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# TECHNICAL MANUAL OF TEXA TENSION CONTROLLER

## Introduction

Dear Customer,

We would like to thank you for choosing a TEXA product for your workshop. We are certain that you will get the greatest satisfaction from it and receive a great deal of help in your work.

Please read through the instructions in this manual carefully and keep it for future reference.

Reading and understanding the following manual will help you to avoid damage or personal injury caused by improper use of the product to which it refers.

TEXA S.p.A reserves the right to make any changes deemed necessary to improve the manual for any technical or marketing requirement; the company may do so at any time without prior notice.

This product is intended for use by technicians specialized in the automotive field only. Reading and understanding the information in this manual cannot replace adequate specialized training in this field.

The sole purpose of the manual is to illustrate the operation of the product sold. It is not intended to offer technical training of any kind and technicians will therefore carry out any interventions under their own responsibility and will be accountable for any damage or personal injury caused by negligence, carelessness, or inexperience, regardless of the fact that a TEXA S.p.A. tool has been used based on the information within this manual.

Any additions to this manual, useful in describing the new versions of the program and new functions associated to it, may be sent to you through our TEXA technical bulletin service.












This manual should be considered an integral part of the product to which it refers. In the case it is resold the original buyer is therefore required to forward the manual to the new owner.

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# 1 LEGEND OF THE SYMBOLS USED

The symbols used in the manual are described in this chapter.

	Asphyxiation Risk
	Explosion Risk
	High Voltage Hazard
	Fire / Burn risk
	Poisoning Hazard
	Corrosive Substances Risk
	Noise Hazard
	Moving Parts Risk
	Crushing Risk
	General Risk
	Important information

## 2 GENERAL SAFETY REGULATIONS

### 2.1 Glossary

- **Operator:** *qualified individual, in charge of using the device/tool.*
- **Machine/device/tool:** *the product purchased.*
- **Workplace:** *the place where the operator must carry out her/his work.*

### 2.2 Operator Safety Regulations

#### 2.2.1 General Safety Regulations

- *The operator must be completely clear-headed and sober when using the device; taking drugs or alcohol before or when operating the device is strictly forbidden.*
- *The operator must not smoke during device operation.*
- *The operator must carefully read all the information and instructions in the technical documents provided with the device.*
- *The operator must follow all the instructions provided in the technical documents.*
- *The operator must always watch over the device during the various operating phases.*
- *The operator must make sure she/he is working in environment which is suitable for the operations that must be carried out.*
- *The operator must report any faults or potentially hazardous situation in connection with the workplace or the device.*
- *The operator must carefully follow the safety regulations required for the workplace in which she/he is working and required by the operations she/he has been asked to carry out.*

#### 2.2.2 Risk of Asphyxiation




Exhaust gas from internal combustion engines, whether they may be petrol or diesel, are hazardous to your health and can cause serious harm to your body.

#### Safety Precautions:

- *The workplace must be equipped with an adequate ventilation and air extraction system and must be in compliance with standards according to current national laws.*
- *Always activate the air extraction system when working in closed environments.*


### 2.2.3 Risk of Impact and Crushing

	The vehicles which are undergoing A/C system recharging operations and the devices, must be properly blocked using the specific mechanical brakes/blocks, while being service.
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#### **Safety Precautions:**

- *Always make sure that the vehicle is in neutral gear (or that it is set in parking position in case of a vehicle equipped with automatic transmission).*
- *Always activate the hand brake or parking brake on the vehicle.*
- *Always block the wheels on the vehicle with the specific mechanical blocks.*
- *Make sure the device is stable, on a flat surface and the wheels are locked with the specific brakes.*



### 2.2.4 Hazards Caused by Moving Parts

	Vehicle engines include parts that move, both while running and not running (eg: the cooling fan is controlled by a thermal switch in connection with the coolant temperature and become activated even when the vehicle is off), that can injure the operator.
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#### **Safety Precautions:**

- *Keep hands away from moving parts.*
- *Disconnect the engine cooling fan each time the engine you are working on is still hot. This will avoid the fan from becoming activated unexpectedly even when the engine is off.*
- *Do not wear ties, loose clothes, wrist jewellery or watches when working on a vehicle.*
- *Keep connection cables, probes and similar devices away from the moving parts of the engine.*

### 2.2.5 Risk of Burning or Scalding

	The parts that are exposed to high temperatures in engines that are moving or have just stopped could burn the operator.
	Remember that catalytic mufflers reach very high temperatures, able to cause serious burns or even start fires. Acid in the vehicle batteries is another potential hazard.


