
# VDO REDI-Sensor Valveless "VL"

Montageanleitung
Installation Manual

# 1 General instructions

## 1.1 Applicability

The Manual is applicable to: VDO REDI-Sensor Valveless "VL"

## 1.2 Important information on this manual

The Manual describes the secure installation of the VDO REDI-Sensor. The Installation Manual should therefore always be kept on hand in the place of work.

The sensor may only be installed by trained automotive or tyre service professionals who have read and understood the Manual. All safety information must be observed.

## 1.3 Scope of supply

VDO REDI-Sensor overmolded with polyurethane, rubber container

## 1.4 Liability restriction

The manufacturer assumes no liability for damage and operational disturbances caused by a failure to observe this manual, incorrect use, faulty assembly, technical changes and conversions if these were not coordinated with the manufacturer.

## 1.5 Copyright

## 1.6 Labelling of safety information

**⚠ WARNING!**

**Texts labelled in this manner indicate a possible danger to life or risk of serious injuries.**

- They also explain how the danger must be avoided.

NOTE

Texts labelled in this manner indicate how material damage, e.g. to the sensor or tyres, can be avoided.

# 2 Safety

## 2.1 Occupational health and safety

**⚠ WARNING!**

**Danger to life and limb of the user or third parties can arise during installation or as a result of incorrect installation of the sensor.**

- Always keep the Installation Manual on hand in the place of work.
- Only install original sensors that are free of defect / undamaged.
- Use sensor for the intended purpose only.
- Observe the safety regulations in this manual and all applicable safety regulations.

## 2.2 Intended use of the VDO REDI-Sensors

The sensors are exclusively intended to measure air pressure and temperature in suitable tyres and to transfer the data to a corresponding original equipment (OE) vehicle tyre pressure monitoring system for which the specific VDO REDI-Sensor is catalogued.

Speed limitation: 250 km / h

Any other use or use going beyond this is viewed to be an incorrect use.

The observation of this Installation Manual is also part of intended use.

The manufacturer is not liable for any damage arising from incorrect use. The risk is borne solely by the user.

## 2.3 Organisational measures

**⚠ WARNING!**

**Even dangers to life and limb are not always recognisable without prior safety information.**

- The personnel entrusted with installation must have read the Installation Manual, and in particular Chapter 2 ”Safety” before starting work.
- The sensor may only be installed by trained or specially instructed skilled staff.
- Keep tools, cleaning agents and adhesives out of the reach of unauthorised persons and children.

**⚠ WARNING!**

**Numerous dangers may arise at the place of work, which are not described in the Manual. This Manual only describes the safe installation of the sensor itself.**

- Generally applicable statutory and other binding regulations on accident prevention and environmental protection should be observed and instructed by way of supplement to the Installation Manual!
- Keep safety data sheets on the operating supplies (REMA TipTop Liquid Buffer, Cyberbond 2250) at hand in the place of work and observe such.
- The place of work must be adequately ventilated.
- Ensure adequate lighting conditions at the place of work at all times.
- The place of work and the tools used must be in a clean and safe condition.

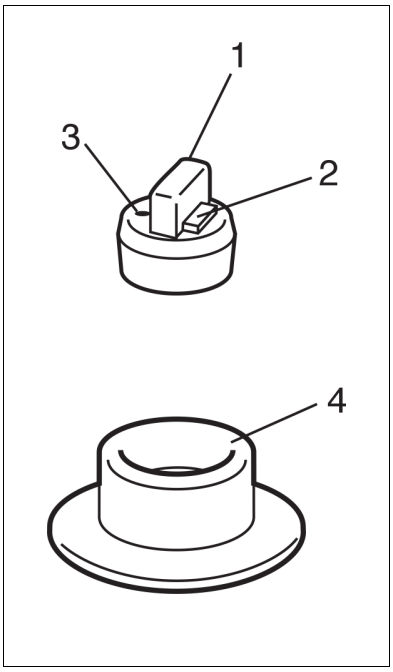
**⚠ WARNING!**

**Danger to life from flat tyres due to ineffective tyre pressure and temperature monitoring.**

- Observe Installation Manual during installation.
- Install sensor only in suitable tyres.
- Use sensor only as a replacement part for original equipment tyre pressure monitoring systems.

