Relationship between tire position and number keys

Truck (including tractor), bus

Tires: 4

Tires: 6

Tires: 8, Axle arrangement: 2 • 2-D

Tires: 8, Axle arrangement: 2-D • 2

Tires: 10

Tires: 12

Trailer

Look at the [TL1] etc. displayed at the bottom of the key when entering trailer tire position.

Tires: 2, Axle arrangement: 1 axles

Tires: 4, Axle arrangement: 1 axles

Tires: 4, Axle arrangement: 2 axles

Tires: 6, Axle arrangement: 3 axles

Tires: 8, Axle arrangement: 2 axles

Tires: 12, Axle arrangement: 3 axles

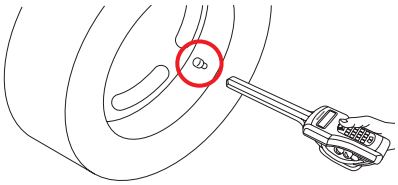
2-8 Reading data from sensor

This section describes how to read the data from the sensor mounted on the tire.

1. Press the POWER switch to turn on the power.
▸ See section "2-1 Power ON" (page 10).

2. Select the measurement mode and set.
▸ See "3 Performing measurement only" (page 17) and "4 Saving the measured data" (page 19).

3. Gently touch the tip of the antenna against the sidewall near the valve of the tire to be measured.



4. Press the **B button.**

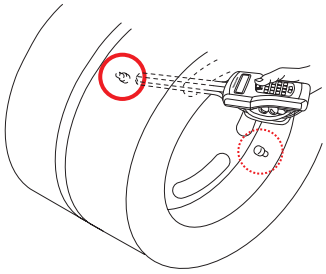
- The data will be measured when the **B button** is released.
- Measurement will be performed only once when you release the **B button** even if you continue pressing it.

5. The data is received from the sensor inside the tire.

When

You want to measure the inside tire of double tire

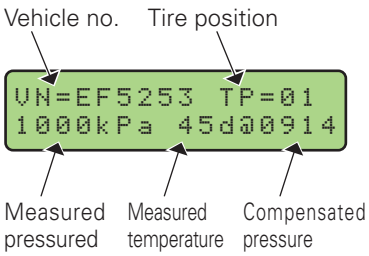
Insert the antenna from the ornamental hole of the outer tire wheel and gently touch against the sidewall near the valve.



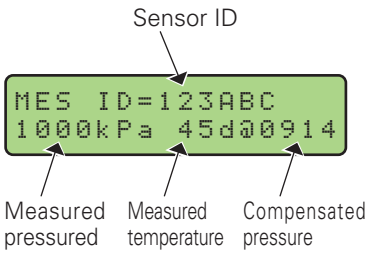
2-9 Viewing the measured data

The measured data appears on the LCD panel as follows.

When you measure in REG mode



When you measure in MES mode



Measured pressured : Shows the measured tire pressure.
Measured temperature : Shows the measured tire internal temperature.
Compensated pressure : Shows the measured tire pressure compensated to the pressure when the tire internal temperature is 20°C.
▸ See section "7-2 Compensated pressure calculation" (page 35) for details.

- The tire pressure changes with tire internal temperature. Therefore, if it is measured after driving, the tire will be warm and the pressure will be higher than before driving when the tire is cool.
  If you want to REG the tire pressure without the effect of the tire internal temperature, use the temperature converted to the pressure (called compensated pressure) at the reference temperature (20°C).

3 Performing Measurement Only (MES mode)

To perform measurement only, select MES mode from the Select Menu screen.

1. Press the POWER switch to turn on the power.
▸ See section "2-1 Power ON" (page 10)

```
SELECT MENU
1REG 2MES 3OB
```

Select Menu screen

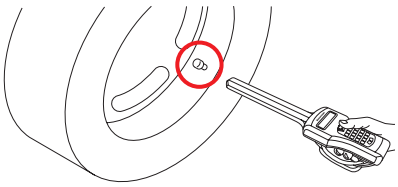
2. Press the **[2]** key and select "2MES" when the Select Menu screen appears.
▸ See section "2-4 Selecting operation mode" (page 11)

3. MES Mode Input Wait screen appears on the LCD panel.

```
MES MODE
READY
```

MES Mode Input Wait screen

4. Gently touch the tip of the antenna against the sidewall near the valve of the tire to be measured.

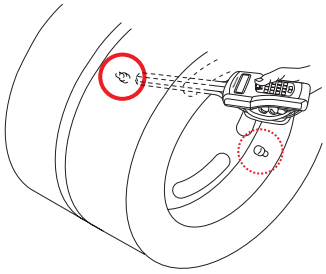


- Note that if you touch the tip of the antenna against the rim or other metal parts, radio wave from the sensor will be blocked and you will not be able to receive the data.

