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# WT

## SECTION

# ROAD WHEELS & TIRES

## CONTENTS

WT

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# PRECAUTIONS

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## PRECAUTIONS

PFP:00001

### Precautions for Battery Service

AES000DR

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

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# PREPARATION

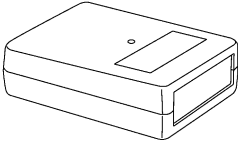
## PREPARATION

PFP:00002

### Special Service Tools

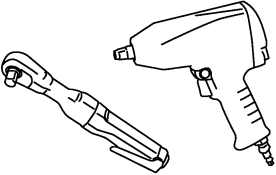
AES0004K

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
(J45295) Transmitter activation tool  SEIA0051E	ID registration

### Commercial Service Tools

AES0004L

Tool name	Description
Power tool  PBIC0190E	Removing wheel nuts

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

## NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

### NVH Troubleshooting Chart

AES0004M

Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

Reference page		FAX-4,FSU-5	WT-6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Possible cause and SUSPECTED PARTS		Improper installation, looseness	Out-of-round	Imbalance	Incorrect tire pressure	Uneven tire wear	Deformation or damage	Non-uniformity	Incorrect tire size	PROPELLER SHAFT	DIFFERENTIAL	FRONT AXLE AND FRONT SUSPENSION	REAR AXLE AND REAR SUSPENSION	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING	—	—	—		
Symptom	TIRES	Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
		Shake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
		Vibration	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Shimmy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Judder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Poor quality ride or handling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	ROAD WHEEL	Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Shake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Shimmy, judder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Poor quality ride or handling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

x: Applicable

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# ROAD WHEEL

## ROAD WHEEL

PFP:40300

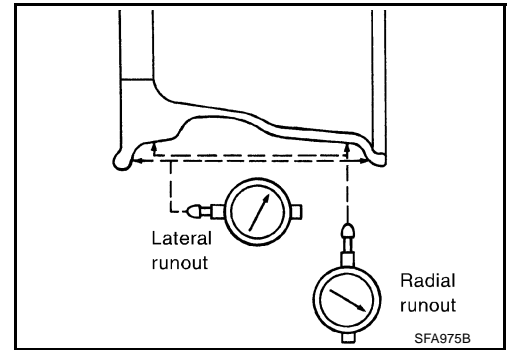
### Inspection ALUMINUM WHEEL

AES000DH

1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage. If deformed, remove wheel and check wheel runout.
  - a. Remove tire from aluminum wheel and mount on a tire balance machine.
  - b. Set dial indicator as shown in the illustration.

**Wheel runout (Dial indicator value):**

**Refer to [WT-42](#), "SERVICE DATA"**



### STEEL WHEEL

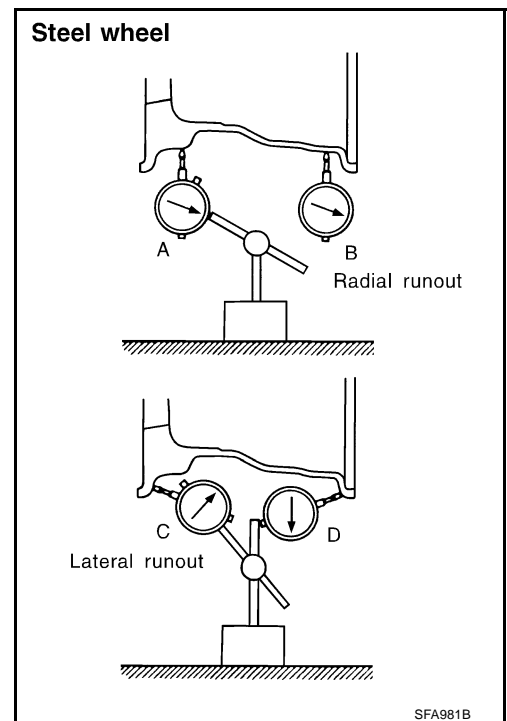
1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage. If deformed, remove wheel and check wheel runout.
  - a. Remove tire from steel wheel and mount wheel on a tire balance machine.
  - b. Set two dial indicators as shown in the illustration.
  - c. Set each dial indicator to 0.
  - d. Rotate wheel and check dial indicators at several points around the circumference of the wheel.
  - e. Calculate runout at each point as shown below.

**Radial runout =  $(A+B)/2$**

**Lateral runout =  $(C+D)/2$**

- f. Select maximum positive runout value and the maximum negative value. Add the two values to determine total runout. In case a positive or negative value is not available, use the maximum value (negative or positive) for total runout. If the total runout value exceeds the limit, replace steel wheel.

**Wheel runout : Refer to [WT-42](#), "SERVICE DATA"**



# ROAD WHEEL TIRE ASSEMBLY

## ROAD WHEEL TIRE ASSEMBLY

PFP:40300

### Balancing Wheels (Bonding Weight Type) REMOVAL

AES000DL

1. Remove inner and outer balance weights from the road wheel.

**CAUTION:**

**Be careful not to scratch the road wheel during removal.**

2. Using releasing agent, remove double-faced adhesive tape from the road wheel.

**CAUTION:**

- **Be careful not to scratch the road wheel during removal.**
- **After removing double-faced adhesive tape, wipe clean traces of releasing agent from the road wheel.**

### WHEEL BALANCE ADJUSTMENT

- If a tire balance machine has adhesion balance weight mode settings and drive-in weight mode setting, select and adjust a drive-in weight mode suitable for road wheels.

1. Set road wheel on wheel balancer using the center hole as a guide. Start the tire balance machine.
2. When inner and outer unbalance values are shown on the wheel balancer indicator, multiply outer unbalance value by  $5/3$  to determine balance weight that should be used. Select the outer balance weight with a value closest to the calculated value above and install it to the designated outer position of, or at the designated angle in relation to the road wheel.

**CAUTION:**

- **Do not install the inner balance weight before installing the outer balance weight.**
- **Before installing the balance weight, be sure to clean the mating surface of the road wheel.**

Indicated unbalance value  $\times 5/3$  = balance weight to be installed

Calculation example:

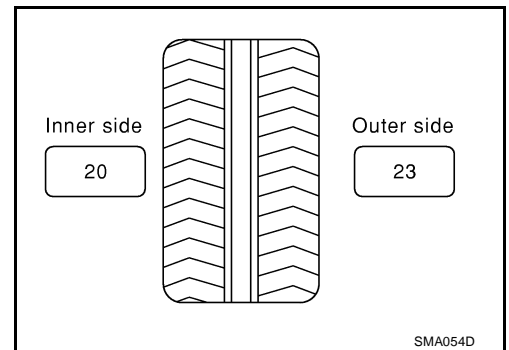
$23 \text{ g (0.81 oz)} \times 5/3 = 38.33 \text{ g (1.35 oz)} = 40 \text{ g (1.41 oz)}$  balance weight (closer to calculated balance weight value)

Note that balance weight value must be closer to the calculated balance weight value.

Example:

$37.4 = 35 \text{ g (1.23 oz)}$

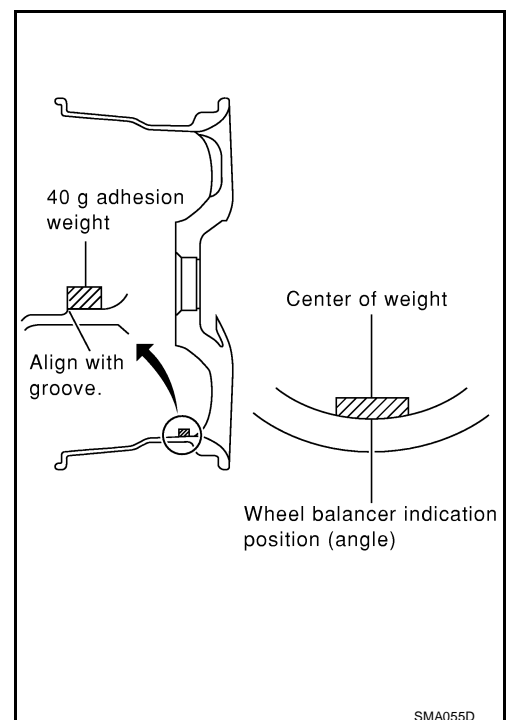
$37.5 = 40 \text{ g (1.41 oz)}$



- a. Install balance weight in the position shown in the figure at left.
- b. When installing balance weight to road wheels, set it into the grooved area on the inner wall of the road wheel as shown in the figure so that the balance weight center is aligned with the wheel balancer indication position (angle).

**CAUTION:**

- **Always use genuine Nissan adhesion balance weights.**
- **Balance weights are un reusable; always replace with new ones.**
- **Do not install more than three sheets of balance weight.**



# ROAD WHEEL TIRE ASSEMBLY

- c. If calculated balance weight value exceeds 50 g (1.76 oz), install two balance weight sheets in line with each other (as shown in the figure).

**CAUTION:**

**Do not install one balance weight sheet on top of another.**

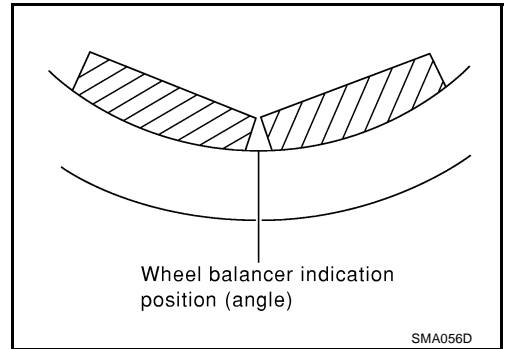
3. Start wheel balancer again.  
 4. Install drive-in balance weight on inner side of road wheel in the wheel balancer indication position (angle).

**CAUTION:**

**Do not install more than two balance weights.**

5. Start wheel balancer. Make sure that inner and outer residual unbalance values are 10 g (0.35 oz) each or below.  
 ● If either residual unbalance value exceeds 10 g (0.35 oz), repeat installation procedures.

**Wheel balance (Maximum allowable unbalance):**



Maximum allowable unbalance	Dynamic (At rim flange)	10 g (0.35 oz) (one side)
	Static (At rim flange)	20 g (0.71 oz)

## Tire Rotation

AES000DJ

**CAUTION:**

**Do not include the T-type spare tire when rotating the tires**

**NOTE:**

Tire cannot be rotated in vehicle, as front tire are different size from rear tire and the direction of wheel rotation is fixed in each tire.