#### **Safety Precautions:**

- *Protect your face, hands, and feet by using suitable protection.*
- *Avoid contact with hot surfaces, such as spark plugs, exhaust pipes, radiators and connections within the cooling system.*



- *Make sure there are no oil stains, rags, paper or other inflammable material near the muffler.*
- *Avoid splashing electrolyte on skin, eyes and clothes, as it is a corrosive and highly toxic compound.*


### 2.2.6 Fire and Explosion Hazard

	<p>The following are potential fires and/or explosion hazards:</p> <ul style="list-style-type: none"><li>• <i>The types of fuel used by the vehicle and the vapours released by these fuels.</i></li><li>• <i>The refrigerants used by the A/C system.</i></li><li>• <i>The acid in the vehicle batteries.</i></li></ul>
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#### **Safety Precautions:**

- *Let the engine cool.*
- *Do NOT smoke near the vehicle.*
- *Do NOT expose the vehicle to open flames.*
- *Make sure that the electrical connections are all well insulated and firmly in place.*
- *Collect any fuel that might have spilled.*
- *Collect any refrigerant that might have spilled.*
- *Make sure you are always working in an environment equipped with a good ventilation and air extraction system.*
- *Always activate the air extraction system when working in closed environments.*
- *Cover the openings of the batteries with a wet cloth in order to stifle the explosive gases before proceeding in testing or recharging.*
- *Avoid causing sparks when connecting cables to the battery.*


### 2.2.7 Noise Hazard

	<p>Loud noises that may occur within the workplace, especially during service operations may damage the operator's hearing.</p>
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#### **Safety Precautions:**

- *Protect your ears with suitable protective ear wear.*


### 2.2.8 High Voltage Hazard

	<p>The voltage supply from the mains that powers the devices in the workplace and the voltage within the vehicle starter system is a potential shock hazard to the operator.</p>
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## **Safety Precautions:**

- *Make sure the electrical system in the workplace is compliant to current national standards.*
- *Make sure the device being used is connected to ground.*
- *Cut off the power supply voltage before connecting or disconnecting cables.*
- *Do NOT touch the high voltage cables when the engine is on.*
- *Operate in conditions of insulation from ground.*
- *Work with dry hands only.*
- *Keep conductive liquids away from the engine while working.*
- *Never leave tools on the battery in order to avoid accidental contacts.*

### *2.2.9 Poisoning Hazard*

	The hoses used to extract the refrigerants can release toxic gases, dangerous to the operator if exposed to temperatures higher than 250 °C or in case of a fire.
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## **Safety Precautions:**

- *Contact a doctor immediately should you inhale these gases.*
- *Use neoprene or PVC gloves when eliminating combustion deposits.*

## 2.3 General User and Maintenance Warnings

When using the device or carrying out scheduled maintenance (eg. fuse replacement) on the device, carefully follow the information provided below.

- *Do not remove or damage the labels/tags and the warnings on the device; do NOT in any case make them illegible.*
- *Do not remove, or block, any safety devices the device is equipped with.*
- *Only use original spare parts or spare parts approved by the manufacturer.*
- *Contact your retailer for any non-scheduled maintenance.*
- *Periodically check the electrical connections of the device, making sure they are in good condition and replacing any damaged cables.*
- *Check parts that are subject to wear periodically and replace if necessary.*
- *Do not open or disassemble the device.*

## 3 SPECIFIC SAFETY RULES FOR USING TEXA TENSION CONTROLLER

The technology used for the design and control of the manufacturing of TEXA TENSION CONTROLLER makes it a reliable, simple and safe device to use.

Personnel in charge of using the diagnostic tools is required to follow the general safety rules, use the TEXA TENSION CONTROLLER device for its intended use and keep it correctly, as described in this manual.

