IGNITION SYSTEMS

PORTABLE HIGH-ENERGY IGNITER MOD. XE18PB06

INSTRUCTIONS FOR USE AND MAINTENANCE

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GENERAL INDEX

CHAPTER 1

1. INTRODUCTION

We jointly want to thank you for having preferred **TESI s.r.l.** and to congratulate you on the choice you made; by purchasing your new **portable high-energy igniter** you provided yourself with a product characterized by excellent performances, high efficiency and reliability.

1.1. DEVICE IDENTIFICATION DATA

Here following, the portable high-energy igniter XE18PB06 **TESI s.r.l.** identification plates which this manual refers to, are reported:

a. Identification plate applied on the portable high-energy igniter XE18PB06

1.2. IDENTIFICATION OF THIS PUBLICATION

The "USE AND MAINTENANCE INSTRUCTIONS" manual is an official document issued by **TESI s.r.l.** and represents an integral part of the portable high-energy igniter XE18PB06. It is countermarked by a publication number (No.), reported on the third coversheet, allowing an easy identification, traceability of the manual itself, as well as any later reference to it.

All the information contained in this manual were updated to its publication date. **TESI s.r.l.** have the right to modify without giving any previous notice the contents of this manual and decline any responsibility for the possible errors and/or omissions present inside it.

1.3. JOINED PUBBLICATIONS

- Portable High energy Igniters wiring diagram

1.4. PURPOSE OF THIS PUBLICATION

This manual, meant for the users of the portable high-energy igniter XE18PB06, contains all the information required for its handling, its installation, its operation and its maintenance. It moreover supplies the information for the personnel training, facilitates the procedure for ordering spare parts and gives indications about the safety devices and the possible residual risks.

On a careful and rational observance of the rules contained in this manual will depend both the correct operation and the useful lifespan of the high-energy igniter XE18PB06, as well as the safeguard and protection of the operator's safety.
It is strongly recommended to carefully read and to strictly observe the directives contained in this publication, which are organized, as far as possible, according with a chronological scheme of use of the portable high-energy igniter XE18PB06.

This manual represents a useful support for the user and a valid mean for reminding him of all the primary operations to be carried out; anyway, some minimum specific technical knowledge is required for using the Portable High-Energy Igniter XE18PB06 on fully safe conditions.

1.5. USE OF THIS MANUAL

	**NOTE** **This manual must be carefully preserved for the whole lifespan of the Portable High-Energy Igniters XE18PB06.** **Should the High-Energy Igniters XE18PB06 be sold, the manual shall be delivered to the new owner together with the unit itself.**

The manual is subdivided into two parts; the first part, whose pages are numbered in Arabian numerals, consists of the Title Page, the List of the valid pages, the Additions' and Variants' Record and the Table of Contents.
The Table of Contents allows to exactly locate the pages containing the topic you are interested in.

The second part, whose pages are numbered in Arabic numerals, is articulated in such a way to supply the user with the necessary indications for operating by fully observing the safety rules in all the installation, setup, use and maintenance phases of the portable high-energy igniter XE18PB06 .
Within the text, some **"symbols"** are used, in order to both highlight and visually distinguish the importance of the different types of information.
Graphic representation of the symbols and relevant meaning:

	**NOTE** **Indicates important complementary information.**

	**CAUTION** **The inobservance of the relevant indications can cause even irreparable damages to the portable high-energy igniter XE18PB06**

	**WARNING** **Highlights any situation possibly dangerous for people.**

	**PROHIBITION** **Indicates the prohibition of carrying out actions, procedures, etc.. The inobservance of such a prohibition can cause even irreparable damages to the portable high-energy igniter XE18PB06, seriously damage the environment or create dangerous situations for people.**

The manual, together with the relevant enclosures and integrations, must be kept with the utmost care and be always complete, integral and legible in every part, for being preserved jointly with the portable high-energy igniter XE18PB06, up to the final elimination of this last one.
Should the manual be lost, a duplicate shall be immediately got by contacting **TESI s.r.l**. Should the safety stickers originally applied on the portable high-energy igniter XE18PB06 be either lost, damaged, or should they result to be even only partially incomprehensible, they shall be promptly replaced.

1.6. REVISION

Should the product be modified, **TESI s.r.l.** is exonerated from updating previous products or from revising previous manuals, exception made for exceptional cases.

This can lead to some inadequacy of the old manuals, and, therefore, the user can ask for the last revision of the manual itself or for any technical information by directly contacting **TESI s.r.l.**.

The revisions which **TESI s.r.l.** will possibly transmit to the owner of the portable high-energy igniter XE18PB06 shall be annexed to this manual.

TESI s.r.l. will be glad to accept any possible suggestions made by the user, purposed to improve the manual, as well as your possible communication about any property change, in case of sale of the Portable High-Energy Igniters XE18PB06 to a new owner.

1.7. CONVENTIONS FOR DEFINING THE ORIENTATION

In order to facilitate the comprehension of this manual, here following the conventions for defining the orientation are reported.
The definitions used for identifying the displacement of portable high-energy igniter XE18PB06 components include the following terms:

1. front;
2. upper;
3. right:
4. left.

The “front” part is that where the box cover, and its fixing devices, is located; also the stickers with the safety warnings is located on the “front” part.
The “upper” part is that where the command button, signal lamps and lifting handle are located.
The “right” and “left” sides are referred to an operator positioned in front of the box cover (front) and looking toward it. Particularly on the left is the connector for the charge cable and the identification plate while, on the

right, is the connector for the ignition lance cable.

1.8. GLOSSARY AND ABBREVIATIONS

In this paragraph, a list containing not common terms, or terms anyway used with a meaning different from the common one, as well as the abbreviations and the units of measure used in this text, are supplied.

1.8.1. GLOSSARY

The 2006/42/CE Machinery Directive (Annex I, 1.1.1.) means by:

- DANGEROUS AREA - an area inside and/or near the machine, in which the presence of an exposed person represents a risk for the safety and the health of the person himself;
- EXPOSED PERSON - any person situated either fully or partially in a dangerous area;
- OPERATOR - a person charged with the task of installing, operating, setting, carrying out the maintenance, cleaning, repairing and transporting the machine.

MAN-MACHINE INTERACTION - any situation in which an operator interacts with the machine, in any of the operative phases and in any moment of the machine lifespan.
RESIDUAL DANGER - a danger which couldn't be possibly either eliminated or sufficiently reduced in the machine designing phase.
SAFETY COMPONENTS - the components used for protecting the operator, whose faulty or bad operation can prejudice the safety and the health of the exposed persons (for example fixed or mobile protections, electric devices, pneumatic devices, etc.).

1.8.2. ABBREVIATIONS

%.....percentage
°C.....Celsius degree (centigrade degree)
H .....hour
Ah ..... ampere-hour
cfr.....compare
dB(A)..... decibel (noise unit of measure)
etc. .....et cetera
ex. ..... example
Hz ..... hertz (cycles per second)
kg..... kilogram
kW..... Kilowatt
M.....meter
Max. ..... Maximum
Min. ..... Minimum
s. ..... second
min. ..... minute
mm.....millimeters
No .....number
Pr. ..... Progressive number
V ..... volt
Vac. .....alternate current volt
J……... ……Joule
W ..... watt
J/s. ..... Joules per second

1.9. SAFETY WARNINGS

1.9.1. GENERAL WARNINGS

WARNING
Carefully read the information reported in Chapter 3 "Safety rules" before carrying out any operation on the High Energy Igniters

You are moreover here reminded that:

- The portable high-energy igniter XE18PB06 must not be used, neither any intervention can be carried out on it, without having previously read and fully understood this manual in every part;
- It is forbidden to use the portable high-energy igniter XE18PB06 for any use, other than those indicated in the manual, and **TESI s.r.l.** can't be held as being responsible for failures, inconveniences and accidents due to lack of knowledge of what reported in this manual;
- It is forbidden to either tamper with the equipments treated in the instruction manual, to alter or to modify them, even partially, in particular as far as the protection guards and the safety devices installed on the High Energy Igniters and foreseen for granting people safety, are concerned;
- It is forbidden either to operate in any different way from the indicated one or to neglect the operations purposed for granting a full safety.

NOTE
It must be considered that the rules contained in this manual can't possibly foresee some particular situations, which could occur during the different working phases.

1.9.2. PERSONNEL QUALIFICATION

All the operations relevant to the portable high-energy igniter XE18PB06, from the maintenance up to its final elimination, require the presence of personnel with an adequate training level, in order to reduce to the minimum the risks due to a lack of professional specialization.
For this purpose, as far as the qualification of the personnel to be employed is concerned, reference shall be made to the here following enlisted indications:

- USER: is a person trained for using the portable high-energy igniter XE18PB06, such to grant a good knowledge of the procedures both on usual and on emergency conditions;
- MECHANICAL MAINTAINER: he must have either a mechanical or an electro-technical qualification, perfectly know the contents of this manual and be adequately trained on the safety rules, in order to be authorized to operate on the portable high-energy igniter XE18PB06.
- ELECTRIC MAINTAINER: he must have either an electro-technical or an electro-mechanical qualification, perfectly know the contents of this manual and be adequately trained on the safety rules, in order to be authorized to operate on the portable high-energy igniter XE18PB06.

