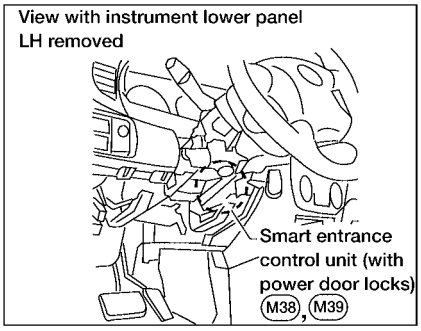
EKS0039K

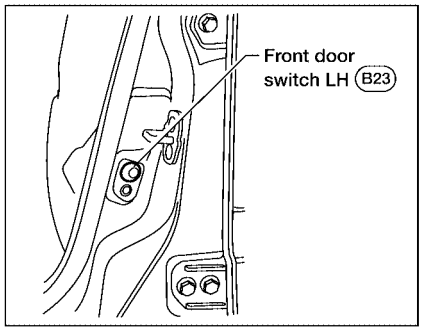


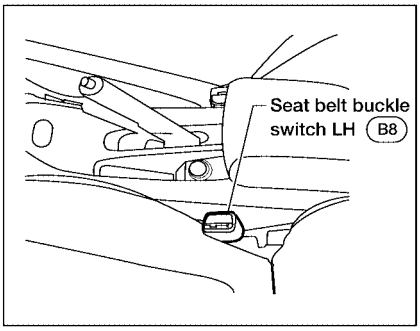




WKIA0160E

## System Description

EKS0039L

### WITHOUT POWER DOOR LOCKS

The warning chime is controlled by the time control unit.
The warning chime is located in the time control unit.
Power is supplied at all times:

- through 10A fuse [No. 13, located in fuse block (J/B)]
- to time control unit terminal 7
- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to key switch terminal 2, and
- through 10A fuse (No. 38, located in the fuse and fusible link box)
- to lighting switch terminal 11.

With the ignition switch in the ON or START position, power is supplied:

- through 10A fuse [No. 10, located in the fuse block (J/B)]
- to time control unit terminal 9.

Ground is supplied to time control unit terminal 8 through body grounds M28 and M54.
When a signal, or combination of signals, is received by the time control unit, the warning chime will sound.

#### Ignition Key Warning Chime

With the key in the ignition switch, the ignition switch in the OFF position, and the driver door open, the warning chime will sound.
Power is supplied:

- from key switch terminal 1
- to time control unit terminal 4.

Ground is supplied:

- from front door switch LH terminal 2
- to time control unit terminal 2.

Front door switch LH terminal 3 is grounded through body grounds B13 and B19.

#### Light Warning Chime

With ignition switch OFF, driver door open, and lighting switch in parking lamp (1ST) or ON (2ND) position, warning chime will sound.
Power is supplied:

- from lighting switch terminal 12
- to time control unit terminal 5.

Ground is supplied:

- from front door switch LH terminal 2
- to time control unit terminal 2.

Front door switch LH terminal 3 is grounded through body grounds B13 and B19.

#### Seat Belt Warning Chime

With ignition switch turned ON and seat belt unfastened (seat belt buckle switch LH ON), warning chime will sound for approximately 6 seconds.
Ground is supplied:

- from seat belt buckle switch LH terminal 1
- to time control unit terminal 1.

Seat belt buckle switch LH terminal 2 is grounded through body grounds B13 and B19.

### WITH POWER DOOR LOCKS

The warning chime is controlled by the smart entrance control unit.
The warning chime is located in the smart entrance control unit.
Power is supplied at all times:

- through 10A fuse (No. 37, located in fuse and fusible link box)
- to smart entrance control unit terminal 10,
- through 10A fuse [No. 12, located in the fuse block (J/B)]

- to key switch terminal 2, and
- through 10A fuse (No. 38, located in the fuse and fusible link box)
- to lighting switch terminal 11.

With the ignition switch in the ON or START position, power is supplied:

- through 10A fuse [No. 10, located in the fuse block (J/B)]
- to smart entrance control unit terminal 33.

Ground is supplied to smart entrance control unit terminal 16 through body grounds M28 and M54.
When a signal, or combination of signals, is received by the smart entrance control unit, the warning chime will sound.

### Ignition Key Warning Chime

With the key in the ignition switch, the ignition switch in the OFF position, and the driver door open, the warning chime will sound.
Power is supplied:

- from key switch terminal 1
- to smart entrance control unit terminal 32.

Ground is supplied:

- from front door switch LH terminal 2
- to smart entrance control unit terminal 29.

Front door switch LH terminal 3 is grounded through body grounds B13 and B19.

### Light Warning Chime

With ignition switch OFF, driver door open, and lighting switch in parking lamp (1ST) or ON (2ND) position, warning chime will sound.
Power is supplied:

- from lighting switch terminal 12
- to smart entrance control unit terminal 34.

Ground is supplied:

- from front door switch LH terminal 2
- to smart entrance control unit terminal 29.

Front door switch LH terminal 3 is grounded through body grounds B13 and B19.

### Seat Belt Warning Chime

With ignition switch turned ON and seat belt unfastened (seat belt switch ON), warning chime will sound for approximately 6 seconds.
Ground is supplied:

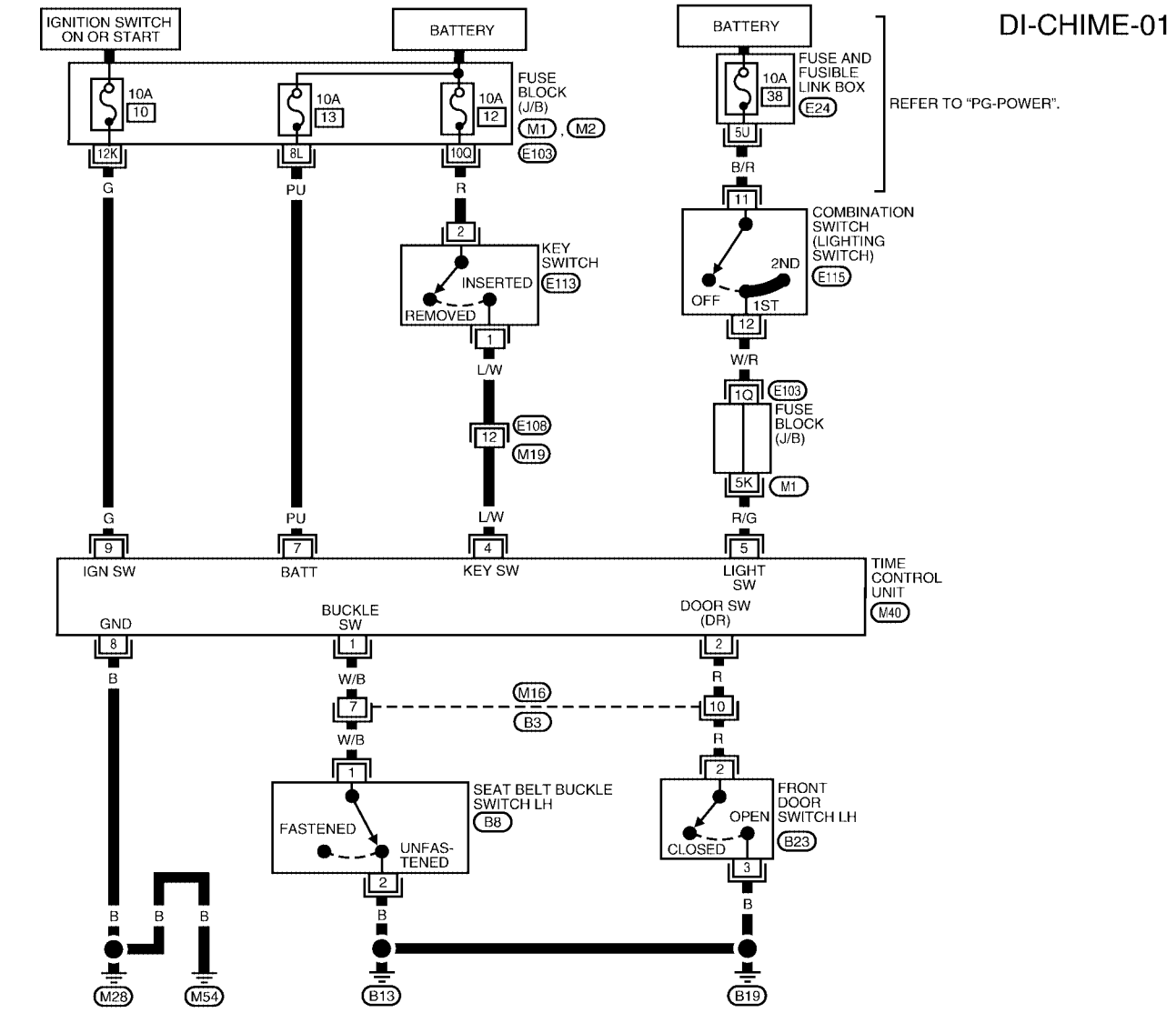
- from seat belt buckle switch LH terminal 1
- to smart entrance control unit terminal 22.