### 3.1 Glossary

**Operator:** qualified person responsible for using the diagnosis tool.

**Tool/device:** any TEXA TENSION CONTROLLER device.

### 3.2 General Rules

- *The operator must have basic knowledge in mechanics, automotive, car repairs and potential dangers that can occur during the auto-diagnosis operations.*
- *The operator must carefully read all the information and instructions in the technical documents provided with the tool.*

### 3.3 Operator Safety




The resonance frequency measurement of a belt requires to operate very close to the engine.

#### **Safety Measures:**


- *Check that the engine is switched off and cold.*
- *Check that the belt to be examined is not in motion.*
- *Check that the belt is not likely to get moving during operations.*

### 3.4 Tool Safety

	<p>The tool was designed for the use in specific environmental conditions.</p> <p>The use of the tool in environments with temperature and moisture characteristics different from those specified may impair its efficiency.</p>
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#### Safety Measures:

- *Place the tool in a dry place.*
- *Don not expose or use the tool near heat sources.*
- *Position the tool making sure it can be properly ventilated.*
- *Do not use corrosive chemicals, solvents or harsh detergents to clean the tool.*

	<p>The tool was designed so as to be mechanically tough and suitable for use in a workshop.</p> <p>Carelessness in the use and excessive mechanical stresses may impair its efficiency.</p>
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#### Safety Measures:

- *Do not drop, shake or subject the tool to shocks.*
- *Do not perform any kind of intervention that may damage the tool.*
- *Do not open or dismantle the tool.*

	<p>The tool was designed so as to be electrically safe and to work with specific power supply voltage levels.</p> <p>Failure to comply with the specifications related to the power supply may impair the tool efficiency.</p>
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#### Safety Measures:

- *Do not wet with water or other liquids.*
- *The power supply of the tool must be always connected according to the procedures shown in the present manual.*
- *Never use external batteries to power the tool.*
- *While recharging from mains use only the battery charger that might be supplied with the kit.*



Electromagnetic compatibility tests on the tool ensure that it can be adapted to technologies normally used on vehicles (e.g.: engine check, ABS, etc.). Nevertheless, if malfunctions occur you need to contact the retailer.

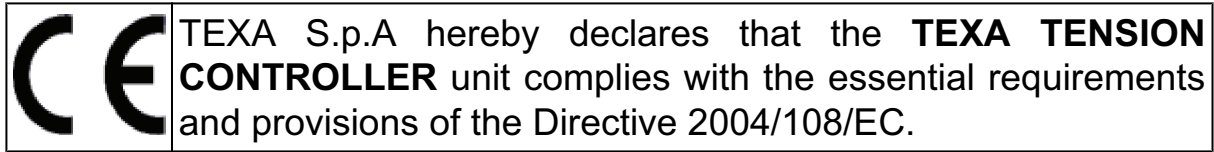
## 4 ENVIRONMENTAL INFORMATION



**For information regarding the disposal of this product please refer to the pamphlet accompanying your tool.**

## 5 NORMATIVE INFORMATION

### Compliance declaration



A complete copy of the Declaration of Conformity can be obtained at  
TEXA S.p.A., Via 1 Maggio 9, 31050 Monastier di Treviso (TV), Italy

### FCC Compliance

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

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. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the 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 try 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.



## 6 DESCRIPTION OF TEXA TENSION CONTROLLER

**TEXA TENSION CONTROLLER (TTC)** is a precision tool for the measurement of the oscillation frequency of the engine belts.



By means of special tables it is possible to derive the belt tension starting from the measured oscillation frequency.

The small dimensions and the ease in the use make **TTC** a practical and reliable tool, suitable for the needs of every body shop.

