

Flex-Sens^{Pro}

Owner's Manual

Clamp-in & Snap-in
Installation/Uninstallation Owner's Manual



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2. About this Book

About the mark used in this Owner's Manual.



Warning : If the following points under warning are not followed and/or avoided the risk of serious injury or death may occur.



Caution : If the following points under Caution are not followed and/or avoided the risk of medium injury or light injury may occur.
(Please pay attention to all other caution displays)

As mentioned above, it is classified according to the degree of danger and damage that occurs.
Please check this content before use and follow the precautions.

No part of this Owner's Manual may be reproduced in any form without permission.

3. About the Flex-Sens

3-1. Who We Are

The PACIFIC Group has been manufacturing and distributing Valve products since the 1930's. We design and manufacture TPMS Sensor at global facilities in Japan, China and the United States and has served the Tier I Automotive Manufacturers on a global level. With high marks in QUALITY, DESIGN, IMPROVEMENT, and DELIVERY, The PACIFIC Group has earned the trust of the automotive community. For more than 20 years, The PACIFIC Group has been a top supplier of Tire Pressure Sensors to several Original Equipment Manufacturers (OEM). Through this experience, The PACIFIC Group introduces the Flex-Sens offering flexibility while assuring quality, function, customer satisfaction, and retention.

3-2. What is the Flex-Sens

The Flex-Sens is a device that measures the pressure and temperature inside the Tire and communicates that information to the Vehicle's TPM System via wireless signals. When an abnormality such as a flat tire occurs, it promptly warns the driver to prevent the occurrence of serious accidents. This product can be used in various vehicles by using a dedicated programming tool. Please be sure to check the contents of this paper before using it, and use it safely.



3. What is the Flex-Sens

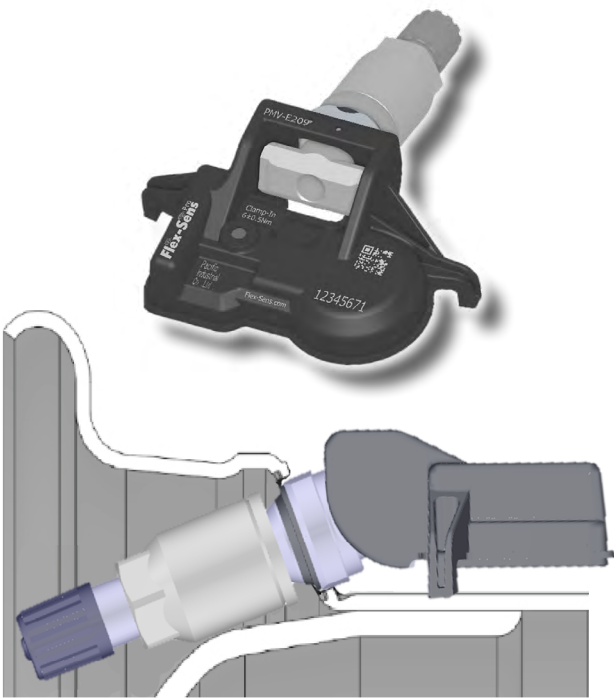
3-3. Conditions of Use



- After installing the Flex-Sens always be sure to check if there is any air pressure escaping.



- Within this manual is a product warranty form for the Flex-Sens.
- Please fill out the form for warranty activation on the day of purchase and hand it to the customer.
- Before the usage of the Flex-Sens Make sure to check and confirm the following specifications.



Clamp-in



Snap-in

•Vehicle speed : below 185 mph (300km/h) •Pressure : 145 Psi (1000kPa) Note1) The TPMS Sensor should be mounted parallel to the Rim.	•Vehicle speed : below 130 mph (210km/h) •Pressure : 65 Psi (450kPa) Note1) For pressure above 65 Psi (450kpa), switch to the usage of the Clamp-in.
•Rated ambient temperature range : -40°F to 248°F •Both Camp-in and Snap-in can be used with either Alloy/Steel Rims.	

3. What is Flex-Sens

3-4. Precautions for use



WARNING!!

- Before using the Flex-Sens, read and review all instructions and warnings related to the installation and the use of it. Otherwise, the Flex-Sens may not function properly.
- When the product is being repaired or replaced make sure to check the written information within this Owner's Manual.
- Installation and Uninstallation can be performed only at specialty stores.
- The Flex-Sens are used to replace factory installed the TPMS Sensor or to replace non working the TPMS Sensor.
- The TPMS assemblies are meant for the promotion of safety in line with the US Federal Motor Vehicle Safety Standards (FMVSS) TPMS Ruling No. 138 requirements and regulation of the TPMS.
- The frequency of this device is meant for the country of sale and cannot be used in other countries.
- The Snap-In and Clamp-In Valve are able to be used with both Alloy Rims & Steel Rims.
- Note that there are Rims that the TPMS Sensor is unable to fit due to the difference in dimensions. Please check with your dealer before purchasing this product.
- The maximum gauge pressure that the Snap-in Valve can hold is 65 Psi (450 kPa). Change to the Clamp-in Valve when the Tire Pressure is higher than that.
- When installing, Have the TPMS Sensor part flat against the Rim.
- When installing, Make sure the TPMS Sensor part does not touch the opposite side of the Rims wall.
- Do not fit the Tire to the Rim unless confident that the Valve has been fitted correctly.
- Never fit a damaged TPMS Sensor to the Rim.
- Do not install the Flex-Sens in damaged Rim.
- Always check for any air leaks after installation.
- When using, if the Tire is cold, the Tire Pressure will decrease. Always adjust the Tire Pressure while the Tire is cooled down.
- If a high precision air-gauge isn't used to measure the air pressure, inaccurate measures may be read.
- Please do not drive with a punctured Tire. If you drive with a punctured Tire, the TPMS Sensor may be damaged.
- Do not use puncture repair fluid. The TPMS Sensor may be damaged. Be sure to replace the TPMS Sensor with a new one when using puncture repair fluid.

