



# Teläir

GENERATORS



## TIG 3000G

***USE AND MAINTENANCE MANUAL  
AND INSTALLATION INSTRUCTIONS***



V. 001 – June 2017

This manual has been drawn up by the Manufacturer in order to provide basic information and instructions for performing all generating set operation and service tasks in an adequate and safe manner.

It is an integral part of the generating set equipment, must be kept with care throughout the equipment life, and must be protected against any agent that could damage it. It must follow the generating set if installed on a new vehicle, or if its ownership changes hands.

The information in this manual is intended for the personnel in charge of installing the generating set, and for all those involved in its maintenance and use.

The manual defines the purpose for which the equipment has been built and contains all the information required for its safe, correct use.


Constant observance of the contained information will ensure user safety, low running costs and a longer equipment life.


To facilitate reference, this manual has been divided into chapters specifying the main notions contained; for quick consultation, refer to the table of contents.


You are strongly advised to read the manual and the reference documents throughout: this is the best way to ensure long-lasting performance, reliability and prevention of injury or damage.


The drawings in this manual are provided by way of example only. You may find that the illustrations differ from the actual parts on the machine in your possession: this does not in any way affect the validity of the general and safety information in this manual.


"Graphic safety symbols" have been employed in this booklet to identify different levels of danger or important information:


 Information to avoid potentially dangerous situations that could result in serious injury or possible harm to one's health.


 Information to avoid situations that could potentially result in damage to property.


 Important information for correctly carrying out the operations described or for the correct usage of the equipment.

 **Before any work on the generating set is carried out, those involved should carefully consult this manual making sure that they have understood its contents.**

 **This generator must be installed solely and exclusively by trained and authorised personnel, in accordance with the manufacturer's instructions. It must be used only and exclusively to produce electrical power on motor vehicles or on stationary equipment connected to an electrical system built to current standards and sized in accordance with the power rating.**

 **The generator does not have any own internal automatic devices for protection against current leakage (automatic cut-out switch). This safety system must be integrated in the distribution system to the utilities.**

 **Never operate the generator without the door or with the door open. In addition to implying risks for the operator, efficient cooling would not be guaranteed and serious damages could be caused to the generator.**

 **Remove any flammable substances (for example: petrol, paints, solvents, etc.) that might be stored near the generating set.**

**Make sure that any hot parts of the generating set are not in contact with any flammable materials.**

**Never fill up the fuel tank while the engine is running.**

**Never touch the generating set or the wiring connections with wet hands.**



***In the event of a circuit break, do not replace the fuses with other higher amp ones. Do not insert objects through ventilation holes.***

***Inspections and maintenance must only be carried out with the engine stopped and by skilled staff.***



***In case of fire, never open the generating set casing and use only approved type fire extinguishers.***

***Never use water to put out flames in the generating set.***



***This equipment is not intended for use by people (including children) with physical, sensory or mental limitations, or lacking experience or knowledge, unless they have been instructed in the use of the equipment by a person responsible for their safety.***



***The information contained in this publication was correct at the time of printing but may be modified without advance notice.***

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## 1 GENERAL INFORMATION

The generating set **TIG3000G**, shortly referred to as generator here below, is designed to be installed on vehicles, although this does not exclude its use in stationary applications requiring a versatile, stable and reliable power source, applying the latest technology.

It consists of an internal combustion Otto-cycle engine, a high frequency three-phase alternator and an inverter able to deliver 230 V 50 Hz alternating voltage and 12 V direct voltage to charge the connected battery.

It is enclosed in a steel plate casing, insulated and sound-proofed using special sound absorbing materials.

The engine fuel is **LPG** in a gaseous state.

Where the fuel is compatible, it can be taken from the tank set aside for camper utilities or the vehicle fuel tank. If the fuel is not compatible it will be necessary to connect up a bottle or install an LPG tank; in any case, they must have a suitable pressure reducer

The generator can be controlled traditionally via the remote control panel (supplied), which can be installed inside the vehicle, or via a domotics control unit (Teleco HUB, optional).

As part of its product development and upgrade policy, the manufacturer reserves the right to introduce modifications without prior notice.

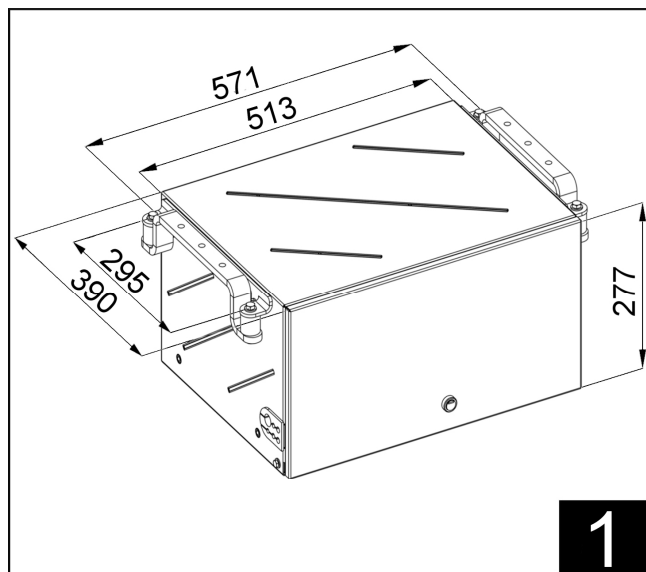
## 2 CHARACTERISTICS

### 2.1 Technical Specifications

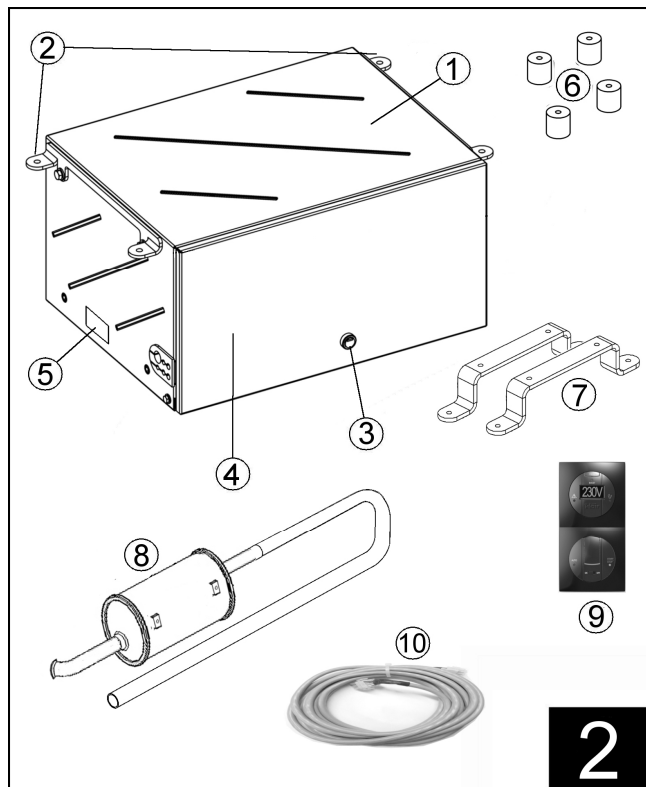
Output voltage:	V ac	230 $\pm$ 2%
Output frequency:	Hz	50 $\pm$ 1
Maximum continuous power:	kW	2.5 @ $\cos\Phi$ 1
Maximum peak power:	kW	2.7 (including consumption of the battery charger)
Engine:		Yamaha MZ175-30ise, single-cylinder air-cooled
Displacement:	cm <sup>3</sup>	171
Start:		electric
Power supply:		LPG in a gaseous state (butane or propane, depending on ambient temperature)
LPG pressure:	mb	30 (higher pressures damage the generator)
Average consumption:	g/kWh	350 (at max power)
Oil sump capacity:	litres	0.6
Battery voltage:	V dc	12 V
Battery charger voltage:	V dc	13.6 V
Battery charger current:	A	10 max
Battery capacity:	Ah	> 40 with inrush current >60 A
Current consumption in Off state:	mA	<= 0,5
Current consumption in Stand-by state:	mA	<= 60
Control:		Electronic control panel, remote switch or domotics control unit (Teleco HUB)
Operating temperatures:	°C	-20 ÷ 40
Generator only weight:	kg	53
Total weight:	kg	62
Noise level:	dBA	52 ÷ 60 @ 7 m, depending on the connected load

## 2.2 Overall dimensions

Figure 1 shows the overall dimensions of the generating set **TIG3000G**.