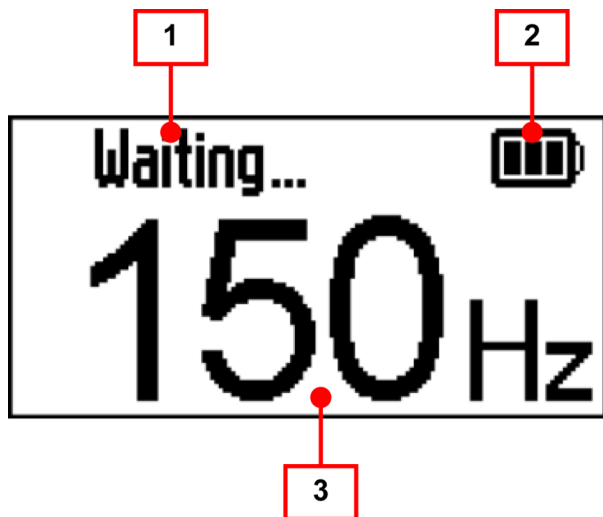
## 6.1 Image of the Tool



1. *Microphone*
2. *LED*
3. *Backlit display*
4. *ON/OFF button*
5. *USB Port \**

(\*) Only for internal battery recharge.

### 6.1.1 Display



- 1. **Action:** shows the operation and the present status of the device
- 2. **Battery:** shows the battery status (see chapter **Power Supply**)
- 3. **Frequency:** shows the measured oscillation frequency.

### 6.2 Technical Features

<b>Micro controller:</b>	ARM 32 bit
<b>Display:</b>	Backlit LCD
<b>Internal battery:</b>	3.7 V 1000 ma/h li-io
<b>Recharge:</b>	from USB port, max consumption 470 mA
<b>Range:</b>	6 hours of continuous operation
<b>Resolution:</b>	3 Hz
<b>Accuracy:</b>	± 1,5 Hz
<b>Operating temperature:</b>	- 10 °C ÷ 40 °C
<b>Stocking temperature:</b>	- 20 °C ÷ 60 °C
<b>Temperature with battery under charge:</b>	0 °C ÷ 45 °C
<b>Storage and operation moisture:</b>	10% ÷ 80% without condensation
<b>Dimensions:</b>	202,7x70,6x31,3 mm
<b>Weight:</b>	0,3 kg








## 7 TOOL OPERATION

TTC must be used by qualified personnel.

### 7.1 Power Supply

The tool is powered with an internal battery.

The battery charge status is shown by a special icon.

ICON	WHEN IT APPEARS	MEANING
	During use	Battery charge lower than 26%. Recharge as soon as possible.
	During use	Charge level between 26% and 50%.
	During use	Charge level between 50% and 75%.
	During use	Charge level between 75% and 100%.
	With tool switched on or off, during recharge	Battery in charge.
	With tool switched off, during recharge	Charge complete.
	With tool switched on or off, during recharge	Internal battery charger not working.

#### 7.1.1 Charge

The internal battery can be recharged in two ways:

- *by connecting the tool to a PC*
- *by connecting the tool to the mains using the specific battery charger (if provided)*



**Do not charge the tool in environments with temperature lower than 0 °C or higher than 45 °C.**



**Do not use the tool while recharging.**

## **CHARGING FROM A PC**

Proceed as follows:

1. *Turn on the PC.*
2. *Connect the USB cable to the tool.*
3. *Connect the USB cable to the PC.*

## **CHARGING FROM THE MAINS**

Proceed as follows:

1. *Connect the USB cable to the tool.*
2. *Connect the USB cable to the battery charger.*
3. *Connect the battery charger to the mains.*

Information about the power supply status is provided both by the tool and by the red LED on the battery charger.

### **7.2 Power on**

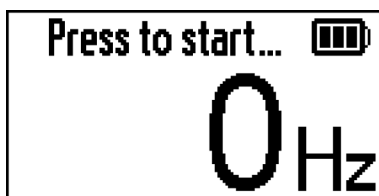
To turn on the tool proceed as follows:

Hold down the power button for about 2 seconds until the tool beeps and the LED flashes.

When you switch on the initial screen with the logo appears.