# 3 Design

## 3.1 Components



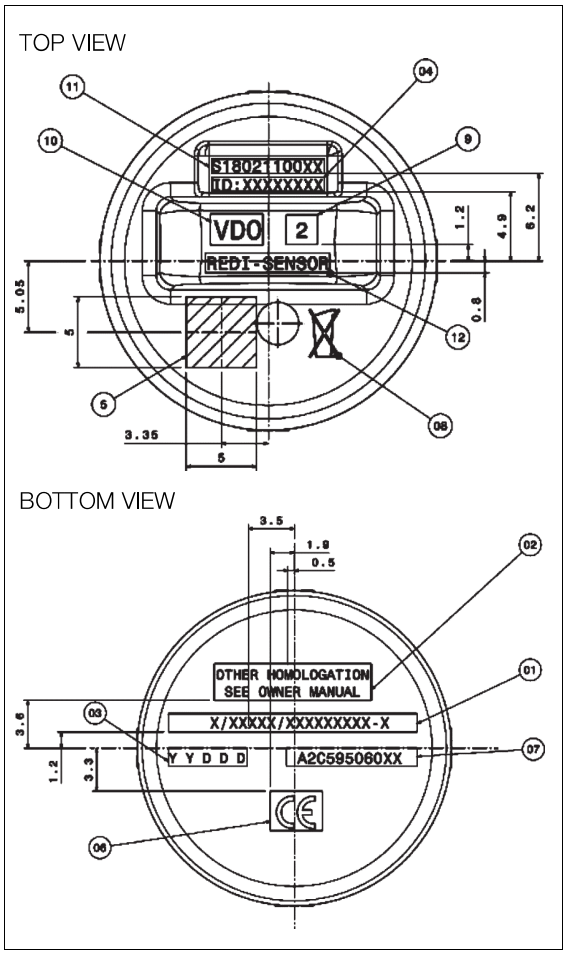

1 RF (radio frequency) antenna
2 LF (low frequency) antenna
3 Pressure port
4 Rubber container

Fig. 1 Components

## 3.2 Marking

**Marking of the VDO REDI-Sensor**

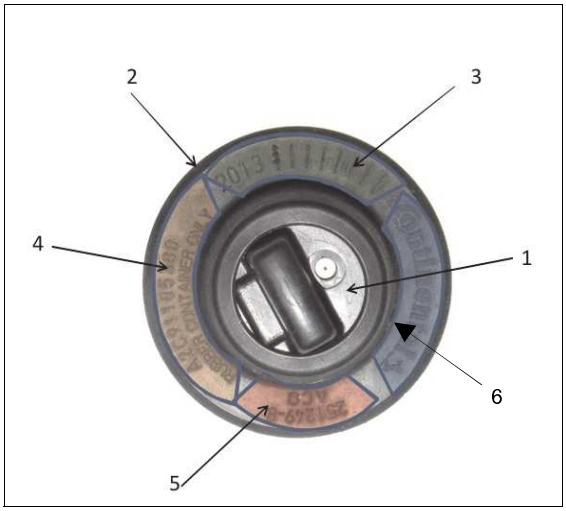
The VDO REDI-Sensor is laser marked on the top and on the bottom side of the module. The bottom marking is not visible after installation in the container.




| Area | Designation |
|---|---|
| 01 | Visual code |
| 02 | Homologation information |
| 03 | Date code |
| 04 | ID number |
| 05 | Data matrix code |
| 06 | CE logo |
| 07 | Customer reference (last two digits signify specific sensor variant number) |
| 08 | Recycling |
| 09 | Variant number |
| 10 | Product name 1 |
| 11 | Continental reference (last two digits signify specific sensor variant number - rubber container included) |
| 12 | Product name 2 |

Fig. 2 Marking of VDO REDI-Sensor

## Marking of the rubber container




| Area | Designation |
|---|---|
| 1 | Tyre Sensor |
| 2 | Rubber container |
| 3 | Quarter and year of production (each line is one year – starting with 2013 – and each dot is one quarter of a year) |
| 4 | Article number of rubber container |
| 5 | Production code |
| 6 | Continental logo |

Fig. 3 Marking of the rubber container

## 3.3 Technical data of VDO REDI-Sensor

| Casing | | |
|---|---|---|
| Material | Polyurethane | |
| Diameter | 24 | mm |
| Height | 17.5 | mm |
| Weight | 8.5 | g |
| **Operational data** | | |
| Operational temperature range | - 40 … + 120 | °C |
| Typical battery lifetime<br><br>in case of winter tyre user profile<br>(5 of 12 months / year mounted on vehicle)<br><br>in case of all season user profile<br>(12 months / year mounted on vehicle) | <br><br>5<br><br>3 | <br><br>years<br><br>years |
| **Rubber container** | | |
| Container should be installed within 2 years after production. | | |

## 3.4 Declaration of conformity

The system satisfies the basic statutory requirements and relevant regulations of the European Union (EU).

## 3.5 Certifications

**Radio approval**

A radio approval has been issued for the system in all EU countries. According to information about further countries - please contact VDO.

# 4 Installation

**⚠ WARNING!**

**Even dangers to life and limb are not always recognisable without prior safety information.**

- Read the Installation Manual before starting work, and in particular Chapter 2 ”Safety”.

## 4.1 Tools and material required

Protective gloves

Protective goggles


Source: REMA TIP TOP AG

Naphtha containing solvent - REMA TipTop Liquid Buffer

Cleaning agent for pre-treatment of tyre inner liner layer and the bonding surface of the container
(not included in the scope of supply)

lint free, non-shredding disposable paper towels
(not included in the scope of supply)

Hand press tool
Part no.: A2C59506049

Soft insert - replacement part number:
A2C59506050Z

Cyberbond 2250 special adhesive

Adhesive for attaching the VDO REDI-Sensor (observe instructions on shelf life and method of storage on the packaging)

- Once opened, use up glue promptly.
- When not in use, ensure cap of bottle applicator is firmly closed.