## 2.3 Main components

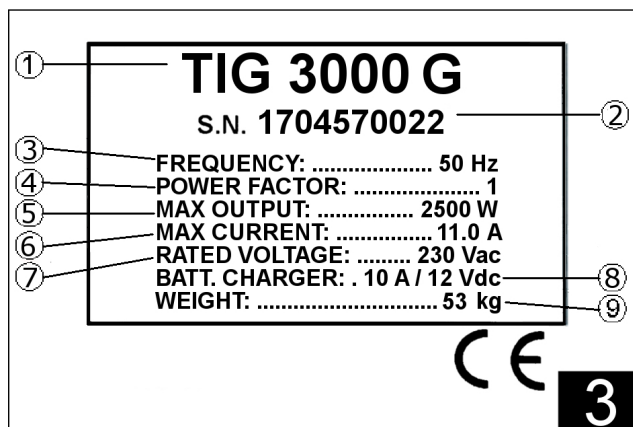


- 1 Generating set
- 2 Supporting brackets
- 3 Access door lock
- 4 Access door
- 5 Technical specifications label

- 6 Vibration damping mounts
- 7 Fixing brackets
- 8 Exhaust silencer
- 9 Electronic control panel
- 10 Signal cable

## 2.4 Identification plate

- 1 Generating set model
- 2 Serial number
- 3 Frequency
- 4 Power factor
- 5 Maximum electric power
- 6 Maximum output current
- 7 Rated voltage 230V AC
- 8 Battery charger specifications
- 9 Weight



## 3 SHIPPING, HANDLING, STORAGE

### 3.1 Storage

During transport and storage, the generator is protected by suitable cardboard packaging and placed on a wooden support base. It must be stored horizontally, in a covered, dry and well ventilated area.



**Do not turn the package upside-down. The correct position is shown by the symbols printed on the package ( ↑ ).**

### 3.2 Weight

Gross weight of **TIG3000G** including the packaging: 66 kg.

### 3.3 Handling



**Always observe safety and accident prevention rules when lifting and handling. Use lifting and handling equipment with capacity greater than the load to be lifted.**

The generating sets, complete with their packaging, can be handled using common lifting and handling equipment. The packages have special spacers to allow for transpallet forks insertion.

## 4 INSTALLATION

### 4.1 Preliminary information



**Incorrect installation of the generating set can cause irreparable damage to the equipment and compromise the safety of the user.**

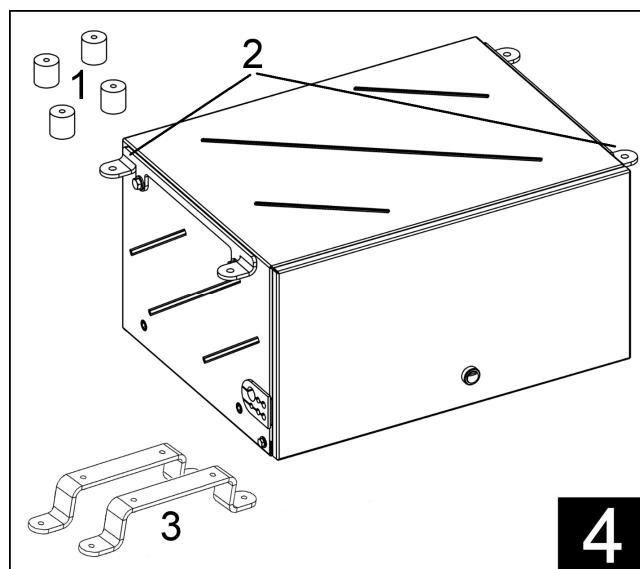


**The generator must be installed in such a way as to prevent water infiltration, therefore, it must be protected especially when installed under vehicles.**

If generating sets are installed not in compliance with the instructions in this manual, the Manufacturer will not be held responsible for any malfunctioning or safety issues regarding the generating set, pursuant to Machinery Directive 2006/42/CE. Moreover, the manufacturer will not be liable for any resulting injury or damage.

### 4.2 Instructions for generating set fixing

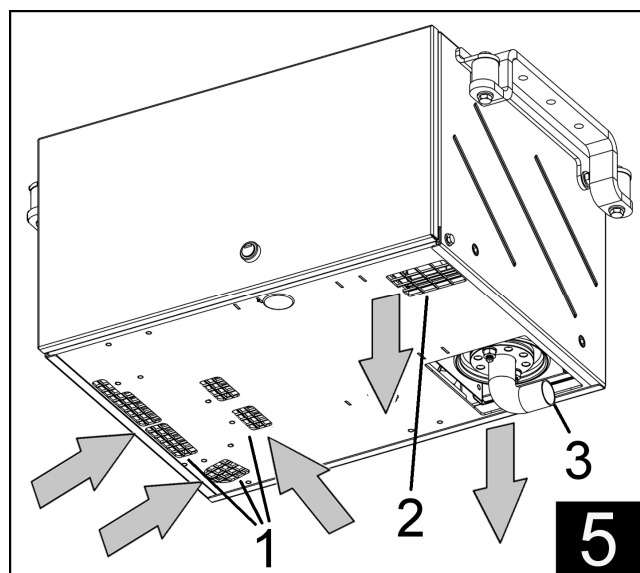
The generator is equipped with 2 support brackets (fig.4, ref. 2) fixed on the sides that allow for both wall mounting and floor mounting. 4 cylindrical vibration damping mounts (fig. 4 ref. 1) and 2 omega shaped mounting brackets (fig.4, ref. 3) are supplied, particularly useful for equipment fixing in a hanging configuration.



#### 4.2.1 Ventilation and protection

For cooling purposes, the generator lets cool air in through the lower air intakes (fig. 5 ref. 1) and expels warm air through the protected opening (fig. 5 ref. 2). Exhaust gases are sent to the exhaust through the hole (fig. 5 ref. 3) on the bottom.

Sufficient space for air circulation must be allowed around the generating set hood; in particular, there should be a gap of at least 10 cm in front of the ventilating holes.



In the event that the generator is installed in the vicinity of a vehicle wheel, apply a suitable protector (splash guard) to prevent rain, mud and sand raised by the wheel affecting the generator or entering through the ventilation air inlet.



## 4.2.2 Hanging installation

The generator is provided with supporting brackets designed for fixing in a hanging configuration. Figure 6 shows the arrangement of the fixing brackets and vibration damping cylinders.

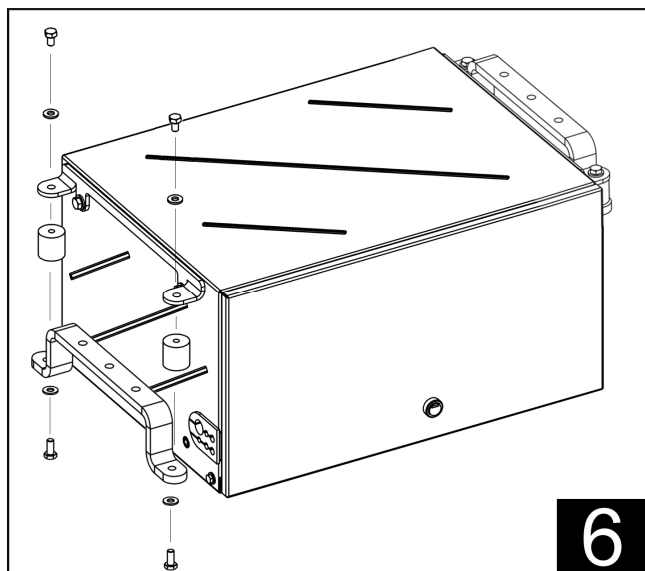
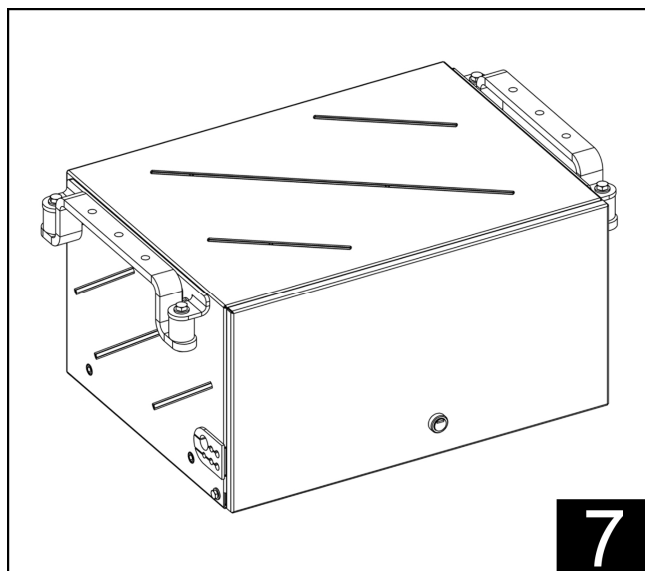
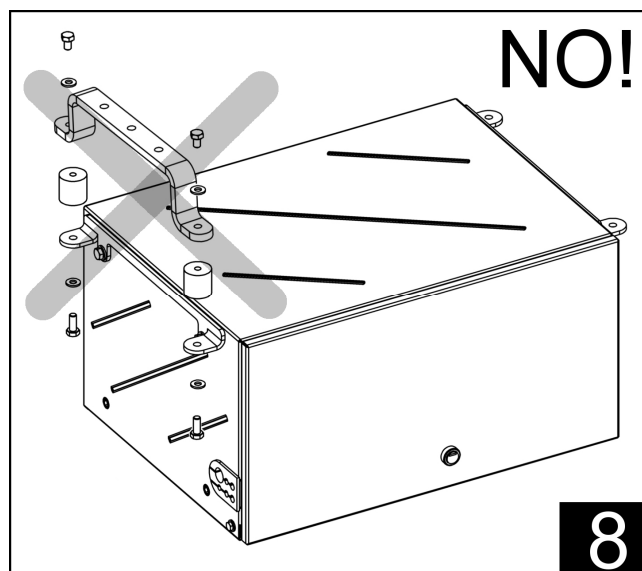


Figure 7 shows the generator with the mounting brackets and damping mounts correctly installed on the generator.



