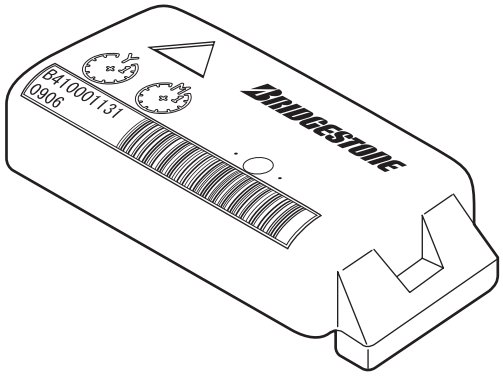
BRIDGESTONE

Tire-Pressure Monitoring System

Sensor Operation Guide



For truck and bus
For use only in Europe (model:B422) or U.S.A. (model:B421)

What is a Tire-Pressure Monitoring System?

Tire-pressure monitoring system is an advanced system that measures the tire pressure and temperature with sensors mounted inside the tire and enables vehicle management using the measured data.

⚠ Notice to user

- This product is designed exclusively for trucks and buses. Supported rim size is from 16 to 22.5 inches.
- This product has two design for use within Europe and USA. It cannot be used other country due to difference in radio wave regulations. Attention for product model number.
  For Europe ..... model B422
  For USA ..... model B421
- Technical knowledge is necessary for sensor installation and removal. Contact shops employing tire mechanic for installation and removal.
- Be sure to read and understand the content of the operation guide before installing or removing.
- Keep this guide in a safe place and refer to it as necessary.

Introduction

This guide describes how to use the tire pressure monitoring system sensor (referred hereafter as "this product" or "sensor") designed exclusively for trucks and buses. Please read and understand the content before using.

NOTE

Installation of this product requires knowledge of vehicle safety and tires. Installation should be performed by a person with such experience.

About This Product

- By installing this product inside the tire (rim), it can measure the pressure and internal temperature and send the data by radio wave.
- A separate hand reader is necessary to read the data after installing this product. Hand reader can be purchased separately from your dealer.

Package Content

Check that the following items are included in the package.

Items included in the sensor package

Sensor x 6 to 12
(depend on the number of tires)

Mark color for location
For Europe: Model No.B422
Color: green
For USA: Model No.B421
Color: blue

Valve mark x 6 to 12
(depend on the number of tires)

*Number of packages depend on the part number.

Mounting band

Mounting band (specified rim size) x 6 to 12
(depend on the number of tires)

*Six mounting bands are contained in one box. The remainder are packaged separately.

Operation Guide

*The operation guide can be obtained separately from your dealer. It is not included with the product.

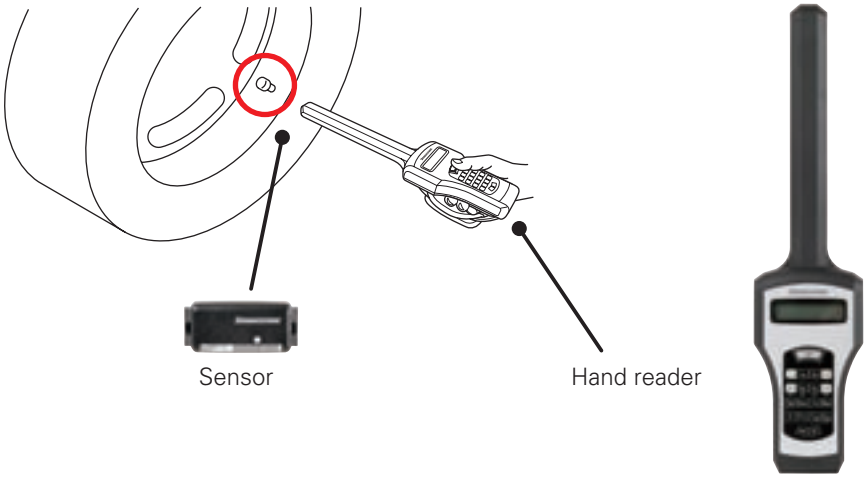
About Tire-Pressure Monitoring System

The tire-pressure monitoring system (hereafter referred to as "system" or "this system") is a system that monitors the tire pressure and temperature using sensors mounted inside tires (rim).
This system is available as "Hand Reader Type" and "On-Board Type". Purchase the product that is appropriate for your intended use.

Hand reader type

This system receives the radio wave from the sensor with a portable hand reader.
The radio wave from the sensor is received with the vehicle stopped. It cannot be used when moving.

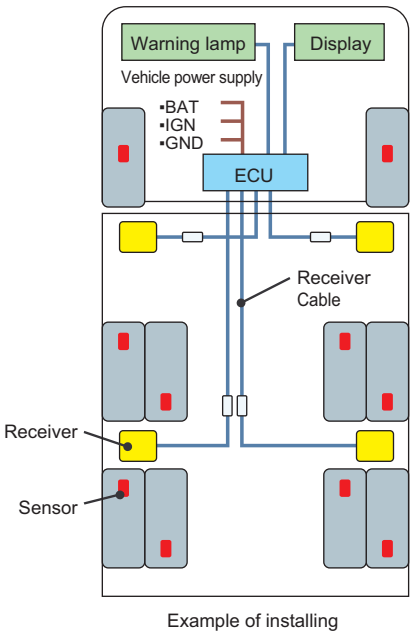
<Equipment Configuration>



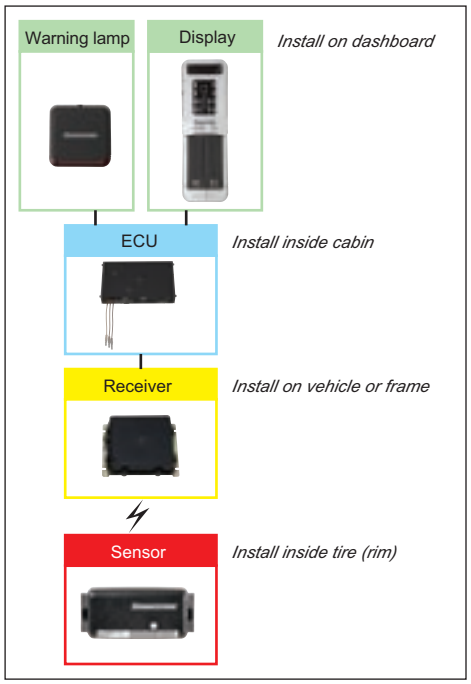
On-board type

This system measure and monitors the radio wave from the sensor with a display and warning lamp mounted on the dashboard.
When there is a tire problem, the display and warning lamps on the dashboard emit alarms to notify the driver. The tire status can be monitored while moving.