Part no.:
A2C59506147 (9.6g bottle)
A2C59506148 (100g bottle)

Spreader Tool (only needed for rework / exchange of the sensor)
Part no.: A2C59506059

## 4.2 Place of work

Bonding may only be carried out at an ambient temperature of 15 °C to 35 °C (59 °F to 95 °F).

Before starting work, prepare the place of work so that all the necessary tools and materials are within easy reach.

The place of work must be adequately ventilated.

Position the tyre so that the inner area of the tyre is easily accessible and well illuminated.

## 4.3 Permitted tyres

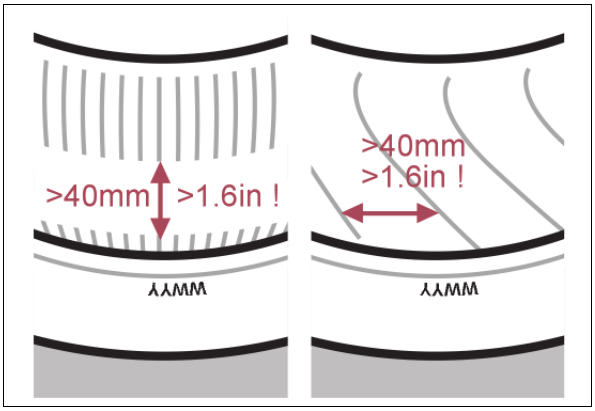



Fig. 4 Permitted tyres

Basically all tubeless standard passenger and light truck (PLT) tyres are suitable for the installation of the VDO REDI-Sensor Valveless "VL", as long as the inner liner area foreseen for its assembly (Ø 40 mm, 1.6 in) is free of major bladder ventilation ribs.

Exception:
Tyres with special inner liner surface like “self sealing tyres” or tyres with additional foam layer are not allowed for VDO REDI-Sensor Valveless "VL" application.

Examples:

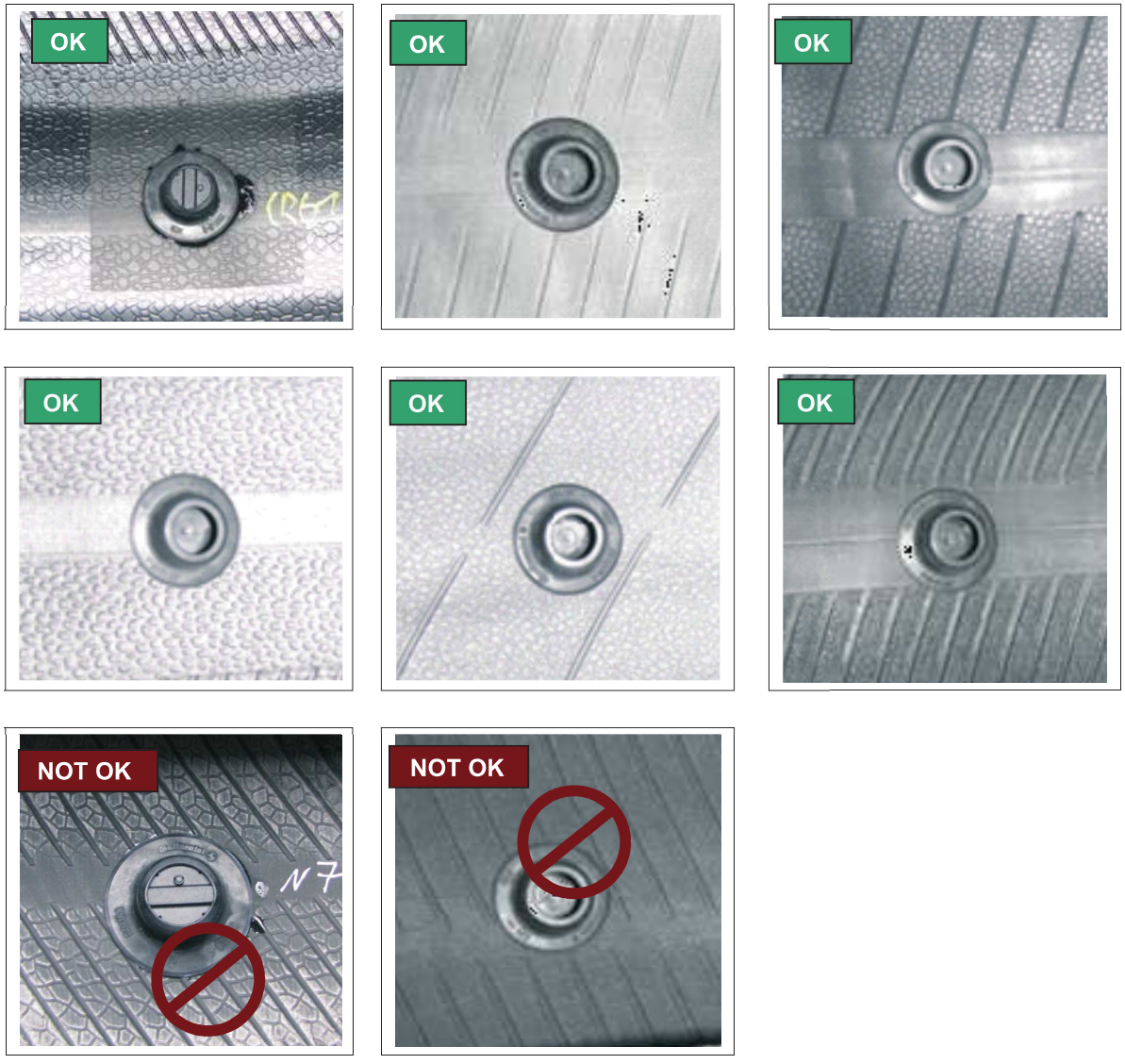
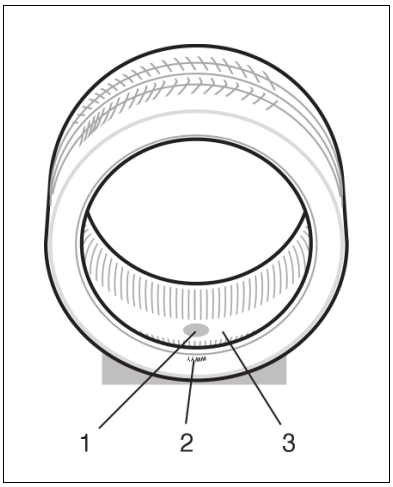



