TDB700 INTELLIGENT BATTERY CHARGER AND POWER SUPPLY

# OPERATING MANUAL


The Diagnostic BOX .com

# CONTENTS

# IMPORTANT INFORMATION

**WARNING!**

**Risk of explosion! Batteries produce explosive gases during normal battery charging**

Possible sources of ignition, such as flames, sparks and lamps, must be kept away from batteries. Do not allow corrosive battery electrolyte to contact eyes, skin or clothing

Magnetic fields can affect pacemakers, keep away from the equipment.Wearers should consult their doctor before going near equipment.

Do not touch any live electrical parts. Wear dry, hole-free insulating gloves and body protection.

Touching live electrical parts can cause fatal shocks or severe burns. High voltage exists in the power supply socket. Never touch the conductor terminals.

Input power installation must meet national standards. All electrical connections must be made by a qualified electrician. Insulated gloves and shoes must be worn when connecting input power or maintaining equipment.

Never disassemble, repair, alter or rebuild the equipment without approval from the manufacturer. There is a risk for electrical shock and fire. Electric shock can kill.

In the event of problems, stop all use of the equipment. Any smoke, smell or abnormal noise produced by the unit, disconnect the power cord immediately and contact your local dealer. Do not use it until the problem is fixed.

Do not operate or place the device near water or in wet locations. Risk of electrical shock or damage to the device.

Do not operate the equipment in potential hazardous areas : chemicals, oil, gas etc

Improper use of this equipment can cause personal injury or property damage

Frequently inspect input power cord and regularly clean the unit to remove dust and dirt. Any worn or damaged power cord or internal components in heavy dust may cause electrical shock, short circuit or fire.

Inspect and maintain the device for safety every 12 months, including cleaning and removing dust. Repair or replace damaged parts/ cables at once.

There are precautions printed on the top of the machine. Check whether the environment where the machine is placed meets the requirements. Otherwise, the charger or the device connected to the charger may be damaged

This machine can only charge rechargeable batteries that conform to the battery specifications. It is strictly forbidden to charge disposable batteries.

# INTRODUCTION

The TDB700 Intelligent Battery Charger and Power Supply from The Diagnostic Box is a MUST for anyone involved in marine or vehicle diagnostics. Most of the newer vehicles and engine management systems are complex micro computer systems and require good battery Voltage supply to maintain their functions correctly.

The TDB700 offers a steady and stable supply for various applications. Whether you are key programming, updating engine management systems or just performing general diagnostics then the TDB700 should be connected.

The TDB700 comes with heavy duty red and black charging cables for connection to all types of 12 Volt batteries and an extra long 240v power lead.

The TDB700 has modes for charging, starting, repair, programming and showroom. It also has protection features that operate for overcharge, overheating, low Voltage, short circuit and reverse polarity protection.

**FEATURES** “

*OVERCHARGE PROTECTION* - Overcharge protection: When the charger is in operation, it will automatically shut down to prevent batteries from becoming overcharged.

*OVERHEATING PROTECTION* - The charger will automatically shut down when the internal temperature is too high .The fan will start and the alarm will sound.

*LOW VOLTAGE PROTECTION* - Low voltage protection: The charger will not work if the input voltage is lower than required.

*SHORT CIRCUIT PROTECTION* - Short circuit protection:The charger will not work if the battery is damaged or has an internal short-circuit.The alarm will sound.

*REVERSE POLARITY PROTECTION* - Reverse Polarity Protection: When the clamps are connected incorrectly the LCD will show the battery clamps reversed and the alarm will sound.

# GENERAL OPERATION


*1.Navigation -**RIGHT** and **LEFT***

*2.Navigation -**UP DOWN** and **OK** buttons*

*3.Start/Stop -Press and **HOLD***

**LANGUAGE SELECTION**

Press **LEFT** and **RIGHT** buttons at the same time to change the language.

# GENERAL OPERATION

## CHARGING MODE

TDB700 charging mode, provides a simple and easy function to charge the vehicle battery, on or off the vehicle. Regular, AGM and GEL options.