<Equipment Configuration>



Example of installing
4 receivers and 10 sensors



Operation Guide Combination

The following operation guides must be obtained depending on whether your system is a Hand reader type or On-board type. Read the guide appropriate for your system.

Guide	Hand reader type	On-board type	Content
Tire-Pressure Monitoring System **Sensor Operation Guide (this document)**	○	○	Describes sensor installation, rim installation and removal, and precautions
Tire-Pressure Monitoring System **On-Board Type Operation Guide**		○	Describes the installation, wiring, system setup, and precautions of receiver, display, warning lamp, and ECU
Tire-Pressure Monitoring System **Display Operation Guide**		○	Describes the display operation method and precautions
Tire-Pressure Monitoring System **Hand Reader Type Operation Guide**	○		Describes the hand reader operation method and precautions

- This operation guide uses photographs to describe the installation procedure, but the supported rims and installation method are not limited to those in the photograph.
- Unauthorized duplication or reprint of any part of this operation guide or in its entirety is prohibited.
- If this operation guide becomes smudged and unreadable, obtain a new one from your dealer.
- Contact your dealer if there is any misprint or missing page and for questions about its content.

Warranty and Disclaimer

Warranty

- This is a system that measures the tire pressure and temperature using sensors mounted inside tires (rim). Bridgestone shall not be liable for any damage resulting from use of this product for other purposes or in combination with other manufacturer's product.
- Do not disassemble or modify this product. Bridgestone shall not be liable for any damage resulting from disassembly or modification of this product.
- Read the operation guide carefully and understand its content before using this system. Bridgestone shall not be liable for any damage resulting from misuse of this product.
- Warranty period is 1 year from the date of purchase. Refer to the "Sensor Warranty Policy" (page 27) for the details of the warranty.

Product specification limitations

- This product have two design for use within Europe and USA. It cannot be used other country due to difference in radio wave regulations. Attention for product model number.
  For Europe : model B422
  For USA : model B421
- This system has no function to maintain the status of the tire itself in good condition.
- When using the On-Board Type, the radio wave from the sensor may be temporarily interrupted depending on whether the vehicle is stopped, presence of radio frequency interference, or position of the tires. In such case, the display and warning lamps may be temporarily disabled.
- **Be sure to measure the tire pressure with a normal pressure gauge during periodic maintenance and when refueling. Compare those results with the tire pressure displayed by this system and check that the system is functioning properly.**

Contents

Safety Precautions

Warning symbols

This guide uses the following symbols to describe items that you must observe in order to use the hand reader safely. Read and observe these items carefully.

⚠ WARNING	Failure to observe this item may result in death or severe injury.
⚠ CAUTION	Failure to observe this item may result in minor injury or property damage.
NOTE	Failure to observe this item may result in damage to the product. This also describes items that you should keep in mind.

Pictograms

Indicates item that must be observed.

Indicates action that is prohibited.

Indicates danger of bodily harm.

1. Sensor handling

⚠ WARNING

Failure to observe the following warning items may result in serious traffic accident due to tire damage or erroneous air pressure detection.

- This product is designed exclusively for trucks and buses.
  Supported rim size is from 16 to 22.5 inches.
  Do not use it on other vehicles or for other purpose.
- This product have two design for use within Europe and USA. It cannot be used other country due to difference in radio wave regulations. Attention for product model number.
  For Europe : model H212
  For USA : model H211
- Do not disassemble, modify, or repair the sensor.
  This can cause sensor dropout, battery heating or ignition.
  Note that the sensor battery is not replaceable. When the battery life has expired, assume that the life of the entire product including electrical component has expired.
- Do not leave sensor with expired battery inside the tire for an extended period.
- Be sure to measure the tire pressure with a normal pressure gauge during periodic maintenance. Compare those results with the tire pressure displayed by this system and check that the system is functioning properly.

2. About general sensor installation and removal

⚠ WARNING

Failure to observe the following warning items may result in serious traffic accident due to tire damage or detection of erroneous air pressure.

- Install or uninstall the sensor at a tire shop.
- Refer to the instructions in the operation guide when installing or uninstalling the sensor.
- Use genuine mounting band to secure the sensor. Using unauthorized band can cause the band to break during vehicle movement resulting in rim or tire damage.
- Be sure to use new mounting band matching the wheel diameter and rim size. Using mounting band that is too long, too short, or previously used can cause the sensor or band to drop out during vehicle movement resulting in rim or tire damage.
- If the width of the well at the center of the rim is extremely narrow causing the sensor to touch the wall of the well or if the well is extremely shallow causing the sensor to protrude from the well, contact your authorized dealer or Bridgestone customer service and check that the sensor can be installed beforehand.
- Be sure to attach a white plastic "valve mark" on the valve of the tire with sensor installed.
- Be careful not to damage the sensor or the mounting band when replacing the tire. The mounting band can become loose and drop out during motion when it comes in contact with tire lever or tire changer. Tires with white plastic "valve mark" on the valve are tires with sensor installed near the valve. Be careful with their handling.
- Normal "mounting tire on rim" and "removing tire from rim" involves equipment such as tire changer and can cause tire damage. Observe the general precautions for "mounting tire on rim" and "de-mounting tire on rim" described in the equipment manual.
- If the tire is improperly rimmed, the tire can burst and fly apart when inflating. Be sure to inflate the tire inside a safety enclosure.
- This guide describes the precautions during installation of this product, but it is not possible to assume and describe all hazards. Be very careful when performing these tasks.