When

You want to measure the inside tire of double tire

Insert the antenna from the hole in the outer rim and gently touch the tip of the antenna against the sidewall near the valve. If the rim is installed properly, the valve of the outer tire should be at the opposite position from the valve of the inner tire.

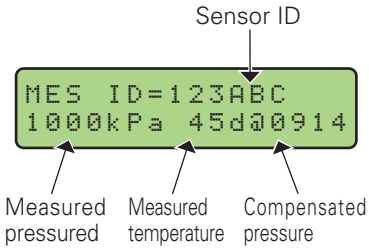


5. Press the **B button**.

- The data will be measured when the **B button** is released.
- Measurement will be performed only once when you release the **B button** even if you continue pressing it.

6. Data is received from the sensor inside the tire.

7. If the data is received normally, an alarm (0.5 sec) sounds twice and the received data appears on the LCD panel.



When data is received successfully

8. To continue measuring another tire or repeat measurement of the same tire, repeat steps **4** and **5**.

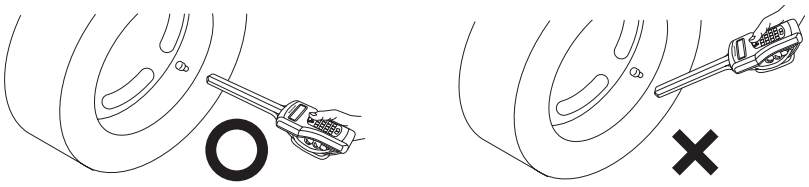
When

A long alarm (1.5 sec) sounds once

When there is no response from the sensor after pressing the **B button** or the data could not be received correctly, the Receive Error screen appears and then the **B button** Input Wait screen appears.
At this point, be careful of the following and press the **B button** once more to repeat measurement.

Receive Error screen

- Keep the tip of the antenna away from rim and other metal parts.
- Bring the tip of the antenna closer to the valve.
- Stand the tip of the antenna against the sidewall as perpendicular as possible (see figure below).
- Press the **B button** and make sure the tip of the antenna is as described above when releasing the button.



- Check the presence of valve mark and the check sheet to determine that the tire is the one with sensor installed.

If you still cannot receive data, see "8 Troubleshooting" (page 39).
The screen returns to Select Menu screen if you press the **[BACK]** key while the Receive Error screen is displayed.

Saving the Measured Data (REG mode)

Select REG mode from the Select Menu screen to measure while saving the measured data to the hand reader.
In this mode, you must enter or select vehicle information such as date, customer no., vehicle no., vehicle type, number of tires, and Axle arrangement before measurement.