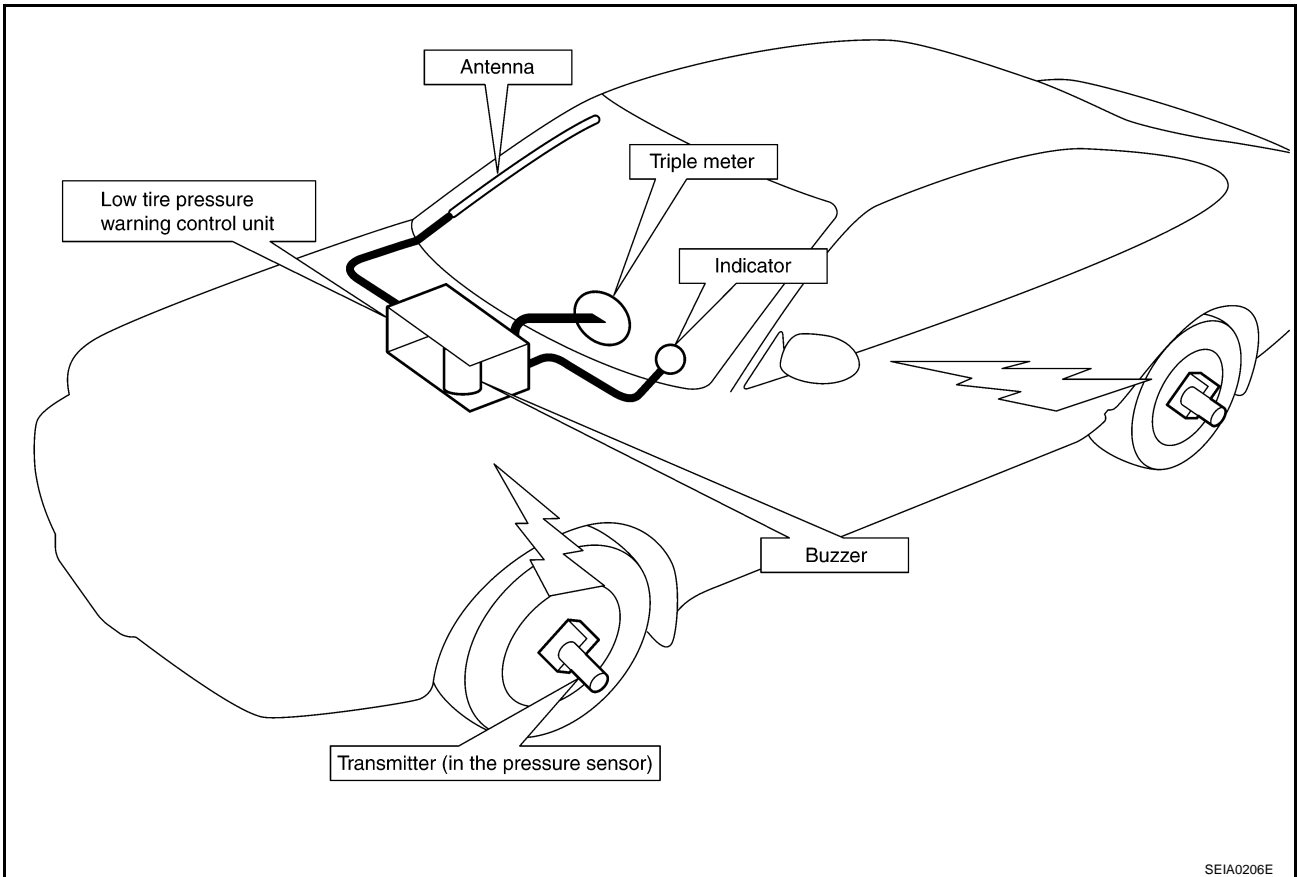
# LOW TIRE PRESSURE WARNING SYSTEM

## LOW TIRE PRESSURE WARNING SYSTEM

PPF:40300

### System Components

AES0004Q

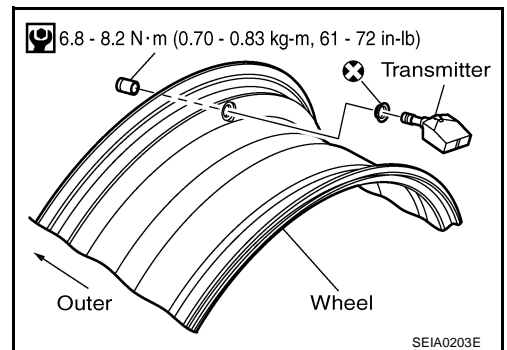


SEIA0206E

### System Description TRANSMITTER

AES0004R

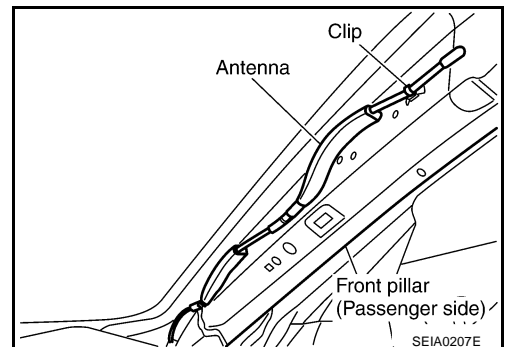
A sensor-transmitter integrated with a valve is installed on a wheel, and transmits a detected air pressure signal in the form of a radio wave.



SEIA0203E

### ANTENNA

Receives the radio wave signal transmitted by the transmitter.



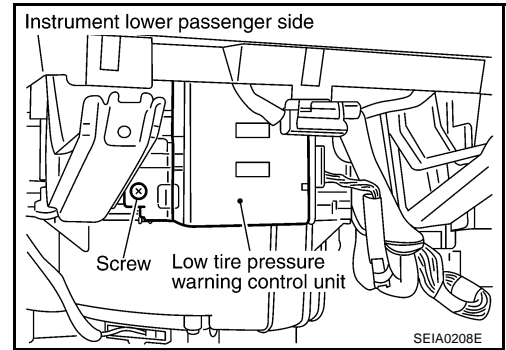
SEIA0207E

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# LOW TIRE PRESSURE WARNING SYSTEM

## LOW TIRE PRESSURE WARNING CONTROL UNIT

Reads the radio wave signal received by the antenna, and controls the warning lamp and the buzzer operations as shown below. It also has a judgement function to detect a system malfunction.

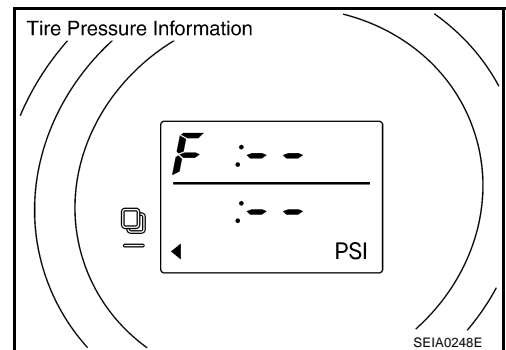


Condition	Warning lamp	Buzzer
Less than 200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi) [Flat tire]	ON	Sounds for 10 sec.
System malfunction	ON	OFF

## DISPLAY (TRIPLE METER)

Displays the air pressure of each tire.

- After the ignition switch is turned ON, the pressure values are not be displayed until the data of all four wheels stabilizes.



# CAN COMMUNICATION

## CAN COMMUNICATION

PFP:23710

### System Description

AES000DF

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

AES000DO

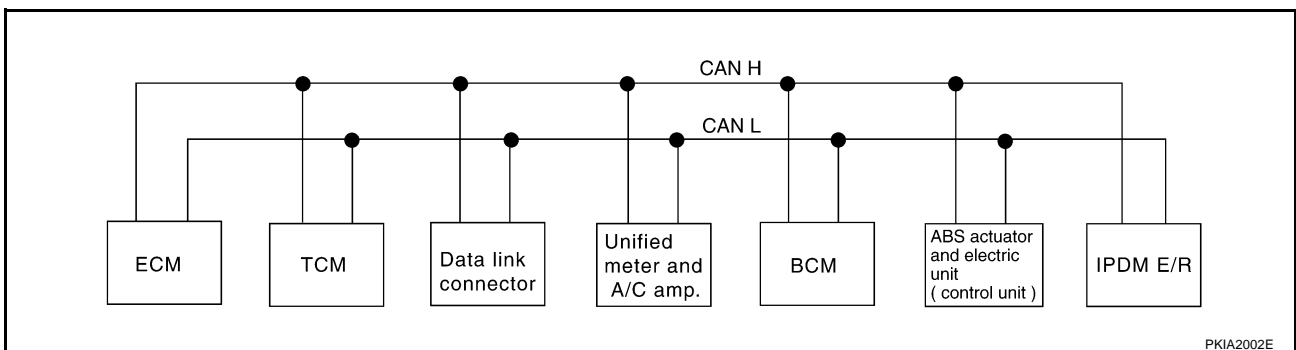
Body type	Coupe						
Axle	2WD						
Engine	VQ35DE						
Transmission	A/T	M/T					
Brake control	TCS	ABS		TCS		VDC	
Low tire pressure warning system	Not applicable	Not applicable	Applicable	Not applicable	Applicable	Not applicable	Applicable
CAN communication unit							
ECM	×	×	×	×	×	×	×
TCM	×						
Data link connector	×	×	×	×	×	×	×
Unified meter and A/C amp.	×	×	×	×	×	×	×
BCM	×	×	×	×	×	×	×
Low tire pressure warning control unit			×		×		×
Steering angle sensor						×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×		
VDC/TCS/ABS control unit						×	×
IPDM E/R	×	×	×	×	×	×	×
CAN communication type	<a href="#">WT-11, "TYPE 1"</a>	<a href="#">WT-13, "TYPE 2/TYPE3"</a>		<a href="#">WT-15, "TYPE 4/TYPE5"</a>		<a href="#">WT-16, "TYPE 6/TYPE7"</a>	

×: Applicable

### TYPE 1

#### System diagram

- Type1



PKIA2002E

# CAN COMMUNICATION

## Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	T	R	R		R	
Engine torque signal	T	R			R	
Engine coolant temperature signal	T	R	R			
Accelerator pedal position signal	T	R			R	
Closed throttle position signal	T	R				
Wide open throttle position signal	T	R				
Battery voltage signal	T	R				
Stop lamp switch signal		R	T			
Fuel consumption monitor signal	T		R			
A/T self-diagnosis signal	R	T				
A/T CHECK indicator lamp signal		T	R			
A/T position indicator signal		T	R		R	
Manual mode gear position signal		T	R			
ABS operation signal		R			T	
A/T shift schedule change demand signal		R			T	
A/C switch signal	R			T		
A/C compressor request signal	T					R
A/C compressor feedback signal	T		R			
Blower fan motor switch signal	R			T		
Cooling fan speed request signal	T					R
Position lights request signal			R	T		R
Low beam request signal				T		R
Low beam status signal	R					T
High beam request signal			R	T		R
High beam status signal	R					T
Vehicle speed signal			R		T	
	R	R	T	R		
Sleep request 1 signal			R	T		
Sleep request 2 signal				T		R
Wake up request 1 signal			R	T		
Door switch signal			R	T		R
Turn indicator signal			R	T		
Seat belt buckle switch signal			T	R		
Buzzer output signal			R	T		
Fuel level sensor signal	R		T			
Malfunction indicator lamp signal	T		R			
ASCD SET lamp signal	T		R			
ASCD operation signal	T	R				
ASCD CRUISE lamp signal	T		R			
ASCD OD cancel request signal	T	R				