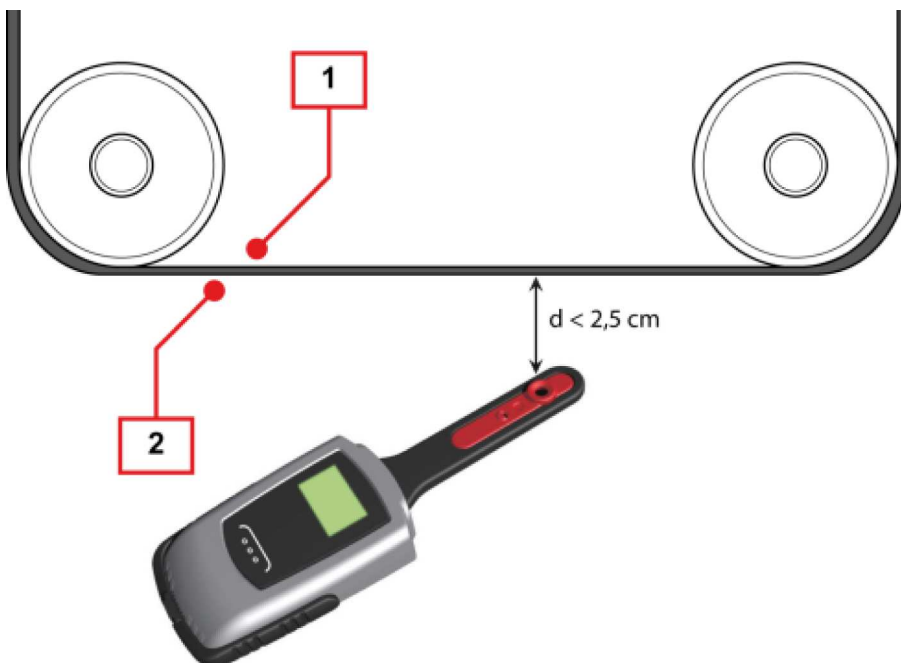
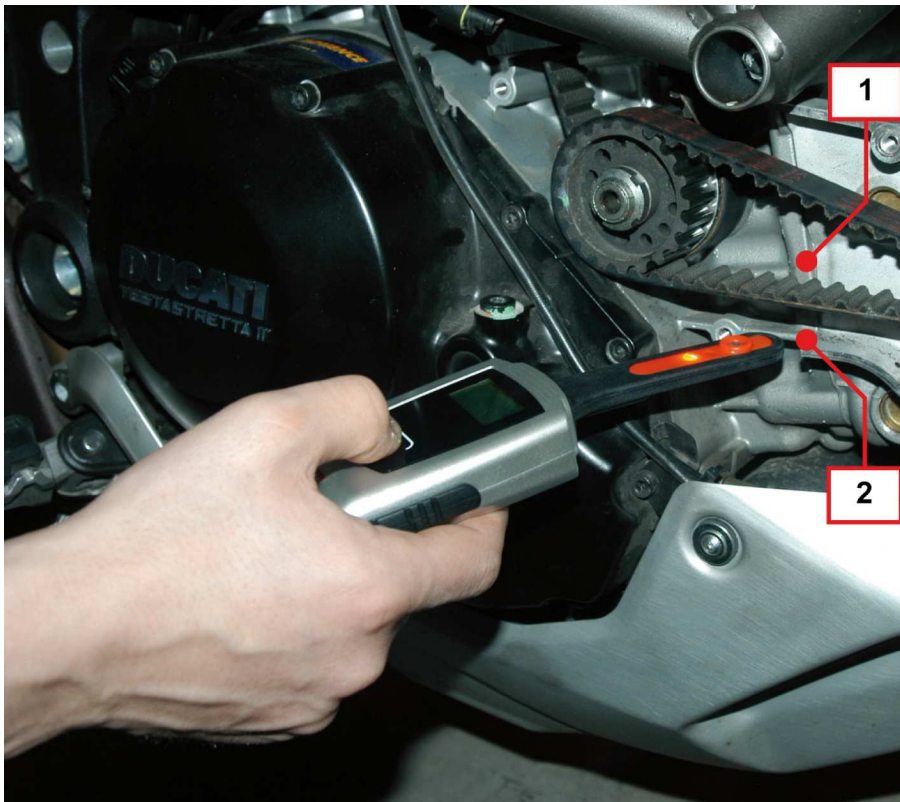


The flashing message "**Press to start ...**" shows that the tool is ready for use.



### 7.3 Measurement


The measurement can be equally done either from the internal side or the external side of the belt (see picture and figure).



1. *Internal side*
2. *External side*

**The microphone must be placed at a distance from the belt not higher than 2.5 cm.**

Instructions on where/how to position the tool and the conversion tables for oscillation frequency/voltage are provided by the vehicle manufacturer.