3. What is Flex-Sens

3-4. Precautions for use



WARNING!!

- When changing Tires, some parts of the TPMS Sensor can be used as is, while others need to be replaced.
- Be sure to replace the replacement part with a new Flex-Sens genuine product.

Clamp-in Valve

- Replace the Valve Core and Grommet with new Flex-Sens genuine parts. Other parts can be reused.
- Replace the Grommet with a New Grommet even if it is not cracked or damaged.
- Never use a Metal Valve Cap. If a Metal Valve Cap is used with the Valve, corrosion will occur and cause air to leak and/or potentially even greater damage.
- Be sure to replace the Valve Core with a new Flex-Sens genuine product. When installing the Valve Core, use a dedicated tool and tighten to a torque of 0.6 Ncm.

Snap-in Valve

- Replace the Valve part and Screw with new Flex-Sens genuine parts. Only the TPMS Sensor itself can be reused.
 - A hexalobular Wrench should be used for fastening and loosening the Screws. (The necessary torque for installation is $1.2 \pm 0.1 \text{ Nm}$)
 - Never use a Metal Valve Cap. If a Metal Valve Cap is used with the Valve, corrosion will occur and cause air to leak and/or potentially even greater damage.
 - Be sure to replace the Valve Core with a new Flex-Sens genuine product. When installing the Valve Core, use a dedicated tool and tighten to a torque of 0.6 Ncm.
-
- Our product is a delicate device, refrain from tampering, disablement or replicating it. Any damages or accidents related to the results of such actions will hold the user responsible.

3. What is Flex-Sens

3-4. Precautions for use



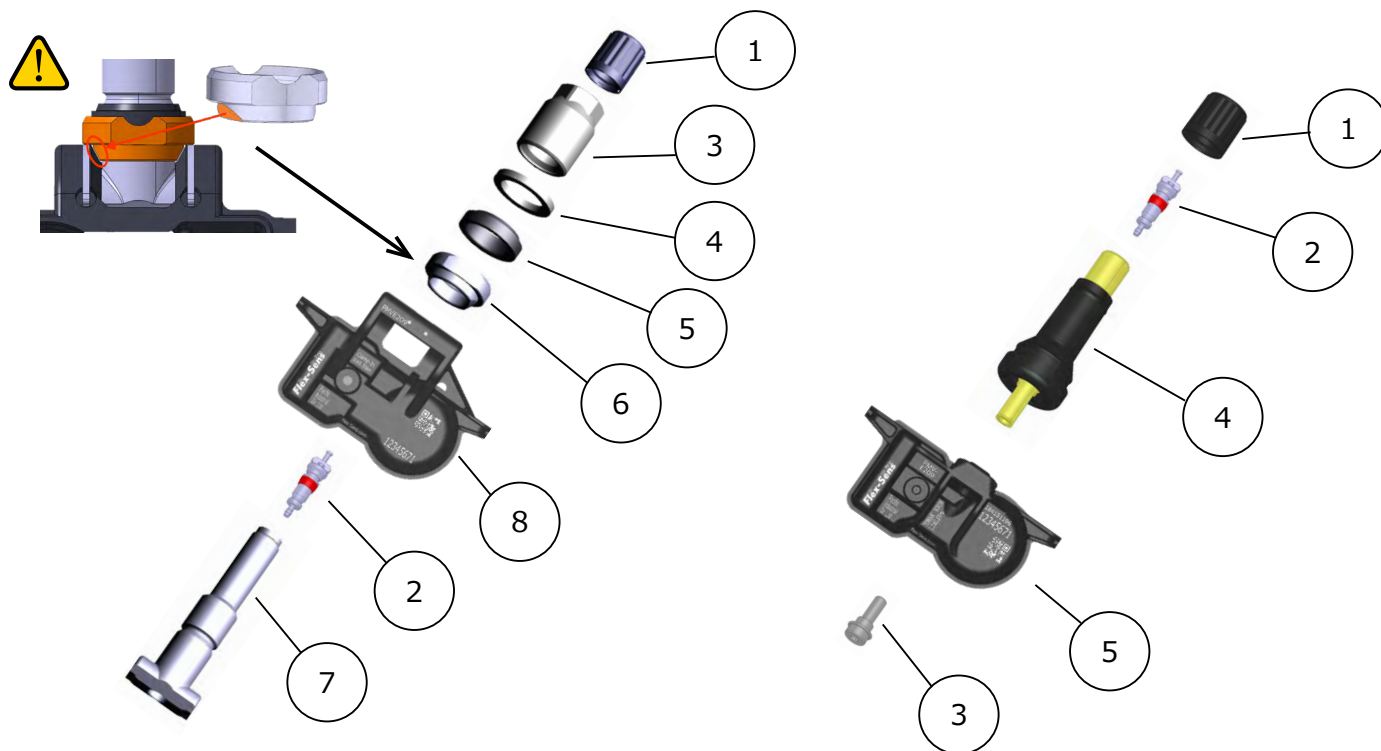
CAUTION!!