PROHIBITION
Don't employ any personnel having a qualification different from the indicated one.

1.9.3. PERSONAL SAFETY MEANS

When using the portable high-energy igniter XE18PB06, the operator shall always wear the here following enlisted personal safety gear:

- safety shoes;
- protective gloves;
- eyes protection;
- helmet;
- protective ear-guards;
- safety faceplate;
- body protective overalls

1.9.4. SAFETY STICKERS

In order to safeguard the personnel safety, on the portable high-energy igniter XE18PB06, in the most adequate places and according with the identified risks, some proper safety stickers were applied.

The following

Table 1.1 reports the safety stickers with their meaning and respective position on the portable high-energy igniter XE18PB06.

Table 1.1 - Safety stickers

SYMBOL	DESCRIPTION	POSITION ON THE PORTABLE HIGH-ENERGY IGNITER
	Dangerous electric voltage	On the front cover of the device
	Grounding point	

	**NOTE** **As far as the safety stickers relevant to the personal safety means are concerned, observe those foreseen by the yard and/or by the relevant rules in force in the country where the *portable* high-energy igniter XE18PB06 is used**

1.10. PERSONNEL TRAINING

The training of the personnel using and carrying out the maintenance interventions on the portable high-energy igniter XE18PB06 is quite simple and it is given by reading this manual.

As described in this manual, the operator must execute some normal checks before setting the portable high-energy igniter XE18PB06 into operation.

When the Portable High Energy Igniters is operating, the operator must keep the whole functionality under control and, if necessary, intervene on the devices, if some malfunctions are noticed, or, anyway, he must know how to operate in case of an emergency.

At the end of the working day, the operator must carry out some other simple checks, purposed to verify the correct operation of the portable high-energy igniter XE18PB06.

Besides, it is very important that the operator is in a position to intervene for carrying out the routine maintenance interventions.

1.11. CUSTOMER SERVICE

After having tested the portable high-energy igniter XE18PB06, **TESI s.r.l.** issue a certificate, by which they engage themselves to grant that the portable high-energy igniter XE18PB06 fully complies both with the specifications and with the stated characteristics.

The warranty period is of **12 (twelve) months** since delivery (the Delivery Note date will be taken for reference), exception made for the normal wearing parts, and only foresees the cost-free replacement of defective elements, when an anomaly due to any defects of materials, machining or assembly errors is ascertained.

The replaced parts keep being a property of **TESI s.r.l.** and must be sent back to their factory within 30 days since reception of the new material; shouldn't the replaced parts be returned within that term, **TESI s.r.l.** will provide to regularly invoice the new parts. **TESI s.r.l.** reserve to themselves the right of requesting that the portable high-energy igniter XE18PB06, or a part of it, is transferred for repair to their own factory or to other factories of their choice, keeping the relevant transport costs charged to the Customer, and without that this last one can oppose to the machine getting transferred to the **TESI s.r.l.** or advance any damages' compensation.

	**NOTE** **The over mentioned warranty period will be valid, only provided that there aren't any different conditions reported on the purchase agreement of portable high-energy igniter XE18PB06**

The disassembly and reassembly expenses, as well as those relevant to the transport and packaging of the parts to be replaced in warranty, will be charged to the Customer.

Besides, if not differently specified in the purchase agreement, the journey costs, inclusive of the travelling hours, as well as of the logistic expenses of the **TESI s.r.l.** personnel carrying out the assistance intervention on warranty terms, will be charged to the Customer.

The denunciation of the defects and the relevant request of intervention shall be made in writing by the user directly to **TESI s.r.l.** within a term of **8 days** from their manifestation

<u>The warranty legally ceases when:</u>

- the customer didn't observe the payment contract obligations;
- the purchaser eliminates, deletes or modifies the digits or the data or the marks directly reported on the portable high-energy igniter XE18PB06, i.e., on the plates or on the identification plates applied to the **TESI s.r.l.** product;
- the portable high-energy igniter XE18PB06 is used in a way not complying with the **TESI s.r.l.**'s

indications, and, therefore, in case of:

- manoeuvring errors;
- overloads;
- mounting of not original spares or modification of original part;
- inobservance of the maintenance rules.

In none of the over mentioned cases the Customer can exact either the contract cancellation or a compensation for damages.

1.11.1. AFTER-SALES TECHNICAL SERVICE

For any kind of intervention, the **TESI s.r.l.** "After-Sales Technical Service" is at their Customers' full disposal. Both qualified personnel and specific equipments are available for overhaul and/or repair interventions.
The **TESI s.r.l.** "After-Sales Technical Service" is always available for supplying explanations and advices, in order to allow you getting the best performances from your portable high-energy igniter XE18PB06.
In case of a failure on the portable high-energy igniter XE18PB06, **TESI s.r.l.** suggest to consult, first of all, Chapter 8 of this manual, which is relevant to the problems' solution, in order to identify the existing possible interventions to be carried out by your own personnel, without having to ask for the help of the **TESI s.r.l.** "After-Sales Technical Service".
After having consulted Chapter 8, it could anyway still be necessary to ask for the intervention of the **TESI s.r.l.** "After-Sales Technical Service" technicians.
The intervention request shall be formulated to **TESI s.r.l.** by using either the references here following reported, or those present on the identification plate fastened to the portable high-energy igniter XE18PB06:

TESI s.r.l.
Via Piave, 20/11
20080 Vermezzo, Milano, Italy

Phone.....+39 02 9440501
Fax.....+39 02 9449087
Internet web site ..... www.tesigroup.com

E-Mail:
General Information .....info@tesigroup.com
Customer assistance .....tdavide@tesigroup.com
Sales ..... andrea@tesigroup.com

The intervention request procedure must be the following one:

1 Contact **TESI s.r.l.** either by phone or through E-Mail, specifying the portable high-energy igniter XE18PB06 data present on the identification plate and then, with the help of a technician, check the possibility of solving the problem directly on the phone.

2 If a solution can't be found by phone or through an E-Mail, send a fax or an E-Mail in order to request an intervention, specifying all the data both relevant to the portable high-energy igniter XE18PB06 and to the owner and place where the generator itself is installed.

3 Wait for a call from the "After-Sales Technical Service", to make arrangements for defining the service supply modalities.

1.11.2. SPARE PARTS

The parts to be possibly replaced must be **" TESI ORIGINAL SPARE PARTS"**, to be purchased at our central

store.
Using not original spare parts not only causes the warranty loss, but also exonerates **TESI s.r.l.** from any responsibility.
When ordering any spare parts, always specify the following data:

- portable high-energy igniter XE18PB06 type;
- Serial number;
- Year of manufacture.

CHAPTER 2

2. GENERAL TECHNICAL INFORMATION

2.1 FOREWORD

The portable high-energy igniter XE18PB06, this manual refers to, allows the generation of a spark with a high energy potential.
The portable high-energy igniter XE18PB06 is used in various processes, but its purpose is to start up the combustion in a industrial burner.
The high energy igniter, as just mentioned, is able to supply powerful sparks from the end of the ignition lance so that any kind of fuel can be ignited, even liquid or heavy fuel oils.

2.1.1. USE DESTINATION

The portable high-energy igniter XE18PB06 is meant for an industrial use.

2.1.2. OPERATOR

No particular technical knowledge is required for using the portable high-energy igniter XE18PB06. A careful reading of this manual will be sufficient; anyway, it is here reminded that both the experience and a good knowledge of the product represent a quite important factor.

2.1.3. WORK ENVIRONMENT

PROHIBITION
Both positioning and using the portable high-energy igniter XE18PB06 in potentially explosive environments are forbidden.

The portable high-energy igniter XE18PB06 can operate in any work environment in the yard activity field, exception made for those explosive environments, in which an explosion-proof protection is required.

2.1.4. ENVIRONMENTAL REQUIREMENTS

The portable high-energy igniter XE18PB06 must be used by presence of the following environmental conditions:

- Maximum temperature ..... + 50 °C (122 °F)
- Maximum charging temperature ..... + 40 °C (104 °F)
- Minimum temperature ..... - 20 °C (-4 °F)
- Minimum charging temperature ..... 0 °C (32 °F)
- Relativity humidity 85%

2.1.5. NOISE EMISSION

The noise level measured in the normal use conditions described in the use manual, is either equal to or lower than 85 dB (A).
The indicated level is that of pondered instantaneous acoustic pressure during the Portable High Energy Igniters using peaks. The daily or weekly exposure of the workers must be anyway determined in the real use conditions and generally results to be lower than the previously indicated value.
Anyway, the use of ear protection-guards is recommended.