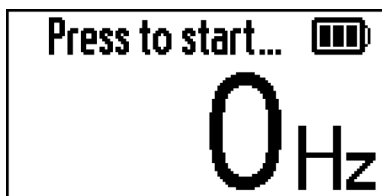
 **Minimize the background noise of the environment, to optimize the tool performances.**

 **Do not place the microphone on the belt.**

 **Do not cover the microphone.**

Proceed as follows:

1. Turn on the tool.

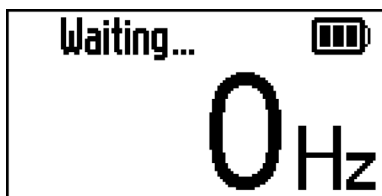


2. Place the tool with microphone pointing to the belt.
3. Hold down and release the power button.

The LED lights on and the tool begins to search for the oscillation frequency of the belt.

**The LED remains on for about 10 seconds, within which the tool can make multiple measurements, each linked to a stress of the belt.**

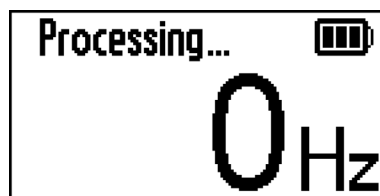
4. Check that there is no noise and that the frequency read on the tool is 0 Hz.



5. Stress the belt with a finger to cause its vibration.



The tool registers the oscillation frequency of the belt and processes data. The process status is highlighted by the flashing message "**Processing...**".





At the end of each processing the tool beeps, the LED flashes and the resonance frequency of the belt is shown.



6. Repeat the measurement 3 times and calculate the average of the read values.



**The values to be used for the calculation of the average must have a difference not higher than 3 Hz.**

7. Use the calculated value to derive with the special tables the tension of the belt.

At the end of the 10 seconds the tool comes back to the status "**Press to start ...**".



### 7.3.1 Work Zone lighting

The LED near the microphone enables to light the belt stretch and the work zone.

Proceed as follows:

Press and release the power button.

The led lights on.

The LED will turn off automatically after about 10 s.

## 7.4 Power off

The tool switching-off can happen in two ways:

- *automatic*
- *manual*

### **AUTOMATIC OFF**

The tool has a function of automatic switching-off which activates after 3 minutes of inactivity.

The tool emits a long beep and the LED flashes.

The screen showing automatic switching-off appears.



The tool switches off.

### **MANUAL OFF**

It is possible to switch off the tool at any time.

Proceed as follows:

Hold down the power button until the tool beeps.

The tool switches off.

## 8 MAINTENANCE

The tool does not require special maintenance.

For a longer life of the tool, keep it clean and follow the instructions provided in the following manual carefully.

**If necessary, contact your Dealer or the Technical Assistance Service.**

## 9 SOLUTIONS TO PROBLEMS

For any technical problem non-solvable following the instructions below, please contact your Distributor/Dealer.

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
With the tool connected to PC, the indication of battery in charge does not pop up.	The PC is not switched on or is in stand-by.	Turn on the PC.
	The USB cable is not connected properly or is defective.	Check connection and/or replace the cable.
The measurement is clearly wrong.	The distance between microphone and belt is excessive.	Point the microphone towards the belt while keeping it at the prescribed distance.
	The point of the belt where the measurement is done does not correspond to the one indicated by the manufacturer.	Place the microphone in the point indicated by the vehicle manufacturer, while keeping it at the prescribed distance.
	The environments where the measurement is done is too noisy.	Minimize the background noise of the environment as much as possible.
	The tool is damaged, possible damages to the microphone.	Contact the Distributor/Dealer.
The tool is switched on and charged, but does not measure.	The microphone is not pointed towards the belt.	Point the microphone towards the belt while keeping it at the prescribed distance.

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>POSSIBLE SOLUTION</b>
The tool is switched on and charged, but does not measure.	The microphone is covered by dirt or hindered by some kind of material.	Gently clean the microphone, removing foreign bodies hindering reception. Be careful and do not damage the microphone.

## 10 LEGAL NOTICES

For information regarding the legal notices, please refer to **International Warranty Booklet** provided with the product in your possession.