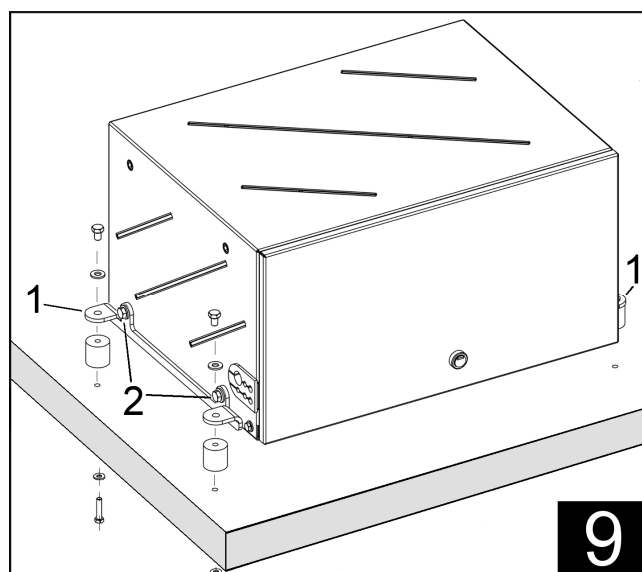
**The vibration damping cylinders are designed to work in compression and must be assembled as shown in figures 6 and 7. Installation in a pulling configuration as shown in fig. 8 is strictly not permitted!**



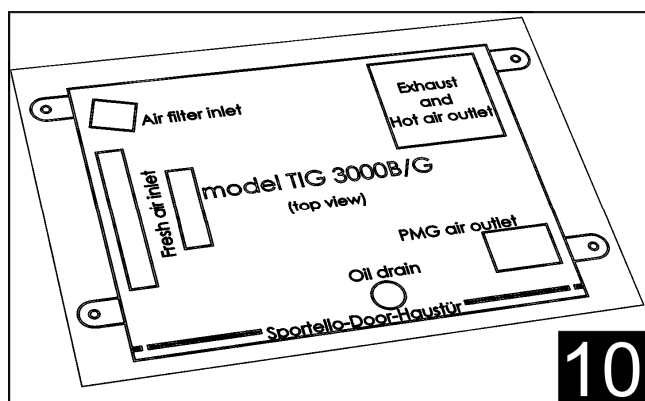
**Ensure that the ride height of the generator is not such as to risk contact with the ground during travel. A good rule is to ensure that the ride height of the lowest point of the generator is not less than that of the other components of the vehicle on which it is installed.**

## 4.2.3 Floor mounting

The **TIG3000G** can be installed on a table/shelf. To do this remove the two support brackets (fig. 9 ref. 1) from the upper part of the generator, rotate them 180 degrees and attach them to the lower part using the screws (fig. 9 ref. 2), as indicated. Once the task has been completed make sure all the screws that lock the two brackets are securely.

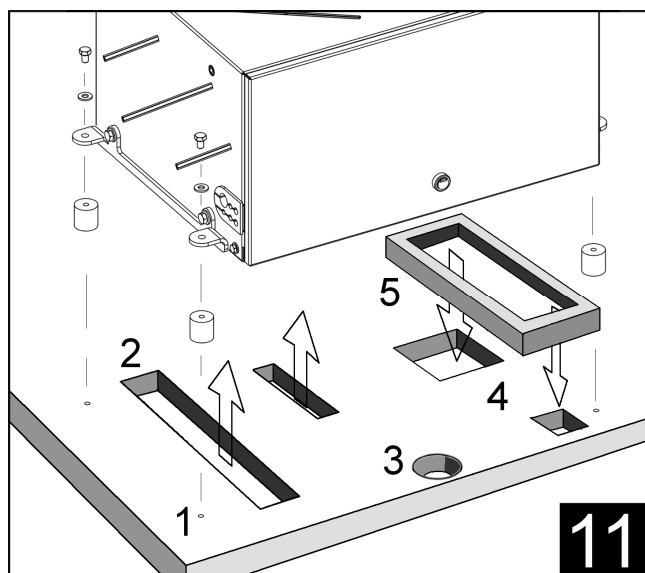


For quick preparation of the support surface, the generator is supplied with a drilling template (fig.10).



On the mounting surface, 4 vibration mount fastening holes should be drilled (fig. 11 ref. 1), as well as a fresh air intake hole (fig. 11 ref. 2), an access hole for the engine oil drain plug (fig. 11 ref. 3), two holes to vent hot air and allow the exhaust pipe to exit (fig. 11 ref. 4).

To prevent the generator sucking the hot exhaust air back in, a closed-cell heat-resistant foam rubber seal should be placed around the latter two. The seal must be high enough to create a sealed duct between the bottom of the generator and the surface (fig. 11 ref. 5).

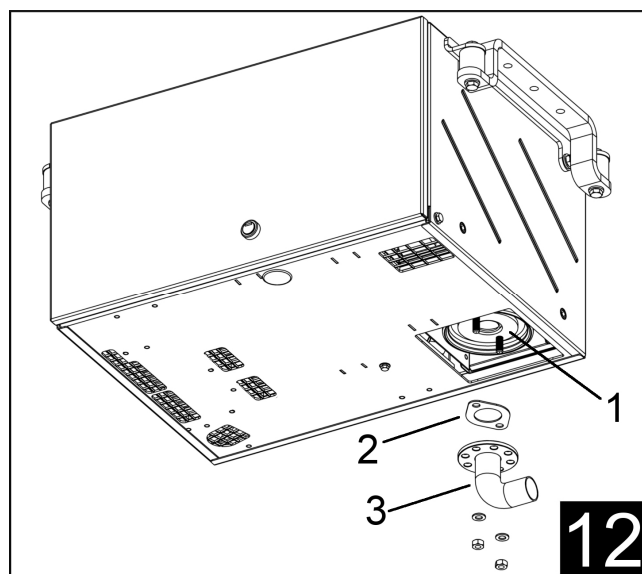


**If hot air is recycled by the generator, in addition to a system shutdown occurring when the safety temperature threshold is reached, irreparable damage may occur to the internal combustion engine and the electronic boards.**

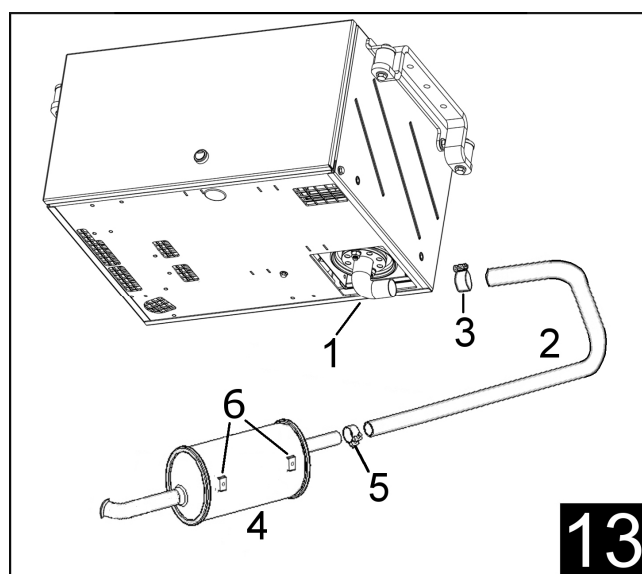
#### 4.3 Connecting the external exhaust silencer

The generator is supplied with an external exhaust silencer kit consisting of the silencer, a flexible steel pipe and accessories for generating set connection and fixing.

As a first step the generator internal muffler (fig.12 ref. 1) must be fixed to the supplied coupling (fig.12 ref. 3) by interposing the seal (fig.12 ref. 2).



Insert at one end of the 2 m long flexible steel pipe (fig.12 ref. 2) the D.32-35 fixing clamp (fig.13 ref. 3), insert the pipe on the previously installed exhaust coupling (fig.13 ref. 1) up to a length of at least 3 cm, then tighten the clamp on to the coupling/pipe connecting section.



Insert the clamp D.32-35 (Fig.13 ref. 5) at the other end of the flex hose. Insert the silencer in

the pipe (fig. 13 ref. 4), and tighten the clamp. Fix the silencer using the threaded couplings (fig. 13 ref. 6) and secure the flex hose, making sure there is no obstruction to generator extraction for routine maintenance purposes.