2.2 GENERAL DESCRIPTION

The portable high-energy igniter XE18PB06, consist of five main components, as here following indicated:

1 Portable high-energy igniter (a)
2 Connection cable (b)
3 Ignition lance (c)
4 spark tip (d)
5 Charge cable (e)

a. Portable high-energy igniter

b. Connection cable

c. Ignition lance

d. Spark tip

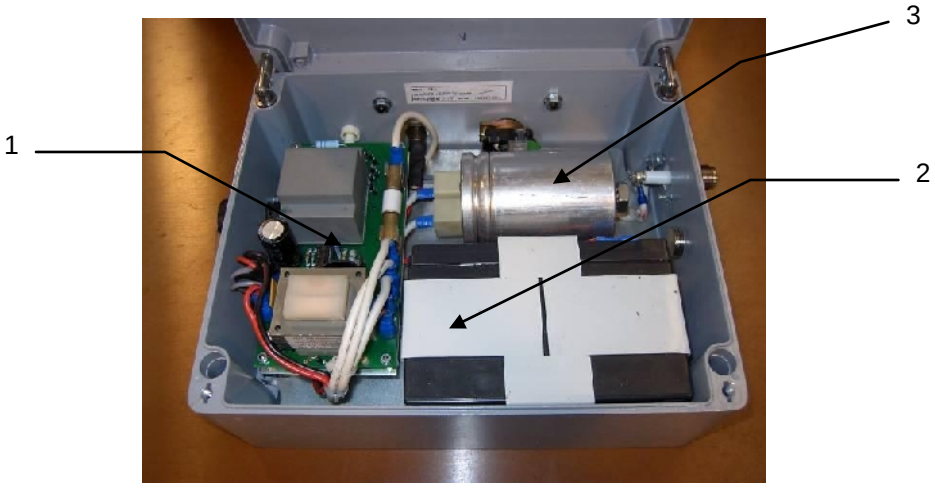
e. Charge Cable

2.2.1. PORTABLE HIGH ENERGY IGNITIER

All the components of the portable high-energy igniter XE18PB06 are installed inside an aluminum box with a protection degree IP65 whose dimensions are: 344 x 280 x 110
The total weight is about 5.7 kg.

The following components are installed inside the box:

1 Electronic board
2 Rechargeable battery
3 Capacitor



The front cover of the aluminum box is secured in position by 4 screws.

On the right side are installed: the power connector for the main connection cable and a plug screwed on a ventilation hole. The plug has to be removed while charging the battery.
On the left side is installed a round connector for the charge cable used for the battery recharge process.
On the top side together with the lifting handle the following devices are installed:

1. A green light which indicates the presence of voltage during charging.
2. A multicolor LED indicator lights which is providing information while the high energy igniter is used (Ignition button pressed). The color of this indicator change according to the battery charge level as follow: GREEN (fully charged), ORANGE (low battery 21-50%), RED (battery below 20%, to be charged)
3. A red button which is used to activate the high energy igniter and provide energy to the ignition lance.

2.2.1.1. DISCHARGE CIRCUIT

Installed in the aluminum box, when activated it provides the high energy necessary to generate powerful sparks, at the power rate of 18 Joules/second.

2.2.1.2. RECHARGEABLE BATTERY

The electrical system works with DC rated voltage of 12 V supplied by a sealed rechargeable battery.
Battery expected working life, at full load and operating temperature of 20 ° C, is about 5,000 discharges.

2.2.1.3. BATTERY CHARGER

The battery charger circuit is built-in the main electronic board, which is located inside the main box.
The battery charging circuit works when supplied by an external source. Input voltage for the battery charger is 115/240 Vac.
The charger is provided with current regulator that self-limit the battery charging current and avoid any possible overload or battery damages.

2.2.1.4. CAPACITOR

	**WARNING** **Pay attention when connecting capacitor wires; the capacitor terminals are not insulated**

	**WARNING** **The capacitors may remain charged even when the device is not in use and after it has been opened**

The capacitor is located inside the main box.

2.2.2 IGNITION LANCE CONNECTION CABLE

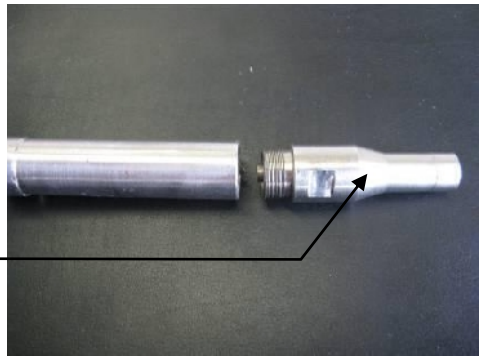
	**WARNING** **The use of the unit with a faulty cable may be dangerous for the operator**

	**CAUTION** **A faulty or not well maintained cable can prevent generation of sparks and damage the whole unit**

The connection cable can be manufactured to customer's length.
The main conductor insulation is high temperature and high voltage resistant and it’s installed in a stainless steel flexible conduit for additional mechanical protection.
The male and female coaxial connectors installed at the ends of the cable are suitable for connection to the box connector and ignition lance terminal connector.
The working temperature of the connection cable is -20 ° C / +50 °C (-4 / 122 °F). The max working temperature of the only main conductor is up to 180°C (356°F)
The approximate weight of the connection cable is 0.4 kg per meter.

2.2.3 IGNITION LANCE

The ignition lance is totally made by stainless steel.
It's available in standard diameters: 12mm.- 14mm. - 17mm.
The length is at customer's request.
The spark tip, installed at the end of the ignition lance, can be removed and replaced only on lances with the following diameters: 14mm and 17mm.



Maximum allowable temperature of the spark tip is 760/1000°C (1400/1831°F - continuous/peak)
The following accessories are also available for the ignition lance:

1. sliding flange to adjust the spark tip position into the burner chamber
2. Rubber grip, 150mm long, inserted on the ignition lance.
3. Angled handle installed at the end of the ignition lance.

1 Sliding stop flange

2 Rubber grip

3 Angled handle

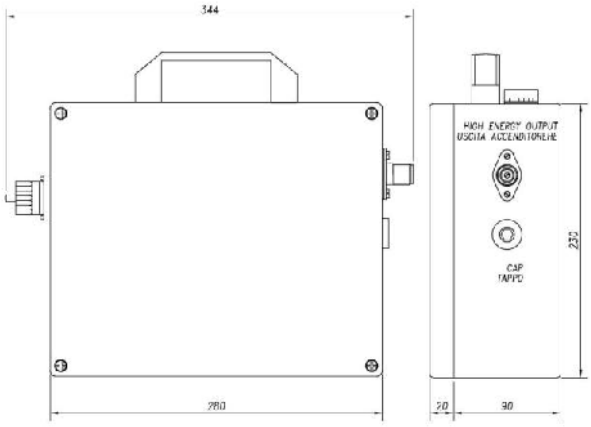
2.2.4. CHARGE CABLE

A charge cable, 1 meter long, is supplied with the unit. It has a Schuko plug to be connected to the power line and a round plug for connection to the left side of the high energy igniter box.

2.3. PORTABLE HIGH-ENERGY IGNITER TECHNICAL DATA

2.3.1 DIMENSIONS AND WEIGHT

344 x 280 x 110 mm
5.7 kg.



2.3.2 ELECTRICAL CHARACTERISTICS

1 Battery Nominal voltage ..... **12 Vdc**
2 Charging power supply Voltage ..... **115/230 Vac – 50/60 Hz**
3 Batteries
  – type ..... **12 V – 7.2Ah**
  – N **1**
4 Output voltage ..... **1400 Vdc**
5 Output Frequency ..... **4 Hz**
6 Output Power ..... **18 J/s**
7 Peak power consumption ..... **60 W**

High energy Igniter duty cycle : not continuous cycle, max duty 33%(for example 10seconds working - 20second rest) MAX continuous working 120 seconds.

2.3.3 PACKINGS' DIMENSIONS AND WEIGHT

The standard packaging is made of two packages; one cardboard box containing High energy Igniter, connecting cable and charge cable and a second cardboard box containing the ignition lance.

By request we can provide OPTIONAL packaging in wooden crates with the following features:

1 Length (considering an ignition lance 1,5 m long) ..... **~ 2000 mm**
2 Width ..... **~ 400 mm**
3 Height ..... **~ 300 mm**
4 gross weight ..... **~ 30 kg**

CHAPTER 3

3. SAFETY RULES

Any working machine can represent a potential danger.

3.1 SAFETY GENERAL PRINCIPLES

As far as it was possible, **TESI s.r.l.** has made every effort in designing the High Energy Igniter, making it inherently safe.
The device is equipped with protections and safety devices deemed necessary and, finally, is accompanied by sufficient information for its safe and properly utilization.

If the device is used in compliance with the terms of use, following the use instruction and is subject to regular maintenance, it can operate safely; on the contrary, the inobservance of the use and maintenance rules, makes the High Energy Igniter dangerous both for the operator and for other people.