- The Flex-Sens is a Universal Sensor that has multiple vehicle applications programmed inside them, manufactured to operate in a Specific Vehicle Make, Model and Year using the proper frequencies (315/433 MHz) to communicate with the Vehicle TPM System.
- Install the Flex-Sens only on the Appropriate Vehicle Make, Model, and Year.
- If the Flex-Sens are improperly installed, the vehicle's TPM system will not function properly.
- Upon completion of installation, test the Vehicle's TPM System using procedures described in the original manufacturer's service guide to confirm proper installation.
- If the TPM System fails to operate properly, check all installation procedures to ensure proper installation and retest.
- If the TPM System continues to fail to operate, immediately consult with an authorized motor vehicle dealership or PACIFIC technical support (flex-sens@pacific-ind.com).
- Do not dispose of this product as household waste.
- When disposing of the product, please consult with your local government about the appropriate method.



4. The Flex-Sens Components

4-1. The Flex-Sens Components Part



Clamp-in		Snap-in	
1	Cap	1	Cap
2	Valve Core	2	Valve Core
3	Nut	3	Screw
4	Washer		
5	Grommet		
6	Retainer		
7	Valve Stem	4	Valve Stem
8	TPMS Sensor	5	TPMS Sensor



- Be sure to check this content when repairing or replacing.
- Always use the correct type of Valve Cap. If a metal type Cap is used with the Valve, corrosion will occur and cause air to leak and/or potentially even greater damage.
- Replace all parts of the TPMS Sensor if you have repaired the Tire using Puncture Repair Agents.
- The Flex-Sens can be reused when replacing Tires, but the following parts should be replaced with new ones even if they are not damaged.

Clamp-in: Valve Core, Grommet

Snap-in: Valve Stem, Valve Core, Screw

4. The Flex-Sens Components

4-2. Assemble

Assemble for Clamp-in



When replacing parts, be sure to replace them with genuine Flex-Sens parts.

1. Insert the Valve Stem into the TPMS Sensor section from the direction shown in the figure.



2. Insert the Retainer into the Valve Stem from the direction shown in the figure.



Attention to the orientation of the Retainer.



3. Insert the Grommet into the Valve Stem from the direction shown in the figure.



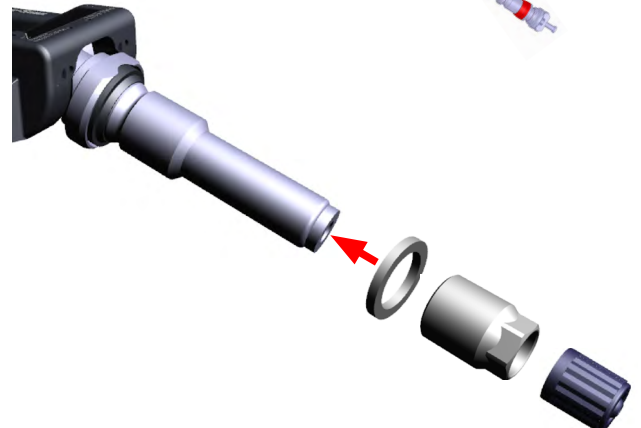
4. Insert the Valve Core into the Valve Stem and attach it using a dedicated tool. The Valve Core tightening torque is 0.6 Ncm.



5. Attach Washer, Nut and Valve Cap to the Valve Stem from the direction shown in the figure.



Never use a Metal Valve Cap. If a Metal Valve Cap is used with the Valve, corrosion will occur and cause air to leak and/or potentially even greater damage.



Note: Disassembling is the reverse of assembly.

4. The Flex-Sens Components

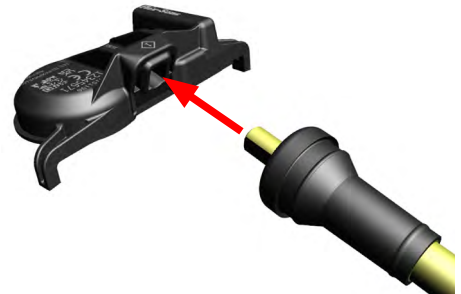
4-2. Assemble

Assemble for Snap-in

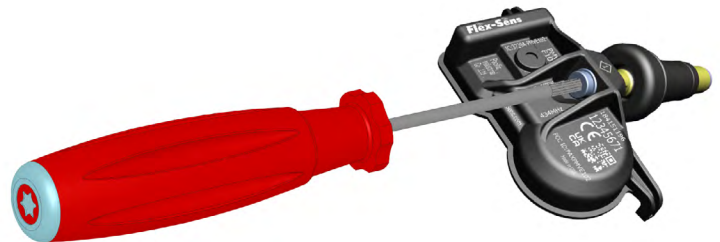


When replacing parts, be sure to replace them with genuine Flex-Sens parts.

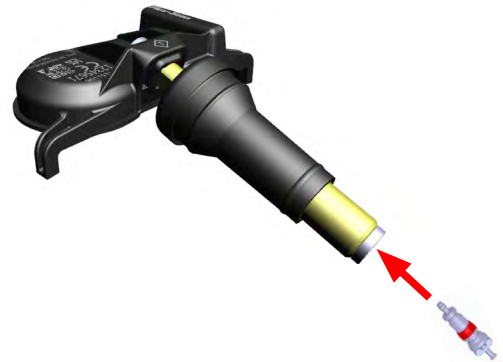
1. Insert the Valve Stem into the TPMS Sensor section from the direction shown in the figure.