Fig. 5 Examples for bonding position of sensor

## 4.4 Bonding position in the tyre

Look for a smooth area in the tyre without ridges or ribbing that will readily accept glue.




1 bonding position in the tyre
2 production date stamp on tyre sidewall
3 tyre inner liner

Fig. 6 Bonding position in the tyre

The correct position of the bonding surface is:

- In the middle of the tyre inner liner (see also Fig. 5 Examples for bonding position of sensor).
- To be mounted at the tyre production date stamp (week code), for ease in locating the sensor during future tyre service and for best communication between the sensor and the TPMS service tool.

NOTE

The VDO REDI-Sensor must not be fixed directly on a visible tyre ribs! Distance to tyre component splice should be at least 40mm.

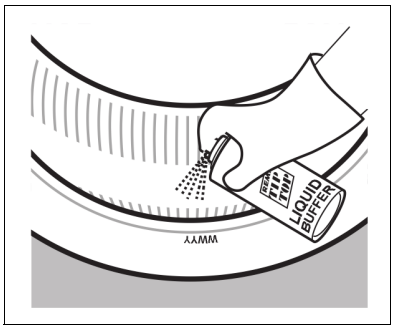
## 4.5 Pre-treatment (cleaning) of the tyre bonding surface

**⚠ WARNING!**

**Health hazard from cleansing agent!**

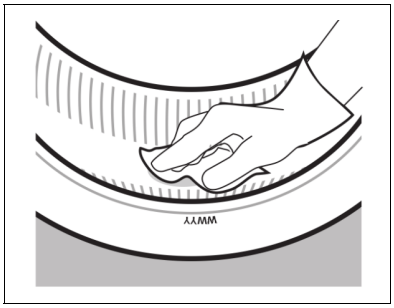
**Cleansing agents can cause burns and irritation of the skin. Its vapours endanger health when breathed in.**

- Observe the cleansing agent's safety instructions.
- Comply with the Material Safety Data Sheet of the cleansing agent.
- Wear protective gloves and eyewear.
- Ensure good ventilation.



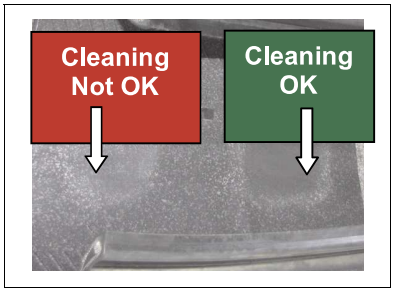

1 Shake the spray can (Naphtha containing solvent - REMA TipTop Liquid Buffer)

2 Spray the complete dry bonding surface to be cleaned (approx. 60 x 60 mm) with the cleaning agent from a distance of approx. 10 cm (2-3 seconds)



3 Immediately after spraying solvent spray, clean the bonding surface with disposable paper towels. (If the cleaning area is next to remaining ventilation ribs wipe in direction of these ribs to avoid a hopping effect during wiping)

4 Repeat the cleaning steps until the bonding surface is free of residue.




5 Mark the outer edge of the bonding surface with a (white) marker for mounting reference.

6 Allow the cleaned surface to dry from solvent for 2 minutes after the cleaning steps

Fig. 7 Cleaning of the bonding surface

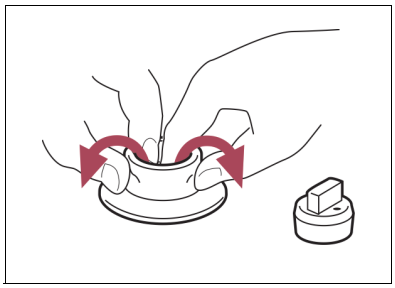
## 4.6 Installing the tyre sensor in the rubber container

The tyre sensor is normally supplied pre-assembled in the rubber container. In this case proceed with chapter 4.7.