WARNING
Before using the High Energy Igniter, carefully read the instructions supplied in this manual and follow the here reported indications.
It is also mandatory that the operator complies the safety rules and instructions related to the worksite in which it operates

If a warning message can't be fully understood, ask **TESI s.r.l.** for the relevant explanations.

For safety purposes, it is anyway not sufficient to carefully observe the safety warnings; for the whole utilization time of the High Energy Igniter, it is necessary to foresee all the possible dangers and to make every effort in order to prevent them.

Never begin any work without having before determined that both his own and others people' safety are safeguarded.

Never undervalue his own doubts, and, if any uncertainty exists about the High Energy Igniter or about the work to be performed, get addressed to somebody competent.

Should any anomalous situations be noticed, it is obligatory to immediately stop the High Energy Igniter and to urgently inform either the foreman or the competent body about the event.

Always act with:

PRUDENCE - ATTENTION - PRECAUTION

CAUTION
For any further concern or required explanation, please contact TESI s.r.l.

3.2 SAFETY INFORMATION

	**WARNING** **Presence of high output voltages.** **The capacitor installed inside the box might be charged even when the power supply has been disconnected and on its terminal there could be high voltage, always pay attention and check the residual voltage before any operation on capacitor**

	**PROHIBITION** **Do not use the High Energy Igniter beyond the limits defined during the design, exceed those limits can be dangerous and may cause damage to the ignition device itself. Do not try to improve the performances of the ignition device applying unapproved modifications.**

- The operator shall have all the required qualifications to use the ignition device.
- It is here reminded to the operators to adopt, during the High energy Igniter utilization, an attentive and careful behaviour, in order to improve his own safety level, as well as that of other people and of the High Energy Igniter itself.
- The following recommendations are here provided in order to reduce the risk of danger for people and things either when the High Energy Igniter is operating or out of service.
- The ignition device should not be used for applications other than those declared by **TESI s.r.l.** Do not use or charge the Ignition device if any signs of damages are noticed.
- Make sure that the environmental conditions fully correspond to the indicated ones.
- Perform several preliminary tests, being assisted by skilled personnel, in order to acquire the required sensibility for operating in fully safe conditions.
- DO NOT tamper in any case the device commands.
- DO NOT leave the device cover opened during normal use as dangerously reduces the degree of protection.
- Periodically check the efficiency of the commands and indicators installed on the device.
- In case of an EMERGENCY, immediately stop any operation on the ignition device and follow all the safety procedures which might be needed.
- In case of fire a suitable extinguisher has to be used, according to the specific safety procedures applicable in the working area.
- During use or recharging of the ignition device the cables have to be protected from moving parts and sharp objects.
- Entrust the connecting operations of power cables of the ignition device only to qualified personnel.
- Disconnect the charge cable before to operate on the internal components.
- Don’t use the Ignition device when you are under the effect of some drugs or alcoholic drinks which could either alter or reduce your reactive quickness.
- Keep the ignition device clean, especially the commands, indicators and connectors.
- Always when working on the ignition device, act with the utmost prudence and attention. Make every effort in trying to prevent any possible danger.
- In order to contribute to a fully safe utilization of the ignition device, the operator can suitably integrate the information supplied by **TESI s.r.l.** with additional working instructions, which shall obviously be complying with the instructions supplied in this manual.
- The inobservance of safety instructions reported on the safety stickers can cause accidents. Keep the safety stickers cleaned and replace those missed or illegible before starting the work cycle.
- While operating the High Energy Igniter the operator shall not in any way be disturbed or interrupted, his full carefulness has to be used for the ignition procedure.

- The operator shall make sure that the working place is well enlightened and free of potentially hazardous conditions. Should the light be not enough, a suitable artificial light must be installed.
- It is absolutely forbidden to smoke, to drink and to eat during the operating cycle of the ignition device.
- The access to the Ignition device working area is strictly forbidden to unauthorized personnel, so it is recommended to signal that rule in a suitable way. Always fully observe all the safety rules specified in this manual and/or those in force in the working area and in the country where it is used.
- A suitable extinguisher shall be install, and regularly checked, in the working area at Customer's care
- A faulty ignition device can cause accidents for both the operator and others. Do not use the ignition device in damaged condition or missing parts. Before starting the work be sure that the maintenance procedures in this manual were completed.
- Do not operate on the internal components of the igniter immediately after a working cycle, leave it off for few seconds before opening the device, or disconnect the cables, to give time at the internal circuit to discharge the capacitor from any residual current.
- The ignition cable and charge cable can be energized and supplied with high voltage and even if properly insulated they cannot be used for different purpose or in a different way of what is specified in this manual. The High Energy Igniter should only be connected with the cables / connectors specially designed and supplied from **TESI s.r.l.**

	**PROHBITION** **Do not insert objects or fingers in the connectors, they could be energized.**

	**CAUTION** **The connectors must be always clean. If necessary, clean the inner part of the connectors with compressed air and the outside with a dry cloth.**

- Regularly check that the lifting handle, and optional handles, provided for lifting and use of ignition devices, do not shown any signs of deterioration.

3.3 EMERGENCY BEHAVIOURS

It is extremely important to carefully read the following information. Make sure that the maintenance staff perfectly knows the here supplied information.

Should any wrong behaviour cause an accident situation, immediately request the intervention of personnel qualified in supplying first aid. While waiting for the first aid personnel to arrive, the following general instructions are here supplied in order to lend the first assistance.

3.3.1. FIRE

	**CAUTION** **It shall be at Customer's care to get installed a proper fire-fighting system in the yard or, in particular, near the High Energy Igniter.**

Extinguish the fire by using either carbon dioxide, dry chemical substance or powder extinguishers. Never use water: by doing so, you could increase the fire or get fulminated, if the fire was originated by electricity. Immediately call the firemen.

3.3.2. BURNS

1) Extinguish the flames on the burnt person's garments by using:

- a water flood;
- a powder extinguisher, by avoiding to address the jet on the victim face;
- some blankets to be thrown on the victim or by rolling the victim itself on the ground.

2) Don't detach any fabrics' tatters adhering at the skin.
3) In case of burns caused by liquids, remove quickly but cautiously the wet garments.
4) Cover the burns with a purposed surgical packet or by using a sterile bandage.

3.3.3. CORROSION

The corrosion to the eyes is provoked both by the lubricating oil and by the water and cement powder mixture. Also batteries liquid or capacitors filling fluid could be corrosive.

Rinse the eye with water for at least 20 minutes, by keeping the eyelids open, in order to allow the water to flow along the eye contour and by moving the eye in every direction, having then immediately recourse to the medical aids.

3.3.4. ELECTRIC SHOCK

The electrocution injuries may be caused by:

- external electric wirings;
- electric equipments.

In both cases, the voltage value causes the passage of high currents through the human body.

In case of a short circuit provoked, for example, by a metal tool, some sparkling could arise, causing burns.

In those cases, try by every mean to cut out the current before touching the victim.

Shouldn't this be possible, remember that any other attempt is highly dangerous also for the rescuer; consequently, the rescue attempt must be performed by using fully insulated tools.

3.3.5. WOUNDS AND FRACTURES

The vastness of the possible cases and the specificity of the interventions necessarily requires the intervention of the medical structures.

In case of bleeding, press the wound from the outside, up to the rescuers arrival.
In case of a fracture, don't move the part of the body concerned by the fracture itself, and, only if absolutely necessary, displace the victim with the utmost care.

3.3.6. ELASTOMERIC MATERIAL

The elastomeric materials which were subjected to temperatures higher than 300° C must be handled by observing the following procedure. Wear heavy rubber gloves and special protective glasses.

1) Remove the material and put it into plastic bags.
2) Wash the polluted area by using an alkaline solution.

3) Then wash by using water and some cleansing agent.

4) Put all the polluted material used in this operation into plastic bags and eliminate them according with the relevant laws in force.

law.

	**PROHBITION** **Do not burn any Fluoroelastomer materials.**

3.3.6.1. FIRST AID

In case of contamination of skin or eyes, immediately and abundantly rinse either in clean water for at least 15 minutes, having then immediately recourse to the cares of a doctor.