#### 4.4 LPG hose connection

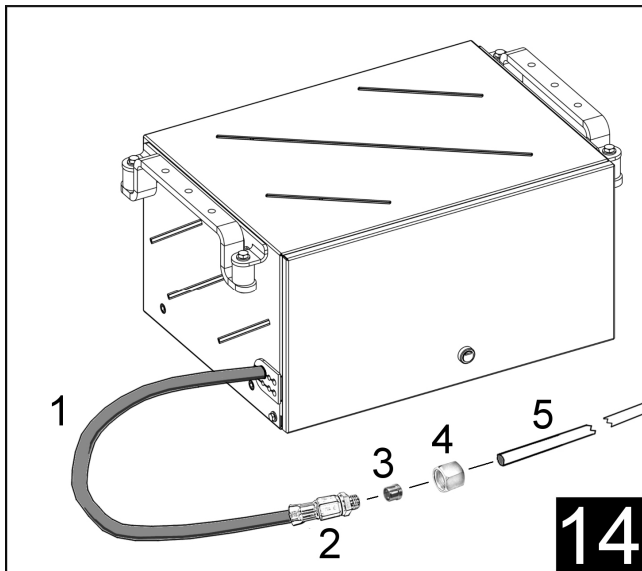


**The generator must be fuelled with LPG in a gaseous state at a pressure of 30 mb. Higher pressures can seriously damage the generator.**

The rubber hose exits from the left side of the generator (fig. 14 ref. 1): this is used to fuel the engine with LPG. At the end of the hose there is a fast connector with an ogive (diameter 8 mm) suitable for connection to the vehicle steel piping system as shown in the figure.

Insert the nut (fig. 14 ref.4) and the ogive (fig. 14 ref. 3) in the steel pipe (fig. 14 ref. 5) coming from the LPG system, then tighten the nut all the way onto the connector.

If the vehicle LPG system consists of copper piping, a D6xd5 steel reinforcement bushing must be inserted inside the hose near the ogive.



Do not crush the rubber hose or bend it too sharply.

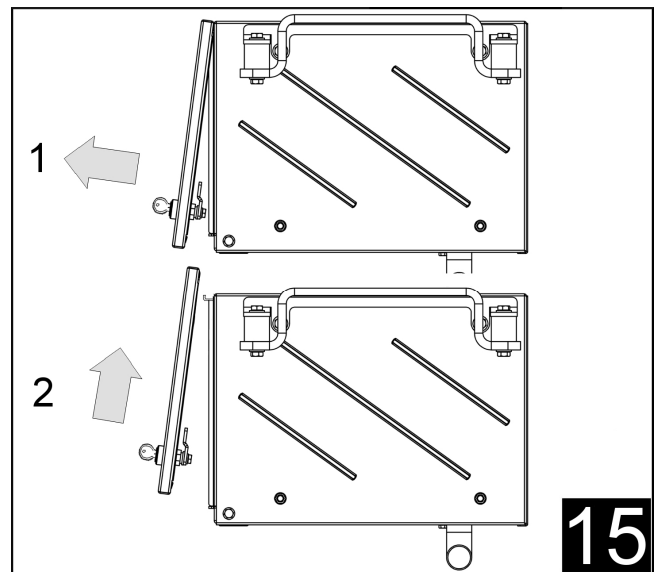
If the LPG tank has a fuel reserve indicator, the service terminal strip will have a wire connector to connect the electrical wire coming from the fuel sensor switch.

## 5 ELECTRIC WIRING CONNECTIONS

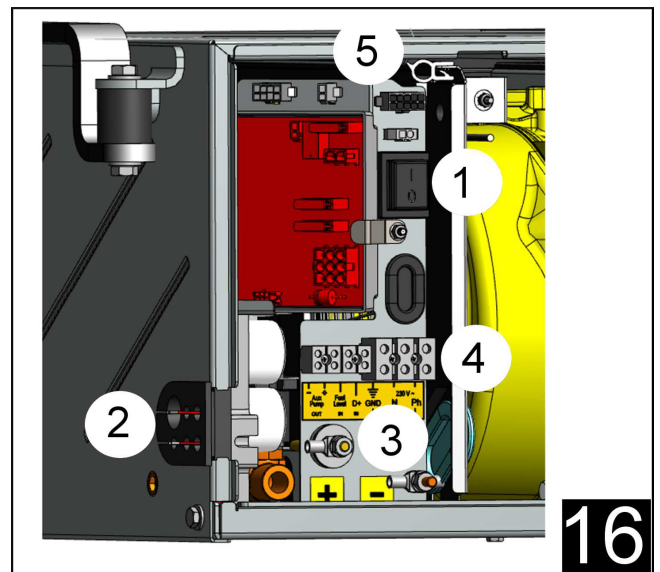
### 5.1 Access to internal electrical connections

To carry out electrical connections to the generator it is necessary to remove the front door.

To do this release the lock, pull the lower part of the door outwards (fig. 15 ref. 1), then push it upwards (fig. 15 ref. 2). Store it in a safe place until it is refitted at the end of generator connection operations.



### 5.2 Safety Switch



Before starting any maintenance operations or carrying out electrical connections inside the generator, the safety switch must be turned to its O (Off) position (fig.16 ref. 1). The switch must then be turned back to its I (On) position once the

electrical connections or maintenance operations have been completed.

On the left side of the generating set is located the cable guide (fig.16 ref. 2) through which the LPG tube and electrical cables must be led for generator connection. The cables coming from the battery must be secured to the special studs (fig.16 ref. 3). The 230 Volt user wires and auxiliary services wires must be connected to the terminal strip (fig.16 ref.4), the control panel and the other electrical controls to the connectors (fig.16 ref.5).

### 5.3 Battery connection



**On the positive power supply line connected to the generator, next to the battery, provide a 60 A rating fuse.**



**The connection to a battery with voltage different from 12 volts or the reversal of polarity will cause irreversible damage to the generator.**

The generator must be connected to a 12 Volt battery (for the required specifications see the table with generator data). Depending on the requirements it can be connected either to the vehicle battery or to the service battery.

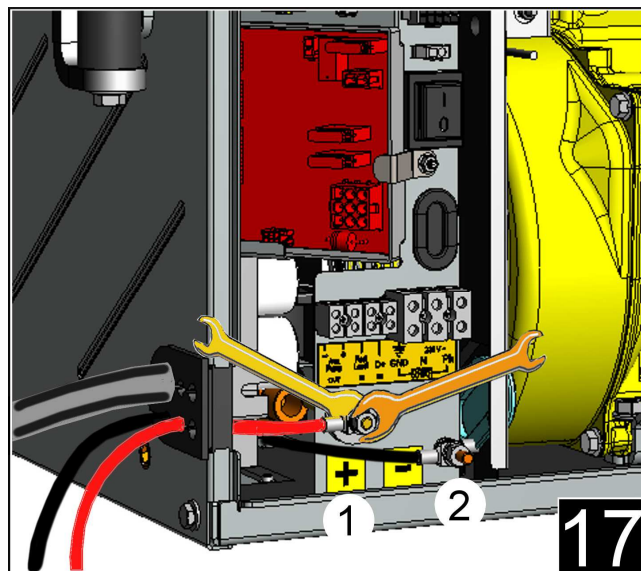
The connected battery is charged by the generator itself with a maximum current of about 10 A.

For connection purposes, insulated cables of different colours should be used (usually red and black, connected to the positive pole and negative pole - respectively) with sections:

10 mm<sup>2</sup> for lengths up to 6 metres

16 mm<sup>2</sup> for longer lengths.

On the generator side, each wire should be fixed to an eyelet terminal with a Ø 6 mm hole. By observing polarity indications, fix the eyelets to the studs + and - on the generator (fig.17 ref. 1, fig.17 ref. 2) taking care to use two wrenches as shown in fig.17, to stop the studs from turning.

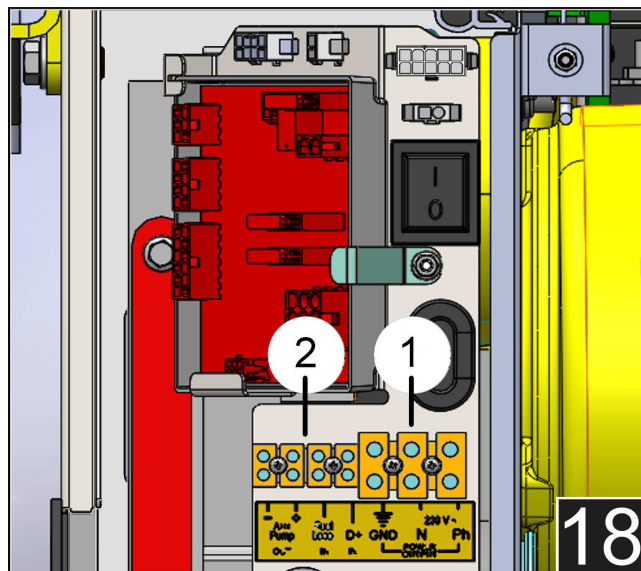


### 5.4 Connection to a 230 V~ utility



**Incorrect connections or connections performed with wires not up to 230 V~ voltage requirements can damage the generator and its connected utilities as well as endanger users.**

The generator has a terminal strip for connection to 230 V~ utilities (fig. 18 ref. 1) and another for optional service connections (fig. 18 ref. 2).