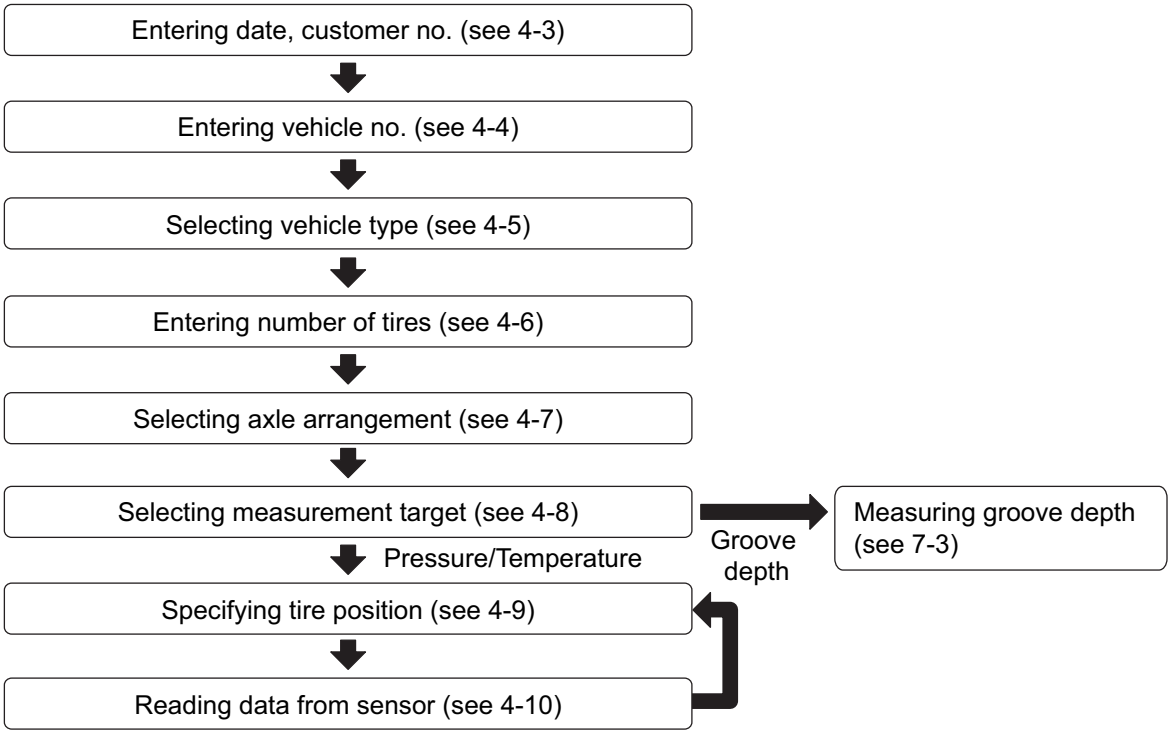
4-1 Saving and controlling measured data

The data measured in REG mode can be saved and controlled as follows.

- **Save and control in hand reader memory**
  Pressure and temperature measurement data can be saved and viewed for up to 90 vehicles (1080 tires). Vehicle information such as date, customer no., and vehicle no. are associated with the saved data. Data with the same date, customer no., and vehicle no. are grouped and controled as data measured for the same vehicle.
- **Transferring data to PC and saving and controlling data on PC**
  You can transfer the saved data to PC in Microsoft Excel readable format (CSV) for use with various applications.
  ▸ See "6 Transferring saved data to PC" (page 31) for information on how to transfer data from the hand reader to your PC.

4-2 Vehicle information input/selection flow

Vehicle information is entered/selected from the Select Menu screen in the following sequence.
When you press the **[ENTER]** key after entering/selecting each item, the Input/Selection screen for the next step appears automatically on the LCD panel.



4-3 Entering date, customer Number

Enter the date and customer no. as follows:

1. Press the POWER switch to turn on the power.
▸ See section "2-1 Power ON" (page 10)

2. Press the **[1]** key and select REG when the Select Menu screen appears.
▸ See section "2-4 Selecting operation mode" (page 11)

```
SELECT MENU
1REG 2MES 3OB
```

Select Menu screen

3. Date, Customer No. Input screen appears on the LCD panel.

4. Enter the date.
Enter the date as six digit number.

Example) **Entering "May 23, 2006"**
Enter as 060523.

Date

```
DATE=060523
USER=PQR
```

Date, Customer No. Input screen

5. When you enter the date, the cursor moves automatically to the bottom line.
To move between the top and bottom line when modifying, move the cursor with **[«]** or **[»]** key.

6. Enter the customer no.
Enter the customer no. with up to three digit numbers (left justified) or characters.

- See "2-5 Entering numbers" (page 12), "2-6 Entering characters" (page 13) for information on how to enter numbers and characters.
- You cannot enter space between characters. If there is a space between characters, a long alarm (1.5 seconds) sounds to indicate an input error. Press the **[BACK]** key once to return to the previous menu and reenter the character from the beginning.

```
DATE=060523
USER=PQR
```

Customer no.

Date, Customer No. Input screen

7. After finishing input, press the **[ENTER]** key.

8. The date and customer no. are saved and the Vehicle No. Input screen for the next step appears.

When

You want to return to Select Menu screen

Press the **[BACK]** key.

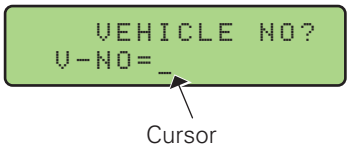
Long alarm sounds when you pressed the [ENTER] key

If a long alarm (1.5 sec) sounds after entering the customer no. and pressing the **[ENTER]** key, an invalid number as date was entered. Enter the correct date.