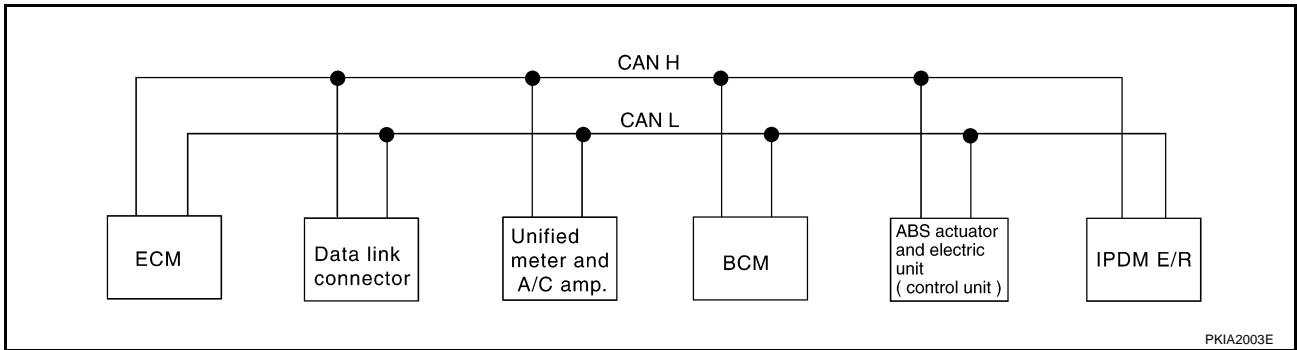
# CAN COMMUNICATION

Signals	ECM	TCM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
Output shaft revolution signal	R	T				
Turbine revolution signal	R	T				
Front wiper request signal				T		R
Front wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R					T
Manual mode signal		R	T			
Not manual mode signal		R	T			
Manual mode shift up signal		R	T			
Manual mode shift down signal		R	T			
Manual mode indicator signal		T	R			
Hood switch signal				R		T
Theft warning horn request signal				T		R
Horn chirp signal				T		R
ABS warning lamp signal			R		T	
TCS OFF indicator lamp signal			R		T	
SLIP indicator lamp signal			R		T	
Brake warning lamp signal			R		T	

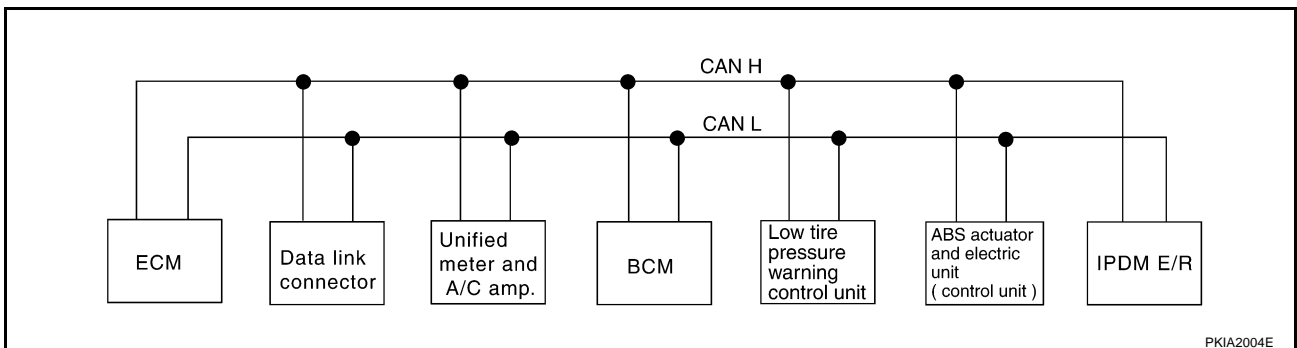
## TYPE 2/TYPE3

### System diagram

- Type2



- Type3



# CAN COMMUNICATION

## Input/output signal chart

T: Transmit R: Receive

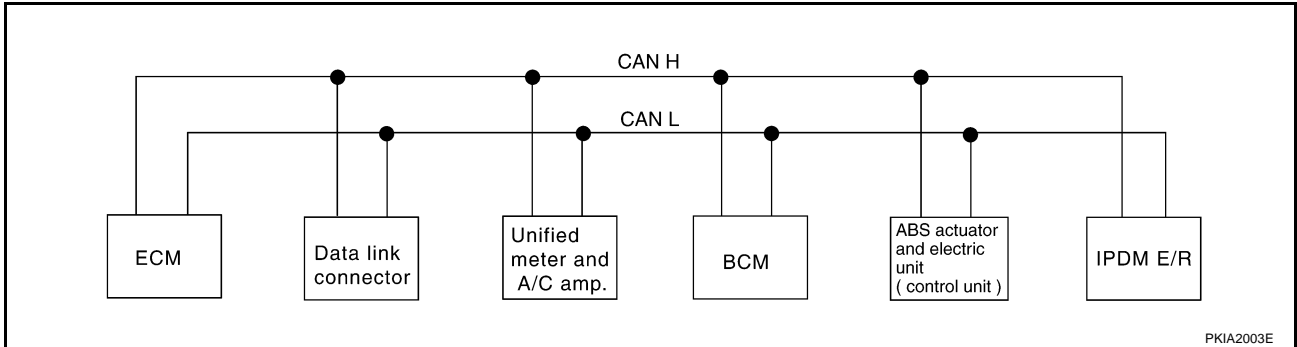
Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	T	R			R	
Engine coolant temperature signal	T	R				
Accelerator pedal position signal	T				R	
Fuel consumption monitor signal	T	R				
A/C switch signal	R		T			
A/C compressor request signal	T					R
A/C compressor feedback signal	T	R				
Blower fan motor switch signal	R		T			
Cooling fan speed request signal	T					R
Position lights request signal			R	T		R
Low beam request signal			T			R
Low beam status signal	R					T
High beam request signal		R	T			R
High beam status signal	R					T
Vehicle speed signal		R			T	
	R	T	R	R		
Sleep request 1 signal		R	T			
Sleep request 2 signal			T			R
Wake up request 1 signal		R	T			
Door switch signal		R	T			R
Turn indicator signal		R	T			
Seat belt buckle switch signal		T	R			
Buzzer output 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				
Front wiper request signal			T			R
Front wiper stop position signal			R			T
Rear window defogger switch signal			T			R
Rear window defogger control signal	R					T
Hood switch signal			R			T
Theft warning horn request signal			T			R
Horn chirp signal			T			R
Tire pressure signal		R		T		
ABS warning lamp signal		R			T	
Brake warning lamp signal		R			T	

# CAN COMMUNICATION

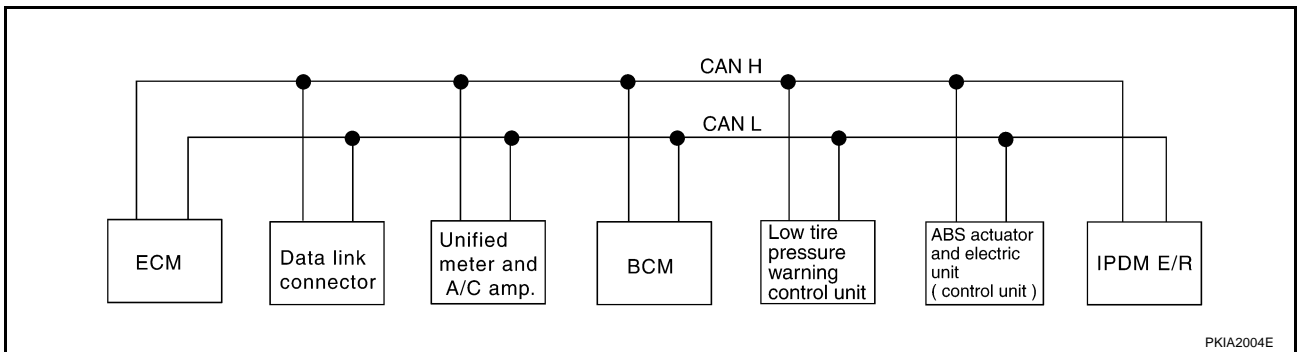
## TYPE 4/TYPE5

### System diagram

- Type4



- Type5



### Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	T	R			R	
Engine torque signal	T				R	
Engine coolant temperature signal	T	R				
Accelerator pedal position signal	T				R	
Fuel consumption monitor signal	T	R				
A/C switch signal	R		T			
A/C compressor request signal	T					R
A/C compressor feedback signal	T	R				
Blower fan motor switch signal	R		T			
Cooling fan speed request signal	T					R
Position lights request signal		R	T			R
Low beam request signal			T			R
Low beam status signal	R					T
High beam request signal		R	T			R
High beam status signal	R					T
Vehicle speed signal		R			T	
	R	T	R	R		
Sleep request 1 signal		R	T			
Sleep request 2 signal			T			R

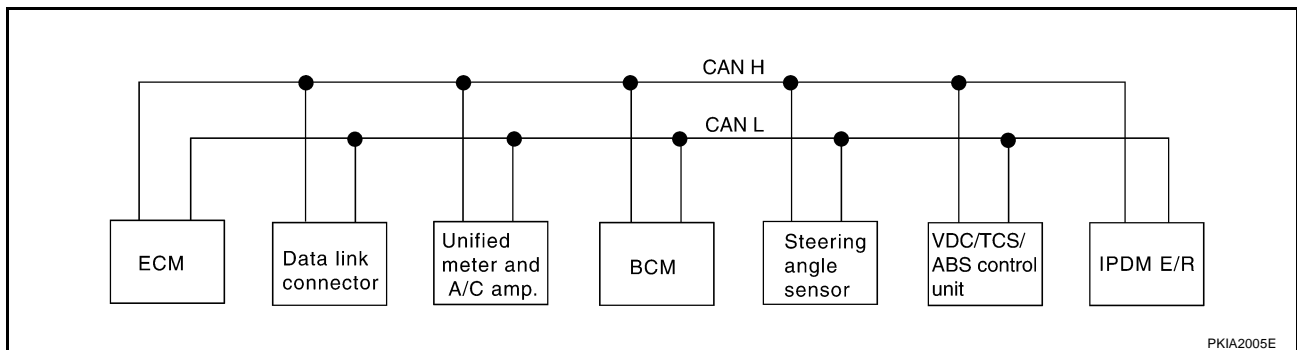
# CAN COMMUNICATION

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Wake up request 1 signal		R	T			
Door switch signal		R	T			R
Turn indicator signal		R	T			
Seat belt buckle switch signal		T	R			
Buzzer output 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				
Front wiper request signal			T			R
Front wiper stop position signal			R			T
Rear window defogger switch signal			T			R
Rear window defogger control signal	R					T
Hood switch signal			R			T
Theft warning horn request signal			T			R
Horn chirp signal			T			R
Tire pressure signal		R		T		
ABS warning lamp signal		R			T	
TCS OFF indicator lamp signal		R			T	
SLIP indicator lamp signal		R			T	
Brake warning lamp signal		R			T	