Connection of 230 V~ utilities should be carried out by using insulated leads with a 2.5 mm<sup>2</sup> section, in compliance with the regulations in force. The output terminals are marked with Ph (Phase), N (Neutral) and GND (metal Ground).





**In order for the electrical circuit breaker devices to operate correctly, the generator is supplied with an output voltage at 230 V ~ related to its mechanical and electrical mass. Should technical considerations require a different configuration, remove the yellow-green jumper linking the GND and N terminals.**

The generator has an internal protection against overloads. It is preferable, however, to install a thermomagnetic cutout switch for single-phase network in the utility distribution control panel with maximum capacity 12 A. It is advisable to close the switch after starting the generator and reopen it before stopping it

## 5.5 Cut-off Relay connection



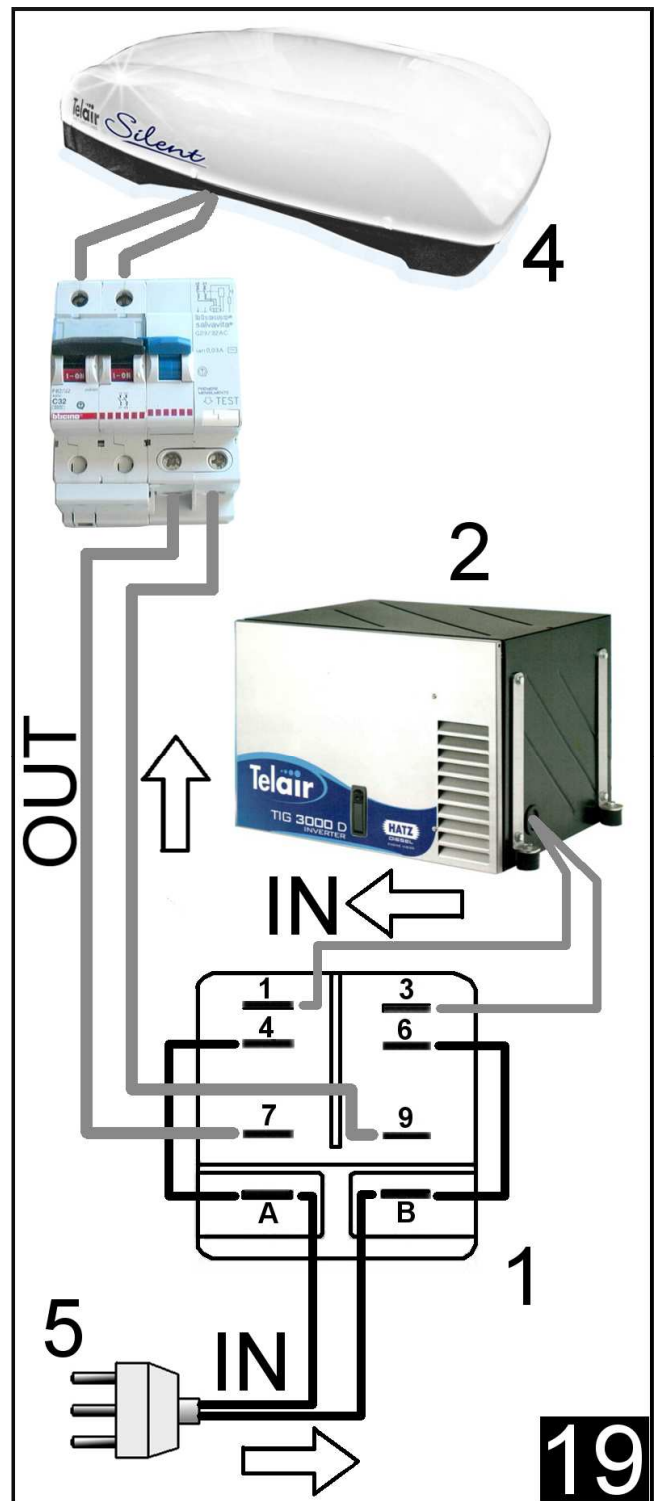
**If a 230 V~ voltage is applied to the generating set output, even for a short time, the equipment may suffer serious damage.**

On the distribution system of the 230 V~ power line, immediately downstream from the generator as indicated in fig.19, a cut-off relay (for example, code 05423, optional) or another automatic switch should be installed to isolate the generator when the system is supplied 230 V~ mains voltage.

Connect the relay (fig.19 ref. 1) as follows:

- Connect the two wires of the 230 V output line of the generating set (fig.19 ref. 2) to the PINS 1 - 3.
- Connect the two wires of the direct line to the utilities to the PINS 7 - 9.
- Connect the two wires of the 230 V external line (fig.19 ref.5) to the PINS 6 - 4.
- Jumper the PINS 4 - A.
- Jumper the PINS 6 - B.

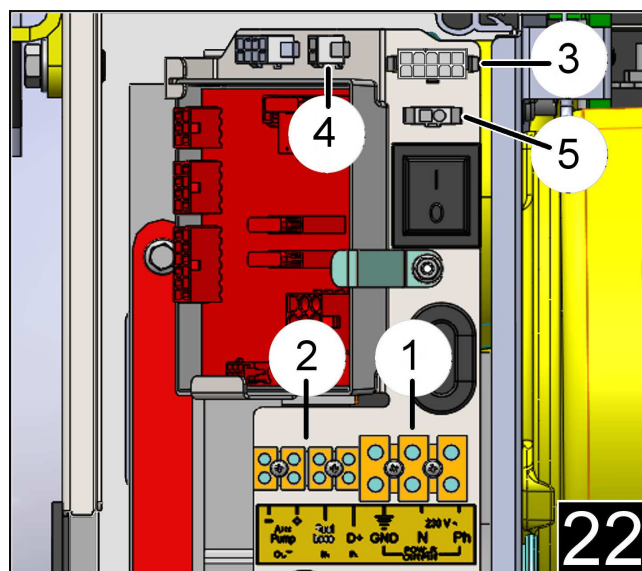
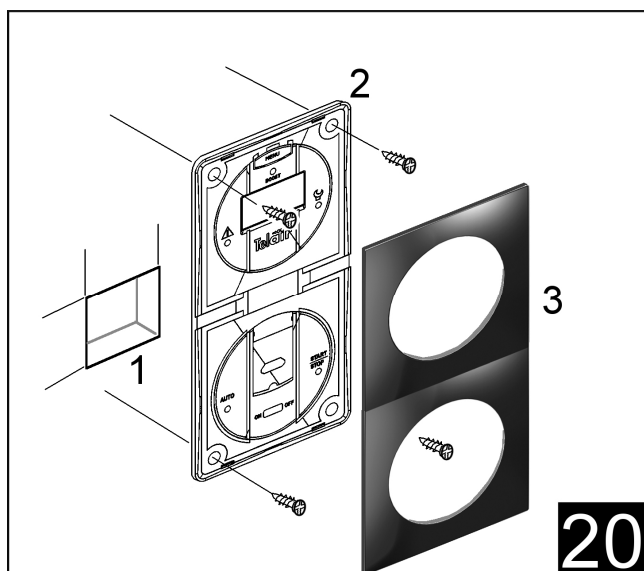
Fig.19 also shows the connection of a thermomagnetic + safety cutout switch (fig.19 ref. 3), not supplied with the generator.



## 5.6 Electronic control panel connection

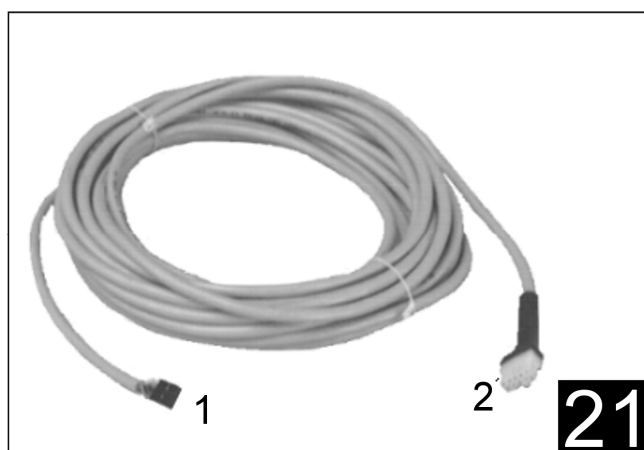
Choose your required position for the control panel inside the vehicle and drill a 35 x 25 mm rectangular hole (fig.20 ref.1) on the wall to receive the panel connectors.





Identify the route for laying the connection cable (fig. 21) from the control panel to the generating set.

Position the connection cable so as to connect the black connector end (fig. 21 ref. 1) to the control panel, and the white connector end (fig. 21 ref. 2) to the generating set.



After leading the connection cable out of the hole in the wall, connect the black connector to the corresponding connector on the back of the panel.

Fix the panel (fig. 20 ref. 2) to the wall using the 4 self-tapping screws, then apply the frame (fig. 20 ref. 3) by exerting a slight pressure until you hear the anchor tabs click in.

The supplied standard cable is 5 m long. Also available are optional 7 m long, 10 m long and 15 m long cables.

Connect the other end of the connection cable to the corresponding white connector on the generator (fig. 22 ref. 3).