## STARTING MODE

This TDB700 starting mode is for boosting a battery to allow starting when the battery is very low and needs charging.

## SHOWROOM MODE

This TDB700 showroom mode is for vehicles left on for demonstration and display. It maintains the vehicle at a normal level, and does not overcharge the system. It allows the vehicle to be left on for long periods of time.

## PROGRAMMING MODE

This TDB700 programming mode is used to create a steady voltage for programming vehicles and systems. This mode allows a set voltage to be set, and the TDB700 will maintain the system to that voltage regardless of what loads are turned on and off during the programming.

## REPAIR MODE

This TDB700 repair mode allows partial repair of batteries, depending on how much they have degraded. This mode is always worth trying on batteries that are ending their life, and it can allow them to continue for longer if the repair is successful. It can also offer improvements for sulphated batteries.

# GENERAL OPERATION CHARGING MODE

SELECT THE **CHARGE** ICON MODE FROM MENU


SELECT IN **VEHICLE OR OUT OF VEHICLE** ICON FROM MENU

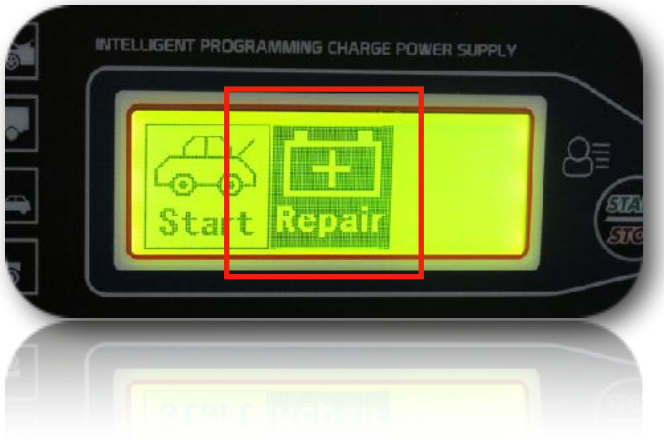