## TYPE 6/TYPE7

### System diagram

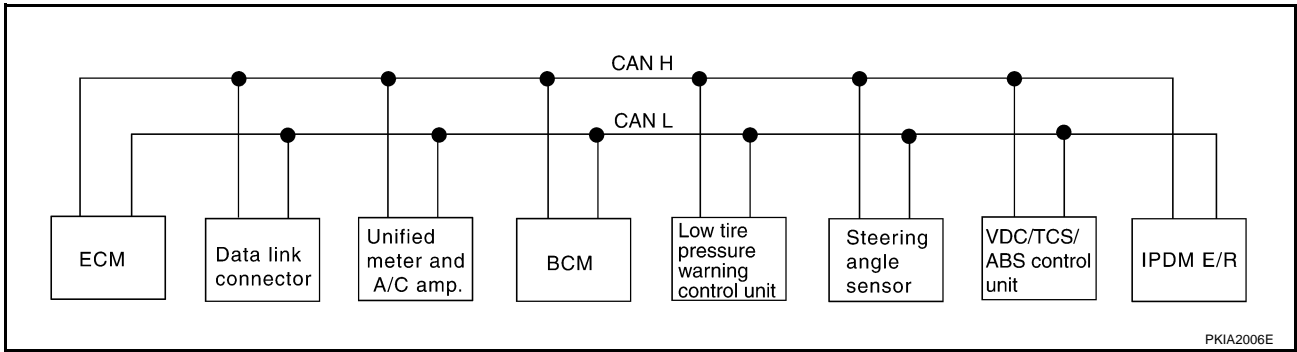
- Type6





# CAN COMMUNICATION

- Type7



## Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	Steering angle sensor	VDC/TCS/ABS control unit	IPDM E/R
Engine speed signal	T	R				R	
Engine torque signal	T					R	
Engine coolant temperature signal	T	R					
Accelerator pedal position signal	T					R	
Fuel consumption monitor signal	T	R					
A/C switch signal	R		T				
A/C compressor request signal	T						R
A/C compressor feedback signal	T	R					
Blower fan motor switch signal	R		T				
Cooling fan speed request signal	T						R
Position lights request signal		R	T				R
Low beam request signal			T				R
Low beam status signal	R						T
High beam request signal		R	T				R
High beam status signal	R						T
Vehicle speed signal	R	R	R	R		T	
Sleep request 1 signal		R	T				
Sleep request 2 signal			T				R
Wake up request 1 signal		R	T				
Door switch signal		R	T				R
Turn indicator signal		R	T				
Seat belt buckle switch signal		T	R				
Buzzer output signal		R	T				
Fuel level sensor signal	R	T					
Malfunction indicator signal	T	R					
ASCD SET lamp signal	T	R					
ASCD CRUISE lamp signal	T	R					
Front wiper request signal			T				R
Front wiper stop position signal			R				T
Rear window defogger switch signal			T				R

## CAN COMMUNICATION

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	Steering angle sensor	VDC/TCS/ABS control unit	IPDM E/R
Rear window defogger control signal	R						T
Hood switch signal			R				T
Theft warning horn request signal			T				R
Horn chirp signal			T				R
Steering angle sensor signal					T	R	
Tire pressure signal		R		T			
ABS warning lamp signal		R				T	
VDC OFF indicator lamp signal		R				T	
SLIP indicator lamp signal		R				T	
Brake warning lamp signal		R				T	

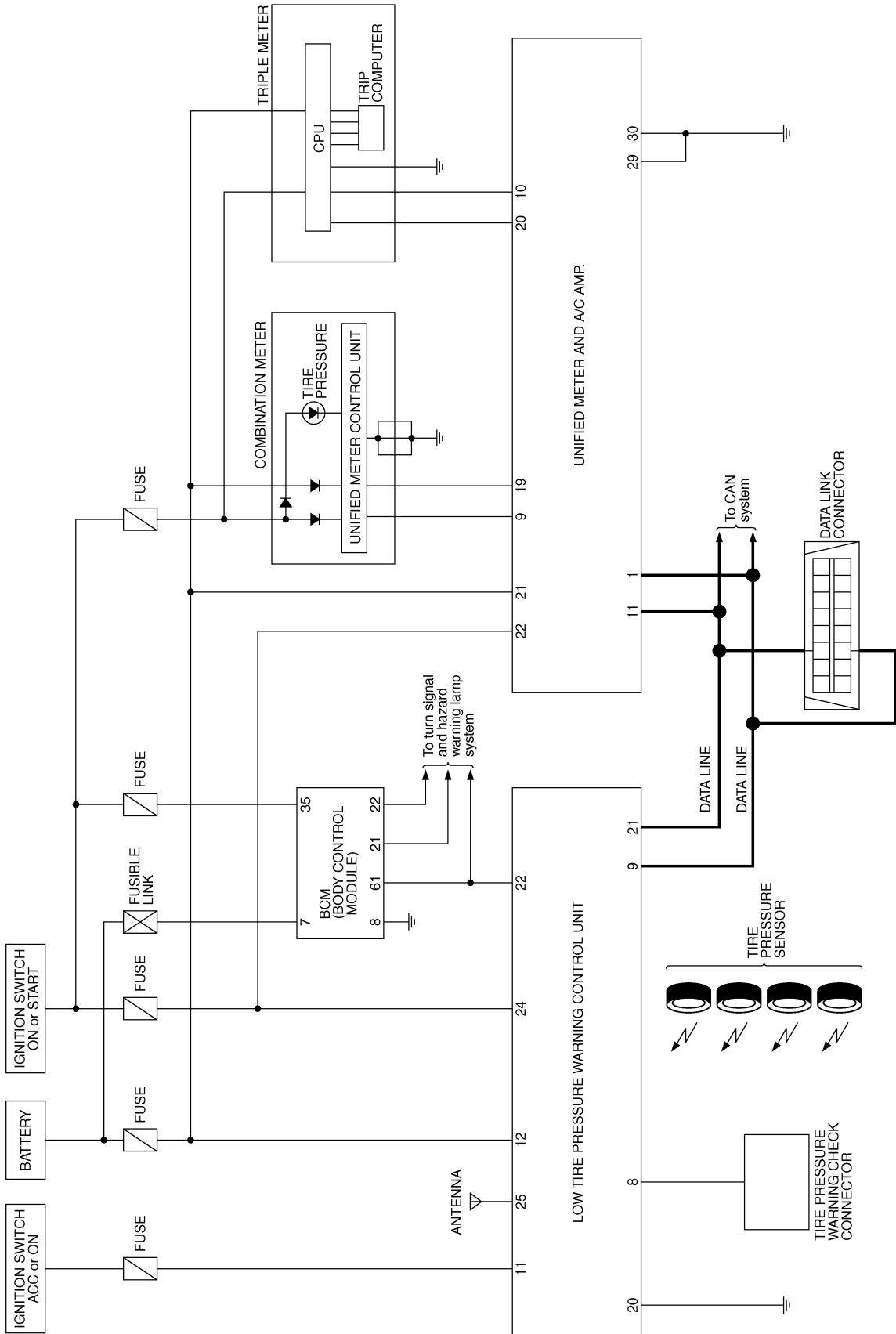
TRUBLE DIAGNOSES

Schematic

PFP:00004

AES000AW

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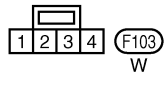
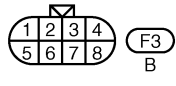
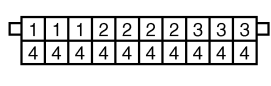
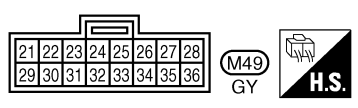
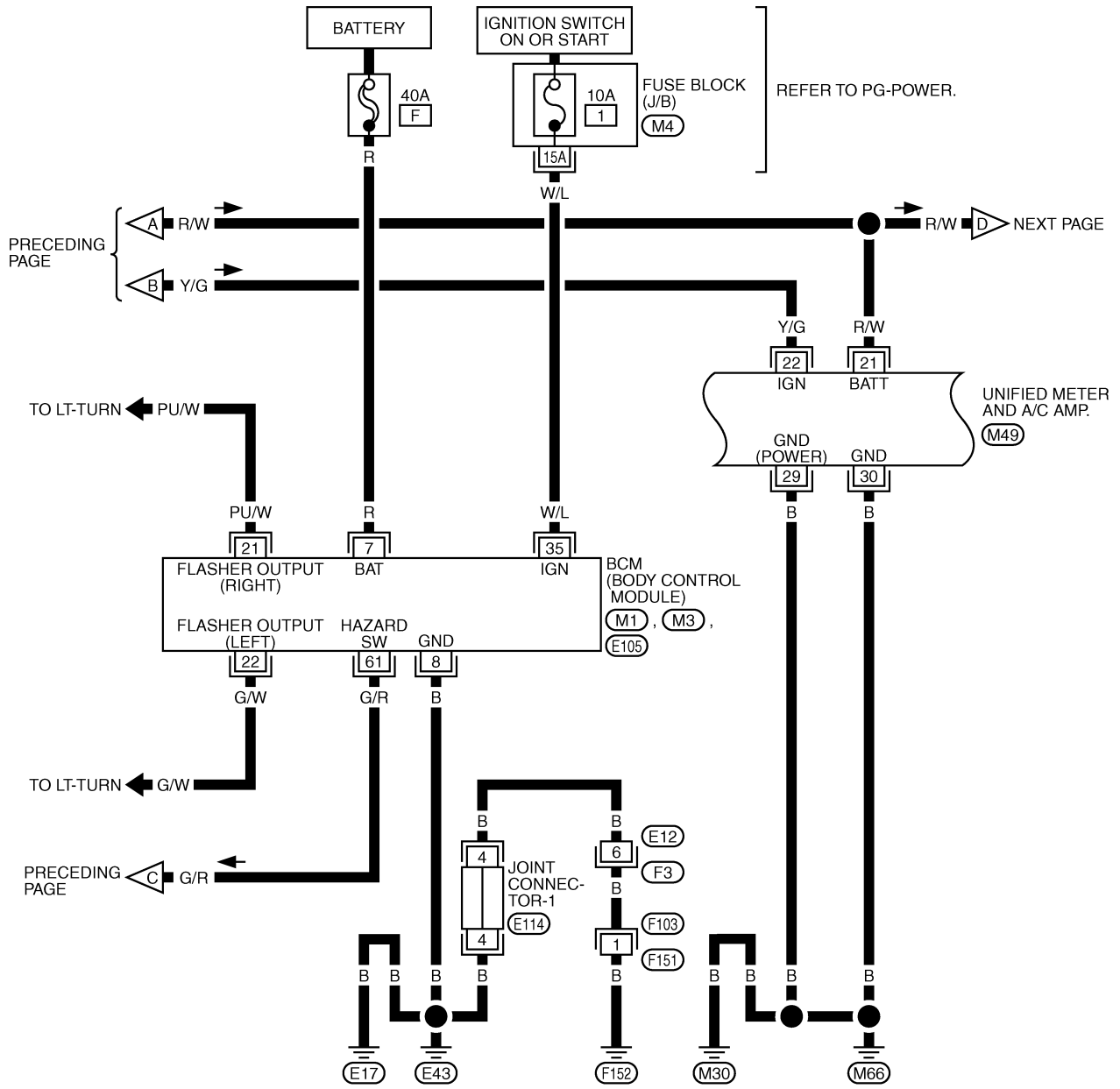