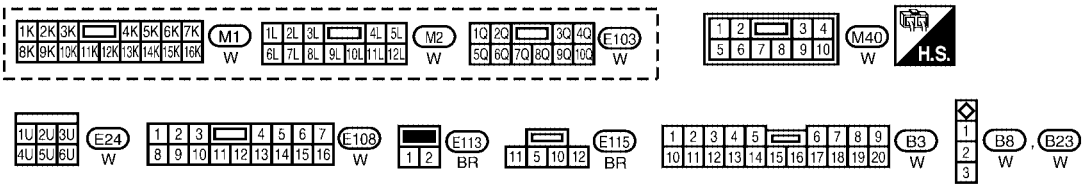
Seat belt buckle switch LH terminal 2 is grounded through body grounds B13 and B19.

## Wiring Diagram — CHIME —

EKS0039M

### WITHOUT POWER DOOR LOCKS



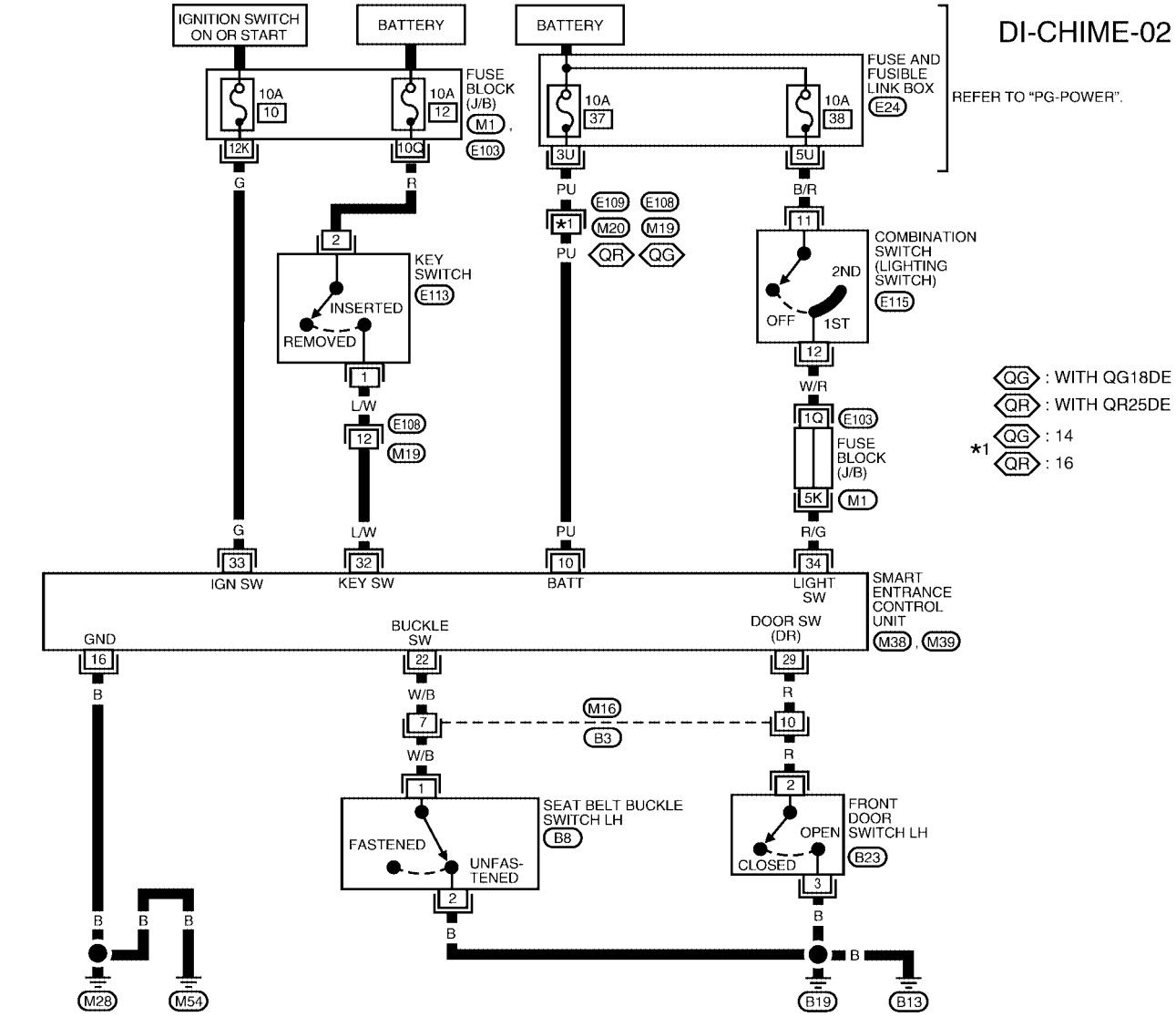

WKWA0244E

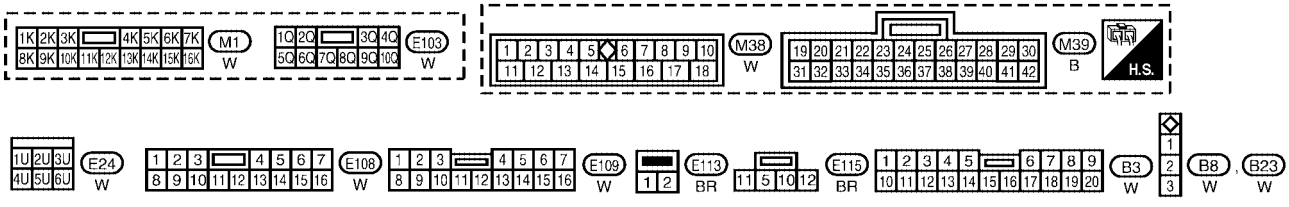
TIME CONT. UNIT (WITHOUT POWER DOOR LOCKS) TERMINALS AND REFERENCE VALUE MEASURED BETWEEN EACH TERMINAL AND GROUND