4-4 Entering vehicle Number

Enter the vehicle no. as follows:

1. Enter the vehicle number in the displayed Vehicle No. Input screen. Enter numbers or characters up to six digits.



Vehicle No. Input screen

- You cannot enter space between characters. If there is a space between characters, a long alarm (1.5 seconds) sounds to indicate an input error. Press the **[BACK]** key once to return to the previous menu and reenter the character from the beginning.

Example) **To erase the space in "AA BB"**
Press the **[«]** key twice to move the cursor to the space. Then press any key to overwrite the space with a character.

2. After finishing input, press the **[ENTER]** key.

3. Measurement data corresponding to the entered vehicle information (date, customer no., vehicle no.) is searched from the saved data and the result is displayed.

4. If there is no corresponding measurement data, the entered vehicle information is automatically saved and the Vehicle Type Selection screen for the next step appears.

When

There is measurement data equal to the entered vehicle information

The Confirm Overwrite screen appears.

```
DATA OVERWRITE!
1PRE 2DEP 3NO=1
```

Confirm Overwrite screen

When overwriting measured pressure/temperature data

Press the **[1]** key and select PRESSURE.
The Tire Position Input screen appears and the pressure/temperature data is overwritten.

```
    PUSH TIRE
POSITION BUTTON!
```

Tire Position Input screen

When overwriting groove depth, mileage, valve cap presence, and irregular wear data

Press the **[2]** key and select GROOVE.
The Mileage Input screen appears and each data is overwritten.

```
VN=EF5253
MILEAGE=000000
```

Mileage Input screen

When you do not want to overwrite data

Press the **[3]** key and select no.
The Date, Customer No. Input screen appears once more. Reenter the date, customer no., and vehicle no.

```
     DATE=060523
     USER=PQR
```

Date, Customer No. Input screen

A long alarm (1.5 sec) sounds

There is no memory area to save the entered data.
No Memory Area Error screen appears on the LCD panel and then the Vehicle No. Input screen appears once more. Perform the following:

```
 MEMORY FULL!!
  DELETE DATA
```

No Memory Area Error screen

1. Transfer the data saved in hand reader to PC.
   ▸ See "6 Transferring saved data to PC" (page 31) for information on how to transfer data to PC.

2. Erase the data saved in the hand reader to make room in memory area.
   ▸ Refer to section "6-3 Erasing data saved in hand reader"(page 34) for information on how to erase data saved in hand reader.

3. The Select Menu screen appears. Reenter the date, customer no., and vehicle no.

You want to return to Date, Customer No. Input screen

Press the **[BACK]** key.

You want to return to Select Menu screen

Press the **[BACK]** key until the Select Menu screen appears.

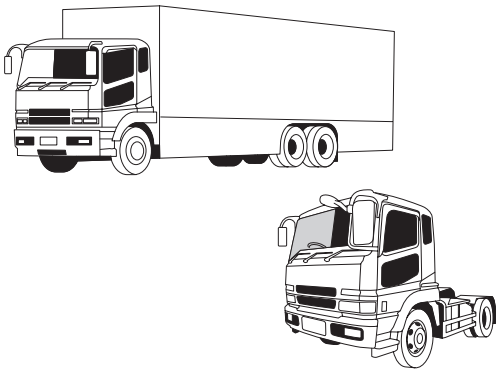
4-5 Selecting vehicle type

Select the type of the vehicle to measure.

When selecting truck

1. Press **[1]** in the Vehicle Type Selection screen, select [1 Truck], and then press the **[ENTER]** key to confirm.

- You can measure truck, bus, and tractor by selecting TRUCK.

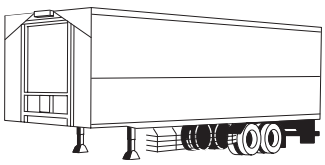


2. The Number of Tires Input screen for the next step appears.

Vehicle Type Selection screen

When selecting trailer

1. Press **[2]** in the Vehicle Type Selection screen, select [2 Trailer], and then press the **[ENTER]** key to confirm.



2. The Number of Tires Input screen for the next step appears.

Vehicle Type Selection screen

When

You want to return to Vehicle No. Input screen

Press the **[BACK]** key once.

You want to return to Select Menu screen

Press the **[BACK]** key until the Select Menu screen appears.

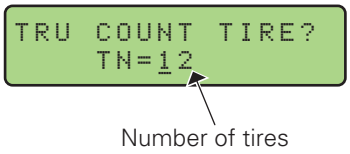
4-6 Entering number of tires

Enter the total number of tires on the vehicle to be measured.
Enter the number of tires according to the selected vehicle type.