TEWT0001E



# TROUBLE DIAGNOSES

WT-T/WARN-02



REFER TO THE FOLLOWING.  
 (M4) -FUSE BLOCK-JUNCTION BOX (J/B)  
 (M1), (M3), (E105) -ELECTRICAL UNITS

TEWT0003E



# TROUBLE DIAGNOSES

## Control Unit Input/Output Signal Standard

AES000AV

Standards using a circuit tester and oscilloscope.

Measurement terminal		Measuring point	Standard value		
+	-				
8 (G)	Body ground	Tire pressure warning check switch	Always	Approx. 5V	
9 (L)		Data line (CAN H)	—	—	
11 (LG)		Ignition switch ON or ACC	Ignition switch ON	Battery voltage (Approx. 12V)	
12 (R/W)		Battery power supply	Always	Battery voltage (Approx. 12V)	
20 (B)		GND	—	Approx. 0V	
21 (R)		Data line (CAN L)	—	—	
22 (G/R)		Hazard	Hazard lamp switch OFF		Battery voltage (Approx. 12V)
			Hazard lamp switch ON		Approx. 0V
24 (Y/G)		Ignition switch ON or IGN		Battery voltage (Approx. 12V)	
25		Antenna	—	—	

( ) : Wire color

## ID Registration Procedure

### ID REGISTRATION WITH TRANSMITTER ACTIVATION TOOL

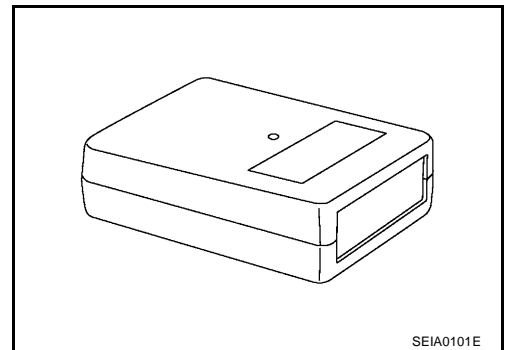
AES000AI

1. Turn ignition switch "OFF".
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.

**NOTE:**

If "AIR PRESSURE MONITOR" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

3. Touch "AIR PRESSURE MONITOR", "WORK SUPPORT" and "ID REGIST".
4. With the transmitter activation tool (J-45295) pushed against the front-left transmitter, press the button then keep 5 seconds.



5. Register the IDs in order from FR LH, FR RH, RR RH or RR LH. When ID registration of each wheel has been completed, a buzzer sounds and hazard warning lamp blinks.

Activation tire position	Buzzer	Hazard warning lamp	CONSULT-II
1 Front LH	Once	2 times flashing	"YET" ↓ "DONE"
2 Front RH	2 times		
3 Rear RH	3 times		
4 Rear LH	4 times		

6. After completing all ID registrations, press "END" to complete the procedure.

**NOTE:**

Be sure to register the IDs in order from FR LH, FR RH, RR RH, to RR LH, or the self-diagnostic results display will not function properly.

# TROUBLE DIAGNOSES

## ID REGISTRATION WITHOUT TRANSMITTER ACTIVATION TOOL

1. Turn ignition switch "OFF".
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.

**NOTE:**

If "AIR PRESSURE MONITOR" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

3. Touch "AIR PRESSURE MONITOR", "WORK SUPPORT" and "ID REGIST".
4. Adjust the tire pressure to the values shown in the table below for ID registration, and drive the vehicle at 15 km/h (9.4 MPH) or more for a few minutes.

Tire position	Tire pressure kPa (kg/cm <sup>2</sup> , psi)
Front – Left	260 (2.6, 37)
Front – Right	240 (2.4, 34)
Rear – Right	220 (2.2, 31)
Rear – Left	200 (2.0, 28)

5. After completing all ID registrations, press "END" to complete the procedure.

Activation tire position	CONSULT-II
Front LH	"YET" ↓ "DONE"
Front RH	
Rear RH	
Rear LH	

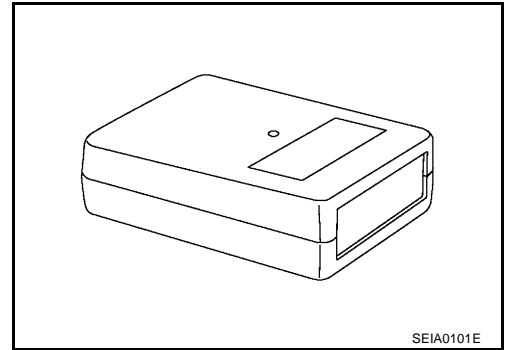


# TROUBLE DIAGNOSES

## Transmitter Wake Up Operation WITH TRANSMITTER ACTIVATION TOOL

AES000DP

1. With the transmitter activation tool (J-45295) pushed against the front-left transmitter, press the button then keep 5 seconds.
  - When ignition switch ON, then warning lamp is blinks as follow diagram transmitter must be waken up.



2. Register the IDs in order from FR LH, FR RH, RR RH or RR LH. When ID registration of each wheel has been completed, a hazard warning lamp blinks.

Warning lamp blinking timing		Need to activation tire position	Hazard warning lamp
1	ON OFF	a : 0.3sec b : 1.3sec	Front LH
2	ON OFF	a : 0.3sec b : 1.3sec	Front RH
3	ON OFF	a : 0.3sec b : 1.3sec	Rear RH
4	ON OFF	a : 0.3sec b : 1.3sec	Rear LH
5	ON OFF	a : 2sec b : 0.2sec	All tire

SEIA0351E

3. After completing wake up all transmitters, make sure tire pressure warning lamp go out.

# TROUBLE DIAGNOSES

AES000AX

## Self-Diagnosis DESCRIPTION

During driving, the low tire pressure warning system receives the signal transmitted from the transmitter installed in each wheel, and gives alarms when the tire pressure becomes low. The control unit of this system has pressure judgement and trouble diagnosis functions.

## FUNCTION

When the low tire pressure warning system detects low inflation pressure or another unusual symptom, the warning lamps in the combination meter comes on. To start the self-diagnostic results mode, ground the self-diagnostic (check) terminal. The malfunction location is indicated by the warning lamp flashing and the buzzer sounds.

## CONSULT-II

### CONSULT-II Application to Low Tire Pressure Warning System

ITEM	SELF-DIAGNOSTIC RESULTS	DATA MONITOR
Front - Left transmitter	×	×
Front - Right transmitter	×	×
Rear - Left transmitter	×	×
Rear - Right transmitter	×	×
Warning lamp	—	×
Vehicle speed	×	×
Buzzer (in control unit)	—	×

× : Applicable

— : Not applicable

## Self-Diagnostic Results Mode

Diagnostic item	Diagnostic item is detected when ...
FLAT - TIRE - FL FLAT - TIRE - FR FLAT - TIRE - RR FLAT - TIRE - RL	Front-left tire pressure drops to 200 kPa(2.0 kg/cm <sup>2</sup> , 28 psi) or less Front-right tire pressure drops to 200 kPa(2.0 kg/cm <sup>2</sup> , 28 psi) or less Rear-right tire pressure drops to 200 kPa(2.0 kg/cm <sup>2</sup> , 28 psi) or less Rear-left tire pressure drops to 200 kPa(2.0 kg/cm <sup>2</sup> , 28 psi) or less
[NO-DATA] - FL [NO-DATA] - FR [NO-DATA] - RR [NO-DATA] - RL	Data from front-left transmitter cannot be received. Data from front-right transmitter cannot be received. Data from rear-right transmitter cannot be received. Data from rear-left transmitter cannot be received.
[CHECKSUM- ERR] - FL [CHECKSUM- ERR] - FR [CHECKSUM- ERR] - RR [CHECKSUM- ERR] - RL	Checksum data from front-left transmitter is malfunctioning. Checksum data from front-right transmitter is malfunctioning. Checksum data from rear-right transmitter is malfunctioning. Checksum data from rear-left transmitter is malfunctioning.
[PRESSDATA- ERR] - FL [PRESSDATA- ERR] - FR [PRESSDATA- ERR] - RR [PRESSDATA- ERR] - RL	Air pressure data from front-left transmitter is malfunctioning. Air pressure data from front-right transmitter is malfunctioning. Air pressure data from rear-right transmitter is malfunctioning. Air pressure data from rear-left transmitter is malfunctioning.
[CODE- ERR] - FL [CODE- ERR] - FR [CODE- ERR] - RR [CODE- ERR] - RL	Function code data from front-left transmitter is malfunctioning. Function code data from front-right transmitter is malfunctioning. Function code data from rear-right transmitter is malfunctioning. Function code data from rear-left transmitter is malfunctioning.
[BATT - VOLT - LOW] - FL [BATT - VOLT - LOW] - FR [BATT - VOLT - LOW] - RR [BATT - VOLT - LOW] - RL	Battery voltage of front-left transmitter drops. Battery voltage of front-right transmitter drops. Battery voltage of rear-right transmitter drops. Battery voltage of rear-left transmitter drops.
VHCL_SPEED_SIG_ERR	Vehicle speed signal is error.