## 5.7 Auxiliary connections

The terminal strip (fig. 22 ref. 2) and the connectors (fig. 22 ref. 4 and ref. 5) allows for the following auxiliary (not mandatory) connections:

- AUX PUMP + and - terminals: not used on LPG fuelled generators.
- FUEL LEVEL Terminal: 0 Volt active input to which the pilot terminal of a fuel level reserve gauge of the on-off type can be connected. The other gauge terminal must be connected to the ground (either on the vehicle, or to the negative pole of the battery connected to the generator).
- D+ terminal: +12 Volt active input (max 15 volts) with respect to the electrical ground to which the D+ wire of the vehicle system can be connected (often marked "Under key lock"). This wire is live with +12 V voltage when the vehicle engine is running. The information is used by the generator to stop at each change of state of D+.
- REMOTE On-Off connector (fig. 22 ref. 4): this connector can be used to connect the two poles of a galvanically isolated open-closed contact, (for example, the contact of an electromechanical relay), controlled by a remote device. When the contact is closed, the generator will start and it will stop when the contact is opened.
- EPO connector (Fig. 22 ref. 5): this connector can be used to connect the two galvanically isolated poles of the contact of a remote NO (Normally Open) type, emergency stop button. When the contact is closed (emergency button pressed), the generator will stop immediately and power is cut from its electronic circuits.

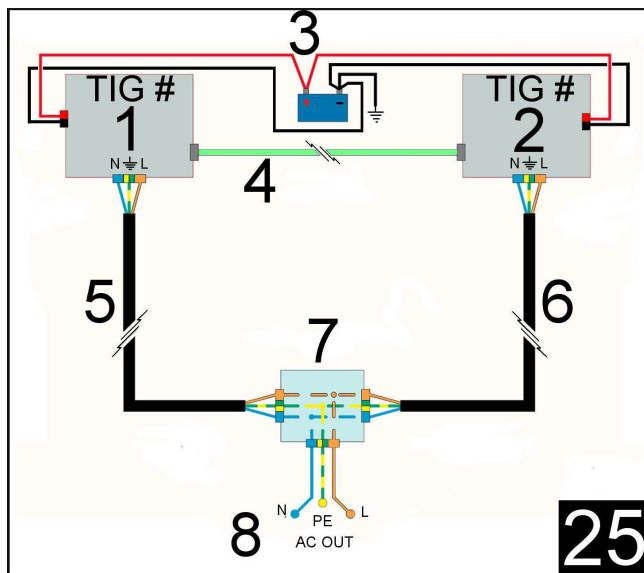
## 5.8 Connection to dedicated LPG tank

If the generator is connected to an LPG tank (or bottle) that is used exclusively for the generator, it is necessary to install a suitable pressure reducer with a 30 mb outlet between tank and generator. As already specified, pressures higher than this can seriously damage the generator. The tank must be type-approved as per the laws in force in the country of installation and must be fitted at a point protected from any impact or high temperatures.

For information on the electrical connection for any fuel reserve indicator, please see the paragraph on auxiliary connections.

## 5.9 Connecting two TIG3000G units in parallel

Should it be necessary to double the available power, it is possible to connect two TIG3000G units in parallel (they must have the same or compatible hardware and software revision levels). The connection must be carried out following the wiring diagram at Fig. 25.



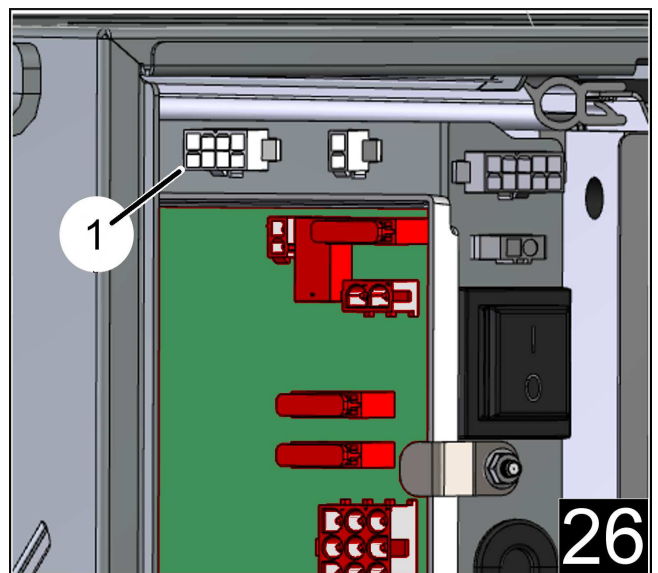
- 1 = TIG 3000G #1
- 2 = TIG 3000G #2
- 3 = Battery (may be common)
- 4 = Data cable for parallel connection
- 5 = TIG #1 230 V output cable
- 6 = TIG #2 230 V output cable
- 7 = Connection point of the two outputs
- 8 = Load connection

The following rules must be observed when carrying out the parallel connection:

- the connections must be made with the generators switched off
- the maximum distance between the two generators must not exceed 10 metres
- the length of cables 5 and 6 from the outputs of the generators to the junction point must be less than 15 metres each, the lengths must be identical (a maximum difference of 1 metre is tolerated) and the wires must be of the same size
- make absolutely certain that the N, L and PE connections to the user circuit are correct
- the two generators may share the same starter battery or each may have its own
- with regard to the size of the cables used, comply with the specifications in the paragraph on electrical connections

If these rules are not complied with the overall power output will not equate to the sum of the outputs of the two generators, or worse still, might create a malfunction with damage to the generators.

In order for the two generators to be able to work with the outputs connected in parallel, they need to exchange data on the synchronisation and operation. This is achieved through the special (optional) data cable code 06688 (Fig. 25 ref. 4).



To carry out the data connection it is necessary to remove the door from both generators. Then, after running the lead through the cable holder used for the other electrical connections, insert the connectors at the end of the lead in the respective 8-pole connectors (fig. 26 ref. 1).



**If the data connection has not also been made, do not start the generators with their outputs connected in parallel because this carries a risk of serious damage to the two machines.**

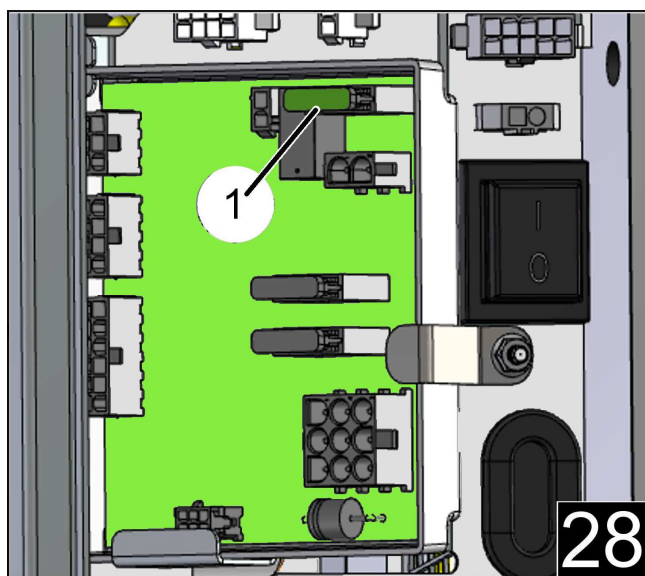


**When operating in parallel, a single generator may be started on its own. The first generator to be started automatically becomes the master.**

### 5.10 Isolating the internal battery charger

In the event that it is decided to isolate the internal battery charger from the generator, a fuse must be removed from the motor control circuit board.

In this instance the battery will not be recharged and an external device will have to be used.



To isolate the internal battery charger it is necessary to remove the fuse from the relative fuse holder (fig. 28 ref. 1) housed on the control board.

## 6 OPERATING INSTRUCTIONS

### 6.1 Machine safety

The generator is enclosed in a sealed case and therefore, there is no risk of contact with moving parts at high temperatures (except for the external part of the silencer) or with live wires.

The door is provided with a lock and key. The key must not be left within the reach of children or inexperienced persons.

The generating set has been manufactured in compliance with the safety standards listed in the declaration of conformity.

### 6.2 Fuel (LPG)

Both Butane or Propane, or a mix of these two LPG gas fuels can be used.

Choosing the right one will depend on the ambient temperature (in the tank area).

Where ambient temperature is higher than 15 °C Butane can be used.

Where ambient temperature is below 5°C only Propane must be used.

### 6.3 Useful tips



To ensure a long efficiency of the generator and avoid malfunctioning of any utilities powered, it is advisable:

- Before starting the set, ensure the utilities are disconnected (for example via the cutout switch provided between the generator and the system as described elsewhere in this document) until the generator has started and has reached steady state.
- Before stopping it, disconnect or at least stop the connected utilities.
- Do not connect power loads exceeding the maximum power rating; ideally 80% of the specified rating should not be exceeded so as to allow for any absorption peaks.
- During the first 50 hours of operation (break-in) do not submit the generator to loads greater than 75% of the rated power
- When the generator is out of use for an extended period, if it is permanently connected to a battery, it is recommended that it be run periodically for half an hour in order to ensure that the battery remains charged.