| TERMINAL | WIRE COLOR | ITEM | CONDITION | DATA (DC) |
|---|---|---|---|---|
| 1 | W/B | SEAT BELT BUCKLE SWITCH LH | UNFASTEN (IGNITION KEY IN ON POSITION) | 0V |
| | | | FASTEN (IGNITION SWITCH IN ON POSITION) | 5V |
| 2 | R | FRONT DOOR SWITCH LH | OFF (CLOSED) | 5V |
| | | | ON (OPEN) | 0V |
| 4 | L/W | IGNITION KEY SWITCH (INSERT) | IGNITION KEY IS INSERTED | 12V |
| | | | IGNITION KEY IS REMOVED | 0V |
| 5 | R/G | COMBINATION SWITCH (LIGHTING SWITCH) | 1ST, 2ND POSITIONS: ON | 12V |
| | | | OFF | 0V |
| 7 | PU | POWER SOURCE (FUSE) | — | 12V |
| 8 | B | GROUND | — | — |
| 9 | G | IGNITION SWITCH (ON) | IGNITION KEY IS IN ON POSITION | 12V |
| | | IGNITION SWITCH (START) | IGNITION KEY IS IN START POSITION | 12V |

LEL597

## WITH POWER DOOR LOCKS




WKWA0245E

SMART ENTRANCE CONTROL UNIT TERMINALS AND REFERENCE VALUE MEASURED BETWEEN EACH TERMINAL AND GROUND

| TERMINAL | WIRE COLOR | ITEM | CONDITION | DATA (DC) |
|---|---|---|---|---|
| 10 | PU | POWER SOURCE (FUSE) | — | 12V |
| 16 | B | GROUND | — | — |
| 22 | W/B | SEAT BELT BUCKLE SWITCH LH | UNFASTEN (IGNITION KEY IN ON POSITION) | 0V |
| | | | FASTEN (IGNITION KEY IN ON POSITION) | 5V |
| 29 | R | FRONT DOOR SWITCH LH | OFF (CLOSED) | 5V |
| | | | ON (OPEN) | 0V |
| 32 | L/W | IGNITION KEY SWITCH (INSERT) | IGNITION KEY IS INSERTED | 12V |
| | | | IGNITION KEY IS REMOVED | 0V |
| 33 | G | IGNITION SWITCH (START) | IGNITION KEY IS IN ON POSITION | 12V |
| | | | IGNITION KEY IS IN START POSITION | 12V |
| 34 | R/G | COMBINATION SWITCH (LIGHTING SWITCH) | 1ST, 2ND POSITIONS: ON | 12V |
| | | | OFF | 0V |

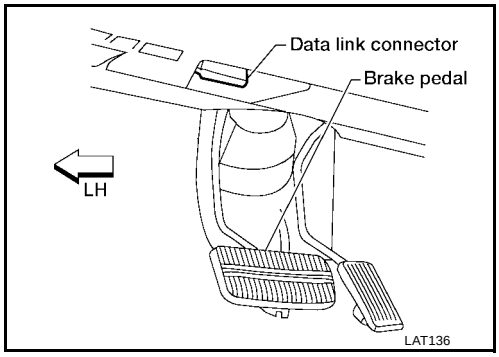
LEL599

## CONSULT-II Inspection Procedure (With Power Door Locks)

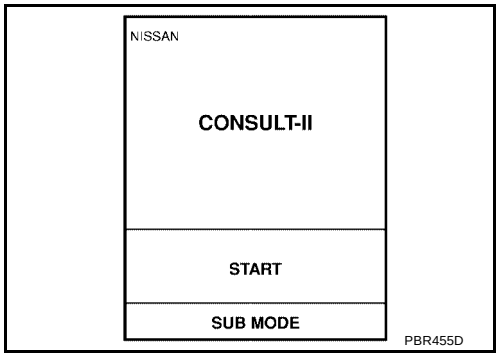
EKS0039N

**“KEY WARN ALM”/“LIGHT WARN ALM”/“SEAT BELT ALM”**

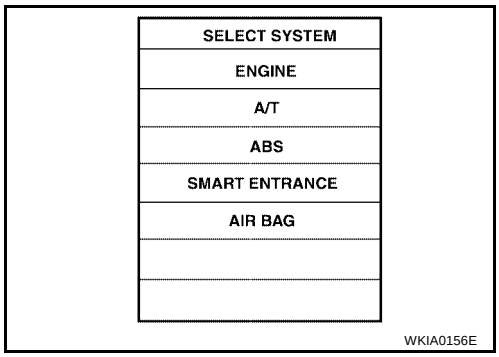
1. Turn ignition switch OFF.
2. Connect “CONSULT-II” to the data link connector.



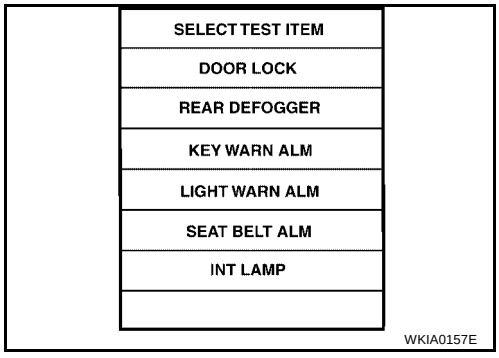

3. Turn ignition switch ON.
4. Touch “START”.



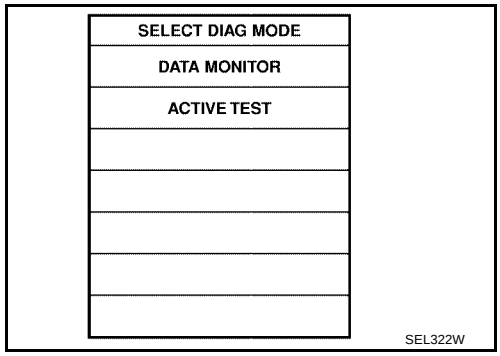

5. Touch “SMART ENTRANCE”.




6. Touch “KEY WARN ALM”, “LIGHT WARN ALM” or “SEAT BELT ALM”.



7. Select diagnosis mode.
“DATA MONITOR” and “ACTIVE TEST” are available for the warning chime.




## CONSULT-II Application Items (With Power Door Locks)

EKS0039O

### “KEY WARN ALARM”

#### Data Monitor

| Monitored Item | Description |
|---|---|
| IGN ON SW | Indicates [ON/OFF] condition of ignition switch. |
| KEY ON SW | Indicates [ON/OFF] condition of key switch. |
| DOOR SW-DR | Indicates [ON/OFF] condition of front door switch LH. |

#### Active Test

| Test Item | Description |
|---|---|
| CHIME | This test is able to check key warning chime operation. Key warning chime sounds after touching “ON” on CONSULT-II screen. |

### “LIGHT WARN ALM”

#### Data Monitor

| Monitored Item | Description |
|---|---|
| IGN ON SW | Indicates [ON/OFF] condition of ignition switch. |
| HD/LMP 1ST SW | Indicates [ON/OFF] condition of lighting switch. |
| DOOR SW-DR | Indicates [ON/OFF] condition of front door switch LH. |