3.4 SAFETY IN MAINTENANCE

	**WARNING** **Before acting on any component, mechanical or electrical, the maintenance supervisor's should disconnect the device from the mains, disconnect the battery connectors and make sure the capacitor is not charged.** **This is to prevent anybody from using the ignition device without having informed those who are performing maintenance.** **A warning notice shall be applied, on the ignition device, while in maintenance.** **The maintenance supervisor's is the main responsible for any accidents which may occur during these operations, therefore it is strongly recommended to perform the procedure described above in order to avoid serious and unpleasant situations.**

- The maintenance technician shall have carefully read this manual before carrying out any operation on the ignition device.
- The maintenance must be performed by qualified personnel. Before starting to perform the maintenance operations, make sure that the ignition device is on safety conditions.
- When it is necessary to intervene on the ignition device in order to execute any maintenance operation, the maintenance technician shall ascertain to operate by a good visibility (by possibly using external illuminating equipments), in order to prevent any possible risk of getting hurt because of the scarce visibility.
- The maintenance technician shall be sure that no possible dangerous conditions are present.
- Cleaning the metal parts by using inadequate solvents can cause corrosion. Exclusively use detergents and solvents of adequate type.
- Don't clean the components of the command and control panel by using any corrosive agents, but only by using a dry wiping cloth.
- Don't try to carry out either repairs or any other maintenance operation without having previously read the instruction manuals or having asked the **TESI s.r.l.** personnel for advice.
- Unauthorized modifications can lead to hurts or damages; before carrying out any modification on the ignition device, contact the **TESI s.r.l.** personnel.
- When some metal pins are either driven or extracted, it is possible to be hurt by metal splinters: always wear protective glasses and use a soft mallet or drift.
- Before either connecting or disconnecting an electric component, attentively analyse the electric circuit: a wrong connection can lead to hurts and/or damages.
- When the batteries are handled, it is necessary to prevent the electrolyte from coming into contact with the hands. Therefore, use the suitable protective gloves. All possible sparks or flames near the batteries must

be absolutely avoided, therefore also smoking is forbidden.
- Don't use any flammable fluids during the cleaning operations.
- The maintenance must be carried out by Ignition device turned off, after having disconnected the terminals from the battery and after having removed the charge cable from igniter.
- A scarce communication level can lead to accidents. If one or more persons are working on the ignition device, make sure that each of them is informed about the work the other ones are performing. By not adopting the above mentioned precautions, the possibility is left open to very serious accidents and even to death.
- By not constantly wearing the adequate garments, there is still the possibility of serious accidents: fluttering garments can get caught into machine parts. Always wear the adequate protective garments, complying with the kind of work you are performing, as, for example: helmet, safety shoes, protective glasses, properly-sized overalls, ears-protections and gloves for industrial use; button the cuffs, don't wear ties or scarves and keep long hair dressed in a pony-tail.
- Gaskets and O-Rings incorrectly mounted, damaged or worn out can provoke leaks and accidents: if not otherwise established, immediately replace the damaged components. Don't use either trichloroethylene or thinners for paints near the O-Rings and the gaskets.
- Some gaskets or oil seals may contain elastomeric material like Viton, Fluorel and Technoflon. The elastomeric materials exposed to high temperature can produce highly corrosive acids.

	**WARNING** **The acids produced from elastomeric materials subjected to high temperatures can cause serious scalds.**

The new components kept at ambient temperature can be handled without any particular precaution.
The elastomeric components which were exposed to 300°C temperatures don't need to be handled with any special precautions. If there are some marks of decomposition (for example, burnings), get referred to Paragraph 3.3 "Emergency behaviours".

	**PROHIBITION** **Don't touch either the component or the surrounding area.**

	**CAUTION** **It is here pointed out that, inside the High Energy Igniter there are some materials which, if dispersed in the environment, can create serious ecological damages (for example, battery, capacitor, electronic board, etc.).** **It is reminded that the collection and the elimination of the above enlisted components are regulated by relevant laws.** **Deliver all the above mentioned residuals to the authorized collecting centres.** **It is severely forbidden to get rid of the residuals by deposing them in abusive dumps or, even worse, by discharging them into the rivers or into the sewerage.** **The relevant laws in force, exactly defined for every country, foresee heavy penalties for the transgressors.** **TESI s.r.l. decline every responsibility in case the here enlisted safety and use instructions shouldn't be strictly observed.**

3.5 SAFETY DEVICE

The ignition device is designed and manufactured considering the protection of the operator's safety and to prevent damage to components of the ignition device itself.

3.5.1 LIFTING ACCESORIES

To enable the handling and proper use during the entire cycle, the ignition device is equipped with accessories (handles and grips) that allow you to grab and use it safely during operation.

3.5.2 ELECTRICAL SYSTEM

The electrical system has been designed in order to prevent, if used within the temperature range of -20°C to +50°C and recharged within the range of 0°C to +40°C, any risk due to electric power, as defined by the Machinery Directive (2006/42/EC) and Low Voltage Directive (2006/95/EC).

All the used components are self-extinguishing.

CHAPTER 4

4. PACKING, RECEPTION, STORAGE AND DISMANTLING

4.1 GENERAL WARNINGS

WARNING
The majority of the accidents on the work place are due to inobservance of the most elementary safety rules. It is absolutely necessary that anybody operating on the High Energy Igniter perfectly knows and strictly observes the rules reported both in this publication (see Chapter 3 "Safety Rules") and on the warning plates.

4.2 PRELIMINARY OPERATIONS

Before any packaging of the ignition device and anyway before transportation of the ignition device the following preliminary operations have to be done:

1 Disconnect the connection cable of the ignition lance
2. Unplug the charge cable from the power supply and the igniter.

4.3 PACKING

The ignition device is shipped with adequate packaging and on request in wooden crates.
If you need to return the ignition device for any reason, reuse the original packaging or similar suitable packaging.

4.4 RECEIVING CONTROL

Upon receipt immediately check the integrity of the packaging (if any). If there is external damage, open the package and remove the ignition device and check its status, while also match the data plate (see Figure 1) with those specified in the delivery note and order confirmation.
If you are experiencing damage to the irregularities in the provision, immediately **TESI s.r.l.** and the courier who delivered the material.

Figure 1

4.5 STORAGE

4.5.1. GENERAL

In the event that a period of storage need before next use of the device, store it in original packaging without connecting the battery.

4.5.2. ENVIRONMENTAL REQUIREMENTS

Storage must be performed in a dry, dust and condensate-free ambient, with a temperature between -20°C to +50°C as inside the ignition device are an electronic boards and a battery.

4.5.3. RUN FROM OPERATIONS BEFORE POWER STORAGE DEVICE

1) Disconnect the battery connector.

NOTE
If not used for a long time, the battery may be low; the most frequent reason that leads to a discharge of the battery are small leakage current inside the electrical circuit.

2) You should NOT leave for long periods the ignition device placed directly on the ground but to interpose between it and the floor beams of wood or insulating material.

4.6 DISMANTLING

The ignition device has no time limit, except that derived from excessive wear caused by excessive use. Dismantling no major problems. The ignition device may be removed and, after separation of different materials that compose it, discarded.
Pay particular attention to those substances to be considered pollutants.
Table 4.1 lists the major materials that make up the ignition device.

Table 4.1 - Materials from which the ignition device

MATERIAL	LOCATION
Acids and bases	Battery
Plastic	Handle and push button
Rubber	Handle ignition device
Iron	Structure and internal components
Aluminum	External housing
Steel	Igniter and connectors
Copper	Generic wiring in electrical panel
Ceramic	Insulators
Wood	Any packaging for transporting

CHAPTER 5

5. INSTALLATION

5.1 GENERAL

	**WARNING** **Most accidents are attributable to non-compliance of the most basic safety rules. It is necessary for anyone working on the ignition device perfectly know and abide by the rules in this publication**

5.2 REMOVAL OF PROTECTIVE PACKING AND GETTINGS STARTED

The procedure for removing any packaging from the portable igniter, it is quite simple but very important in order to avoid problems, so depending on the type of packaging used should be followed in the following:

1. remove polythene bubble from the ignition device;
2. open the wooden box and remove the fasteners that secure the ignition device (optional only on the packaging).

	**NOTE** **In the presence of special packaging, you must keep it throughout the lifetime of the ignition device to reuse later in the case handling**

5.3 INSTALLATION OF IGNITION DEVICE

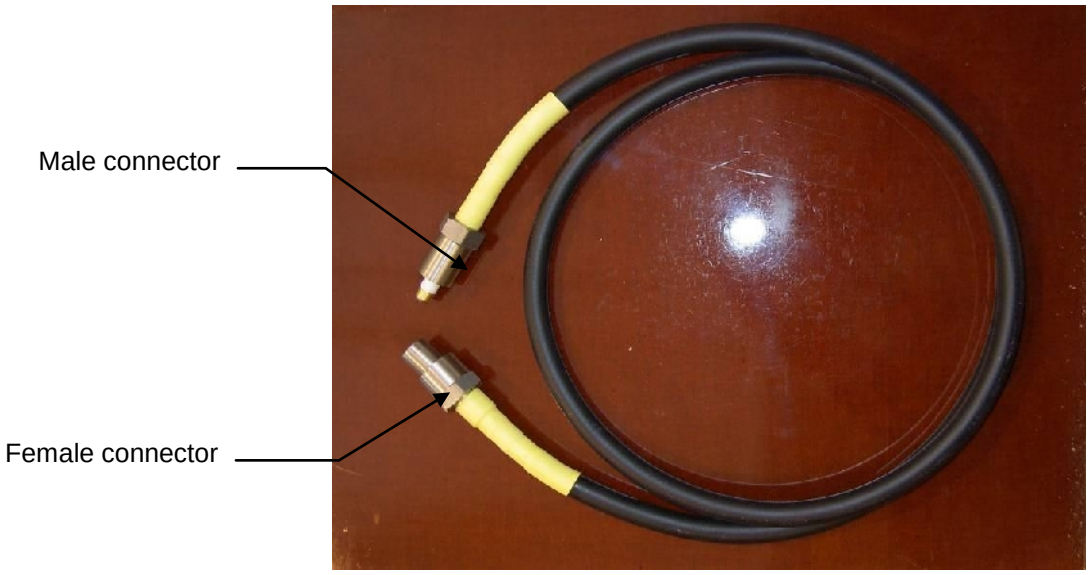
5.3.1. CONNECTING THE BATTERY

Before first use of the ignition device, connect the battery as follows:

1 Open the housing cover (front part).
2 Connect the cable to the battery terminals, then close the cover.

5.3.2. ELECTRICAL CONNECTION BETWEEN POWER AND IGNITOR

The ignition device is connected to the ignition lance by suitable cable equipped with two coaxial threaded connectors.
The male connector cable must be used towards the outlet of the housing panel.
The female connector of the cable must be used to ignition lance



	**DANGER** **The link between feeder and igniter via the supplied cable must be made before the commissioning of the ignition device being sure not to press the power button during the operation.**

CHAPTER 6

6. USE

6.1 GENERAL

	**DANGER** **Most accidents are attributable to non-compliance of the most basic safety rules. requires that anyone operating the device perfectly know and abide by the rules in this publication (see Chapter 3 "Safety Rules" and warning labels).**

	**WARNING** **Before starting the ignition device must have learned all the terms listed in Chapter 2 and Chapter 5**

	**WARNING** **Should there by any discrepancies between the operation described in this Chapter and actual operation of the ignition device, please contact TESI s.r.l. for clarification**

	**WARNING** **TESI s.r.l. not liable for damage to the ignition device or its parts if they are not complied with the instructions in this manual.**

6.2 COMMAND AND CONTROL

6.2.1. GENERAL

In this paragraph describes the commands and controls on the device

6.2.2. CONTROL PANEL

The photo shows the upper view of the control panel and controls

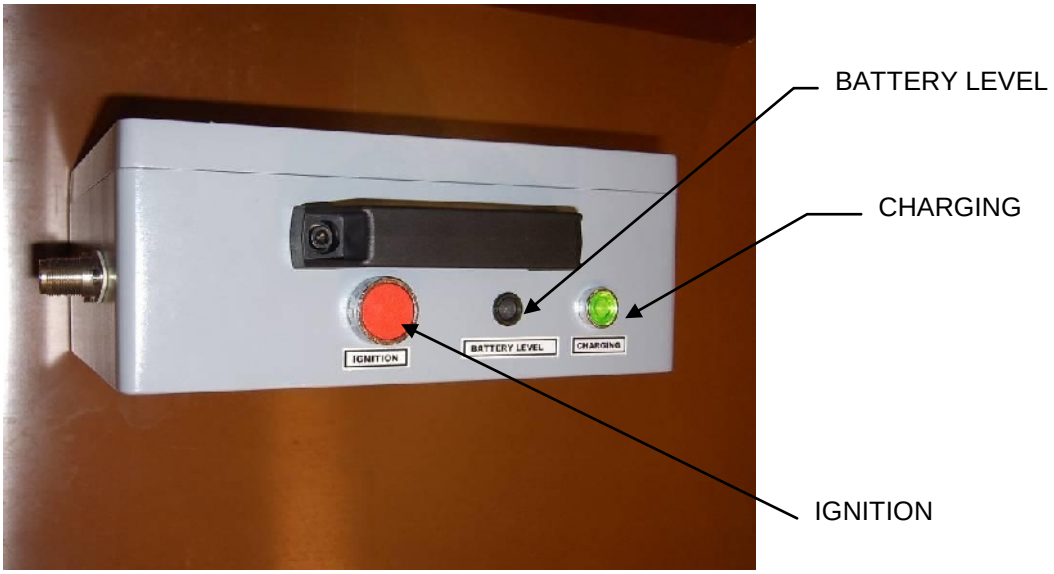


Table 6.1 describes the commands and controls placed on the panel

Table 6.1 - Commands and controls placed on the control panel and control

POS.	PLATE	TYPE	FUNCTION
1	IGNITION	Red button	Press to activate the spark.
2	CHARGING	Green light	Indicates (if illuminated) when the device's internal battery is under recharge
3	BATTERY LEVEL	Multicolored led	Indicate the remaining battery power during operation of the red button. GREEN: Remaining including between 51% and 100%. ORANGE: Remaining between 21% and 50%. RED: Charging below 20%. **It is necessary to recharge the internal battery**

6.3 USE

TESI s.r.l. developed this device for facilitating the ignition of the burners, without its own dedicated system (pilot torches or other).
The device 'is also a good resource in case of emergency or breakdown of main igniters.
High power discharge also allows easy ignition of liquid fuels.
Not affected by the presence of moisture or deposits that can stain the surface of the electrode.
The combination of mechanical and electrical generation of spark makes self-cleaning the surface of the spark ignition electrode.

6.3.1. POSITIONING OF IGNITION IN THE BURNER

Before operating the spark button should place the ignition lance inside the burner, through appropriate openings available.
Make sure the ends (tip) of the igniter is close to the release of fuel from the nozzle of the burner.
If installed use the sliding stop flange (optional) to set the correct position for future applications.

6.3.2. UNIT IGNITION STARTING

Press the button to allow the release of the spark to the igniter tip.
Possibly move the igniter increasing or decreasing the depth of insertion to facilitate ignition of the burner.
Discharge cycle admitted: not continuous cycle, max duty 33% (for example 10seconds working - 20second rest), maximum continuous working 120 seconds.

6.3.3. CHECKS DURING OPERATION

During the ignition, make sure not to exceed the limit of 120 seconds. Sparking.
Reached this threshold, the device should stop for a period of at least 5 minutes to allow cooling.
During the operation, check the color of multicolored led placed at the top of the housing near the handle support.
The color indicates the remaining battery and warns you when it is necessary start the recharging cycle.

CHAPTER 7

7. MAINTENANCE

7.1 GENERAL

The reading of this chapter assumes, for the purpose of safe maintenance of the ignition device, the knowledge of what is contained in **Chapter 3 "Safety"**

7.2 INTRODUCTION

The ignition device was designed and constructed to minimize maintenance.
The ignition device is tested at the **TESI s.r.l** before to be delivered to the customer in optimum conditions.
In order to maintain the above conditions, and ensure a trouble free operation, it is important to perform routine maintenance and preventative as described in this Chapter.

7.3 CUSTOMER SERVICE

The **TESI s.r.l.** want to fully satisfy its customers, therefore in the event of any problems, please contact her.
In order to obtain a valid service please:

a) Please specify your name, address and telephone number;
b) State the model and serial number of the ignition device;
c) Give the date of purchase or an order reference;
d) Explain the type of problem.

Be noted also that proper maintenance of the ignition device not only improves the reliability, but preserves the value over time.

7.4 AUTHORIZED PERSONNEL

1. For small repairs ..... **Operator**
2. For electrical maintenance..... **Technician qualified electrician**

7.5 MAINTENANCE

During the normal operation of the ignition device operator to maintain the same in good conditions, it must perform some simple routine maintenance, as shown in

Table 7.1 - Maintenance

NR. PR.	ACTIVITY	PERIODICITY	REFERENCE SECTION
1	Control of the connectors on the device.	Before use	7.5.1
2	Checking the condition of the cables.	Before use	7.5.2
3	Checking the battery charge.	Before use in anticipation of a monthly or next use (at least a few days before)	7.5.3
4	Checking the state of the surface of the tip.	In anticipation of a future use	7.5.4

7.5.1. CONTROL CONNECTOR ON THE DEVICE

	**DANGER** **Before any operation, make sure the charging cable is unplugged and battery is disconnected**

	**PROHIBITION** **When cleaning, never operate the ignition button.**

Visually inspect the connectors on the left and right panels are clean, there are no signs of damage and that the contacts are clean from dirt or oxidation.
In case of obstruction of grease, tar, earth or mud, clean them.

7.5.2. CHECKING THE CONDITION OF THE CABLES SUPPLIED

	**DANGER** **Before any operation, make sure the charging cable is unplugged and battery is disconnected**

	**PROHIBITION** **When cleaning, never operate the ignition button.**

Visually check the condition of the cables supplied, especially near the connectors to prevent any possible breakage.
Avoid emergency repairs with insulating tape, but please contact **TESI s.r.l.** to provide a cable replacement.