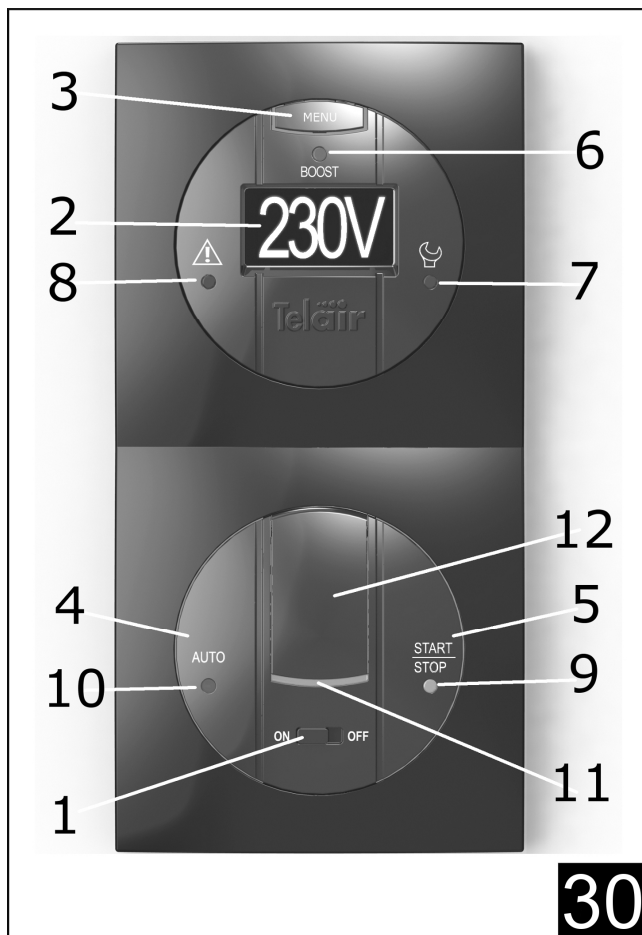
## 7 CONTROL PANEL

The generator is equipped with an original remote control panel from which it is possible to control its operation (fig.30).

The panel has a access port for connection to an domotics control unit and a USB port for connection to a PC.

Controls and signals on the panel (Fig 30):

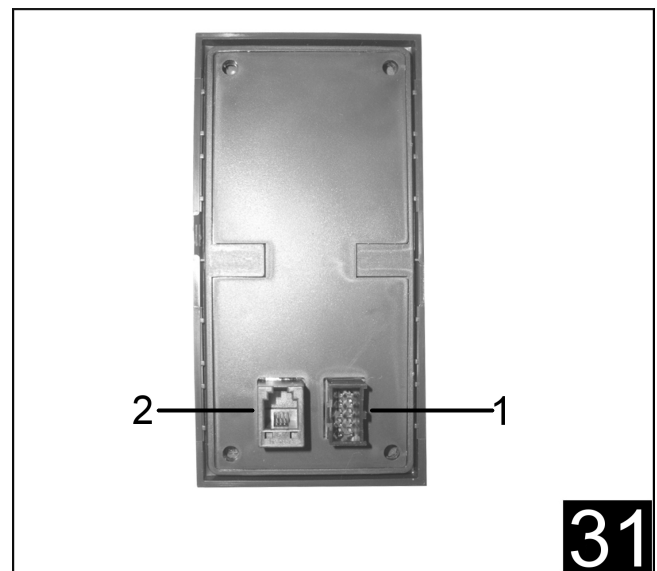
- 1 ON/OFF switch: allows control panel activation. The display 2 and the LED 11 are switched on
- 2 Display: allows generator operation to be monitored. It shows the operation state and any messages related to internal diagnostics
- 3 MENU / BOOST button, dual function key: pressed normally it allows scrolling the various menus or confirming the selected options, held down for at least 3 seconds allows the BOOST function to be activated or deactivated. This function must be activated when you are planning to apply to the generator a single load with power exceeding 60% of the rated power.



- 4 Auto button, dual function button: within the MENUS, it scrolls back through the available options; with an active panel it allows the AUTO function to be activated or deactivated. This function controls the automatic generator start and stop respectively on reaching the start threshold and the stop threshold set.
- 5 Start/Stop button, dual function button: within the MENUS, it scrolls forward through the

available options; with an active panel it enables the generating set start and stop. Press it to cancel the AUTO function.

- 6 LED Booster, it illuminates when the BOOST function is on (fig.30 ref. 3)
- 7 MAINTENANCE red LED: the display shows the type of required maintenance (engine lubricating oil level check or replacement).
- 8 ALARM red LED: indicates a fault. The display provides detailed information on the fault detected by the system.
- 9 GEN ON LED: it illuminates when the generator is in operation. The display shows the parameters relating to the state of operation of the generator.
- 10 AUTO LED: it indicates that the corresponding function is active
- 11 ON LED: indicates that there is power to the panel.
- 12 microUSB port: used to perform diagnostic tests or software updates for the generator via a PC.



On the back of the panel are a connector for the connecting cable to the generator (fig.31 ref. 1) and the RJ11 connector for connection to an domotics control unit.



## 8 GENERATING SET USE

### 8.1 First starting

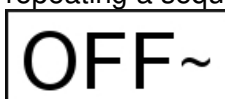


**If the fuel line is empty, the first start-up may be difficult as the LPG must first take the place of the air inside it. You may want to perform a number of attempts.**

Before the first starting check the oil level in the engine (see the chapter concerning maintenance).

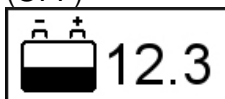
Turn the safety switch (fig.16 ref. 1) on the generator to I.

Set to ON the switch (fig.30 ref. 1) on the control panel. The ON LED lights up (fig.30 ref. 11); for one second, the display shows the Telair logo and the resident software version, then it starts repeating a sequence of 3 icons:



generator in standby mode

(OFF)



battery voltage

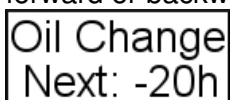


total hours of operation

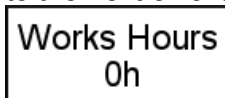
The generator is on stand-by.

### 8.2 Information menu

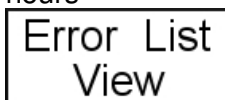
Pressing the MENU key (fig.30 ref. 3) gives access to the list of searchable information items; then, the START/STOP keys (fig.30 ref. 5) and AUTO key (fig.30 ref. 4) can be used to scroll forward or backward in the menus:



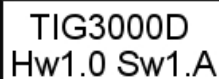
indicates the number of hours to the next oil change



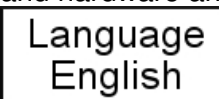
indicates the total running hours



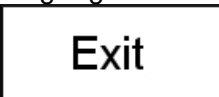
by pressing boost and then START/STOP or AUTO the last 10 recorded alarm events can be viewed



indicates the generator model and hardware and software versions



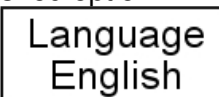
indicates the language setting; by pressing BOOST followed by START/STOP or AUTO it is possible to scroll through the available languages



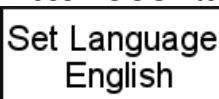
end of the available list, by pressing BOOST the panel is returned to its standard display mode.

### 8.3 Language Setting

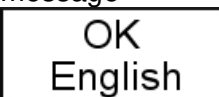
To select the language in which the display will show the main messages, press the BOOST button, then with the START/STOP and AUTO buttons scroll through the menus to reach the desired option



Press BOOST to display the message



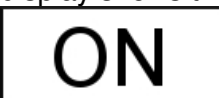
With the buttons START/STOP and AUTO, scroll through the available language options, then press BOOST once again. This will display the message



then the display will revert to showing again the generator stand-by state icons sequence.

### 8.4 Starting the generator in manual mode

Press the START / STOP button: the corresponding LED lights up (fig.30 ref. 9) and the generator controls the starting procedure; the display shows the icon



Once the equipment has started, the display repeatedly shows the sequence of icons related to the generator state of operation:





alternate

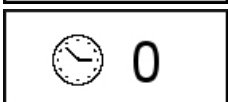
when the generator makes 230 V~ voltage available



output voltage



delivered power



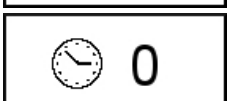
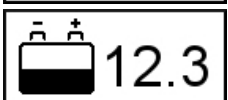
total hours of operation.

4 attempts are performed at the end of which, if the generator fails to start, an alarm signal is produced with the corresponding red LED (Fig.30 ref. 8) lighting up and the display showing the icon



## 8.5 Generating set stop

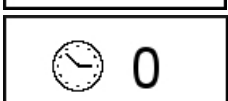
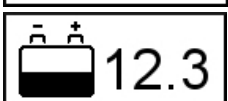
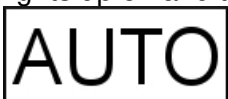
Press the START/STOP button. The generating set stops on stand-by, the display shows the icons



repeatedly in succession.