Notices for using in USA

This device complies with Part 15 of the FCC Rules and IC RSS-Gen. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and IC RSS-Gen.
These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates use and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

⚠ WARNING	
❗	Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment.

WARNING for using in Europe

We, the manufacturer (BRIDGESTONE CORPORATION) hereby declare that this equipment (TPMS), model B422 is in compliance with the essential equirements and other relevant provisions of Directive 1999/5/EC.

CE 0891

BRIDGESTONE CORPORATION
Model No.: B422

TCAM agreed that it is sufficient to add the following statement as part of the user information:

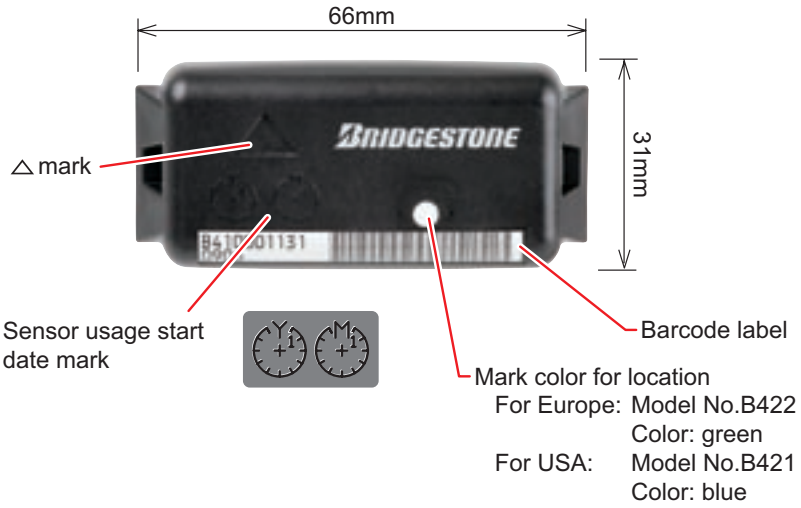
English	*Hereby, (BRIDGESTONE CORPORATION), declares that this (SENSOR:B422) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.*
Finnish	*(BRIDGESTONE CORPORATION) vakuuttaa täten että (SENSOR:B422) tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.*
Dutch	*Hierbij verklaart (BRIDGESTONE CORPORATION) dat het toestel (SENSOR:B422) in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG*
	Bij deze verklaart (BRIDGESTONE CORPORATION) dat deze (SENSOR:B422) voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	*Par la présente (BRIDGESTONE CORPORATION) déclare que (SENSOR:B422) est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE*
	Par la présente, (BRIDGESTONE CORPORATION) déclare que ce (SENSOR:B422) est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables
Swedish	*Härmed intygar (BRIDGESTONE CORPORATION) att denna (SENSOR:B422) står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.*
Danish	*Undertegnede (BRIDGESTONE CORPORATION) erklærer herved, at følgende udstyr (SENSOR:B422) overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF*

German	*Hiermit erklärt (BRIDGESTONE CORPORATION), dass sich dieser/diese/dieses (SENSOR:B422) in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)*
	Hiermit erklärt (BRIDGESTONE CORPORATION) die Übereinstimmung des Gerätes (SENSOR:B422) mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ (BRIDGESTONE CORPORATION) ΔΗΛΩΝΕΙ ΟΤΙ (SENSOR:B422) ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ*
Italian	*Con la presente (BRIDGESTONE CORPORATION) dichiara che questo (SENSOR:B422) è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.*
Spanish	*Por medio de la presente (BRIDGESTONE CORPORATION) declara que el (SENSOR:B422) cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE*
Portuguese	*(BRIDGESTONE CORPORATION) declara que este (SENSOR:B422) está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.*
Czech	*Společnost (BRIDGESTONE CORPORATION) tímto prohlašuje, že (SENSOR:B422) splňuje základní požadavky a další příslušné ustanovení Direktivy 1999/5/EC.*
Estonia	*Sellega kinnitab (BRIDGESTONE CORPORATION), et see (SENSOR:B422) vastab direktiivi 1999/5/EC põhilistele nõudmistele ja muudele asjakohastele määrustele.*
Latvia	*Ar šo, (BRIDGESTONE CORPORATION), apstiprina, ka (SENSOR:B422) atbilst Direktīvas 1999/5/EK galvenajām prasībām un citiem tās nosacījumiem.*
Lithuania	*Šiuo, (BRIDGESTONE CORPORATION), pareiškia, kad šis (SENSOR:B422) atitinka pagrindinius Direktyvos 1999/5/EB reikalavimus ir kitas svarbias nuostatas.*
Hungary	*Alulírott, (BRIDGESTONE CORPORATION), kijelenti, hogy a jelen (SENSOR:B422) megfelel az 1999/5/EC irányelvben meghatározott alapvető követelményeknek és egyéb vonatkozó előírásoknak.*
Malta	*Hawnhekk, (BRIDGESTONE CORPORATION), tiddikjara li (SENSOR:B422) josserva l-ħtiġijiet essenzjali u dispożizzjonijiet relevanti oħra tad-Direttiva 1995/5/KE.*
Poland	*(BRIDGESTONE CORPORATION) niniejszym oświadcza, że (SENSOR:B422) spełnia zasadnicze wymogi oraz inne istotne postanowienia dyrektywy 1999/5/EC.*
Slovenia	*S tem (BRIDGESTONE CORPORATION) izjavlja, da je ta (SENSOR:B422) v skladu z osnovnimi zahtevami in ostalimi ustreznimi predpisi Direktive 1999/5/EC.*
Slovakia	*Spoločnosť (BRIDGESTONE CORPORATION) týmto vyhlasuje, že (SENSOR:B422) spĺňa základné požiadavky a ďalšie príslušné ustanovenia Direktívy 1999/5/EC.*
Bulgaria	*С настоящия документ (BRIDGESTONE CORPORATION) декларира, че (SENSOR:B422) е в съгласие с основните изисквания и съответните постановления на Директива 1999/5/ЕС.*
Romania	*Prin prezenta, (BRIDGESTONE CORPORATION) declară că acest (SENSOR:B422) este conform cu cerinţele principale şi cu celelalte prevederi relevante ale Directivei 1999/5/EC.*
Turkey	*İşbu belge ile (BRIDGESTONE CORPORATION), bu (SENSOR:B422)'in 1995/5/EC Yönetmeliği esas gereksinimlerine ve diğer şartlarına uygun olduğunu beyan eder.*

Sensor Installation

This product is a "band mount sensor" that attaches the sensor to the rim with the included mounting band.