### NOTE:

Before performing the self-diagnosis, be sure to register the ID. Or, the actual malfunction location may be different from that displayed on CONSULT-II.

# TROUBLE DIAGNOSES

## Data Monitor Mode

MONITOR	CONDITION	SPECIFICATION
VHCL SPEED SE	Drive vehicle.	Vehicle speed (km/h or MPH)
AIR PRESS FL AIR PRESS FR AIR PRESS RR AIR PRESS RL	<ul style="list-style-type: none"> <li>● Drive vehicle for a few minutes.</li> <li style="text-align: center;">or</li> <li>● Ignition switch ON and activation tool is transmitting activate signals.</li> </ul>	Tire pressure (kPa or Psi)
ID REGST FL ID REGST FR ID REGST RR ID REGST RL	Ignition switch ON	Registration ID: DONE No registration ID: YET
WARNING LAMP		Warning lamp on: ON Warning lamp off: OFF
BUZZER		Buzzer in Low tire pressure warning control unit on: ON Buzzer in Low tire pressure warning control unit off: OFF

**NOTE:**

Before performing the self-diagnosis, be sure to register the ID. Or, the actual malfunction location may be different from that displayed on CONSULT-II.

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# TROUBLE DIAGNOSES

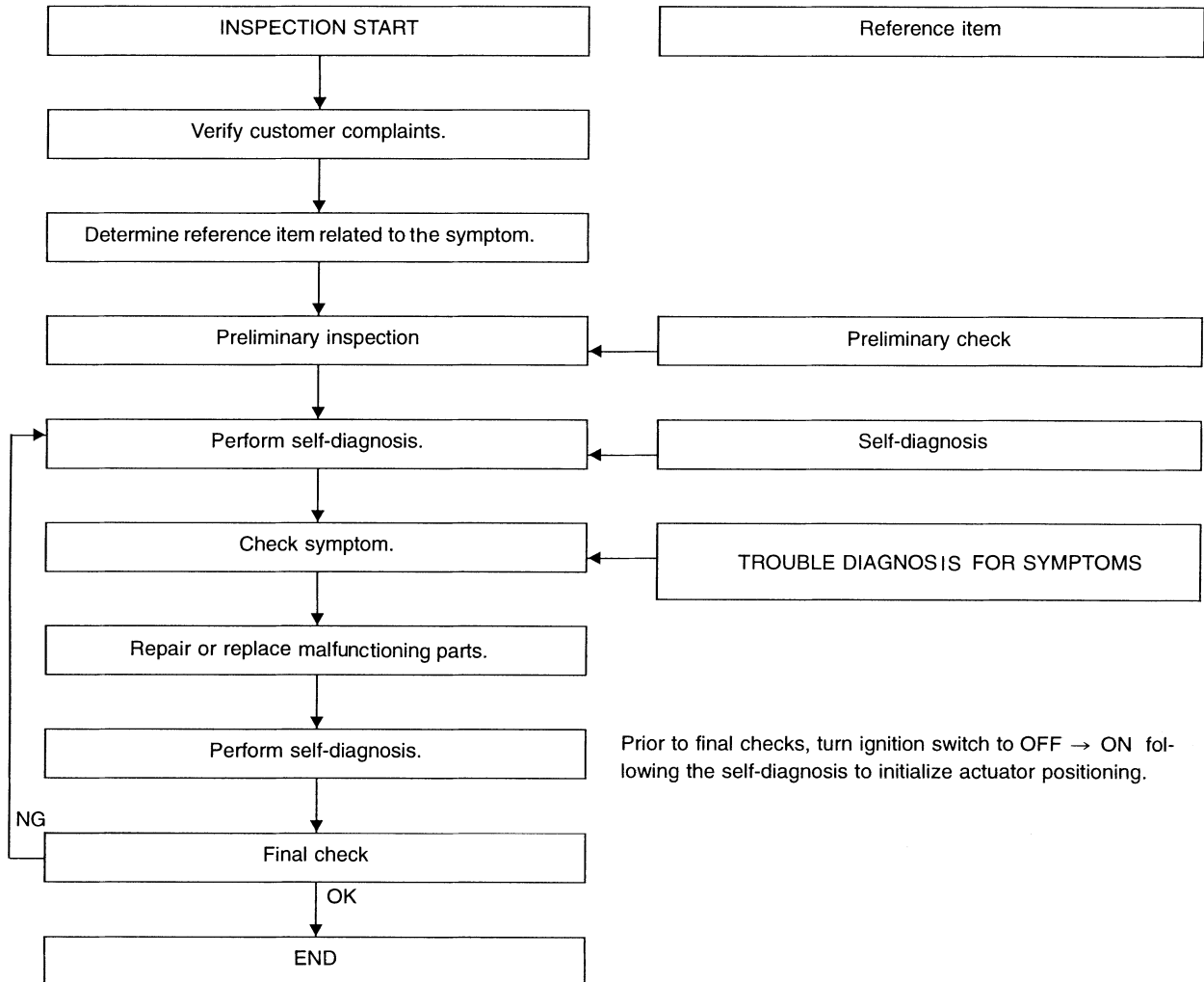
## How to Perform Trouble Diagnosis for Quick and Accurate Repair

AES000AY

### INTRODUCTION

- Before troubleshooting, verify customer complaints.
- If a vehicle problem is hard to reproduce, harnesses, harness connectors or terminals may often be malfunctioning. Hold and shake these parts by hand to make sure they are securely connected.
- When using a circuit tester to measure voltage or resistance of each circuit, be careful not to expand connector terminals.

### WORK FLOW



Preliminary check : [WT-29](#)

Self-diagnosis : [WT-31](#)

Trouble diagnosis for symptoms : [WT-34](#)

SEIA0100E

# TROUBLE DIAGNOSES

## Preliminary Check

AES000AZ

### BASIC INSPECTION

#### 1. CHECK ALL TIRES PRESSURES

- Check all tires pressures.

**Tire pressure : 240 kPa (2.4 kg/cm<sup>2</sup> , 34 psi)**

#### OK or NG?

OK >> GO TO 2.

NG >> Adjust tire pressure to specified value.

#### 2. CHECK CONNECTOR

1. Disconnect low tire pressure warning control unit connector M77.
2. Check terminals for damage or loose connection.

#### Inspection results OK?

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

#### 3. CHECK TRANSMITTER ACTIVATION TOOL

- Check transmitter tool battery.

#### OK or NG?

OK >> Carry out self-diagnosis.

NG >> Replace transmitter activation tool battery.

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# TROUBLE DIAGNOSES

## Malfunction Code/Symptom Chart

AES000B0

Code/Symptom	Malfunction part	Reference page
15 16 17 18	Front-left tire pressure drops to 200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi) or less Front-right tire pressure drops to 200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi) or less Rear-right tire pressure drops to 200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi) or less Rear-left tire pressure drops to 200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi) or less	—
21 22 23 24	Transmitter no data (front - left) Transmitter no data (front - right) Transmitter no data (rear - right) Transmitter no data (rear - left)	<a href="#">WT-31</a>
31 32 33 34	Transmitter checksum error (front - left) Transmitter checksum error (front - right) Transmitter checksum error (rear - right) Transmitter checksum error (rear - left)	<a href="#">WT-31</a>
35 36 37 38	Transmitter pressure data error (front - left) Transmitter pressure data error (front - right) Transmitter pressure data error (rear - right) Transmitter pressure data error (rear - left)	<a href="#">WT-32</a>
41 42 43 44	Transmitter function code error (front - left) Transmitter function code error (front - right) Transmitter function code error (rear - right) Transmitter function code error (rear - left)	<a href="#">WT-31</a>
45 46 47 48	Transmitter battery voltage low (front - left) Transmitter battery voltage low (front - right) Transmitter battery voltage low (rear - right) Transmitter battery voltage low (rear - left)	<a href="#">WT-31</a>
52	Vehicle speed signal	<a href="#">WT-33</a>
Warning lamp does not come on when ignition switch is turned on.	Fuse or unified meter and A/C amp. Low tire pressure warning control unit connector or circuit Low tire pressure warning control unit	<a href="#">WT-34</a>
Warning lamp stays on when ignition switch is turned on.	Fuse or unified meter and A/C amp. Low tire pressure warning control unit connector or circuit Low tire pressure warning control unit	<a href="#">WT-35</a>
Warning lamp blinks when ignition switch is turned on.	Low tire pressure warning control unit harness connector or circuit Low tire pressure warning control unit Transmitter's mode off ID registration not yet	<a href="#">WT-36</a>
Hazard warning lamp blinks when ignition switch is turned on.	Low tire pressure warning control unit harness connector or circuit Low tire pressure warning control unit	<a href="#">WT-37</a>
"TIRE PRESSURE" information in triple meter does not exist.	Fuse Triple meter Low tire pressure warning control unit	<a href="#">WT-38</a>
ID registration can not be operated.	Transmitter Antenna harness connector or circuit Antenna	<a href="#">WT-38</a>

# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

## TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

PFP:00000

### Inspection 1: Transmitter or Low Tire Pressure Warning Control Unit MALFUNCTION CODE NO. 21, 22, 23 OR 24

AES0000F

#### 1. CHECK CONTROL UNIT

- Drive for several minutes. Check all tires' pressure with CONSULT-II "DATA MONITOR ITEM".

Are all tires' pressure displayed 0 kPa?

- YES >> GO TO 2.
- NO >> GO TO 3.

#### 2. CHECK ANTENNA CONNECTOR

- Check antenna and feeder connector M205 for damage or loose connections.

OK or NG

- OK >> Replace control unit, then GO TO 3.
- NG >> Repair or replace antenna or feeder connector.

#### 3. ID REGISTRATION

- Carry out ID registration of all transmitters.

Is there a tire that cannot register ID?

- YES >> Replace transmitter of the tire, then GO TO 5.
- NO >> GO TO 4.

#### 4. VEHICLE DRIVING

- Drive at a speed of 40 km/h (25 MPH) or more for several minutes without stopping.  
Check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 15 minutes after vehicle speed becomes 17 km/h (11 MPH).

Does "DATA MONITOR ITEM" displayed tire pressure as normal without any warning lamp?

- YES >> INSPECTION END.
- NO >> GO TO 5.

#### 5. ID REGISTRATION AND VEHICLE DRIVING

1. Carry out ID registration of all transmitters.
2. Drive at a speed of 40 km/h (25 MPH) or more for 3 minutes, and then drive the vehicle at any speed for 10 minutes. Then check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 5 minutes.

Does "DATA MONITOR ITEM" displayed tire pressure as normal without any warning lamp?

- YES >> INSPECTION END.
- NO >> GO TO the inspection applicable to DTC.