In case of reusing a VDO REDI-Sensor, please make a battery check.

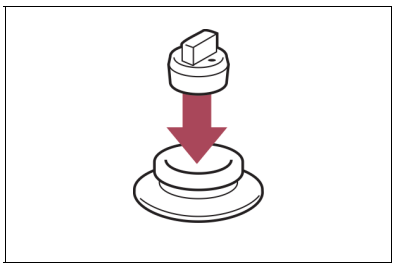
The tyre sensor may be inserted manually into the rubber container or using an optional spreader tool.

**Manual installation of the tyre sensor**



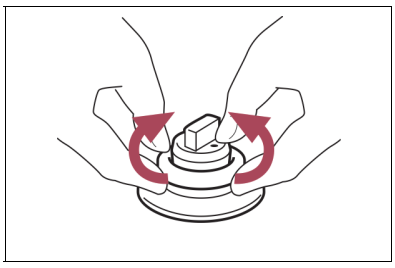
1 Fold over the sealing lip of the rubber container.

Keep the rubber container free of tyre mounting lubricants and other lubrication liquids..

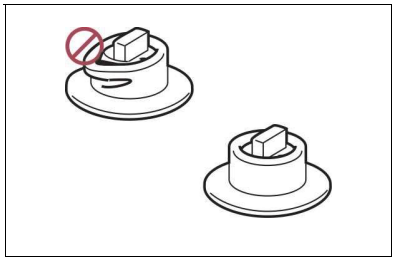


2 Place the VDO REDI-Sensor in the rubber container.

Take specifically care, that no air may be trapped below the sensor. Otherwise the sensor could be popped out.



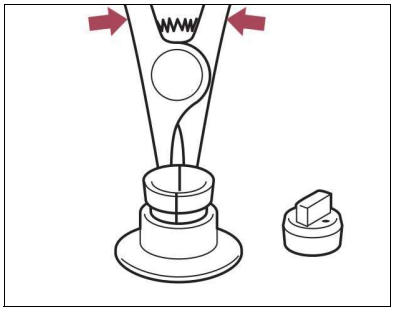
3 Fold the sealing lip of the container up again.



4 The sealing lip of the container must lie uniformly on the top of the sensor around the circumference.

Fig. 8 Manual installation of the tyre sensor

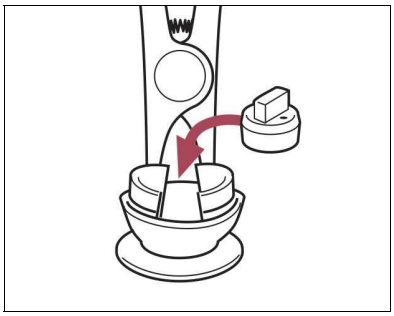
## Installation of the tyre sensor using a spreader tool



1 Insert the spreader tool to the empty rubber container.

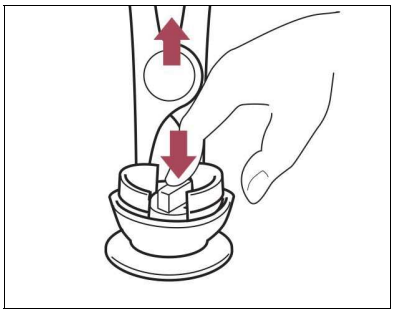
2 Open the container by the help of the spreader tool.

The rubber container has high elongation properties, however avoid opening / stretching the rubber container for a greater distance than is required to insert the sensor.

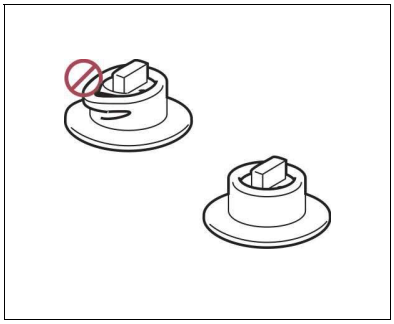


3 Place the tyre sensor in the rubber container.

Take specifically care, that no air may be trapped below the sensor. Otherwise the sensor could be popped out.



4 Detach the spreader tool from sensor and container. (Hold the sensor down during removal of the spreader tool.)



5 The sealing lip of the rubber container will close around the sensor.

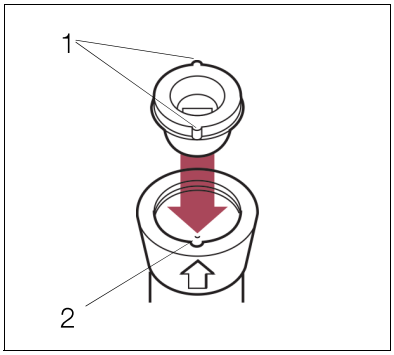
The sealing lip of the container must lie uniformly on the top of the sensor around the circumference.