1-1 Marks and label



1-2 Installation flow

Install the sensor to the rim in the following sequence regardless of the type of tire.

Jack up the vehicle

↓

Remove the tire from the axle

↓

Remove the rim

↓

Install the sensor on the rim

↓

Replace the rim

↓

Install the tire on the axle

⚠ WARNING

- Sensor installation and removal must be performed a tire shop.

NOTE

- This product is cannot be used on tube tires. The air pressure cannot be measured even if it is installed.

1-3 Required tools

Items included in the sensor package

Sensor x 6 to 12
(depend on the number of tires)

Valve mark x 6 to 12
(depend on the number of tires)

*Number of packages depend on the part number.

Mounting band

Mounting band (specified rim size) x 6 to 12
(depend on the number of tires)

*Six mounting bands are contained in one box. The remainder are packaged separately.

Have the following items ready

Have the following safety gears and tools ready.

Protective glasses

Gloves

Power driver
(flat bit)

Torque wrench
(socket size 8 mm)

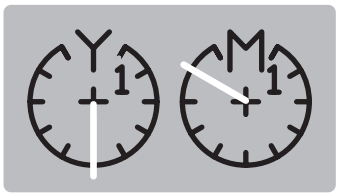
1-4 Mark the sensor usage start date

Use a flat blade driver and enter the date in the sensor usage start date mark.

NOTE

- If you enter the mark too hard, the sensor's material strength may be weakened causing it to break during use.

Example: Entering Oct. 2006.



Year
(position 6)

Month
(position 10)

1-5 Attach mounting band to rim

1. Check that the included mounting band is the same rim size as the specified wheel diameter. (Rim size is written on the box containing the mounting band.

2. Place the rim by your feet with the valve side up and stand on the disk side.

3. Hold the fixture of the mounting band with your right hand, tilt the rim toward yourself, and fasten the mounting band in the rim well.

⚠ WARNING

- Be sure to use genuine mounting band to secure the sensor. Using unauthorized band can cause the band to break during vehicle movement. This can cause rim or tire damage resulting in traffic accident or injury.
- Be sure to use new mounting band matching the wheel diameter and rim size. Using mounting band that is too long, too short, or previously used can cause the sensor or band to drop out during vehicle movement. This can cause rim or tire damage resulting in traffic accident or injury.
- Wear protective glasses. The mounting band may break and inure your eyes.

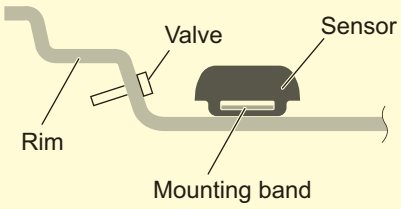
⚠ CAUTION

- Wear gloves. The mounting band and fixtures may injure your hand.

1-6 Install the sensor

1. Pass the band through the sensor so that the △ mark on top of the sensor faces the valve side and place the sensor in the rim well close to the valve.

- Cross section of sensor attached to the rim.



2. Insert the end of the mounting band through the band fastener so that the screw of the band fastener faces away from the sensor and insert the screw.

- Check that the △ mark on top of the sensor is facing the valve side.

3. Attach a flat bit to the power driver and tighten the screw until there is no sag in the mounting band.

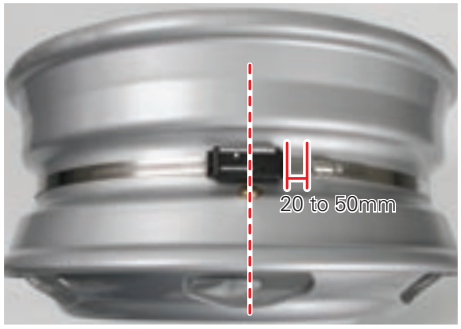
- The screw should be loose enough to move the sensor.

⚠ WARNING

- Be sure to read the operation guide before using the power driver. Otherwise, you may hurt yourself.

4. Adjust the sensor position.

- Adjust the position so that the center of the sensor is aligned with the position of the valve.
- Adjust so that the distance between the mounting band fastener and sensor is between 20 to 50 mm.
- Check that the mounting band is straight and in the center of the rim well.



Center of sensor aligned with position of valve

5. Tighten the screw with torque wrench.
Torque: 5 N·m

⚠ WARNING

- Tighten with prescribed torque so that the mounting band does come loose during driving.

NOTE

- The fastener or screw may become deformed and damaged if the torque is greater than the prescribed value.


Torque: 5N·m

6. Check that the sensor is not loose.

- Gently push the sensor away (with force about 1 kg) and check that it is not displaced. If the sensor is displaced, loosen the mounting band once and repeat the procedure from step (4).

Check that the installed sensor is not loose

1-7 Attach the valve mark

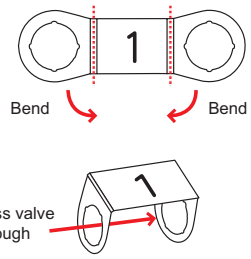
Attach a valve mark on the valve of the rim with sensor installed so that you can easily determine which tire (rim) has the sensor installed.

1. Bend both ends of the valve mark.

2. Remove the valve cap and pass the valve through both holes of the valve mark.

3. Attach the valve cap.

- The number on the valve mark indicates the installed position of tire. Attach a valve mark with number matching the installed position of tire.