2. Insert the Screw into the Valve Stem from the direction shown. A Hexalobular Wrench should be used for fastening and loosening the Screws. The necessary torque for installation is $1.2 \pm 0.1 \text{ Nm}$.



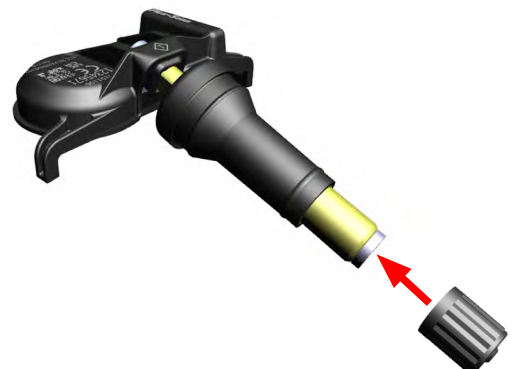
3. Insert the Valve Core into the Valve Stem and attach it using a dedicated tool. The Valve Core tightening torque is 0.6 Ncm .



4. Attach Washer, Nut and Valve Cap to the Valve Stem from the direction shown in the figure.



Never use a Metal Valve Cap. If a Metal Valve Cap is used with the Valve, corrosion will occur and cause air to leak and/or potentially even greater damage.

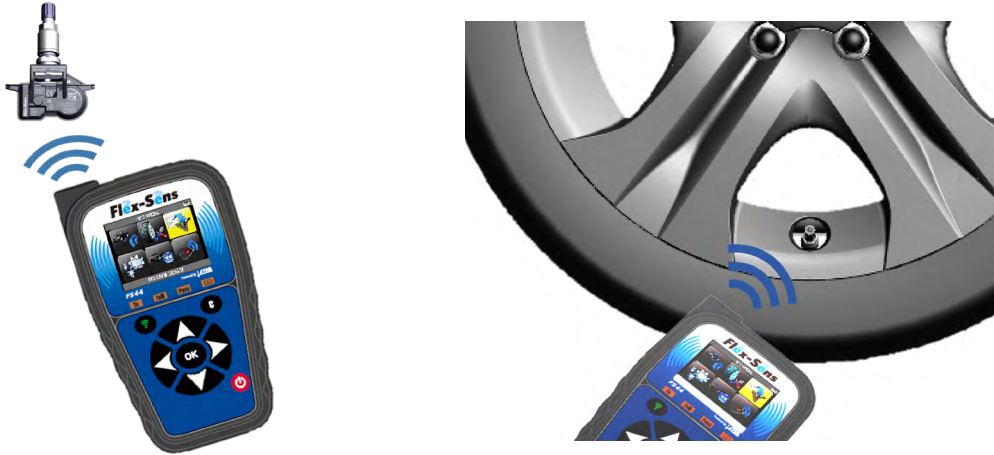


Note: Disassembling is the reverse of assembly.

5. The Flex-Sens Programming

Before using the Flex-Sens, it must be programmed with the appropriate the TPMS Sensor programming tool. The Flex-Sens will not function properly without proper programming.

- Perform programming according to the instructions of your dedicated tool.
- Programming can be done before or after installation to Rim.



If vehicle re-learning does not work, use a copy of the ID (Clone ID function) to re-learn the vehicle.

For details on how to program the Flex-Sens, download the manual from the following URL and check it. (<https://flex-sens.com>)

6. Installation to Rim

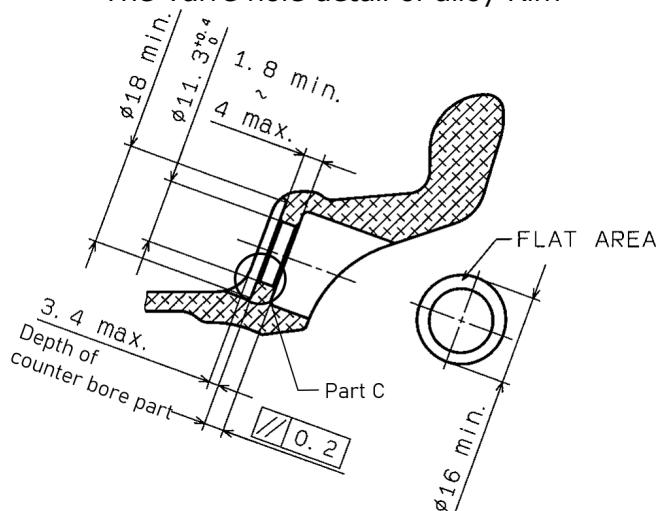
6-1. Before Installation Check



For the Clamp-in and Snap-in Valve to work at its best, please take the time to review the content of the dimensions and specifications of the listed figures down below.