#### Active Test

| Test Item | Description |
|---|---|
| CHIME | This test is able to check light warning chime operation. Light warning chime sounds after touching “ON” on CONSULT-II screen. |

### “SEAT BELT ALM”

#### Data Monitor

| Monitored Item | Description |
|---|---|
| IGN ON SW | Indicates [ON/OFF] condition of ignition switch. |
| SEAT BELT SW | Indicates [ON/OFF] condition of seat belt buckle switch LH. |

#### Active Test

| Test Item | Description |
|---|---|
| CHIME | This test is able to check seat belt warning chime operation. Seat belt warning chime sounds after touching “ON” on CONSULT-II screen. |

# Trouble Diagnoses (Without Power Door Locks)

EKS0039P

## SYMPTOM CHART

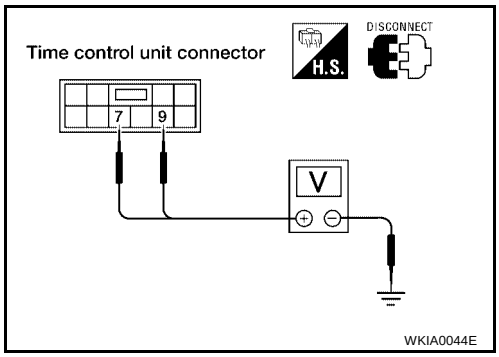
| REFERENCE PAGE | DI-44 | DI-45 | DI-45 | DI-46 | DI-47 |
|---|---|---|---|---|---|
| SYMPTOM | POWER SUPPLY AND GROUND CIRCUIT CHECK | DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK) | DIAGNOSTIC PROCEDURE 2 (KEY SWITCH INSERTSIGNAL CHECK) | DIAGNOSTIC PROCEDURE 3 (SEAT BELT BUCKLE SWITCH LH CHECK) | DIAGNOSTIC PROCEDURE 4 |
| Light warning chime does not activate. | X | X | | | X |
| Ignition key warning chime does not activate. | X | | X | | X |
| Seat belt warning chime does not activate. | X | | | X | X |
| All warning chimes do not activate. | X | | | | X |

X: Applicable

## POWER SUPPLY AND GROUND CIRCUIT CHECK

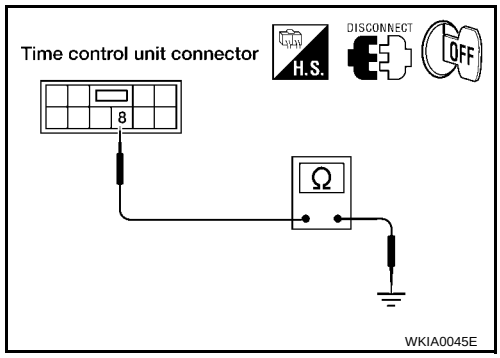
### Power Supply Circuit Check

| Terminals | | | Ignition switch position | | |
|---|---|---|---|---|---|
| (+) | | (-) | | | |
| Connector | Terminal (Wire color) | | OFF | ACC | ON |
| M40 | 7 (PU) | Ground | Battery voltage | Battery voltage | Battery voltage |
| M40 | 9 (G) | Ground | 0V | 0V | Battery voltage |



## Ground Circuit Check

| Terminals | | | Continuity |
|---|---|---|---|
| (+) | | (-) | |
| Connector | Terminal (Wire color) | | |
| M40 | 8 (B) | Ground | Yes |

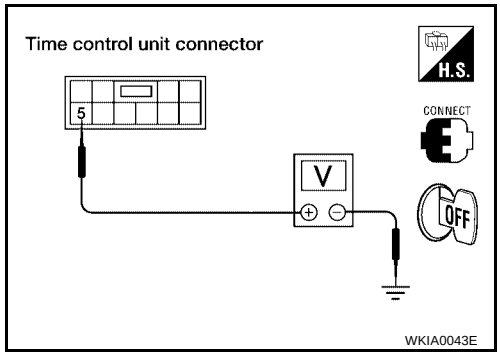



## DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK)

### 1. CHECK LIGHTING SWITCH INPUT SIGNAL

Check voltage between time control unit terminal 5 and ground.

| Terminals | | | Condition of lighting switch | | |
|---|---|---|---|---|---|
| (+) | | (-) | 1st position | 2nd position | OFF |
| Connector | Terminal (Wire color) | | | | |
| M40 | 5 (R/G) | Ground | Battery voltage | Battery voltage | 0V |




OK or NG

OK >> Lighting switch is OK.
NG >> Check the following.

- 10A fuse (No. 38, located in the fuse and fusible link box)
- Harness for open or short between control unit and lighting switch

## DIAGNOSTIC PROCEDURE 2 (KEY SWITCH INSERT SIGNAL CHECK)

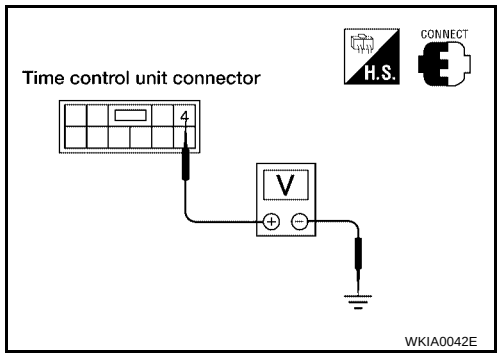
### 1. CHECK KEY SWITCH INPUT SIGNAL

Check voltage between time control unit terminal 4 and ground.

| Terminals | | | Condition of key switch | |
|---|---|---|---|---|
| (+) | | (-) | Key inserted | Key removed |
| Connector | Terminal (Wire color) | | | |
| M40 | 4 (L/W) | Ground | Battery voltage | 0V |

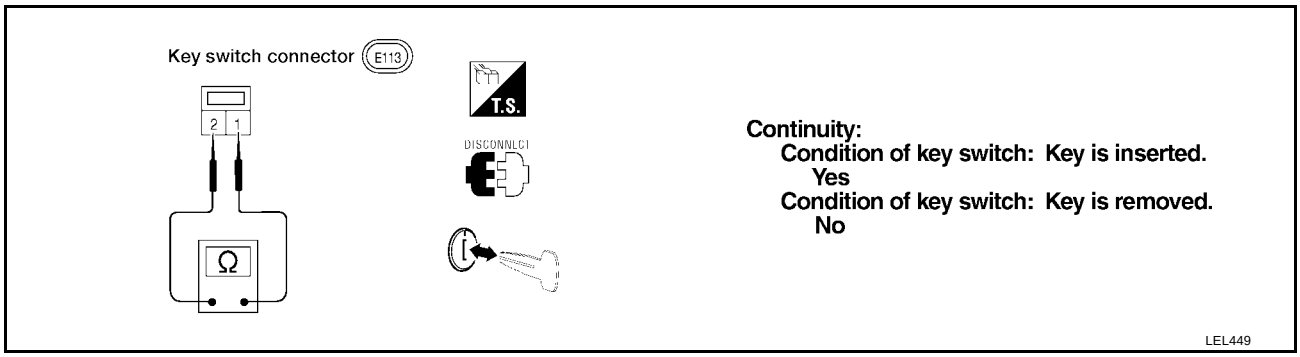
OK or NG

OK >> Key switch is OK.
NG >> GO TO 2.



## 2. CHECK KEY SWITCH

Check continuity between terminals 1 and 2.