Attaching valve mark

1-8 Enter in check sheet

Enter the serial no. (S/N) of the installed sensor in the Check Sheet at the end of this manual to record which tire (rim) has the sensor installed (S/N is indicated on the barcode label on the surface of the sensor).

- The sensor ID is the six digit alphanumeric string at the center of the sensor.
  This is the six digit string displayed on the LED panel when the data is read with hand reader.
- The check sheet is necessary when requesting sensor repair. Be sure to enter the necessary data when installing the sensor.
- The barcode label will be hidden and the serial cannot be read after mounting tire on rim.
  Enter the sensor serial no. in the check sheet before mounting tire on rim. Be sure to enter in the field matching the installed position of tire.

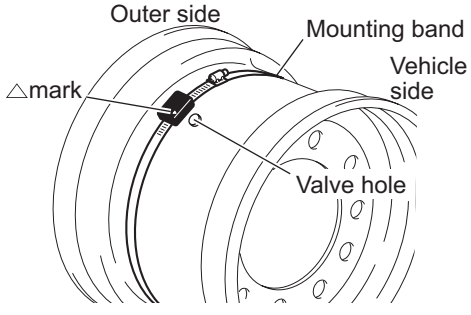
Sensor serial No.	1
B 4 1 0 - 1 2 3 A B C	
Tire size	
Pattern	
Prescribed pressure	kPa
Inflation pressure	kPa
Rim	× Steel Aluminum

This sensor's ID is "123ABC".

1-9 For super single tire

The procedure to install the sensor on the super single tire rim is as follows:

- Stand on the side that is to be the side of the vehicle when the tire is mounted.
- Install the sensor next to the valve hole so that it is on the outer side when the rim is mounted on the vehicle.
- Install so that the △ mark of the sensor is facing toward the valve hole.
- The remaining steps are the same as those in "1-6 Install the sensor" (page 11).



Mounting tire on rim and Operation Verification

2-1 Required tools

Tire changer

Bead roller

(Equipment used for mounting tire on rim. Generally known as bead roller, bead breaker, or tire installer/remover.)

Hand reader

Clamp

Tire lever

2-2 Mounting tire on rim

1. Before mounting tire on rim, check that there is no moisture or foreign object inside the tire or rim. Remove all moisture and foreign objects if there are any.

NOTE

- Remove all moisture and foreign objects inside the tire if there are any. The sensor may be damaged and performance may be degraded if moisture or foreign object enters the sensor.

2. After installing the sensor, apply lubricant to rim and tire beads.

⚠ WARNING

- Read the description of the lubricant carefully and use recommended lubricant. Some lubricant may be flammable or harmful if inhaled.

NOTE

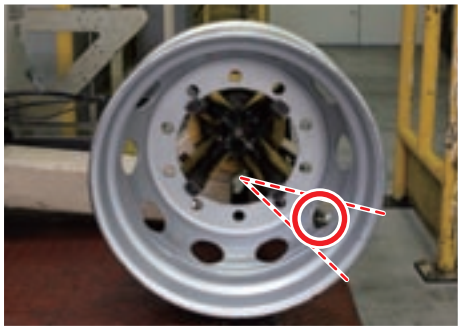
- Be careful not to apply lubricant to the sensor. If it is applied to the sensor, wipe it off immediately. The sensor may be damaged and performance may be degraded if lubricant enters the sensor.

3. Set the rim on the tire changer.

- Set so that the valve is lower than the horizontal position of the bead roller (4 or 5 o'clock position).

⚠ WARNING

- Read the operation guide of the tire changer before using. Failing to observe the warnings in the manual may result in severe damage.



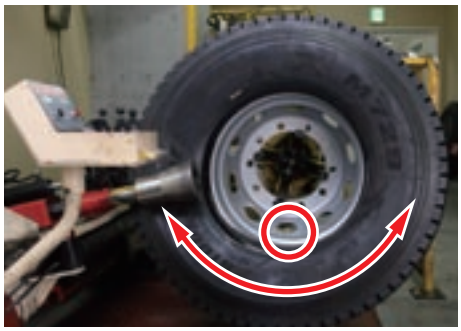
Valve is between 4 to 5 o'clock position.

4. Push the bead roller and rotate the tire to insert the inner bead.

- In order to prevent sensor damage due to contact with the tire bead, rotate the tire so that the valve is lower than the horizontal position of the bead roller (within the range of the arrow in figure) when rotating the rim.

⚠ WARNING

- Be careful not to have your finger caught between the tire bead and rim.



Valve is below the bead roller horizontal position

NOTE

- Be careful not to touch the tire bead to the sensor. If touched, the sensor, band, or band fastener may be damaged.

5. Insert the outer bead.
Hold the tire with a clamp or tire lever before rotating so that the relative angle between the tire and rim do not change.

- Check that the relative position between the clamp or tire lever and valve is as show in the figure.
- Hold the section where the tire enters the rim with tire lever so that the tire fits the rim at the position of the lever and the tire bead is kept from dropping on the sensor and damaging it.

With the bead roller pressed against the tire, rotate the rim until the position of the valve is above the bead roller (10 to 11 o'clock position).

Valve is above the bead roller horizontal position (10 to 11 o'clock position)

6. Hold this position and rim the tire by rotating the rim, while taking care the tire and rim do not slip.

NOTE

- Be careful not to touch the tire lever to the sensor. If touched, the sensor may be damaged.
- If the tire and rim slip, rotate the rim back to the original position and repeat the step.
  If you continue, the tire bead and sensor may touch and damage the sensor.

7. Check that the sensor is installed and operating correctly.
Rotate the rim so that the position of the valve is above the horizontal position of the bead roller and read the data with the hand reader.

- Check that the sensor ID match the ID displayed on the hand reader LED panel. Refer to section "1-8 Enter in check sheet" (page 13) for information on sensor ID.
- To check that the sensor is not damaged or removed from the mounting band during mounting tire on rim, hold the antenna of the hand reader near the valve and check that the data can be read.
  Refer to the hand reader operation guide for information on how to use the hand reader.
- If the data cannot be read, check whether it can be read near the bottom of the tire.
  If it can be read at the bottom of the tire, the sensor may be damaged and dropped to the bottom of the tire. In this case, de-rim the tire once and install the sensor once more. Refer to section "3-3 Remove the rim"(page 18) for the de-mounting tire on rim procedure.