1. Enter the number of tires with the number key and press the **[ENTER]** key. The number of tires must be entered as a two digit number.

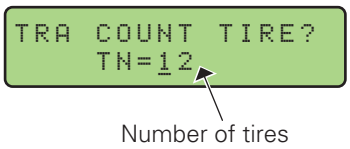
Example) When the number of tires is 8
Enter "08" rather than "8". In this case, press the **[0]** key and then the **[8]** key to enter "08".

When TRUCK is selected for vehicle type



TRUCK Number of Tires Input screen

When TRAILER is selected for vehicle type



TRAILER Number of Tires Input screen

2. The screen for the next step appears.
The screen displayed for the next step depends on the vehicle type and number of tires entered in step **1**.

When the vehicle type is TRUCK and the number of tires is 4, 6, 10, or 12
The Tire Position Input screen appears.
- Specify the tire position according to "4-9 Specifying tire position" (page 26).

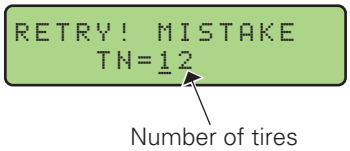
When the vehicle type is TRUCK and the number of tires is 8
TRUCK Axle Arrangement Selection screen appears.
- Specify the axle arrangement according to "4-7 Selecting axle arrangement" (page 25).

When the vehicle type is TRAILER
TRAILER Axle Arrangement Selection screen appears.
- Specify the axle arrangement according to "4-7 Selecting axle arrangement" (page 25).

When

A long alarm (1.5 sec) sounds

If a long alarm (1.5 seconds) sounds when you press the **[ENTER]** key, an inappropriate number of tires was entered. The Number of Tires Input Error screen appears on the LCD panel. Enter the correct number of tires and press the **[ENTER]** key.



Number of Tires Input Error screen

You want to return to Vehicle Type Selection screen

Press the **[BACK]** key once.

You want to return to Select Menu screen

Press the **[BACK]** key until the Select Menu screen appears.

4-7 Selecting axle arrangement

Select the axle arrangement as follows.
Axle arrangement selection depends on whether you select TRUCK or TRAILER as the vehicle type. Enter the axle arrangement according to the selected vehicle type.

1. Select axle arrangement.

When the vehicle type is TRUCK and the number of tires is 8

Axle arrangement	Key
2•2-D (22D)	**[1]** key + **[ENTER]** key
2-D•2 (2D2)	**[2]** key + **[ENTER]** key

▸ Refer to the figure in "2-7 Entering the tire position" (page 14) for the axle arrangements "22D" and "2D2".

[-] and [•] are not displayed on the screen.

```
 TN=08  A-TYPE?=1
A=1  22D  &  2  2D2
```

TRUCK Axle Arrangement Selection Screen

When the vehicle type is TRUCK and the number of tires is not 8
The axle arrangement is determined automatically and the TRUCK Axle Arrangement Selection screen is skipped.

When TRAILER is selected for vehicle type

Axle arrangement	Key
1 axle (SINGLE)	**[1]** key + **[ENTER]** key
2 axles (DOUBLE)	**[2]** key + **[ENTER]** key
3 axles (TRIPLE)	**[3]** key + **[ENTER]** key

▸ Refer to the figure in "2-7 Entering the tire position" (page 14) for the axle arrangements "1 axle (SINGLE)", "2 axles (DOUBLE)", and "3 axles (TRIPLE)".

```
 TN=08  A-TYPE?=1
A=1SiG  2Dou  3Tri
```

TRAILER Axle Arrangement Selection Screen

2. The Measurement Target Selection screen for the next step appears.

When

A long alarm (1.5 sec) sounds

If a long alarm (1.5 seconds) sounds when you press the **[ENTER]** key, the correct axle arrangement is not selected. The TRAILER Axle Arrangement Input Error screen appears on the LCD panel.

```
RETRY!  A-TYPE?=1
A=1Sig  2Dou  3Tri
```

TRAILER Axle Arrangement Input Error screen

The axle arrangement is related with the number of tires entered in "4-6 Entering number of tires" (page 24). Enter the correct axle arrangement and press the **[ENTER]** key.

Axle arrangement	Number of tires
1 axle	2, 4
2 axles	4, 8
3 axles	6, 12

You want to return to Number of Tires Input screen

Press the **[BACK]** key.