Fig 1. Alloy Rims

The Valve hole detail of alloy Rim

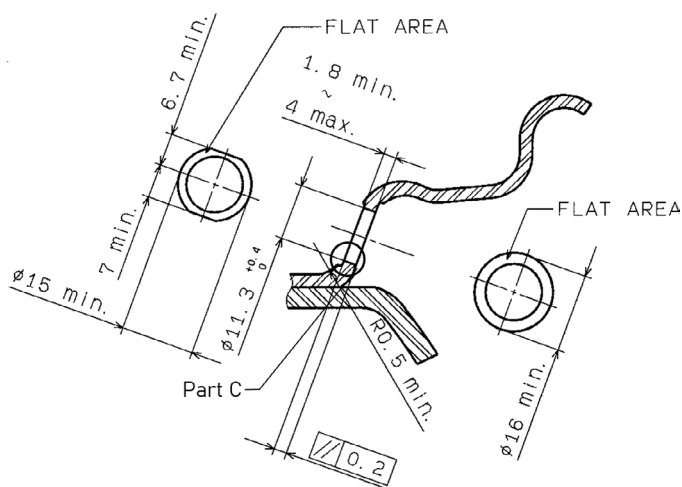


ETRTO VALVE HOLE 11.3H Equivalent

- Shapes of the Valve hole on Rims should be a minimum of 16 millimeters as follows in Fig.1.
- Around the Valve holes, provide a flat area. If the flat area is small, it will not only cause decreased airtightness but also abnormal deformation and damage to the Rubber Valves. (Details regarding Part C can be observed below in Fig.3.)
- The details and conditions listed above regarding "Alloy Rims" applies to "Steel Rims" in Fig.2. (Details regarding Part C can be observed below in Fig.3.)

Fig 2. Steel Rims

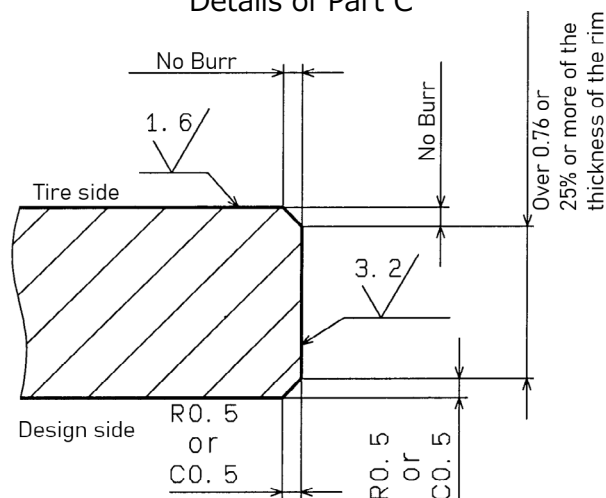
The Valve hole detail of steel Rim



ETRTO VALVE HOLE 11.3E1, E2 Equivalent

Fig 3. Part C

Details of Part C



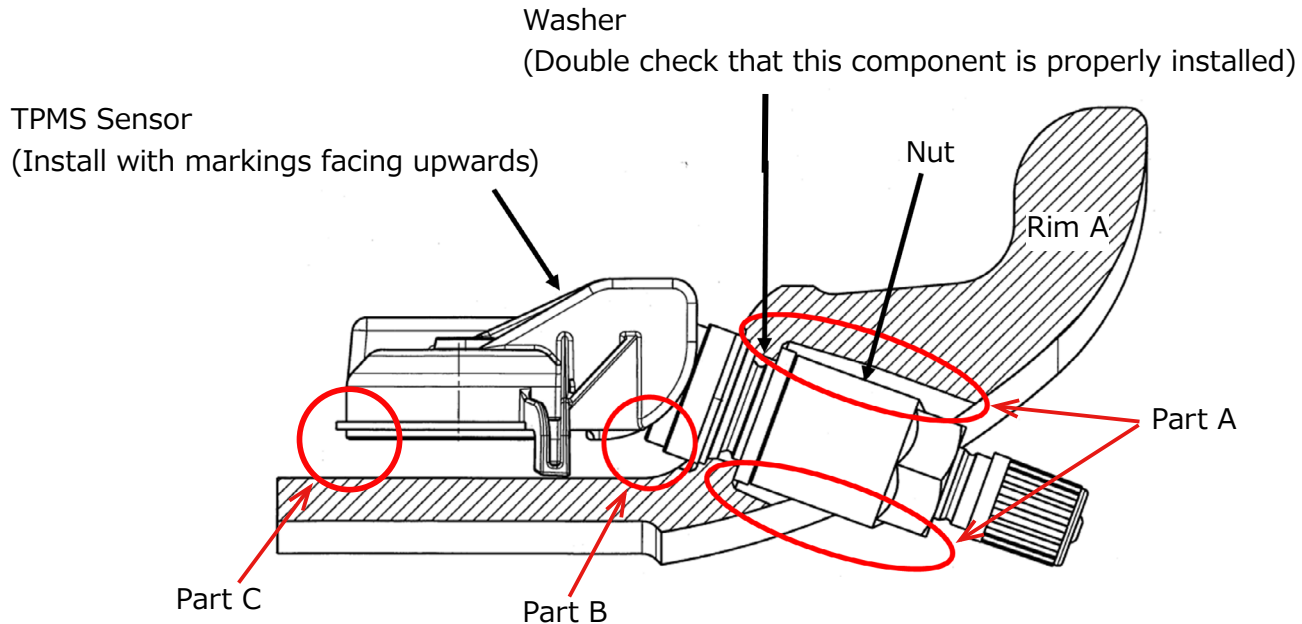
- Do not install the Flex-Sens in damaged Rims.
- Do not install the damaged the Flex-Sens in Rims.

6. Installation to Rim

6-2. Clamp-in Installation



When installing, be sure to check the following contents.



*Ensure that Rim, Part A and it's Washer, Nut, and Nut Tightening Tool does not interfere.

(1) Interference with the Rim (Please check beforehand)

- Please confirm the dimensions of the Rim the TPMS Sensor will be installed to.
- Ensure that in Part A, the parts such as the Nuts, Washers, and Nut Tightening Tools do not interfere.
- Please confirm that there is no interference with the Rim in Part B below.