NOTE

- Do not set the operation mode of the Hand Reader type to [Set]. Using the set mode may shorten the life of the sensor considerably.
  In this case, the sensor warranty will be voided.
- Refer to the description in the "On-Board Type Operation Guide" when checking the operation of the On-Board type.

8. Inflate the tire.
After inflating, use soap water to check that no air is leaking from the valve or rim.

⚠ WARNING

- Be sure to inflate the tire inside a safety enclosure.
  If the tire is improperly rimmed, the tire can burst and fly apart causing serious injury.

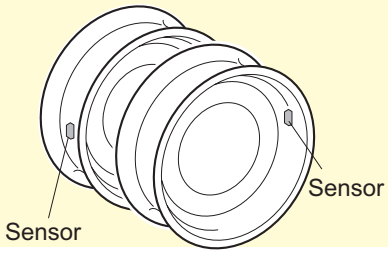
NOTE

- Be sure to drain the tire. The sensor may be damaged and performance may be degraded if moisture enters the sensor.
- Be careful not to tip the tire and damage the sensor when carrying the tire to the safety enclosure.

2-3 Install the tire on the axle

1. Install the tire on the axle.
After checking for proper operation, install the inflated tire on the axle.

- In case of double tire, be sure to offset the position of the valve of the inner tire and outer tire by 180°.
  If the positions of the inner and outer tire valve are not offset, data may not be read correctly due to radio interference.



2. Enter the necessary data in the check sheet.
Enter the necessary data in the check sheet at the end of this manual to keep record of the sensor installation.
Check that the installed position of tire entered in section "1-8 Enter in check sheet" (page 13) is the same as the actual position.

Remove the Sensor

3-1 Sensor removal flow

Remove the sensor from the rim in the following order:

Jack up the vehicle
↓
Remove the tire from the axle
↓
Remove the rim
↓
Remove the sensor from the rim
↓
Rim the tire
↓
Install the tire on the axle

⚠ WARNING

- Install or uninstall the sensor at a tire shop.

3-2 Required tools

Use the same tools as those used for mounting tire on rim.

3-3 Remove the rim

1. Deflate the tire.

NOTE

- Be careful not to tip the tire and damage the sensor when carrying the assembled tire to the tire changer after deflating.

2. Place the tire on the tire changer.
Set the rim so that the valve is approximately 20° from the top of the tire.
(The sensor is in the rim well near the valve.)

Set the rim so that the valve is approximately 20° from the top of the tire

⚠ WARNING

- Read the operation manual of the tire changer before using. Failing to observe the warnings in the manual may result in severe damage.

NOTE

- If the rim well is shallow, the sensor may touch the tire bead and become damaged when removing the rim. Be especially careful when removing.

3. Apply lubricant to the flange.

⚠ WARNING

- Read the description of the lubricant carefully and use recommended lubricant.
  Some lubricant may be flammable or harmful if inhaled.

NOTE

- Be careful not to apply lubricant to the sensor. If it is applied to the sensor, wipe it off immediately.
  The sensor may be damaged and performance may be degraded if lubricant enters the sensor.

4. Insert the tire lever and pull out the outer bead.

- Normally, no tire lever is used when de-mounting tire on rim with tire changer, but it is used in this case to prevent the tire and rim from slipping and damaging the sensor.

NOTE

- Be careful not to touch the tire lever to the sensor. If touched, the sensor may be damaged.


Pull out the outer bead with tire lever

5. Remove the outer bead.
After pulling out the outer bead in step (4), rotate the tire with the tire lever attached to the position in the figure, push the inner bead with bead roller, and remove the outer bead.
Move the inner bead aside from the sensor to the position in the figure to prevent damage to the sensor.

NOTE

- Set the distance between the bead roller and rim flange to a minimum so that the bead roller does not touch the sensor. If touched, the sensor may be damaged.


Move the inner bead aside to position where it does not hit the sensor

6. Remove the inner bead.
With the outer bead removed in step (5), push the inner bead with the bead roller and remove the inner bead from the rim.

NOTE

- If the tire bead is caught in the sensor, change the alignment of the sensor and the bead roller without moving the bead roller in order to prevent damage to the sensor and then resume.

Remove the inner bead

3-4 Remove the sensor from the rim

To remove the sensor from the rim, reverse the procedure in "1 Sensor Installation" (page 8).
When removing the sensor, be sure to remove the valve mark from the valve and store it together with the sensor.

NOTE

- The mounting band cannot be reused once it has been used. Re-using a mounting band can cause the sensor or band to drop out when driving the vehicle, resulting in rim or tire damage.

Sensor Transportation, Storage, and Disposal

The sensor periodically transmits radio waves (periodic transmission function). Therefore, you must stop the periodic radio wave transmission function when transporting, storing, or disposing the sensor.

4-1 Precaution during transportation

■ **Sensor used as Hand Reader type**

Sensor used as Hand Reader type will not transmit radio signals unless instructed by the hand reader. It has no periodic transmission function so it can be transported without any problem.

■ **Sensor used as On-Board type**

Sensor used as On-Board type is set to "Normal transmission mode" and periodically outputs radio waves.

When transporting sensor by air

Stop the periodic transmission using a separately purchased hand reader so that the radio waves from the sensor do not interfere with the electronic equipment on the airplane. Refer to the "On-Board Type Operation Guide" for information on how to set with the hand reader.

4-2 Precaution during storage

Both the Hand Reader type and On-Board type sensor must be placed in a sealed metal box when storing to shield them from hand reader signals and 125 kHz frequency radio signals (output by some types of inverter, IC card reader, or ID card reader).

NOTE

- When storing for an extended period, stop the periodic transmission of sensor used as On-Board type.

4-3 Precaution during disposal

Your purchasing dealer will salvage the sensor you no longer need. Contact your dealer when disposing the sensor.