### Inspection 2: Transmitter - 1

#### MALFUNCTION CODE NO. 31, 32, 33, 34, 41, 42, 43, 44, 45, 46, 47 OR 48

AES0000G

#### 1. ID REGISTRATION (CORRECTION OF TRANSMITTER LOCATION)

1. Carry out ID registration of all transmitters.
2. Drive at a speed of 40 km/h (25 MPH) or more for 3 minutes, and then drive the vehicle at any speed for 10 minutes. Then check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 5 minutes.

>> GO TO 2.

# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

---

## 2. REPLACE TRANSMITTER

---

1. Check warning lamp for blink again, replace malfunctioning transmitter.
2. Carry out ID registration of all transmitter.

Can ID registration of all transmitters be completed?

- YES >> GO TO 3.  
NO >> GO TO the inspection 1.

## 3. VEHICLE DRIVING

---

- Drive at a speed of 40 km/h (25 MPH) or more for 3 minutes, and then drive the vehicle at any speed for 10 minutes. Then check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 5 minutes.

Does "DATA MONITOR ITEM" displayed tire pressure as normal without any warning lamp?

- YES >> INSPECTION END.  
NO >> Replace malfunctioning transmitter, and perform "Step 3" again.

### Inspection 3: Transmitter - 2 MALFUNCTION CODE NO. 35, 36, 37 OR 38

AES0000H

## 1. CHECK ALL TIRE PRESSURE

---

- Check all tire pressures.

**Tire pressure : 240 kPa (2.4 kg/m<sup>2</sup> , 34 psi)**

Are there any tires' which pressure is "64 psi" or more?

- YES >> GO TO 2.  
NO >> Adjust tire pressure to specified value.

## 2. VEHICLE DRIVING

---

1. Carry out ID registration of all transmitters.
2. Drive at a speed of 40 km/h (25 MPH) or more for several minutes without stopping. Check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 15 minutes after vehicle speed become 17 km/h (11 MPH).

>> Replace transmitter with new one if "DATA MONITOR ITEM" displayed 64 psi or more. Then GO TO 3.

## 3. ID REGISTRATION AND VEHICLE DRIVING

---

1. Carry out ID registration of all transmitters.
2. Drive at a speed of 40 km/h (25 MPH) or more for 3 minutes, and then drive the vehicle at any speed for 10 minutes. Then check all tires' pressure with CONSULT-II "DATA MONITOR ITEM" within 5 minutes.

Does "DATA MONITOR ITEM" displayed tire pressure as normal without any warning lamp?

- YES >> INSPECTION END.  
NO >> GO TO the inspection applicable to DTC.



# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

## Inspection 4: Vehicle Speed Signal MALFUNCTION CODE NO. 52

AES00001

A

### 1. SELF-DIAGNOSIS RESULT CHECK

1. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.

B

**NOTE:**

If "AIR PRESSURE MONITOR" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

C

2. Select "AIR PRESSURE MONITOR" on "SELECT SYSTEM" screen.
3. Select "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.
4. Check display contents in self-diagnostic results.

D

Is "CAN COMM CIRCUIT" displayed in the self-diagnosis display items?

YES >> Malfunction in CAN communication system. GO TO [LAN-4, "Precautions When Using CONSULT-II"](#).

WT

NO >> Check unified meter and A/C amp. self-diagnostic. Refer to [DI-65, "SELF-DIAGNOSIS RESULTS"](#).

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# TROUBLE DIAGNOSIS FOR SYMPTOMS

## TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

### Inspection 1: Warning Lamp Does Not Come On When Ignition Switch Is Turned On.

AES000AR

Before carrying out the inspection on the following diagnostic procedure, perform the CAN communication line check. Refer to [WT-39, "Inspection 7: CAN Communication Line"](#).

#### DIAGNOSTIC PROCEDURE

### 1. CHECK COMBINATION METER

- Check combination meter operation.

Inspection results OK?

OK >> GO TO 2.

NG >> Check combination meter. Refer to [DI-4](#).

### 2. CHECK WARNING LAMP

- Disconnect low tire pressure warning control unit connector.

Does the warning lamp activate?

YES >> Replace low tire pressure warning control unit.

NO >> GO TO 3.

### 3. CHECK UNIFIED METER AND A/C AMP. POWER SUPPLY CIRCUIT

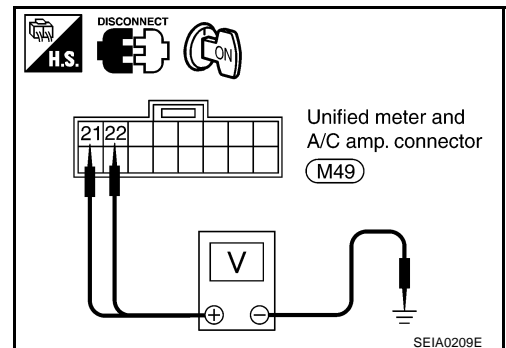
- Check voltage between unified meter and A/C amp. harness connector M49 terminal 21 (R/W), 22 (Y/G) and ground.

**: Battery voltage should exist. (Approx. 12V)**

OK or NG?

OK >> GO TO 4.

NG >> Check unified meter and A/C amp. power supply circuit for open or short.



### 4. CHECK UNIFIED METER AND A/C AMP. GROUND CIRCUIT

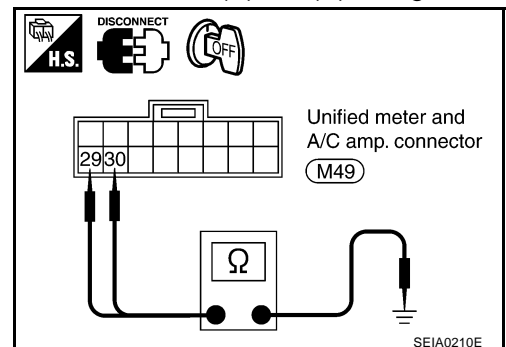
- Check continuity between unified meter and A/C amp. connector M49 terminal 29 (B), 30 (B) and ground.

**: Continuity should exist.**

OK or NG?

OK >> Check unified meter and A/C amp. Refer to [DI-53](#).

NG >> Repair or replace unified meter and A/C amp. ground circuit.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Inspection 2: Warning Lamp Stays On When Ignition Switch Is Turned On.

AES000AS

### DIAGNOSTIC PROCEDURE

#### 1. CHECK CONNECTOR

1. Disconnect low tire pressure warning control unit connector.
2. Check terminals for damage or loose connections.

#### Inspection results OK?

- OK >> GO TO 2.  
NG >> Repair or replace damaged parts.

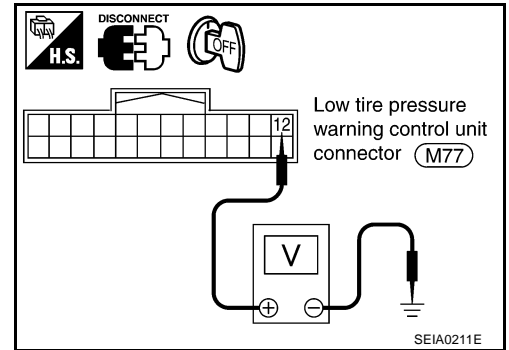
#### 2. CHECK POWER SUPPLY CIRCUIT 1

Check voltage between low tire pressure warning control unit connector M77 terminal 12 (R/W) and ground.

**: Battery voltage should exist. (Approx. 12V)**

#### OK or NG?

- OK >> GO TO 3.  
NG >> Check low tire pressure warning control unit power supply circuit for open or short.



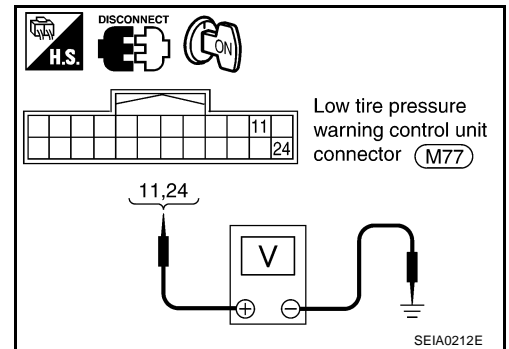
#### 3. CHECK POWER SUPPLY CIRCUIT 2

1. Turn ignition switch ON.
2. Check voltage between low tire pressure warning control unit connector M77 terminals 11 (LG), 24 (Y/G) and ground.

**: Battery voltage should exist. (Approx. 12V)**

#### OK or NG?

- OK >> GO TO 4.  
NG >> Check low tire pressure warning control unit power supply circuit for open or short.



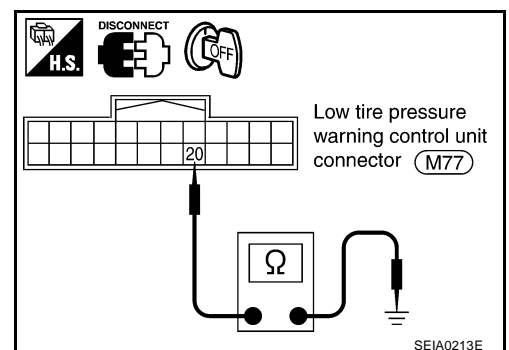
#### 4. CHECK GROUND CIRCUIT

- Check continuity between low tire pressure warning control unit connector M77 terminal 20 (B) and ground.

**: Continuity should exist.**

#### OK or NG?

- OK >> Replace low tire pressure warning control unit.  
NG >> Repair or replace low tire pressure warning control unit ground circuit.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Inspection 3: Warning Lamp Blinks When Ignition Switch Is Turned On.

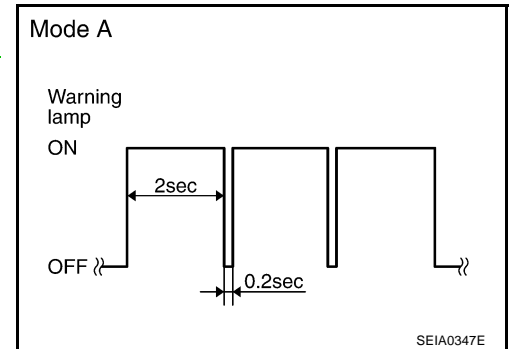
AES000DB

### NOTE:

If warning lamp blink below, the system is normal.

Blink Mode A

- This mode shows transmitter status is OFF-mode. Carry out transmitter wake up operation. Refer to [WT-25](#). "[Transmitter Wake Up Operation](#)".



## DIAGNOSTIC PROCEDURE

### 1. CHECK CONNECTOR

- Disconnect low tire pressure warning control unit connector.
- Check terminals for damage or loose connections.

Inspection results OK?