(2) Installation Directions

- Attach the TPMS Sensor in the direction shown below. Please do not put it on by flipping upside down.
- Install the TPMS Sensor body parallel to the Rim.
- Please confirm that there is no interference with the Rim in Part C below.

(3) Washer installation

- When installing the TPMS Sensor to the Rim, please do not forget to attach the Washer.

(4) Amount of torque required for tightening the Nut

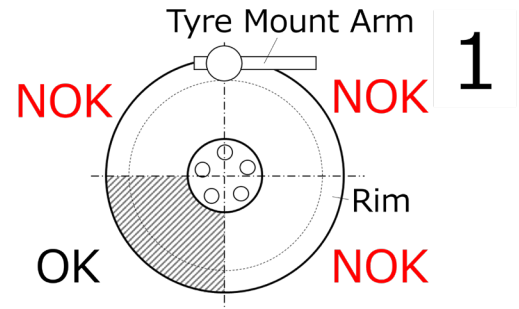
- When installing the TPMS Sensor to the Rim, tighten the Nut by $6 \pm 0.5 \text{ Nm}$.
- After assembling the Valve, check for air leakage.

6. Installation to Rim

6-2. Clamp-in Installation

Follow the steps below to install.

1. When installing be sure to install within the gray zone indicated in right Figure.



2. Hold the bottom of the TPMS Sensor when installing, make sure that the TPMS Sensor is not sideways or upside down when installing.



3. When tightening, use the Torque Wrench to tighten the Nut to $6.0 \pm 0.5 \text{ Nm}$.



Make sure the Valve is installed correctly before installing the Tire.



4. Apply wax or Soapy water to both sides of the Tire (Be sure not to leave residue within the Tire.).



Do not leave any residue in the Tire.



5. When installing the Tire be sure the bottom bead does not come into contact with the TPMS Sensor.



6. Installation to Rim

6-2. Clamp-in Installation

Follow the steps below to install.

6. When rotating the Tire be sure to have the TPMS Sensor ahead of the traction point where bead and Rim come to meet.



7. When rotating the Tire, have the Tire drop within the Rim where the TPMS Sensor located.



8. After the bottom bead is within the Rim use the roller to drop the upper bead within the Rim.



9. After step 8 your Tire should look like the Tire in Fig.9.



After installing the Flex-Sens, be sure to check that the air pressure is not released.

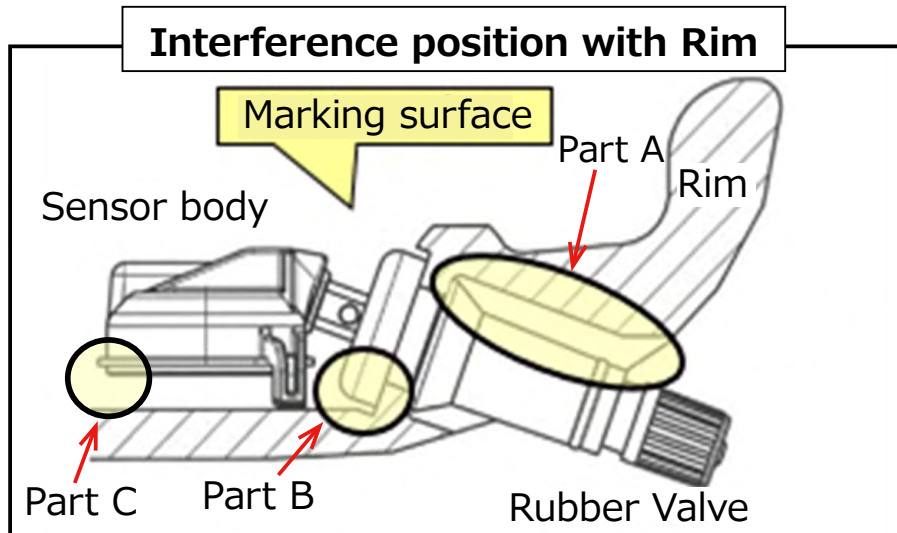
6. Installation to Rim

6-3. Snap-in Installation

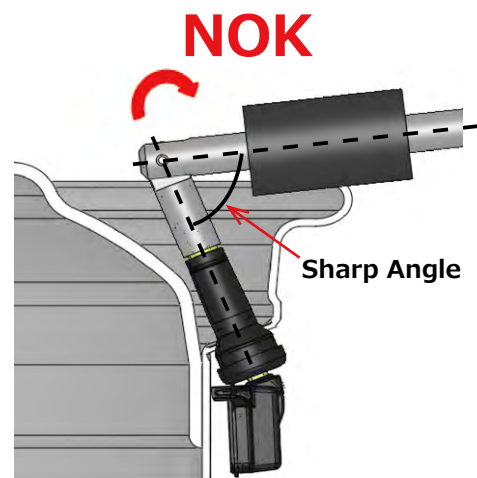
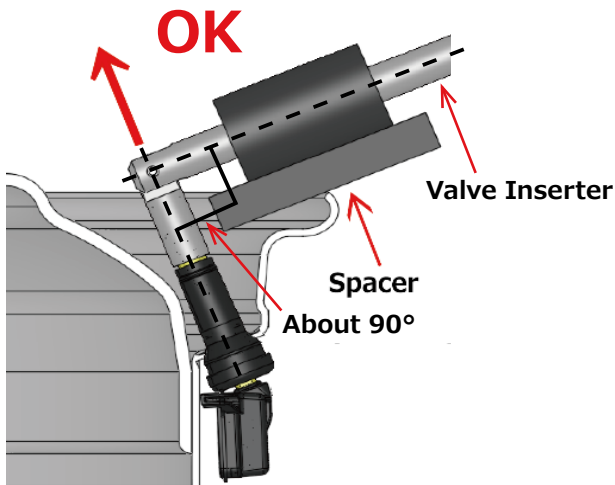


When installing, be sure to check the following contents.