Troubleshooting

5-1 No response from the sensor

The possible causes are as follows.

Cause	Remedial Action
You may be measuring a tire with no sensor installed or with other manufacturer's sensor installed.	Check the presence of valve mark and the check sheet to determine whether a sensor is installed.
The sensor has become loose inside the tire and has dropped to the bottom of the tire.	Position the tire so that the valve is on the top side and measure by positioning the hand reader antenna at the bottom of the tire. If there is response at the bottom of the tire, the sensor may have become loose and dropped. Remove the rim and check the sensor. If the sensor is damaged, replace it with a new one.
The mounting band was not sufficiently tightened during installation and the sensor has moved from the position of the valve.	Position the hand reader antenna at several spots around the tire and measure. If there is a response at position not near the valve, remove the rim and tighten the mounting band once more.
The sensor was damaged when mounting tire on rim.	Remove the rim and check the sensor. If the sensor is damaged, replace it with a new one.
The hand reader is damaged or is not used properly.	• Check the measurement procedure once more and check whether measurement cannot be obtained with any tire. • The battery of the hand reader may be low. Replace it with a new one. If still there is no response, ask the dealer where you purchased it.
The sensor battery has expired.	If other sensors respond but a specific sensor does not, remove the rim, place the hand reader antenna directly against the non-responding sensor and measure. If there is no response, the sensor may be damaged. Replace it with a new one.

5-2 When the sensor is damaged

Symptom	Remedial Action
Sensor is damaged	The mechanical strength may be insufficient even if there is response when measured with hand reader. Replace it with new one.

⚠ WARNING

- Do not disassemble, modify, or repair the sensor. This can cause sensor dropout, battery heating or ignition.
- If the problem cannot be solved after taking the remedial action described in this guide, contact your place of purchase.

Service and Repair

If there is any problem during usage, stop using the sensor immediately.

⚠ WARNING	
⃠	• If the problem cannot be solved after taking the remedial action described in this guide, contact your place of purchase.

6-1 Requesting repair

When requesting repair, you may be asked for the content of the check sheet during installation and for the following information. Check the necessary information.

Hand reader type

Symptom	No response / Wrong measurement / Others (select one)
Circumstance under which the problem occurred	
Sensor usage start date mark	Date (mm/dd):
Last date/time the sensor was operating normally	Date (mm/dd/yyyy):
Date/time you noticed the sensor problem	Date (mm/dd/yyyy):
Current odometer reading	km

On-board type

Sensor usage start date mark	Date (mm/dd):
Date and time of the problem	Date (mm/dd/yyyy): Morning / Daytime / Evening / Night
Frequency of the problem	Daily / Several times a day / Once a week / Only after starting the engine/ Only once (select one)
Vehicle condition under which the problem occurred	Moving/Stopped (select one) If moving, speed km/h
Character displayed on the display panel	
Color of the tire position lamp at time of the problem and whether it was ON, blinking or OFF.	Tire position lamp: 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 Tire position lamp color: Red / Yellow / Green Tire position lamp status: ON / Blinking / OFF (select one)
Has the vehicle been repaired recently or was any electronic equipment or wireless equipment installed?	Vehicle repair Yes / No (select one) Electronic or wireless equipment installed Yes / No (select one)

⚠ WARNING	
	Failure to observe the following warning items may result in serious traffic accident due to tire damage or erroneous air pressure detection.
	• If there is any problem during usage, stop using the sensor immediately.
	• Do not leave damaged sensor inside the tire for an extended period.

6-2 Routine Maintenance

Correct operation and routine maintenance are necessary to use this product safely.
Be sure to measure the tire pressure with a normal pressure gauge during routine maintenance. Compare those results with the tire pressure displayed by this system and check that the system is functioning properly.

6-3 Disposal of the product

Your purchasing dealer will salvage the sensor you no longer need. When disposing the sensor, please take it back to the place where you purchased it.

6-4 Contact

This product has been manufactured with utmost care, but please contact your purchasing dealer if there is any problem.

Specification

Product	Specification	
Sensor	Pressure measuring range	0 to 1170 kPa
	Pressure measuring precision	±30 kPa (500 to 900 kPa, -20 to +100°C)
	Temperature measuring range	-40 to +125°C
	Transmitting frequency	B421:300 MHz, B422:433MHz
	Compliance to radio wave law	B421: FCC/IC, B421:R&TTE
	Weight (excluding mounting band)	30g
	Environment condition	Storage temperature: -40 to +125°C
		Operating temperature: -40 to +125°C
		Others: No condensation

The specifications may change without prior notice for product improvement.

Index

Sensor Warranty

1. The warranty period of this product is one year from the date of purchase.

2. Bridgestone shall replace the product without charge if it fails within the warranty period under normal usage as described in the operation guide. To request replacement, please bring the product together with proof of purchase date (receipt) to the place of purchase. However, the warranty shall be voided in the following cases:
   (1) If you have no proof of purchase date
   (2) Malfunction caused by ignoring the methods and cautions described in the operation guide
   (3) Malfunction caused by dropping, compressing, or submersing in water
   (4) Malfunction caused by modification or repair by unauthorized person or dealer
   (5) Malfunction caused by improper storage
   (6) Malfunction caused under extreme condition
   (significant accumulation of dust, dirt, moisture or evidence of such)
   (7) Malfunction caused by reasons scientifically and technically unforeseeable at the time the product was shipped
   (8) Malfunction caused by accidents such as fire, earthquake, flood

3. The scope of the warranty is limited to replacement of the product itself and excludes compensation of any incidental damages (loss of profit, data, etc.) that may have resulted from the malfunction of the product.

4. This warranty guarantees replacement of the product without charge within the period and under the conditions described herein. Therefore, it is not intended to limit the legal rights of the customer.