OK or NG

OK >> Check the following.
- 10A fuse [No. 12, located in fuse block (J/B)]
- Harness for open or short between key switch and fuse
- Harness for open or short between time control unit and key switch

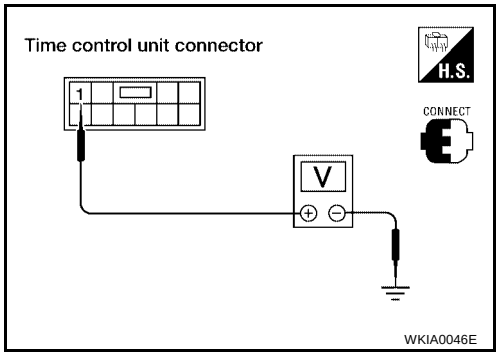
NG >> Replace key switch.

## DIAGNOSTIC PROCEDURE 3 (SEAT BELT BUCKLE SWITCH LH CHECK)

## 1. CHECK SEAT BELT BUCKLE SWITCH LH INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between time control unit terminal 1 and ground.

| Terminals | | | Condition of seat belt buckle switch LH | |
|---|---|---|---|---|
| (+) | | (-) | Fastened | Unfastened |
| Connector | Terminal (Wire color) | | | |
| M40 | 1 (W/B) | Ground | Approx. 5V | 0V |

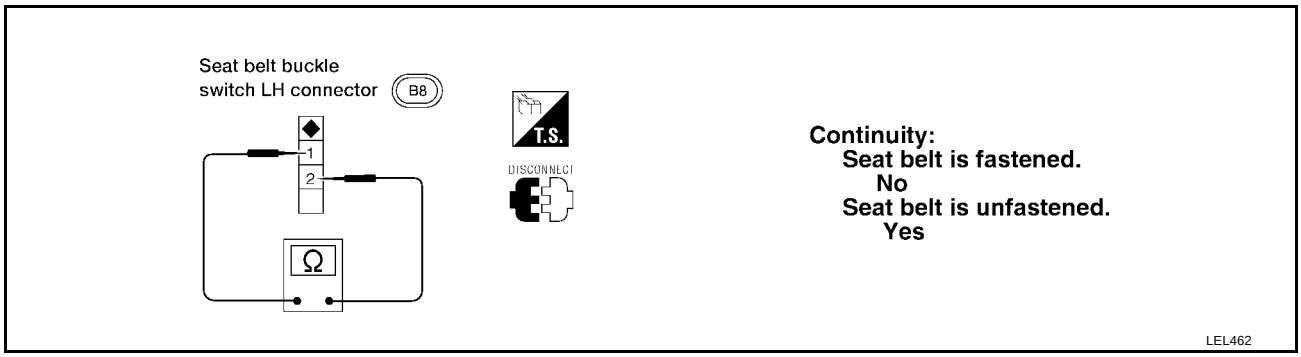



OK or NG

OK >> Seat belt buckle switch LH is OK.
NG >> GO TO 2.

## 2. CHECK SEAT BELT BUCKLE SWITCH LH

Check continuity between terminals 1 and 2 when seat belt is fastened and unfastened.




OK or NG

OK >> Check the following.
- Seat belt buckle switch LH ground circuit
- Harness for open or short between time control unit and seat belt buckle switch LH

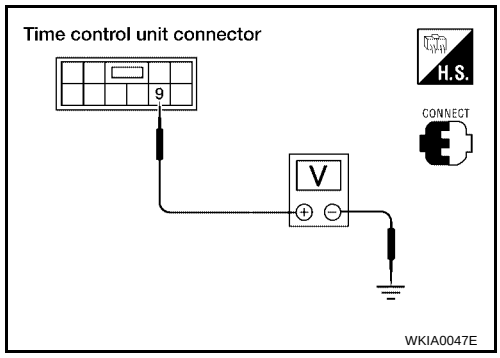
NG >> Replace seat belt buckle switch LH.

## DIAGNOSTIC PROCEDURE 4

## 1. CHECK IGNITION ON SIGNAL

Check voltage between time control unit terminal 9 and ground.

| Terminals | | Ignition switch position | | |
|---|---|---|---|---|
| (+) | (-) | OFF | ACC | ON |
| 9 (G) | Ground | 0V | 0V | Battery voltage |




OK or NG

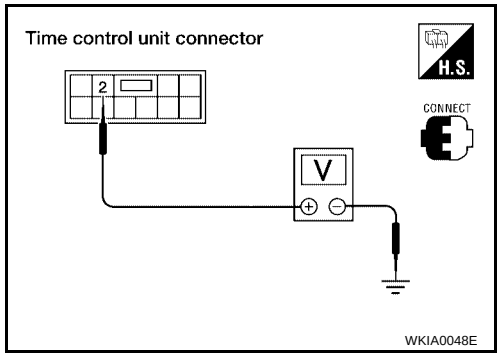
OK >> GO TO 2.

NG >> Check the following.
- 10A fuse [No. 10, located in fuse block (J/B)]
- Harness for open or short between time control unit and fuse

## 2. CHECK FRONT DOOR SWITCH LH INPUT SIGNAL

With ignition switch OFF, check voltage between time control unit terminal 2 and ground.

| Terminals | | | Condition of driver's door | |
|---|---|---|---|---|
| (+) | | (-) | Closed | Open |
| Connector | Terminal (Wire color) | | | |
| M40 | 2 (R) | Ground | Approx. 5V | 0V |



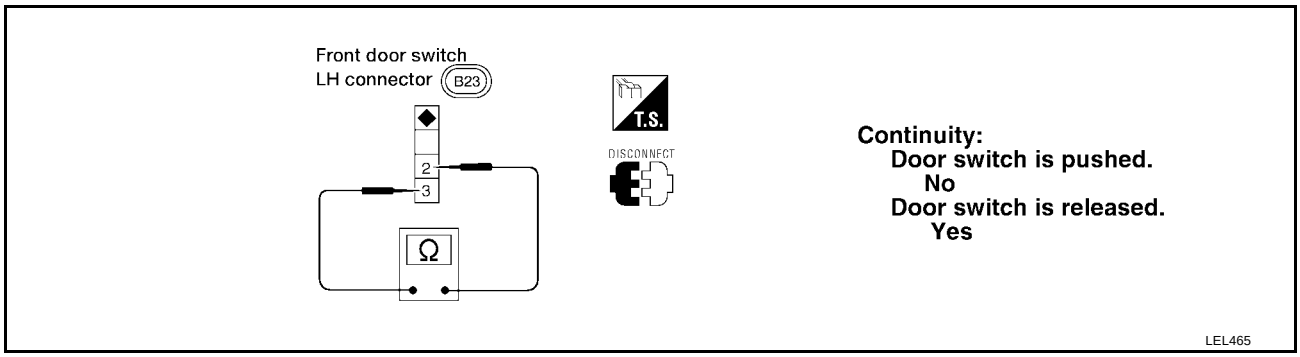

OK or NG

OK >> System is OK.

NG >> GO TO 3.

## 3. CHECK FRONT DOOR SWITCH LH

Check continuity between terminals 2 and 3.




OK or NG

OK >> Check the following.

- Front door switch LH ground circuit and condition
- Harness for open or short between time control unit and front door switch LH

NG >> Replace front door switch LH.