SELECT THE TYPE OF BATTERY AND PRESS THE **START STOP** BUTTON


# GENERAL OPERATION STARTING MODE

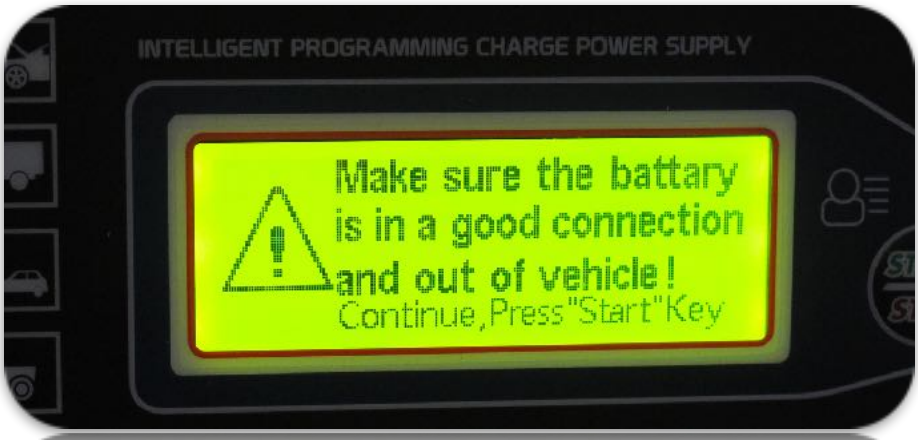
SELECT THE **START** ICON FROM MENU

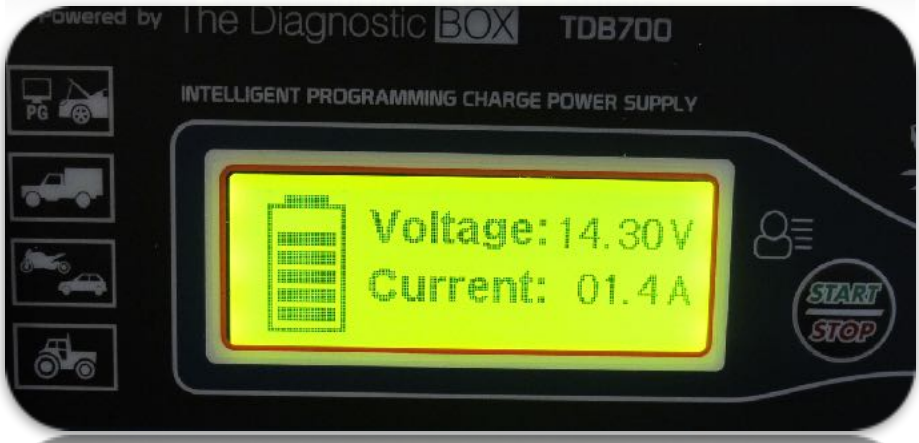

PRESS THE **START STOP** BUTTON

# GENERAL OPERATION REPAIR MODE



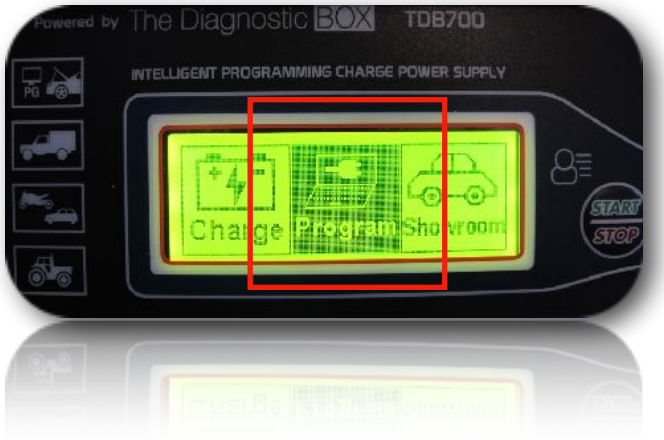

PRESS THE **START STOP** BUTTON



# GENERAL OPERATION PROGRAMMING MODE

PRESS THE **OK** BUTTON




SELECT THE REQUIRE SETTING AND PRESS **START/STOP** BUTTON

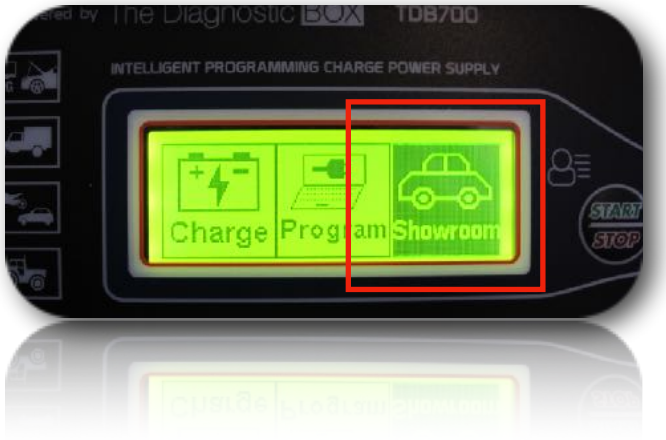

TO ADJUST THE VOLTAGE IN ADJUSTABLE MODE PRESS THE **RIGHT** AND **DOWN** BUTTONS TOGETHER TO ENTER ADJUSTMENT MODE.

THE ICON ON THE SCREEN WILL CHANGE TO SHOW THE TOOLS.

NOW PRESS **RIGHT** BUTTON TO INCREASE VOLTAGE AND **LEFT** BUTTON TO DECREASE VOLTAGE.

# GENERAL OPERATION SHOWROOM MODE

PRESS THE **OK** BUTTON




SELECT THE REQUIRED SETTING AND PRESS **START/STOP** BUTTON

# BATTERY TYPES

## 1. Wet cell batteries (SLI) – proven and economical

A conventional starter battery consists of six battery cells. A battery cell, also referred to as a plate block, consists of a positive and a negative set of plates, which in turn consists of several electrodes.