You want to return to Select Menu screen

Press the **[BACK]** key until the Select Menu screen appears.

4-8 Selecting measurement target

Select the measurement target as follows:

1. Select the measurement target.

Measuring pressure/internal temperature
Press the **[1]** key on the Measurement Target Selection screen and press the **[ENTER]** key.

When measuring/entering groove depth, mileage, valve cap presence, and irregular wear condition
Press the **[2]** key on the Measurement Target Selection screen and press the **[ENTER]** key.

- A depth gauge (option) is necessary to enter the groove depth.

```
SELECT MEASURE?
1PRE 2DEP =1
```

Measurement Target Selection screen

2. The screen for the next step appears.
The screen displayed for the next step depends on the measurement target selected in step **1**.

When measuring pressure/temperature
The Tire Position Input screen appears.
▸ Specify the tire position according to "4-9 Specifying tire position" (page 26).

When measuring/entering groove depth, mileage, valve cap presence, and irregular wear condition
The Mileage Input screen appears.
▸ See "7-3 Measuring groove depth and entering other REG data" (page 35).

4-9 Specifying tire position

Specify the tire position to be measured as follows:

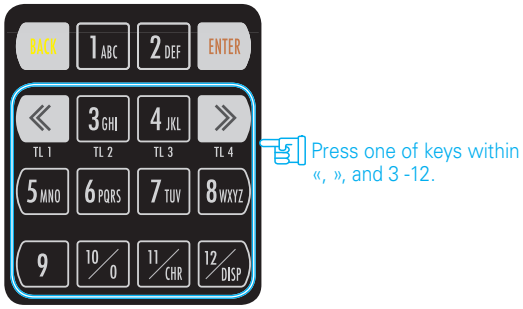
1. Press the number key and enter the tire position to display the Input Wait screen.

```
PUSH TIRE
POSITION BUTTON!
```

Tire Position Input screen

For truck/tractor

For trailer



▸ See "2-7 Entering the tire position" (page 14) for tire position input.

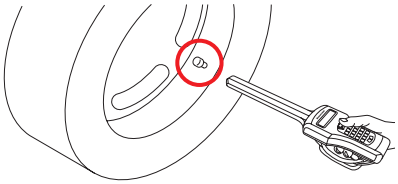
2. The set tire position appears on the LCD panel.

```
VN=EF5253 TP=08
RES=567   READY!
```

Example of setting tire position 8

4-10 Reading data from sensor

1. Gently touch the tip of the antenna against the sidewall near the valve of the tire to be measured.



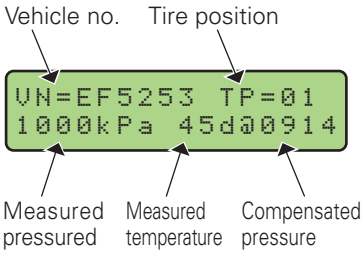
- Note that if you touch the tip of the antenna against the rim or other metal parts, radio wave from the sensor will be blocked and you will not be able to receive the data.

2. Press the **B button**.

- The data will be measured when the **B button** is released.
- Measurement will be performed only once when you release the **B button** even if you continue pressing it.

3. Data is received from the sensor inside the tire.

4. An alarm (0.5 sec) sounds twice when data is received successfully.
Successfully received data is automatically saved in the hand reader internal memory by vehicle no.
The received data appears on the LCD panel.



Data Receive screen

5. Continue measurement of another tire.

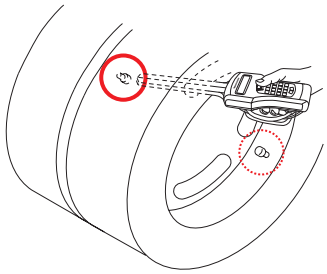
Measuring another tire of the same vehicle
Enter the tire position to measure next to display the Receive Wait screen for the specified tire. Measure according to steps **1** to **4**.
After the received data is displayed on the LCD panel for 5 seconds, the Tire Position Input screen appears. Enter the tire position to measure next and measure according to steps **1** to **4**.

Measuring another tire of different vehicle
To measure a vehicle different from the current one, press the **[BACK]** key until the SELECT menu appears.
When the Select Menu screen appears, specify the new vehicle information.

When

You want to measure the inside tire of double tire

Insert the antenna from the hole in the outer rim and gently touch the tip of the antenna against the sidewall near the valve. If the rim is installed properly, the valve of the outer tire should be at the opposite position from the valve of the inner tire.