Fig. 9 Installation of the tyre sensor using a spreader tool

## 4.7 Inserting the rubber container with integrated tyre sensor into the hand press tool

NOTE

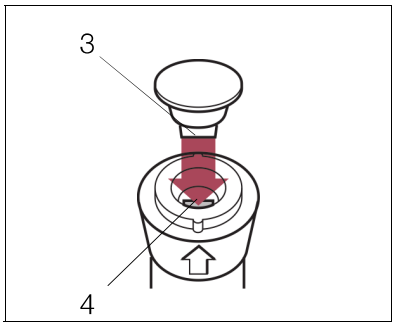
Do not bond the rubber container to the tyre without using the hand press tool! The tool is spring loaded to indicate if sufficient pressure is being transferred to the rubber container / sensor in order to create satisfactory pressure for optimal glue adhesion.



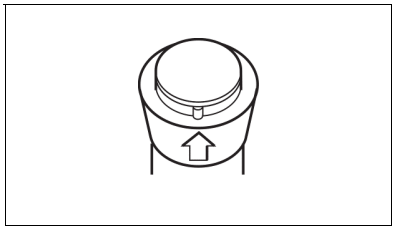

1 Place the soft inlay part in the hand press tool that the extending “tabs / noses” (pos. 1) fit to the counterpart of the holder (pos. 2). Note the soft inlay "tabs / noses" will only fit into the pressing tool cavity in a specific orientation.

Do not use the tool without the soft inlay part. The soft inlay part may be exchanged in case of excessive contamination / damage by glue or other impact.

2 Press the soft inlay part down so that it tightly fits to the pressing / installation tool base.




3 Place the rubber container with the integrated tyre sensor in the soft inlay part of the tool so that the antenna part of the sensor (pos. 3) fits to the cavity (pos. 4).



4 The container must fit tightly to the soft insert all around, otherwise check the position of the container.

Fig. 10 Inserting the rubber container into the hand press tool

## 4.8 Cleaning the bonding surface on the rubber container (inserted into the assembly tool)

**⚠ WARNING!**

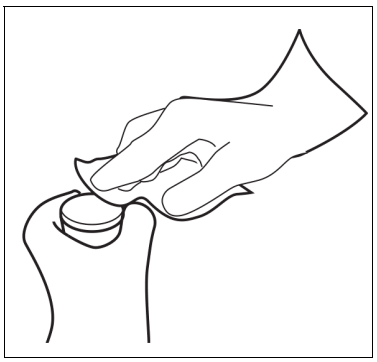
**Health hazard from cleansing agent!**

**Cleansing agents can cause burns and irritation of the skin. Its vapours endanger health when breathed in.**

- Observe the cleansing agent's safety instructions.
- Comply with the Material Safety Data Sheet of the cleansing agent.
- Wear protective gloves and eyewear.
- Ensure good ventilation.


1 Shake the cleaner spray can (Naphtha containing solvent - REMA TipTop Liquid Buffer)

2 Spray the cleaning agent onto disposable paper towels.



3 Then thoroughly clean / wipe the bonding surface with the paper to prepare it for glue.

4 Allow the cleaned surface to dry from solvent for 30 seconds after the cleaning steps.

Fig. 11 Cleaning the bonding surface on the rubber container

## 4.9 Bonding the rubber container with the integrated tyre sensor to the inner liner of the tyre

**⚠ WARNING!**

**Risk of injury when working with Cyberbond 2250 adhesive!**

**Skin and eyelids are stuck together within seconds.**

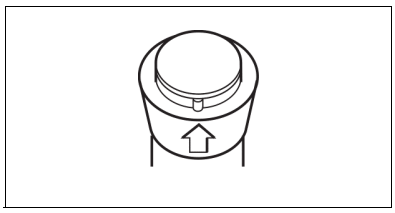
- Observe the manufacturer's safety instructions.
- Wear goggles and protective gloves.

NOTE

The rubber container can only be mounted to the tyre correctly with the sensor integrated to the container. Otherwise the correct usage of the hand press tool is not possible.

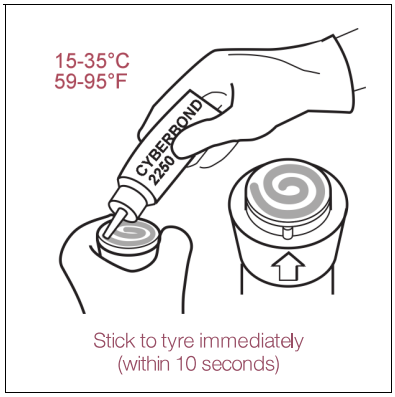
Bonding may only be carried out at an ambient temperature of 15°C to 35°C (59°F to 95°F) and an inner liner temperature above 15°C (59°F).

Only use Cyberbond 2250.