## Trouble Diagnoses (With Power Door Locks)

EKS0039Q

### SYMPTOM CHART

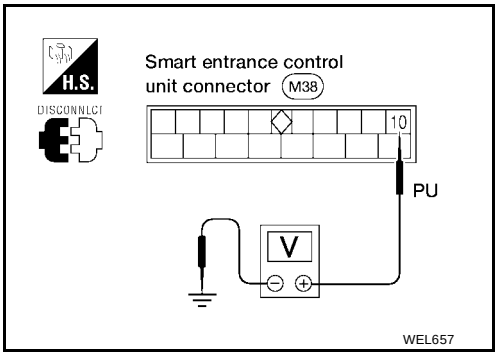
| REFERENCE PAGE | DI-49 | DI-50 | DI-51 | DI-52 | DI-53 |
|---|---|---|---|---|---|
| SYMPTOM | POWER SUPPLY AND GROUND CIRCUIT CHECK | DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK) | DIAGNOSTIC PROCEDURE 2 (KEY SWITCH INSERTSIGNAL CHECK) | DIAGNOSTIC PROCEDURE 3 (SEAT BELT BUCKLE SWITCH LH CHECK) | DIAGNOSTIC PROCEDURE 4 |
| Light warning chime does not activate. | X | X | | | X |
| Ignition key warning chime does not activate. | X | | X | | X |
| Seat belt warning chime does not activate. | X | | | X | X |
| All warning chimes do not activate. | X | | | | X |

X: Applicable

### POWER SUPPLY AND GROUND CIRCUIT CHECK

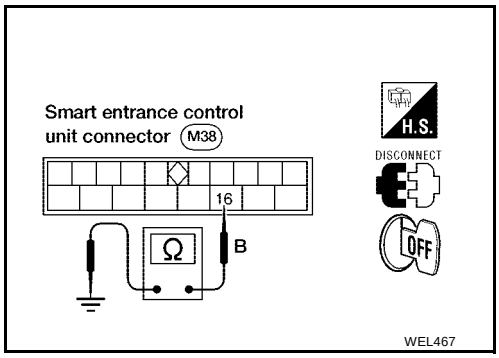
#### Power Supply Circuit Check

| Terminals | | Ignition switch position | | |
|---|---|---|---|---|
| (+) | (-) | OFF | ACC | ON |
| 10 | Ground | Battery voltage | Battery voltage | Battery voltage |



## Ground Circuit Check

| Terminals | | | Continuity |
|---|---|---|---|
| (+) | | (-) | |
| Connector | Terminal (Wire color) | | |
| M38 | 16 (B) | Ground | Yes |

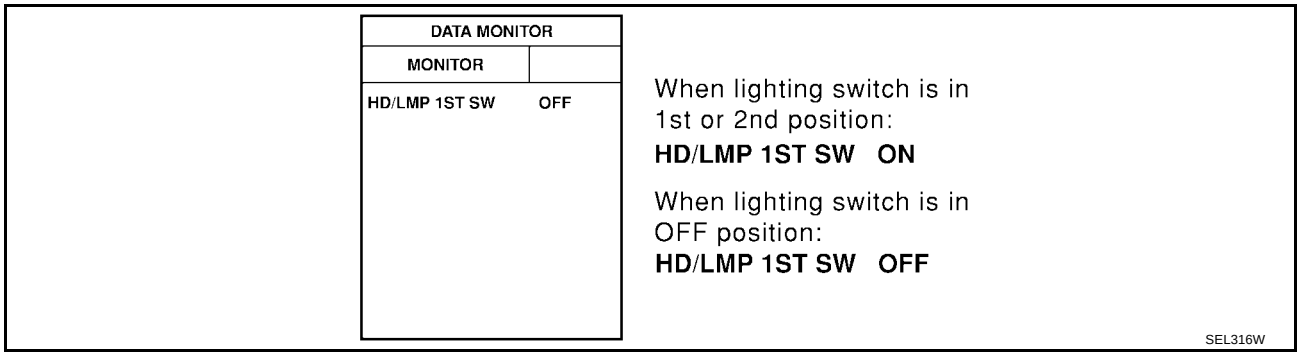



## DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK)

### 1. CHECK LIGHTING SWITCH INPUT SIGNAL

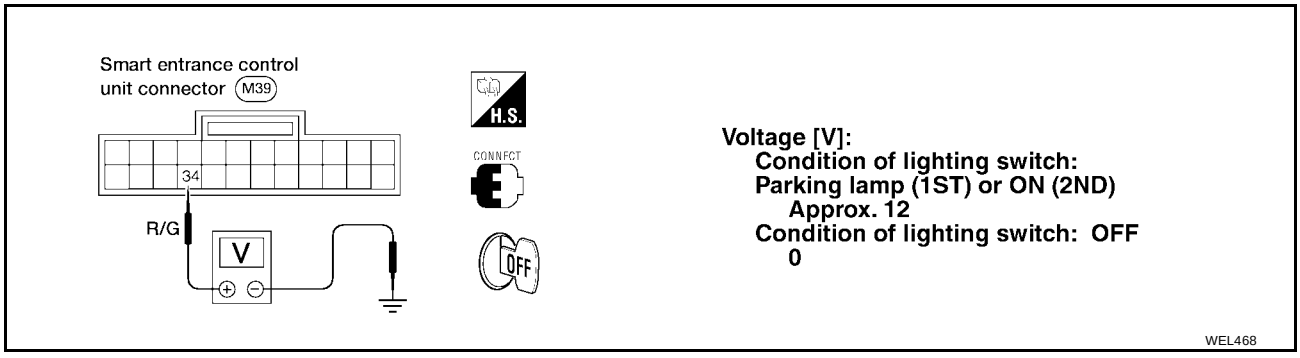
**With CONSULT-II**

Check lighting switch ("HD/LMP 1ST SW") in "DATA MONITOR" mode with CONSULT-II.




**Without CONSULT-II**

Check voltage between smart entrance control unit terminal 34 and ground.




OK or NG

OK >> Lighting switch is OK.

NG >> Check the following.

- 10A fuse (No. 38, located in the fuse and fusible link box)
- Harness for open or short between smart entrance control unit and lighting switch

## DIAGNOSTIC PROCEDURE 2 (KEY SWITCH INSERT SIGNAL CHECK)

### 1. CHECK KEY SWITCH INPUT SIGNAL

**With CONSULT-II**

Check key switch ("KEY ON SW") in "DATA MONITOR" mode with CONSULT-II.

| DATA MONITOR | |
|---|---|
| MONITOR | |
| KEY ON SW | ON |

When key is inserted to ignition key cylinder:

**KEY ON SW ON**

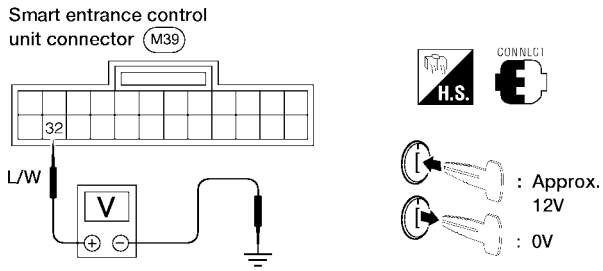
When key is removed from ignition key cylinder:

**KEY ON SW OFF**

SEL315W

**Without CONSULT-II**

Check voltage between smart entrance control unit terminal 32 and ground.