The TPMS Sensor should be installed to the Valve hole in the same direction as indicated in the Figure below. It is necessary that the TPMS Sensor body and Rubber Valve do not interfere with the Rim. Be sure to check part A ,part B and part C. Install the TPMS Sensor body parallel to the Rim. If the TPMS Sensor body or the Rubber Valve interferes with the Rim, it may cause air leakage. After assembling the Valve, check for air leakage.



When installing the Snap-in Valve, pull the Rubber Valve Stem at an angle of about 90°. If the angle is not about 90°, adjust with a Spacer such as the Rubber Pads. In the case the installer fails to follow pulling the Snap-In Valve through at an angle of about 90° the installation may result in a torn and/or bent Valve. If the above procedures are not followed leading to a faulty Valve, the installer will bare full responsibility in replacing the TPMS Sensor's Valve with a new one at his/her expenses. Please refer to Figures below for the proper procedures.



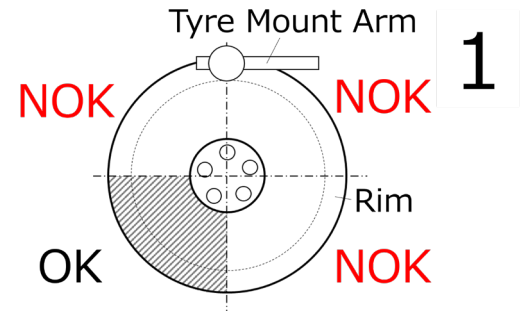
If the Snap-in Valve is not pulled in through properly like described in the figure above, damage to the Valve will occur causing deformation of the Valve and air loss. Please pay full attention when installing.

6. Installation to Rim

6-3. Snap-in Installation

Follow the steps below to install.

1. When installing be sure to install within the gray zone indicated in right figure.



2. Apply soapy water or wax around the base of the Rubber Valve Stem.



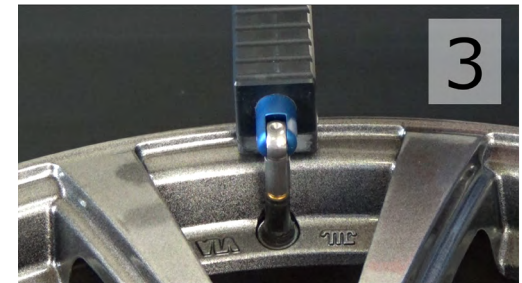
Be sure not to dip the TPMS Sensor in the substance nor apply it directly to TPMS Sensor.



3. When pulling the Rubber Valve Stem through the Rim, be sure to have the Valve Inserter is at an angle of about 90°.



Be sure to pull the Valve Inserter at a 90° angle.



4. Apply wax or Soapy water to both sides of the Tire(Be sure not to leave residue within the Tire.).



Do not leave any residue in the Tire.



5. When installing the Tire be sure the bottom bead does not come into contact with the TPMS Sensor.



6. Installation to Rim

6-3. Snap-in Installation

Follow the steps below to install.

6. When rotating the Tire be sure to have the TPMS Sensor ahead of the traction point where bead and Rim come to meet.



7. When rotating the Tire, have the Tire drop within the Rim where the TPMS Sensor located.



8. After the bottom bead is within the Rim use the roller to drop the upper bead within the Rim.



9. After step 8 your Tire should look like the Tire in Fig.9.



After installing the Flex-Sens, be sure to check that the air pressure is not released.

7. Uninstallation to Rim

7-1. Clamp-in Uninstallation

Follow the steps below to uninstall.

1. Remove the Valve Core and deflate all the air in the Tire.



2. Remove the Nuts and Washers, and drop the Flex-Sens inside the Tire.



3. Remove the Tire from the Rim. Take out the Flex-Sens from the Tire.



7. Uninstallation to Rim

7-2. Snap-in Uninstallation

Follow the steps below to uninstall.

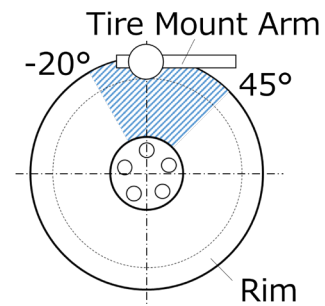
1. Remove the Valve Core and deflate all the air in the Tire.



2. Before removing the Tire be sure to align the TPMS Sensor location under the Tire mount.



Please refer to the blue area of Fig.2, 0° is recommended however the area of -20 to 45° is acceptable.



3. Remove the Tire from the Rim.



4. Remove the Screw and remove the Sensor.



7. Uninstallation to Rim

7-2. Snap-in Uninstallation

Follow the steps below to uninstall.