5. Bridgestone shall assume ownership of the replaced failing product regardless of whether it is free of charge or not.

6. This warranty is valid only when the product is used in Europe and USA.
   (This warranty is valid only in Europe and USA)

Bridgestone Corporation Customer Service
Toll free number 0120-39-2936
Hours: Monday to Friday (except holidays)
9:00 to 12:00 and 13:00 to 17:00

memo

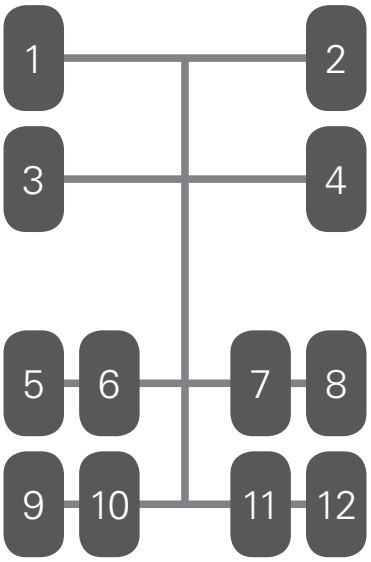
Tire-Pressure Monitoring System Check Sheet *Copy and use

Sensor Installation Status		
Installation date	Date (mm/dd/yyyy):	(Day)
Start time	Date (mm/dd/yyyy):	: AM PM
End time	Date (mm/dd/yyyy):	: AM PM
Vehicle no.		
Wheel arrangement	2-D / 2-D·2 / 2·2-D / 2-D·4 / 2-D·D / 2·2-D·D	
Mileage	km	
Model/Make		
Vehicle type		
Installing person		

Part name	Serial No.
Warning lamp	W -
Display	D -
ECU	E -
Receiver 1	R -
Receiver 2	R -
Receiver 3	R -
Receiver 4	R -
Receiver 5	R -
Receiver 6	R -

▲ Enter the serial no. in the above table for On-board type only.

Installed position of tire



Sensor serial No. 1

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 2

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 3

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 4

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 5

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 6

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 7

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 8

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 9

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 10

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 11

B -

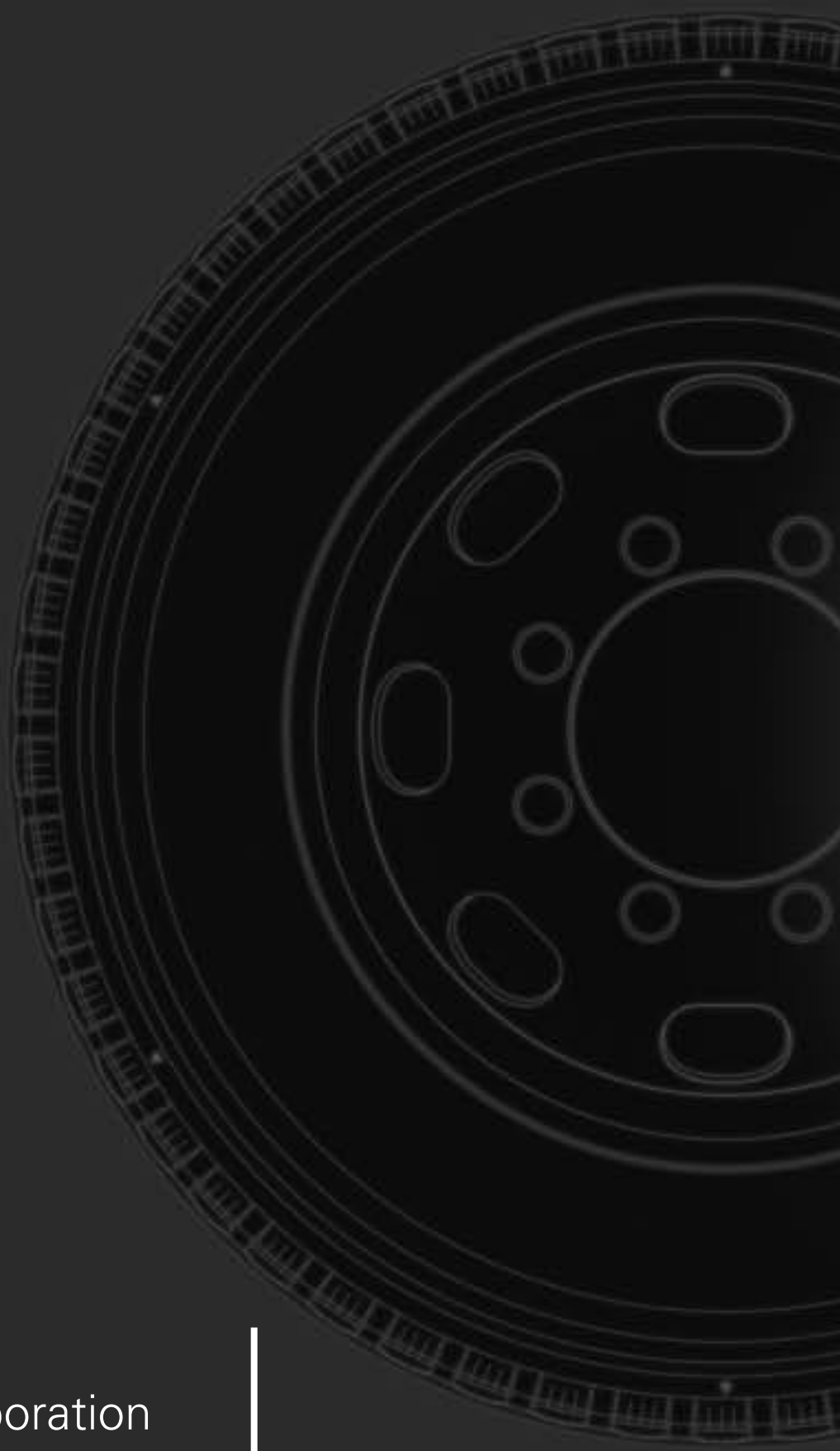
Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

Sensor serial No. 12

B -

Tire size		
Pattern		
Prescribed pressure		kPa
Inflation pressure		kPa
Rim	×	Steel Aluminum

BRIDGESTONE



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Base REG Development
2006.04 Base Ⓐ