**Voltage [V]:**
**Condition of key switch: Key is inserted.**
**Approx. 12**
**Condition of key switch: Key is removed.**
**0**

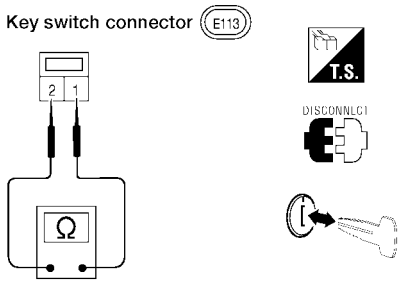
WEL469

OK or NG

OK >> Key switch is OK.
NG >> GO TO 2.

### 2. CHECK KEY SWITCH

Check continuity between terminals 1 and 2.




**Continuity:**
**Condition of key switch: Key is inserted.**
**Yes**
**Condition of key switch: Key is removed.**
**No**

LEL449

OK or NG

OK >> Check the following.
- 10A fuse [No. 12, located in fuse block (J/B)]
- Harness for open or short between key switch and fuse
- Harness for open or short between smart entrance control unit and key switch

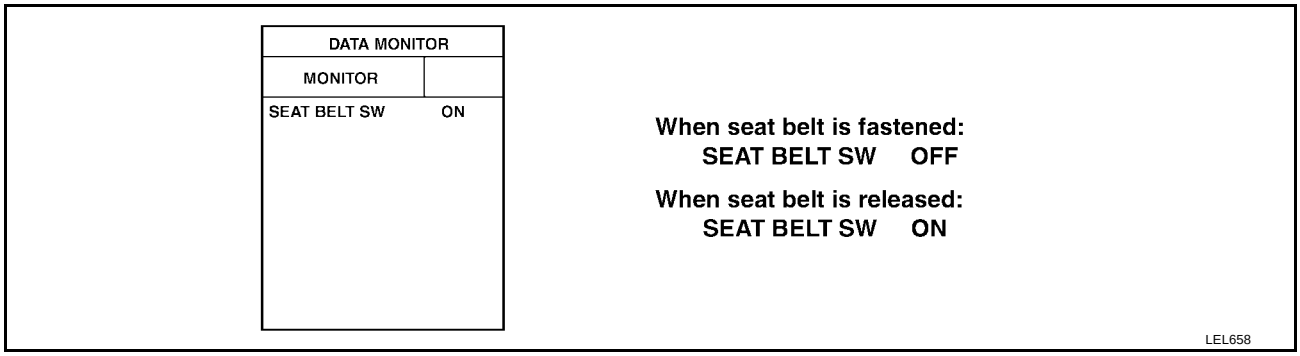
NG >> Replace key switch.

## DIAGNOSTIC PROCEDURE 3 (SEAT BELT BUCKLE SWITCH LH CHECK)

### 1. CHECK SEAT BELT BUCKLE SWITCH LH INPUT SIGNAL

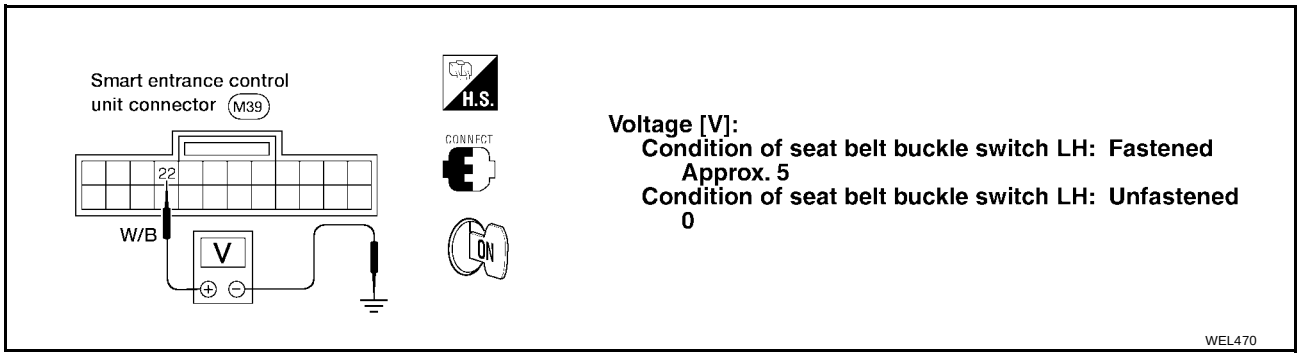
**With CONSULT-II**

Check seat belt buckle switch LH (“SEAT BELT SW”) in “DATA MONITOR” mode with CONSULT-II.




**Without CONSULT-II**

1. Turn ignition switch ON.
2. Check voltage between smart entrance control unit terminal 22 and ground.

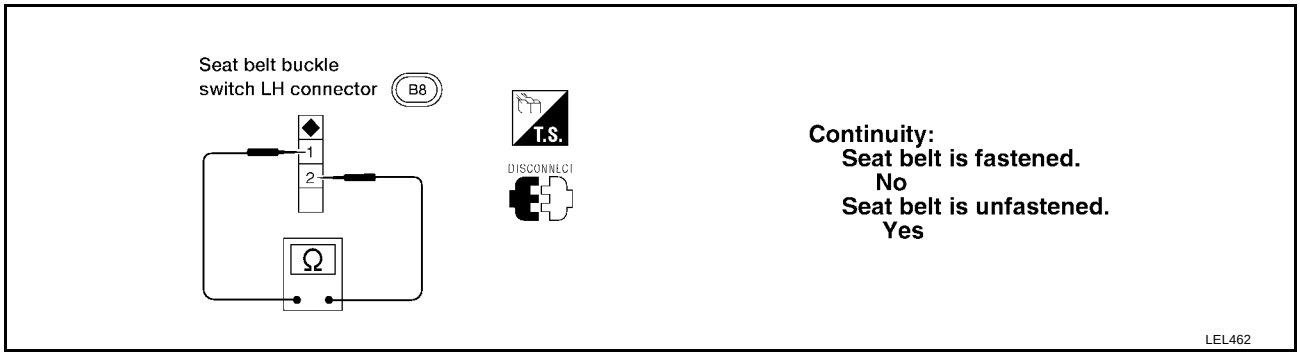



OK or NG

OK >> Seat belt buckle switch LH is OK.
NG >> GO TO 2.

### 2. CHECK SEAT BELT BUCKLE SWITCH LH

Check continuity between terminals 1 and 2 when seat belt is fastened and unfastened.




OK or NG

OK >> Check the following.
- Seat belt buckle switch LH ground circuit
- Harness for open or short between smart entrance control unit and seat belt buckle switch LH

NG >> Replace seat belt buckle switch LH.