5. After removing the Tire, use a tool such as a Nipper to cut the bottom of the Valve.

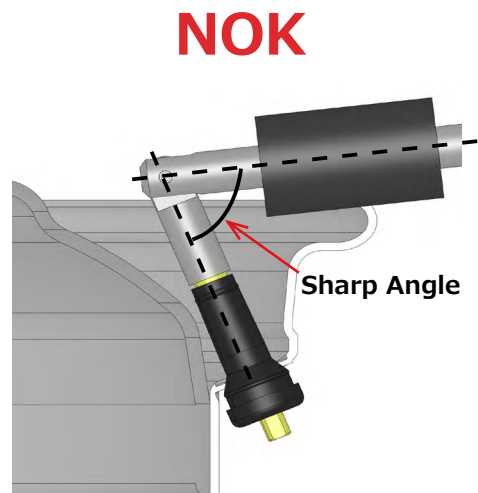
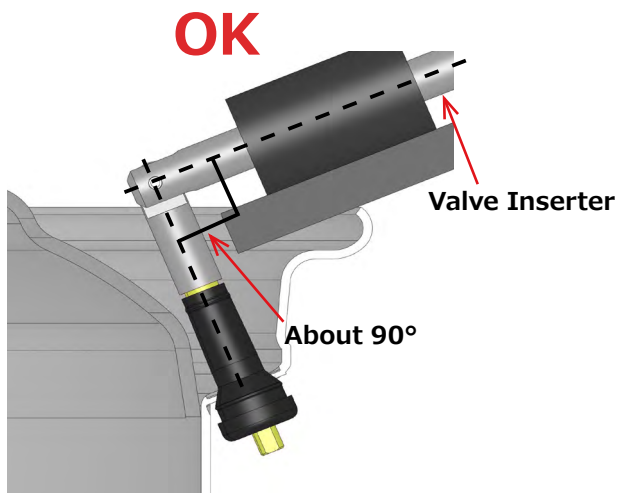
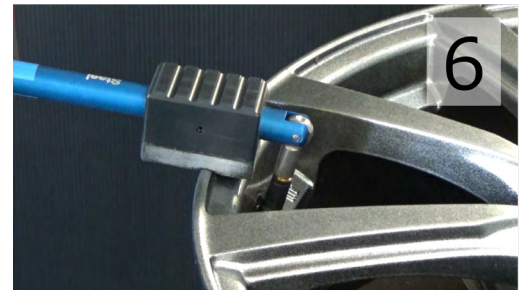


6. Pull out the Valve Stem with a Valve Inserter.



When removing the Snap-in Valve, place a Spacer or Rubber Pads between the Rim and the Valve Inserter, adjust the Valve Inserter angle to about 90°, and then pull the Valve straight out.

When removing the Snap-in Valve, if it is pulled through the Rim diagonally the metal base of the Valve may hit the hole of the Rim causing damage.



8. Declaration of Conformity

For vehicles sold in the U.S.A.

FCC ID: PAXPMVE209

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines as this equipment has very low levels of RF energy.

For vehicles sold in the Canada

This device contains licence-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada's licence-exempt RSSs.

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.

Warning

This product can expose you to chemicals including Lead or more chemicals, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

9. Warranty

Method of TPMS Storage

1. Store this product in a well ventilated, temperature (41°F to 95°F) and humidity (45% to 85%) controlled environment. Be sure when stored indoors, avoiding direct sunlight and contact with water or other liquids or powders.
2. When storing Flex-Sens, take care not to drop them from high places. In the case the Flex-Sens is dropped, please refrain from installing it.

IMPORTANT WARRANTY INFORMATION

Flex-Sens manufactured and sold by PACIFIC Group (“PACIFIC”) are warranted against manufacturing and material defects under normal use for 12 months or 20,000 km from the date of Sensor activation.

This warranty and its limited obligations shall be invalid if the product is considered to be subject to accident, modification, misuse or abuse.

PACIFIC Warranty duty is limited to replacements or refunds for Flex-Sens-related parts returned by the purchaser to PACIFIC during the warranty period that PACIFIC determines are not in compliance with the warranty.

If the buyer of the product returns a defective/malfunction product and PACIFIC has conducted an judgment and determines that it is defective/malfunction, the product may be replaced.

In addition, if the purchaser of the product returns vehicle non conforming product unsuitable product and PACIFIC has conducted an judgment and has determined that vehicle is not compatible, the purchaser may refund the purchase price.

IN NO CIRCUMSTANCES SHALL THE WARRANTY EXCEED THE PURCHASE PRICE OF THE DEFECTIVE/NON-CONFORMING PRODUCT IN QUESTION, AND SHALL NOT BE LIABLE PERMANENTLY TO CUSTOMER FOR ALL INDIRECT, CONSEQUENTIAL AND INCIDENTAL DAMAGES, OR FOR ANY OTHER DAMAGES, INCLUDING BUT NOT LIMITED TO DIRECT DAMAGES, ON ANY THEORY.

10. Customer Warranty Activation Information

If there is any problem with your the Flex-Sens, please visit the store of your purchase.

Please email "PACIFIC Technical Support" to activate your warranty.

To activate warranty send to : Pacific Manufacturing Ohio, 8955 Seward Road, Fairfield ,
Ohio 45011 U.S.A. (flex-sens@pacific-ind.com)

Professional installer name: _____

Place of repair: _____

Installation Date: _____

Number of miles on vehicle: _____

Address: _____

Phone: _____

Vehicle Owner: _____

Address: _____

Motor vehicle number: _____

Model: _____

Year: _____

VIN number: _____

Flex-Sens date of installation : / /

Flex-Sens ID : _____

Part Number of TPMS Sensor being replaced (old TPMS Sensor) circle selection

PACIFIC / Schrader / Siemens VDO / TRW / Beru / Orange / Continental / Lear / BH Sensor /

Other: _____