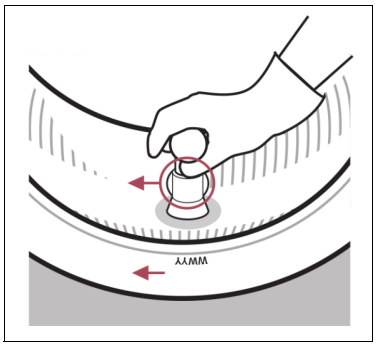
1 Check the position of the rubber container with the integrated tyre sensor in the hand press tool.

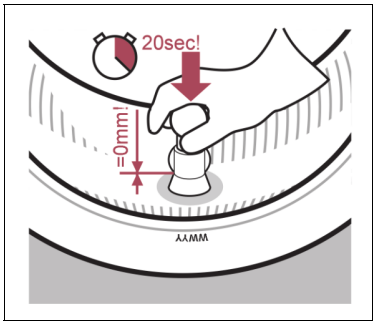
The container must fit tightly to the soft insert all around, otherwise check the position of the container.




2 Apply the glue via bottle applicator tip in a controlled circular motion to the rubber container surface.

The bottle fill level notches will help guide appropriate dispensing / measurement of glue to apply (approximately 0.4g (0.014 oz) of glue per container). The rubber container surface should then be coated by a thin spiral layer of glue. Do not apply additional glue directly to the tyre inner liner.





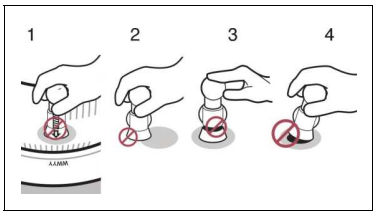




Fig. 12 Bonding the rubber container to the tyre

3 Immediately after applying the adhesive to the container bottom surface, press the hand press tool perpendicular onto the cleaned tyre surface.

NOTE
Orient the hand press tool so the miniature tyre shape and arrows indicated on the tool shows in the same rolling direction as the actual tyre that the sensor shall be bonded to. This ensures proper sensor antenna alignment for optimal functionality.

It is important to work quickly - but safely - after applying glue, as the glue begins to set / cure after as little as 10 seconds.

4 Press the tool down firmly and evenly until the stop is activated (spring force) to the tyre inner liner for approximately 20 seconds. Do not angle or tilt the hand press tool during the process.

5 Do not pull the tyre sensor or rubber container for (at least) 5 minutes.

Please avoid the following issues:

1 wrong orientation of the hand press tool

2 bonding outside of the cleaned area

3 insufficient pressure

4 tilting of the hand press tool

NOTE

The sensor must not come in contact with glue.
Never directly glue the sensor to the tyre without the rubber container.
Never apply glue inside the rubber container cavity.

In case the rubber container falls down to the floor with the glue already distributed to the surface do not use this container to bond to the tyre. Remove the sensor from the container (after the glue has dried) and apply it to a new rubber container.

## 4.10 Final inspection

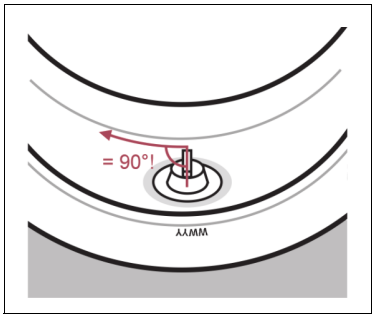



Fig. 13 Antenna orientation

1 Check that the sensor antenna is at right (90 degrees) angles to the rolling direction of the tyre.

If the antenna is not oriented properly it can be removed from the rubber container by folding down its lip and repositioning the sensor or use of the spreader tool after the glue has dried (see sections 5 and 4.6). Do not wrench the sensor within the rubber container (i.e. with pliers).

2 Inspect the bond visually. When bonded correctly, the rubber container with integral tyre sensor is in full, flush contact with the inner liner of the tyre.

Minor amount of glue exceeding the rubber container edge can stay there and will dry quickly.

A larger amount of excessive glue can be carefully wiped away prior to the glue curing / setting by disposable paper towels, but note for future installations to adjust the amount of glue used.

3 Check proper functioning of the sensor using a dedicated TPMS service tool / scan tool.

## 4.11 Tyre fitting

For mounting the tyre with the bonded tyre sensor the normal tyre mounting process on standard mounting machines can be used.

Pay attention to the following points:

- When fitting the tyre using tools such as tyre levers, ensure that these do not damage the tyre sensor.
- After mounting the lower sidewall of the tyre on the rim pay attention that the part of the inner liner containing a sensor keeps clear from the rim lip when moving the tyre down the rim to mount the upper sidewall of the tyre.
- When mounting or servicing the tyre, ensure that the sensor and rubber container are not exposed to soapy water or rim mounting paste, or if exposure has already occurred then the parts must be satisfactorily dried / cleaned. Otherwise, the sensor may have a tendency to pop out of the rubber container.

Balancing the wheel after mounting can be done as normal.