## DIAGNOSTIC PROCEDURE 4

### 1. CHECK IGNITION ON SIGNAL

**With CONSULT-II**

Check ignition switch ON signal (“IGN ON SW”) in “DATA MONITOR” mode with CONSULT-II.

| DATA MONITOR | |
|---|---|
| MONITOR | |
| IGN ON SW | ON |

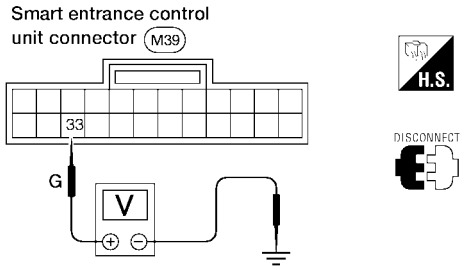
When ignition switch is ON:
**IGN ON SW ON**

When ignition switch is OFF:
**IGN ON SW OFF**

SEL318W

**Without CONSULT-II**

Check voltage between smart entrance control unit terminal 33 and ground.







| Terminals | | Ignition switch position | | |
|---|---|---|---|---|
| (+) | (–) | OFF | ACC | ON |
| 33 | Ground | 0V | 0V | Battery voltage |

WEL471

OK or NG

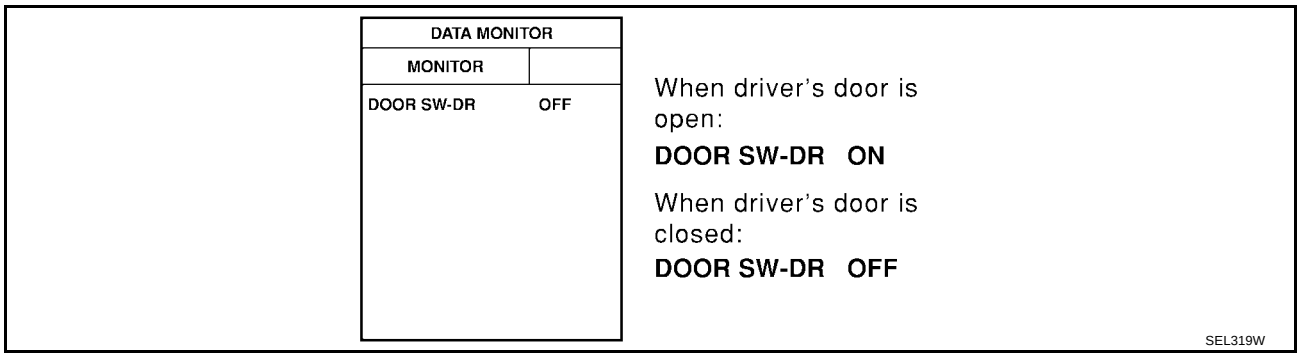
OK >> GO TO 2.
NG >> Check the following.

- 10A fuse [No. 10, located in fuse block (J/B)]
- Harness for open or short between smart entrance control unit and fuse

## 2. CHECK FRONT DOOR SWITCH LH INPUT SIGNAL

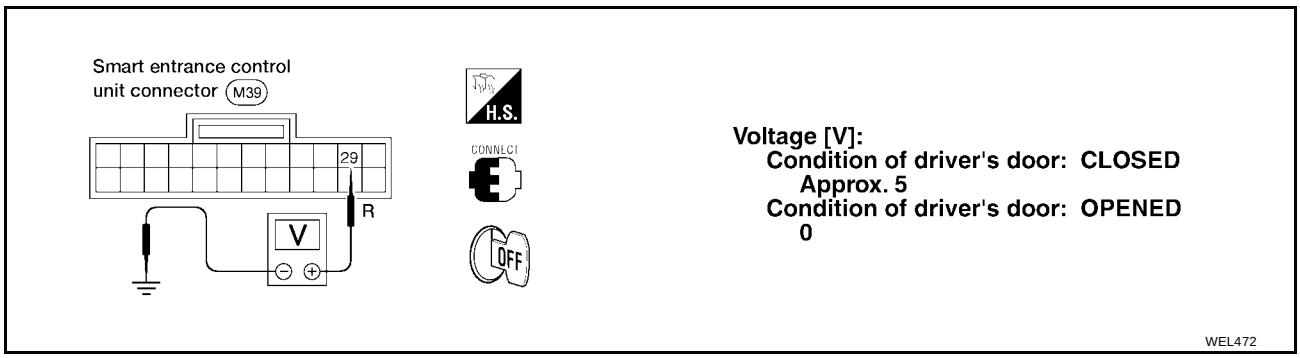
**With CONSULT-II**

Check front door switch LH signal (“DOOR SW-DR”) in “DATA MONITOR” mode with CONSULT-II.




**Without CONSULT-II**

Check voltage between smart entrance control unit terminal 29 and ground.

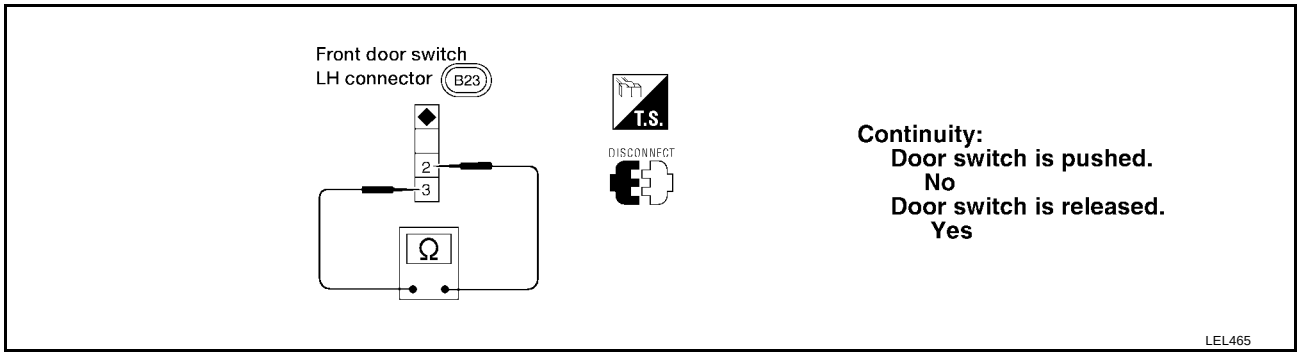



OK or NG

OK >> GO TO 4.
NG >> GO TO 3.

## 3. CHECK FRONT DOOR SWITCH LH

Check continuity between terminals 2 and 3.




OK or NG

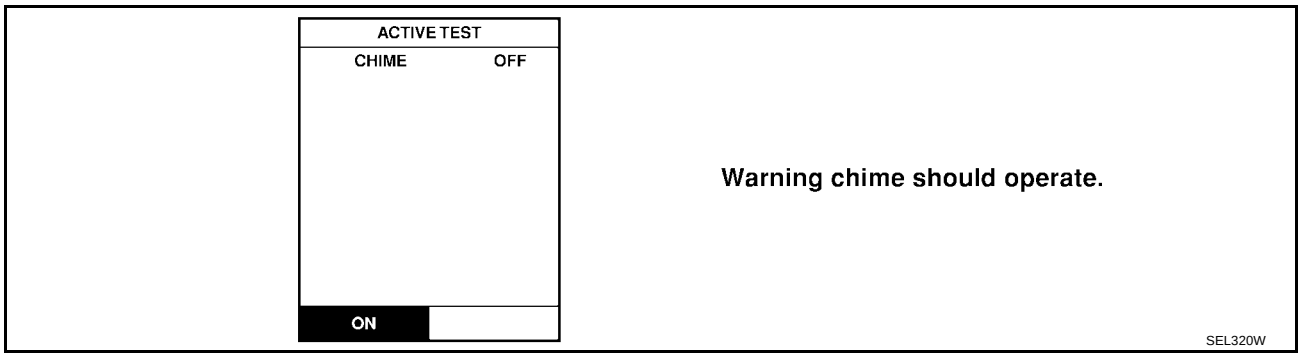
OK >> Check the following.
- Front door switch LH ground circuit and condition
- Harness for open or short between smart entrance control unit and front door switch LH

NG >> Replace front door switch LH.

## 4. CHECK WARNING CHIME

**With CONSULT-II**

Perform “CHIME” in “ACTIVE TEST” mode with CONSULT-II.




OK or NG

OK >> System is OK.
NG >> Replace smart entrance control unit.