When

A long alarm (1.5 sec) sounds once

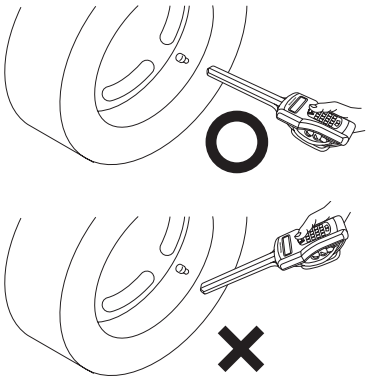
When there is no response from the sensor for 5 seconds after pressing the **B button** or the data could not be received correctly, the Receive Error screen appears and then the B Button Input Wait screen appears.
At this point, be careful of the following and press the **B button** once more to repeat measurement.

- Keep the tip of the antenna away from rim and other metal parts.
- Bring the tip of the antenna closer to the valve.
- Stand the tip of the antenna against the sidewall as perpendicular as possible (see figure at right).
- Check the presence of valve mark and the check sheet to determine that the tire is the one with sensor installed.

If you still cannot receive data, see "8 Troubleshooting" (page 37).
The screen returns to Tire Position Input screen if you press the **[BACK]** key while the **B button** Input Wait screen is displayed.

```
REG RCV FAIL!
    RETRY!!
```

Receive Error screen



4-11 Ending measurement

When you are finished measuring all tires, end measurement as follows:

1. Press any number key while the Data Receive screen is displayed.

2. All Tire Position Measurement Complete screen appears.
Even if you do not press the number key, an alarm (0.5 sec) will sound three times and the All Tire Position Measurement Complete screen will appear automatically after 5 seconds.

Number of tires

```
TN=04   COUNT UP!
1END?or2RETRY?=1
```

All Tire Position Measurement Complete screen

3. Press the **[1]** key to select End Measurement and then press the **[ENTER]** key to confirm.

4. The Vehicle No. Input screen appears.

```
   VEHICLE NO?
V-NO=_
```

Vehicle No. Input screen

When

You want to measure once more

1. Press the **[2]** key in the All Tire Position Measurement Complete screen, press the **[2]** key to select Repeat Measurement and then press the **[ENTER]** key to confirm.
2. The Data Overwrite Selection screen appears.

```
DATA OVERWRITE!
1PRE 2DEP =1
```

Data Overwrite Selection screen

3. Specify the item to measure once more and press the **[ENTER]** key.
4. Select the tire position to measure once more in the Tire Position Selection screen and press the **B button**.
5. The measurement result is displayed and the Tire Position Measurement Complete screen appears once more after 5 seconds.

You want to cancel measurement

To cancel measurement before measurement of all tires complete:

- Press the **[BACK]** key until the Tire Position Input screen appears.
- Wait approximately 3 minutes and the power will go off.

4-12 Repeating measurement from the middle

You can resume measurement as follows if the power goes off while measuring in REG mode and measurement is cancelled.

- Once the power goes off, the operation is reset and the Select Menu screen appears, but the data measured up to the time the power went off are saved. You can save measurement data of all tires by resuming measurement from the next tire position.
- There is no problem if you repeat measurement of tire you have already measured previously. In that case, the old data of the corresponding tire is overwritten with new data.

1. Press the POWER switch to turn on the power.
▸ See section "2-1 Power ON" (page 10)

2. Select [1 REG] from the displayed Select Menu screen.
▸ See section "2-4 Selecting operation mode" (page 11)

3. Specify the date and customer no. and call out the desired vehicle.
▸ See "4-3 Entering date, customer number" (page 19).

4. Specify the vehicle no. of the desired vehicle.
▸ See "4-4 Entering vehicle number" (page 21).

5. Select the item to overwrite on the Confirm Overwrite screen and press the **[ENTER]** key.

```
DATA OVERWRITE!
1PRE 2DEP 3NO=1
```

Confirm Overwrite screen

6. Specify the vehicle type, number of tires, and axle arrangement.
▸ See "4-5 Selecting vehicle type" (page 23) and "4-7 Selecting axle arrangement" (page 25).

7. Specify the tire position that was being measured when the power went off in the Tire Position Input screen.
▸ See "4-9 Specifying tire position" (page 26).

8. Read data from the sensor.
▸ See "4-10 Reading data from sensor" (page 27).