7.5.3. CHECKING THE BATTERY CHARGE

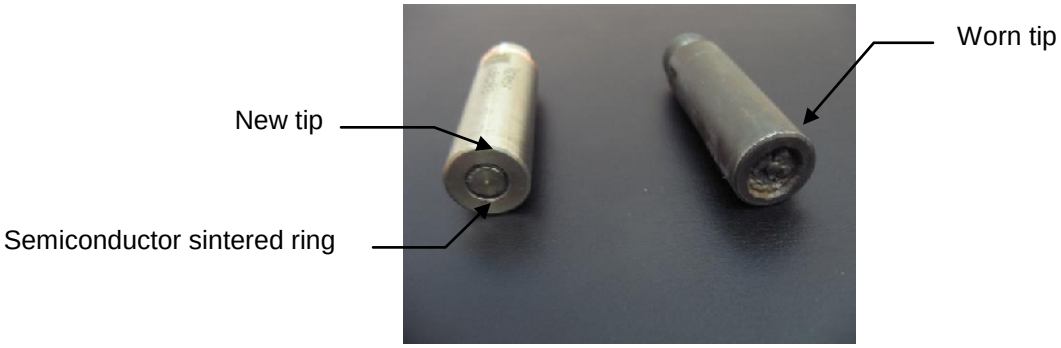
Make sure the ignition lance is properly connected to the main unit.
Pressing the ignition button, to control the color of the LED indicating the status of the remaining battery located on the top panel, being careful where you place the ignition lance (far from flammable materials, people or animals).
Opening the front panel is also possible to reach the battery contacts and make a measurement with any multimeter.
The voltage of a fully charged battery should be 12.5 volts and in any case never less than 10 volts.
If there is a reading of less than 5 volts, replace the battery, because it will no longer rechargeable.

7.5.4. STATE CONTROL OF THE TIP SURFACE

	**WARNING** **Before any operation, make sure the charging cable is unplugged and battery is disconnected.**

	**PROHIBITION** **When cleaning, never operate the ignition button.**

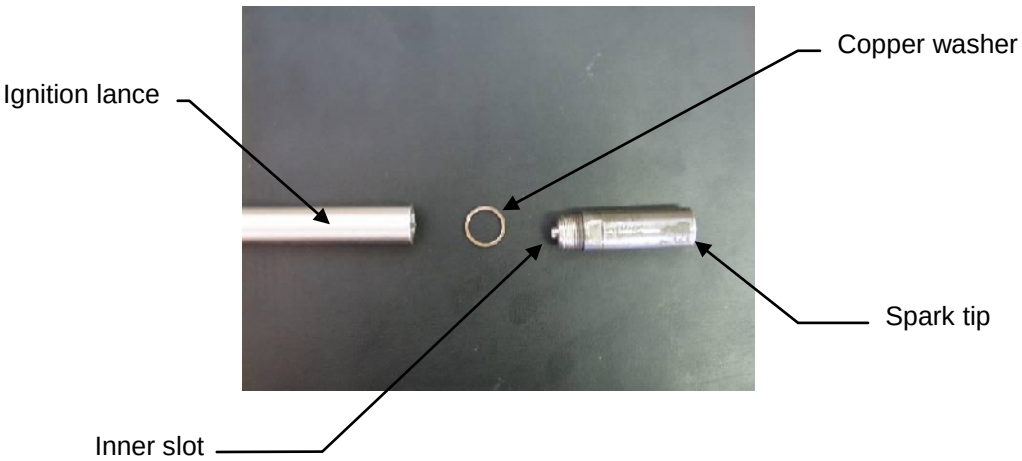
Before using the device, you must check the status of the top surface of the spark tip.
In particular, check the integrity of the black ring made of sintered semiconductor material placed between the central pole and the outer body of the tip.



If such sintered ring are fractures or areas that are particularly worn, replace it.

Perform the replacement of the tip as follows:

1. Tighten the ignition lance in a vise protecting the surface with the use of padded jaws (aluminum).
2. Acting with a 15mm spanner unscrew counterclockwise tip to replace.
3. Check the integrity of the copper washer placed between the barrel and the ignition tip and insert it on the thread of the tip.
4. Install the new tip, ensuring that the center electrode inside the tube of the igniter is inserted into the hollow of the ignition tip's inner slot.
5. Screw the tip and tighten with the 15mm wrench



7.6 CORRECTIVE MAINTENANCE

	DANGER **Before acting on any mechanical or electrical component, the Maintenance Manager will have to disconnect the battery until servicing is completed and only then can restore normal operating conditions to verify the ignition device.** **This is to prevent someone from re-enable the ignition device without alerting those who are performing maintenance.** **Apply also on the ignition device a sign indicating that the same is maintained.** **The Maintenance Manager is the main responsible for any accidents that may occur during these operations, therefore it is strongly recommended to perform the procedure described above in order to avoid serious and unpleasant trouble.**

	DANGER **Before connecting an electrical component, carefully study the electrical circuit, a bad connection can cause injury or damage.** **This may be done only by qualified personnel.**

In this section describes the corrective maintenance operated by a qualified technical personnel to carry out repairs on the ignition device.

The Table 7.2 lists the corrective maintenance activities.

Table 7.2 – Corrective maintenance

NR. PR.	DESCRIPTION	REFERENCE SECTION
1	Replacing the electronic board	7.6.1.6.1
2	Replacing the battery	7.6.2
3	Replacing the capacitor	7.6.3
4	Replacing of the spark gap	7.6.4

7.6.1. REPLACING THE ELECTRONIC BOARD

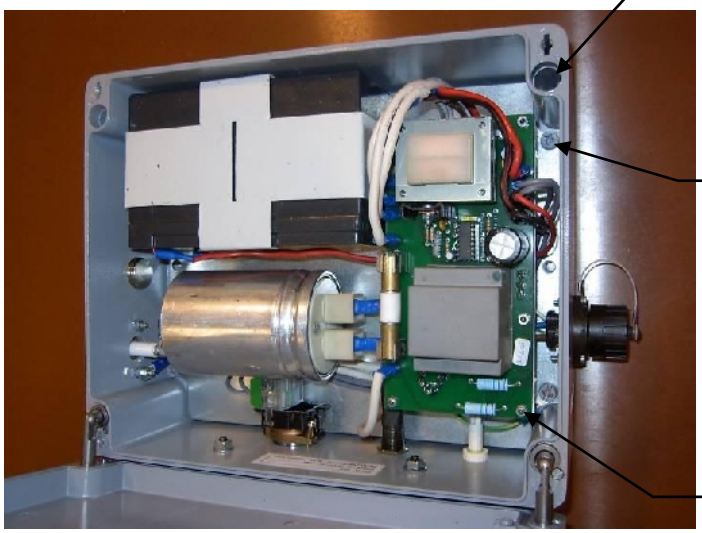
	**DANGER** **All operations on electronic board or in general inside the cabinet must be performed with the recharge cable unplugged, battery disconnected and capacitor discharged.**

	**NOTE** **If in doubt, before working on electronic boards, contact "Customer Service" TESI s.r.l.**

a) Removal

1.Open the front cover by unscrewing the 4 screws
2. Loosen the screws on the inner plate of the housing, disconnect the battery and disconnect terminals and internal connections of the connectors panel.
3. Remove inner plate with all components and remove the 4 nuts on the back that secure the electronic board.

	**NOTE** **Acting on the electronic board, only after you have noted and written down all connections to be restored.**



b) Installation

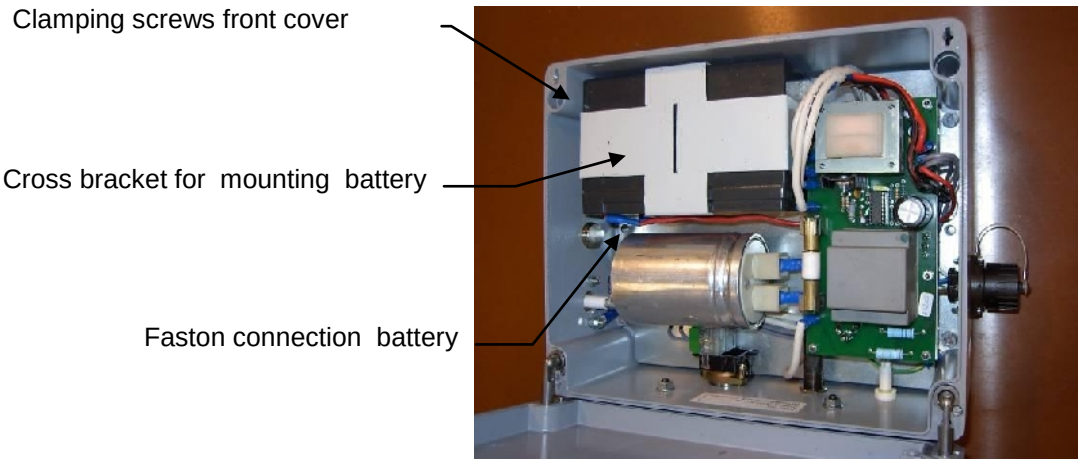
Install a new circuit board, proceeding in the opposite direction, the above procedures set forth in paragraphs

7.6.2. REPLACING THE BATTERY

	**DANGER** **All operations on electronic board or in general inside the cabinet must be performed with the recharge cable unplugged, battery disconnected and capacitor discharged.**

a) Removal

1. Open the front cover by unscrewing the 4 screws.
2. Remove the cross bracket holding the battery removing the retaining screws.
3. Disconnect faston connectors from positive and negative battery terminals.