A positive electrode consists of active material made from lead oxide and a positive grid made of lead alloy. The grid structure gives the electrodes a solid structure and at the same time serves as an electrical conductor. The active material is immersed in an electrolyte, a mixture of acid and distilled water.

A negative electrode also consists of active material, however in this case made of pure lead, and a negative grid. The electrodes with different polarities are separated by a separator. The required battery capacity is achieved by connecting the individual plates in the cell in parallel. Connecting the individual cells in series produces the required voltage of 12 Volt.

Conventional batteries such as lead-acid batteries are the most common types of battery. This technology is often referred to as SLI, which relates to the main functions of a vehicle battery: Starting, Lighting, and Ignition. They are suitable for vehicles without start-stop technology and a moderate number of electrical consumers.

## 2. EFB batteries – many charging cycles and long life

EFB batteries are an optimised, higher performance version of the wet battery. The abbreviation "EFB" stands for "Enhanced Flooded Battery". Here too, the plates are insulated from each other with a microporous separator. Between the plate and the separator there is also a polyester scrim. This material helps to stabilise the active material of the plates and extend the life of the battery. EFB batteries have a large number of possible charging cycles and provide more than double the partial and deep discharge performance in comparison with conventional batteries.

EFB batteries are often installed in vehicles with simple automatic start-stop systems. Due to their superior performance batteries with EFB technology are also increasingly used as replacements for conventional lead-acid batteries.

## 3. AGM batteries – high performance and load capacity

AGM batteries are versatile, have high performance and are designed for high demands. In principle, the structure of an AGM battery is the same as that of a wet cell battery. However, in an AGM the electrolyte is no longer free-floating, but rather is bound in a special glass fiber separator – hence the name "Absorbent Glass Mat". The large contact area contributes to the power output and also makes the battery leak-proof. Due to its construction, the battery is sealed airtight. This feature enables internal recombination of oxygen and hydrogen, so that there is no water loss. To protect against excess pressure, the individual battery cells are equipped with a safety valve, so that they remain safe, even in case of a fault.

With regard to their service life, AGM batteries have significant advantages over simple starter batteries. An AGM battery can withstand three times more cycle life than a conventional starter battery. A further advantage of AGM batteries is that they are not dependent on their position, as due to the binding

# SPECIFICATION

| | |
|---|---|
| INPUT VOLTAGE | 220-240V |
| FREQUENCY | 50/60Hz |
| INPUT POWER | 1200 WATTS |
| MAXIMUM CURRENT | 100 AMPS |
| MAXIMUM STARTING CURRENT | 60 TO 220 AMPS |
| OUTPUT VOLTAGE | 12 VOLTS |
| PROGRAMMING MODE VOLTAGE | 2-14 VOLTS/2-100 AMPS |
| BATTERY CAPACITY | 10 TO 12OO AH |
| CHARGE CABLE LENGTH | 2.5 METRES |
| DIMENSIONS | 43 cm x 35 cm x 14 cm |
| WEIGHT | 8.5 kg |

# DECLARATION OF CONFORMITY

| | |
|---|---|
| Manufacturer's Name: | The Diagnostic Box |
| Manufacturer's Address: | The Diagnostic Box |
| | Diagnostic Box House<br>Unit 13, Torr Trade Park<br>East Allington<br>Totnes<br>TQ9 7FA<br>United Kingdom |
| Product Name: | Intelligent Battery Charger and Power Supply |
| Product Model: | TDB700 |
| Conforms to: | Specifications |
| | EN 55022:1998, A1: 2000 + A2: 2003 |
| | EN 55024:1998, A1: 2001 + A2: 2003 |
| Following the Provisions of | EMC Directive: 204/108/EEC |

TDB700 November 2024

Product conforms to class A emission standards

Signed on behalf of The Diagnostic Box