## 4.12 Vehicle relearn procedure

The VDO REDI-Sensor is designed to follow the OE vehicle relearn procedures. It is recommended to use a dedicated TPMS service tool / scan tool to complete the vehicle relearn procedure.

Some vehicles require up to a 20 minute stationary wait period following replacement sensor installation before the replacement sensor can be learned to the vehicle.

In case of the VDO REDI-Sensor, the tool shall be placed close to the production date stamp on the tyre side wall. If the sensor type is unknown (in case of an installed valve-type sensor), the tool has to be placed close to the valve instead.

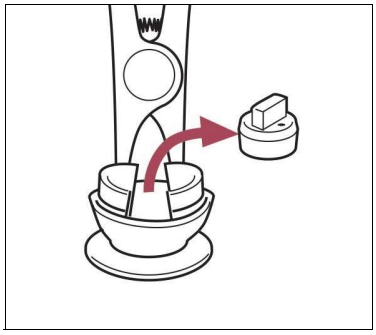
# 5 Sensor removal

In case the sensor has to be exchanged (wrong version, damage, battery depleted, etc) it can be simply removed from the rubber container.

Please observe the information on the recycling of the sensor in Chapter 6.

NOTE

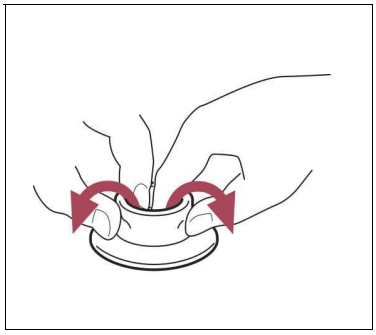
**VDO REDI sensor used during misuse driving with a flat tire must be removed and discarded (prohibited from further usage). The sensor must be replaced immediately by a new VDO REDI-Sensor.**



1 Insert the spreader tool to the rubber container.

2 Open the container by the help of the spreader tool and remove the sensor.

OR



1 Fold over the sealing lip of the rubber container.

2 Remove the sensor.

Fig. 14 Sensor removal

If the rubber container has been used (vehicle tyre has been driven since rubber container installation), a new rubber container should be installed with the new sensor.

Otherwise proceed with Chapter 4.6, taking in account that the sensor antenna has to be at right angles to the rolling direction of the tyre (see Fig. 13 Antenna orientation).

# 6 Recycling

The sensor must be removed before disposal of a tyre.

If the serviceable life of the sensor permits, it can be used in another tyre.

Otherwise, it must be professionally disposed of in accordance with all applicable regulations.

NOTE

The sensor contains a non-replaceable lithium battery. It must be given to an authorised CPS sales partner or a central TBC collection point for disposal to protect the environment and satisfy all statutory requirements.

In the scope of the European directive 2006/66/EC for the European market, the end of life products have to be collected in order to isolate the lithium battery and to recycle it.

**Address of the central TBC collection point:**

Continental Trading GmbH
"Abteilung Entsorgung"
VDO-Strasse 1
Gebäude B14
64832 Babenhausen
Germany

# 7 Troubleshooting

| Problem | Possible causes and correction |
|---|---|
| Rubber container doesn't adhere to tyre. | Wrong or outdated adhesive (only use Cyberbond 2250)<br><br>Insufficient cleaning of rubber container or tyre (only use Naphtha containing solvent - REMA TipTop Liquid Buffer). Let dry after application)<br><br>Storage temperature of adhesive or ambient temperature during installation out of range (see Chapter 4.2)<br><br>Tyre not suitable for sensor installation (see Chapter 4.3) |
| No sensor signal response resulting from service tool LF trigger - command by PPMS service tool | TPMS service tool software update may be required. Follow service manual of TPMS service tool supplier.<br><br>TPMS service tool incompatibility: TPMS service tool may not be compatible with the original equipment and/or VDO REDI-Sensor sensors.<br><br>Non-functional sensor/depleted battery: Sensor must be replaced immediately by a new VDO REDI-Sensor. |

| Problem | Possible causes and correction |
| --- | --- |
| TPMS warning lamp is illuminated - after vehicle has been driven for 10 or more minutes. No pressure loss indicated. Correct tyre pressure is confirmed for all tyres by manual pressure measurement (calibrated gauge). | Non-functional sensor: Check sensor with TPMS service tool. If sensor is determined to be non-functional, replace sensor with a new sensor.<br><br>In case of insufficient or improper sensor mounting, the sensor may become loose inside the tyre. Driving with a loose sensor inside the tyre will cause the TPMS warning lamp to illuminate. If the vehicle has been driven with a loose sensor, the loose sensor must be removed and discarded (prohibited from further usage). The loose sensor must be replaced immediately by a new VDO REDI-Sensor.<br><br>Ensure there are no sensors missing from the vehicle.<br><br>Incorrect sensor: Sensor and vehicle system are not compatible (only use VDO REDI-Sensor as a replacement part for catalogued applications with original equipment direct Tyre Pressure Monitoring Systems). |

If you encounter problems for which no remedy is provided in this manual, contact your local agent. Further information may be obtained from: www.vdo.de

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