b) Installation

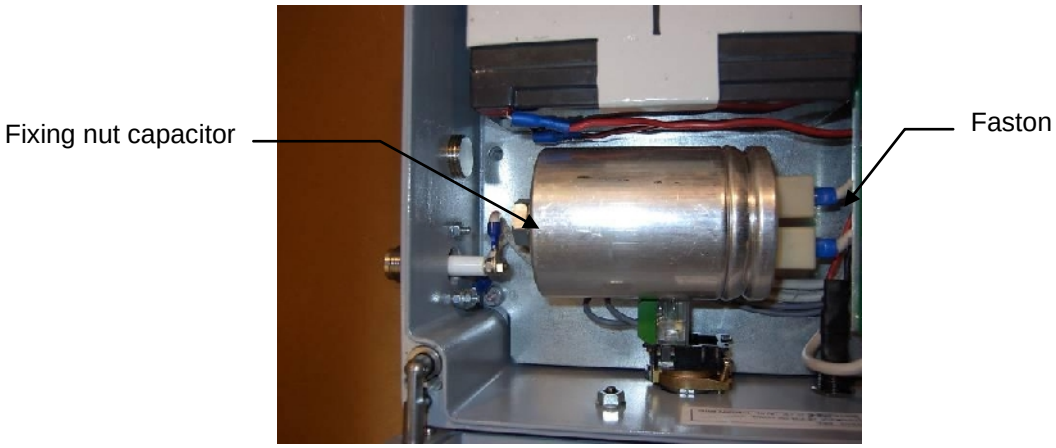
Install a new battery, proceeding in the opposite direction to the procedures described in previous paragraphs and paying attention to correctly connect the positive and negative poles of the battery to the respective faston connectors marked with a red wire for positive and black one for negative.

7.6.3. REPLACING THE CAPACITOR

	**DANGER** **All operations on electronic board or in general inside the cabinet must be performed with the recharge cable unplugged, battery disconnected and capacitor discharged.**

a) Remove

1. Open the front cover by unscrewing the 4 screws (see figure "Replacing the Battery").
2. Disconnect the faston connectors from the capacitor mounted.
3. Unscrew the nut on the bottom of the capacitor that attaches to the support bracket.



b) Installation

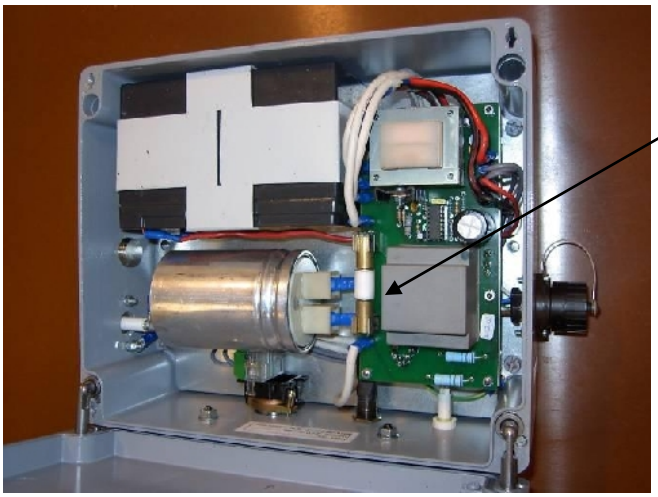
1. Replace the capacitor with one having the same features and perform in reverse previous transactions

7.6.4. REPLACING OF THE SPARK GAP

	**WARNING** **Before any operation, make sure the power is disconnected from the network and at least 3 minutes have elapsed since last use.**

a) Remove

1. Open the front cover by unscrewing the 4 screws (see figure "Replacing the Battery") .
2. Acting as possible with insulated pliers, remove the spark gap from the contacts snap on the electronic board.



b) Installation

1. Replace the spark gap with one having the same features and run in reverse previous transactions.

CHAPTER 8

8. DIAGNOSTICS

8.1 GENERAL

In this Chapter shall be taken into account failures and anomalies that statistically are the most common or the difficulties encountered during the use of ignition device itself

8.1.1. RISK OF MALFUNCTION

The Table provides information to identify possible causes for problems encountered during the use of ignition devices. And possible remedies are also shown indicating the paragraphs that refer to the process of replacing the faulty component

Table - Troubleshooting

MALFUNCTION	POSSIBLE CAUSE	REMEDY
The device does not generate sparks.	**a** Low battery discharge.	**a** Recharge or replace battery.
	b Failure connection cable.	**b** Check the status of cable and connectors and possibly replacing it with another new one.
	c Tip damaged or not correctly fitted.	**c** Check the status of the tip and its correct assembly on device.
	d Capacitor failure	**d** Check the status of the capacitor using multimeter and check that the two terminals of the capacitor are shorted together. With a multimeter suitable, check capacity of the capacitor (4Mf)
	e Malfunction of the spark gap.	**e** Since is not possible check its status with any tool, try to replace it with another new one.
	f Malfunction of the main electronic board.	**f** Check all the above possible anomalies, replace the card and send the faulty TESI srl for repair and verification.
The device does not recharge the battery.	**a** The power supply integrated charger is not connected to the network or the socket is not powered	**a** Connect recharge cable to a powered socket at 115Vac or 230Vac. The multicolor led on the top panel should turn on green.
	b The power supply integrated charger cable is damaged	**b** Check insulation and continuity with a multimeter or a meeger.
	c The battery is too low.	**c** Check the remaining battery voltage with a multimeter. The value of reading should not be less than 10Vdc (10Vdc=shortcircuit)

MALFUNCTION	POSSIBLE CAUSE	REMEDY
	d The charging circuit, located on the main board inside the enclosure is damaged.	**d** Check out all the previous possible anomalies, replace the card and send the complete failure **TESI srl** for repairs and checks
During operation, the spark rate is reduced significantly.	**a** The battery is low or almost.	**a** Check the color of the led on the top panel during the operation of the Device. If the color of the LED was orange or red, to recharge the battery using the cable provided

CHAPTER 9

9. OPTIONAL ACCESSORIES

9.1 GENERALITY

The optional accessories available, if requested by the customer, for the portable Device XE18Pb06 model are as follows

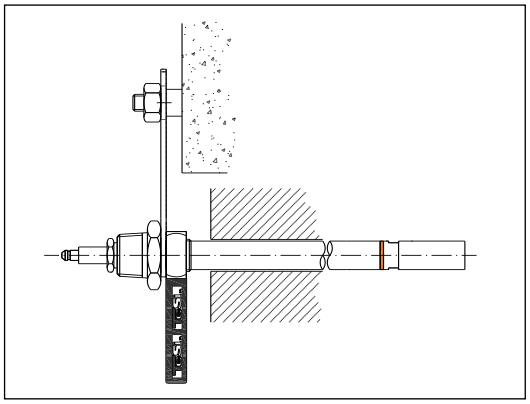
1. Aluminum sliding and adjustable stop flange.

2. Rubber easy grip (L = 150mm) to be mounted axially on the ignition lance.

3. Metal and rubber made, 90° handle to be mounted on the ignition lance, close to the cable fitting .

4. Metal made 90° handle with built-in remote spark push button (came with suitable connection cable).

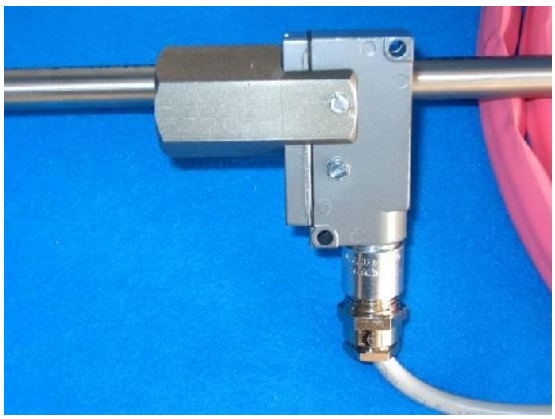
5. Mounting bracket to fix the ignition lance in working position.



6. Stainless steel fitting ½ "NPT M sliding on the ignition lance made.

7. Teflon protection spark button cover.

8. Sliding/adjustable micro switch to prevent accidental operation when the device is not properly positioned in the burner (come with suitable connection cable).



9. Shoulder belt for hand free transport

TESI s.r.l. DECLINE ANY RESPONSIBILITY IN CASE OF DAMAGES TO EITHER PEOPLE OR THINGS DUE TO INOBSERVANCE OF THE DIRECTIVES AND INSTRUCTIONS CONTAINED IN THIS MANUAL OR IN THE INTEGRATIVE DOCUMENTS JOINTLY DELIVERED WITH THE COMPONENTS POSSIBLY COMPLETING THE PORTABLE HIGH-ENERGY IGNITER – XE18PB06.

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PORTABLE HIGH-ENERGY IGNITER MODEL XE18PB06

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