- OK >> GO TO 2.  
NG >> Repair or replace damaged parts.

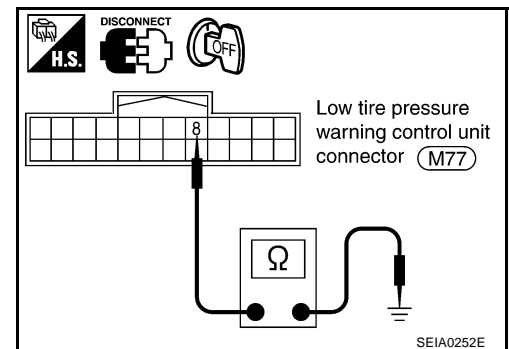
### 2. CHECK GROUND CIRCUIT

- Check continuity between low tire pressure warning control unit harness connector M77 terminal 8 (G) and ground.

**: Continuity should exist.**

OK or NG?

- OK >> Replace low tire pressure warning control unit.  
NG >> Repair or replace harness connector.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Inspection 4: Hazard Warning Lamp Blinks When Ignition Switch Is Turned On .

AES000DC

### DIAGNOSTIC PROCEDURE

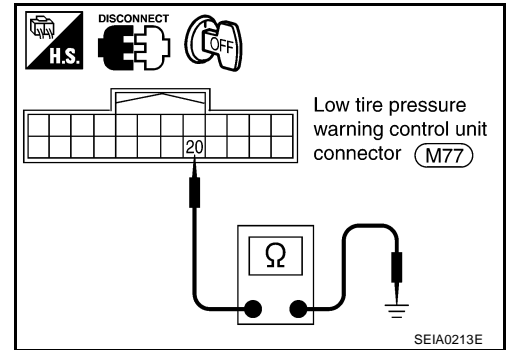
#### 1. CHECK GROUND CIRCUIT

- Check continuity between low tire pressure warning control unit harness connector M77 terminal 20 (B) and ground.

**: Continuity should exist.**

#### OK or NG?

- OK >> Replace low tire pressure warning control unit.
- NG >> Repair or replace low tire pressure warning control unit ground circuit.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Inspection 5: "TIRE PRESSURE" Information In Triple Meter Does Not Exist.

AES000DA

Before carrying out the inspection on the following diagnostic procedure, perform the CAN communication line check. Refer to [WT-39, "Inspection 7: CAN Communication Line"](#).

### DIAGNOSTIC PROCEDURE

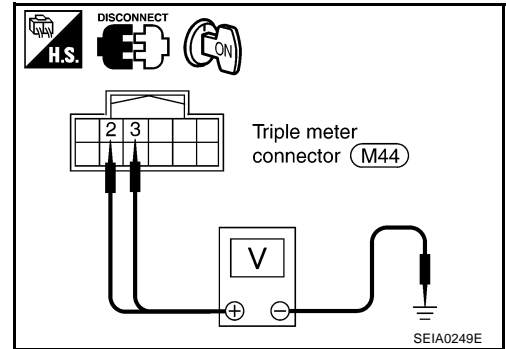
#### 1. CHECK TRIPLE METER POWER SUPPLY CIRCUIT

1. Disconnect triple meter connector.
2. Check voltage between triple meter harness connector M44 terminal 2 (R/W), 3 (G/Y) and ground.

: **Battery voltage should exist. (Approx. 12V)**

OK or NG?

- OK >> GO TO 2.  
NG >> Check triple meter power supply circuit for open or short.



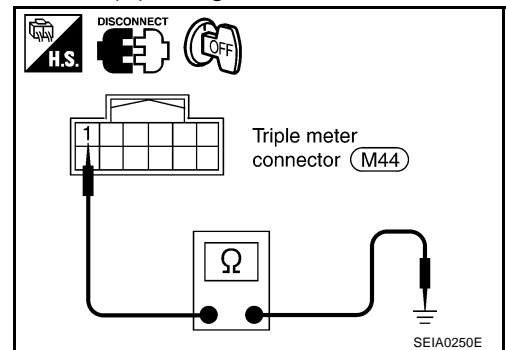
#### 2. CHECK TRIPLE METER GROUND CIRCUIT

- Check continuity between triple meter harness connector M44 terminal 1 (B) and ground.

: **Continuity should exist.**

OK or NG?

- OK >> Check triple meter. Refer to [DI-42, "Diagnosis Flow"](#).  
NG >> Repair or replace triple meter ground circuit.



## Inspection 6: ID Registration Can Not Be Completed

AES000AU

### DIAGNOSTIC PROCEDURE

#### 1. ID REGISTRATION (ALL)

- Carry out ID registration of all transmitter.
- Can ID registration of all transmitter be completed?

OK or NG?

- YES >> INSPECTION END.  
NO >> GO TO "TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS".

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Inspection 7: CAN Communication Line

AES000DD

### DIAGNOSTIC PROCEDURE

#### 1. SELF-DIAGNOSIS RESULT CHECK

1. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.

**NOTE:**

If "AIR PRESSURE MONITOR" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

2. Select "AIR PRESSURE MONITOR" on "SELECT SYSTEM" screen.
3. Select "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.
4. Check display contents in self-diagnostic results.

Is "CAN COMM CIRCUIT" displayed in the self-diagnosis display items?

YES >> Malfunction in CAN communication system. GO TO [LAN-4, "Precautions When Using CONSULT-II"](#).

NO >> Inspection end.

A

B

C

D

WT

F

G

H

I

J

K

L

M

# REMOVAL AND INSTALLATION

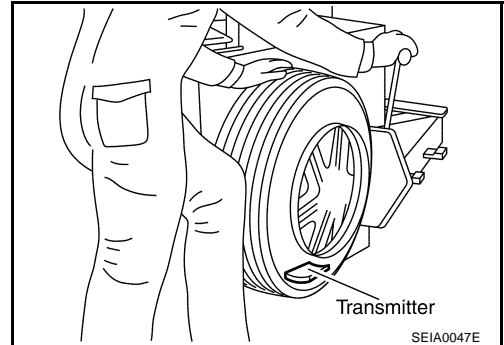
## REMOVAL AND INSTALLATION

PFP:00000

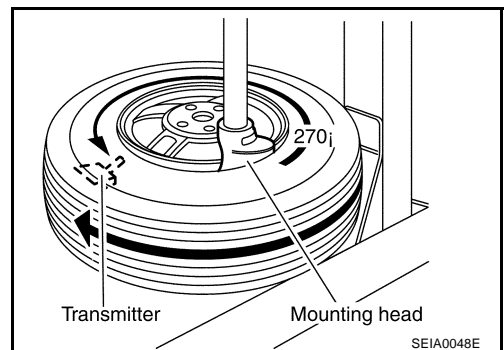
### Transmitter REMOVAL

AES00057

1. Deflate tire. Unscrew transmitter retaining nut and allow transmitter to fall into tire.
2. Gently bounce tire so that transmitter falls to bottom of tire. Place on tire changing machine and break both tire beads ensuring that the transmitter remains at the bottom of the tire.

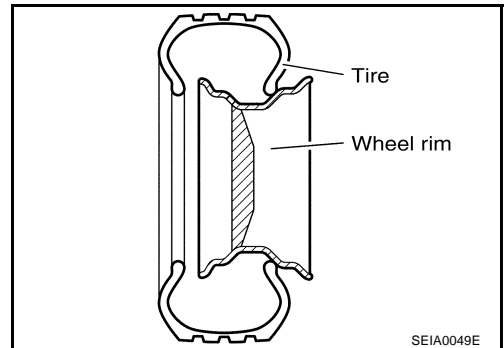


3. Turn tire so that valve hole is at bottom and bounce so that transmitter is near valve hole. Carefully lift tire onto turntable and position valve hole (and transmitter) 270 degree from mounting/dismounting head.
4. Lubricate tire well and remove first side of the tire. Reach inside the tire and remove the transmitter. Remove second side of tire.

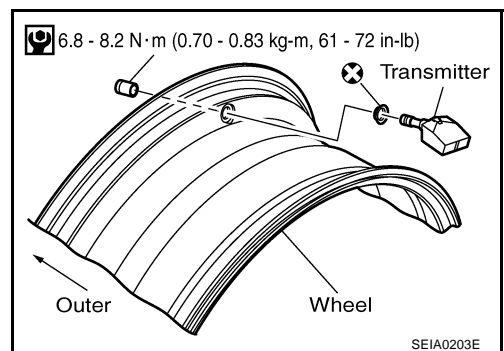


### INSTALLATION

1. Put first side of tire onto rim.



2. Mount transmitter on rim and tighten nut.



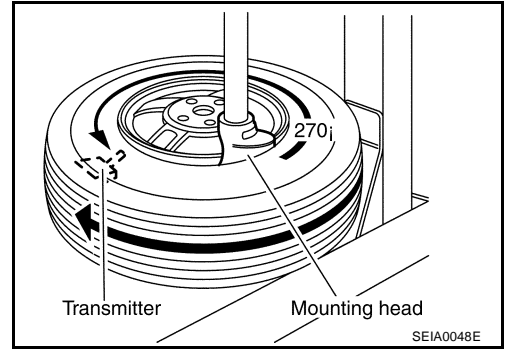


## REMOVAL AND INSTALLATION

- Place wheel on turntable of tire machine. Ensure that transmitter is 270 degree from mounting head when second side of tire is fitted.

**NOTE:**

Do not touch transmitter at mounting head.



- Lubricate tire well and fit second side of tire as normal. Ensure that tire does not rotate relative to rim.
- Inflate tire and fit to appropriate wheel position.

A  
B  
C  
D

WT

F  
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K  
L  
M

# SERVICE DATA

## SERVICE DATA

PFP:00030

### Road Wheel

AES00058

Kind of wheel		Aluminum	Steel for emergency use
Deflection limit	Lateral deflection	Less than 0.3 mm (0.012 in)	Less than 1.0mm (0.039 in)
	Vertical deflection	Less than 0.3mm (0.012 in)	Less than 1.2mm (0.047in)
Allowable quantity of residual unbalance	Dynamic (At rim flange)	Less than 10g (0.35oz) (per side)	
	Static (At rim flange)	Less than 20g (0.70oz)	

### Tire

AES00059

Unit: kPa (kg/cm<sup>2</sup>, psi)

Tire size	Air pressure	
	Front wheel	Rear wheel
225/50R17 94W 225/45R18 91W	240 (2.4, 35)	—
235/50R17 06W 245/45R18 96W	—	240 (2.4, 35)
T145/96D16 T155/80R17	420 (4.2, 60)	420 (4.2, 60)

### Tightening Torque

AES000DK

Wheel nut	98.1 - 127 N·m (10 - 12 kg·m, 73 - 93 ft·lb)
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