## 8.6 Starting the generating set in automatic mode

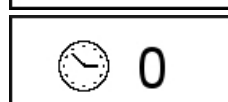
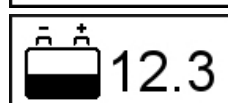
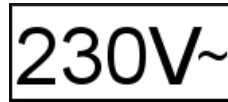
Press the AUTO button: the corresponding LED lights up on and the display shows the icons



repeatedly in succession.

The generator will start when the connected battery voltage drops below the set threshold (default is 12.0 volts).

Once the generator has started the display shows in sequence the icons



The generator will stop automatically when the connected battery voltage rises above the set threshold (default is 13.8 Volt).

In any case, the generator will remain in operation for at least 15 minutes.

Note that the required battery charging time changes according to the battery capacity, maximum current delivered by the battery charger used and the ambient temperature in the battery environment.

In the event that, in addition to the battery charger, a minimal default load is connected (around 300 Watt), the generator will not shut off. The AUTO mode can be activated whether the generator is active or on stand-by.

The AUTO mode is automatically deactivated when the START/STOP button is pressed.

## 8.7 Remote starting

The generator can be started using a remote control from another device (battery charger, SMS box, etc.), using the REMOTE connector (Fig. 22 ref. 4). The galvanically isolated C and NO terminals are attached to this connector by a relay controlled from an external device.

To carry out a remote start-up, turn the switch on the control panel to the ON position (Fig. 30 ref. 1), without starting the generator. At this point the generator is ready to receive a command on the REMOTE connector: when the contact is closed,

the generator will start and it will stop when the contact is opened.



Should any high-level alarms come from the generator, such as oil or temperature, the signal from the D+ input, or pressing the START/STOP button on the control panel will take priority over the REMOTE On-Off command. The oil alarm and the D+ signal prevent remote start-up until the START/STOP button on the control panel has been pressed.

## 8.8 BOOST Function

The BOOST function must be activated when a single load close to the maximum power must be connected.

To activate this function, hold down the Menu key for 3 seconds; the corresponding LED lights up and even in the absence of any load the engine increases its rpm.

To turn off the function, press and hold the Menu key again for 3 seconds; the corresponding LED will go off and the engine rpm slows down.

## 8.9 Alarm messages and causes

The alarms described here stop the generator. An alarm condition is cancelled by pressing the START/STOP button once; the generator then reverts to a status in which it can be restarted. Before doing this, you must eliminate the condition that caused the stop and the alarm.

### 8.9.1 Over load



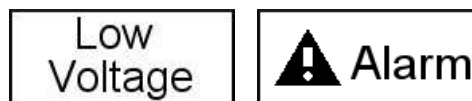
the maximum permitted load has been exceeded, the generator stops and the red alarm LED lights up (Fig.30 ref. 8).

### 8.9.2 Short circuit



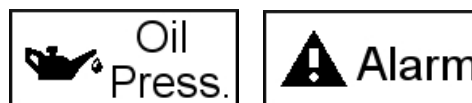
there is a short circuit on 230 V output, the generator stops, the red alarm LED lights up (Fig.30 ref. 8).

### 8.9.3 Low output voltage



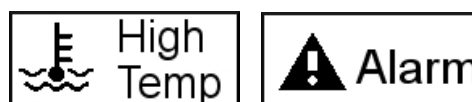
the output voltage has dropped too far below the minimum limit, probably due to poor performance of the internal combustion engine or to a single very high load being applied without the use of the BOOST function, the generator stops, the red alarm LED lights up (Fig. 30 ref. 8).

### 8.9.4 Oil pressure



insufficient engine oil lubricant level or pressure has been detected, the generator immediately stops and the red alarm LED lights up.

### 8.9.5 Engine temperature too high



an excessive engine temperature has been detected, the generator immediately stops and the red alarm LED lights up.

### 8.9.6 Data communications error



this message indicates that there has been an error in communication between the control panel and the control board on the generator. Check the connection. Obviously this alarm cannot be cancelled merely by pressing the START/STOP button.

### 8.9.7 Error codes

Open the menu (as indicated in another part of the manual) until the following text appears

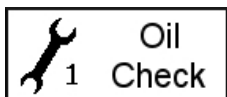


By pressing BOOST and then START/STOP or AUTO, the error codes of the last 10 recorded alarm events can be viewed. This is the list of the main alarm codes:

1	Start-up failed
2	Battery voltage too low
3	Motor over-revving
4	Oil level or pressure
5	Motor over-heating
9	Data connection to inverter lost
50	Short circuit on inverter output
51	Overload on inverter output
52	Inverter voltage too low
53	Inverter over-heating
57	An inverter input phase is missing
59	Inverter continuous voltage too high

## 8.10 Warning messages and causes

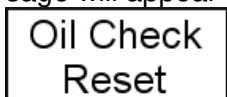
### 8.10.1 Check engine oil level



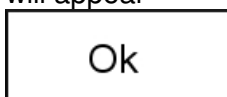
this message appears alternately with the normal messages on the display and is highlighted by the illumination of the red LED (Fig. 30 ref. 7); it calls for the oil level to be checked (and topped up if necessary).

Once the check has been completed, reset the corresponding hour counter:

press the MENU button and the following message will appear

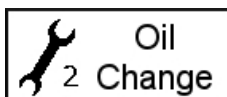


Press the MENU button again to confirm resetting of the hour counter. The following message will appear



the red LED switches off (Fig. 30 ref. 7) and the related message disappears from the display.

### 8.10.2 Engine oil replacement



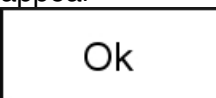
this message appears alternately with the normal messages on the display and is highlighted by the illumination of the red LED (Fig.30 ref.7); it calls for the engine oil to be changed.

After completing the operation reset the corresponding hour counter:

press the MENU button and the following message will appear



Press the MENU button again to confirm zeroing of the hour counter. The following message will appear



the red LED switches off (Fig. 30 ref. 7) and the related message disappears from the display.

### 8.10.3 Low fuel level



if the connection described in another part of the manual has been performed, this message indicates that the fuel has reached the minimum reserve level, and the maintenance LED lights up (Fig. 30 ref. 7). The generator will continue to operate until the fuel runs out.

### 8.10.4 Stop with D+ signal



if the connection described in another part of the manual has been performed, this message indicates that the generator has stopped due to a change in status of the D+ signal received from the vehicle.

To restart it, press the START/STOP button on the control panel.

## 9 MAINTENANCE INSTRUCTIONS

### 9.1 Maintenance schedule

ROUTINE MAINTENANCE SCHEDULE		50 hours or 4 months	100 hours or one year	300 hours or one year	500 hours or one year
Engine oil	Level check	•			
	Replacement	• (1)	•		
Engine valves	Chek and adjustment				•
Air filter	Chek (repalce if necessary)		•		
Ventilation ducts	Inspection and cleaning			•	
Engine vibration damping mounts	Check (replace if necessary)				•
External vibration damping mounts	Check (replace if necessary)				•
Fuel pipes	Inspection (replace if necessary)			•	

(1) First replacement



**Before performing any check or maintenance operation on the generating set, turn the ON/OFF switch of the control panel to its OFF position and the safety switch of the control panel to its O position.**

**This way you can operate under safe conditions as the generating set cannot start up.**

**If it is necessary to work on the electrical wiring system or on one of the electronic boards, remove the fuse provided on the direct supply positive line to the generator or disconnect the line from the battery.**



**Only use original spare parts. Using poorer quality spare parts may damage your generating set.**

**Periodic inspection and maintenance are essential to preserve the generator performance and ensure its long working life.**



**For more information on the maintenance of the engine, please refer to the technical manual of the engine manufacturer, supplied together with the generator.**

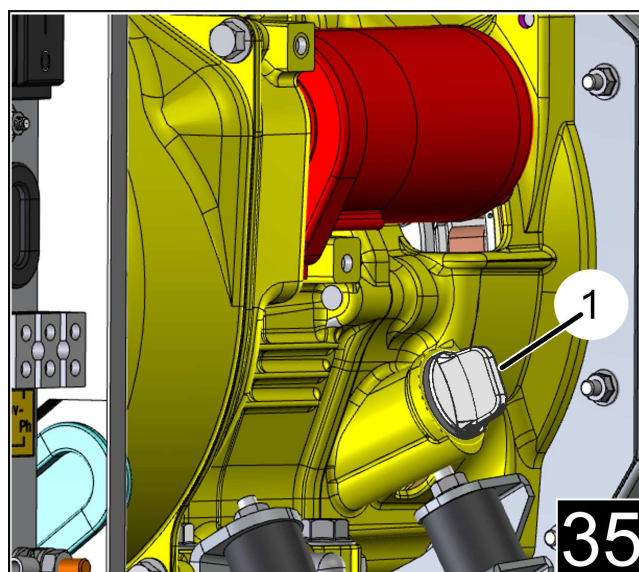
The following precautions must therefore be taken:

- 1) The generator must not be running.
- 2) All its parts must be cold.

#### 9.2.1 Checking the engine oil level



**Engine oil level checking must be carried out with the engine stopped and with a perfectly horizontal generating set.**



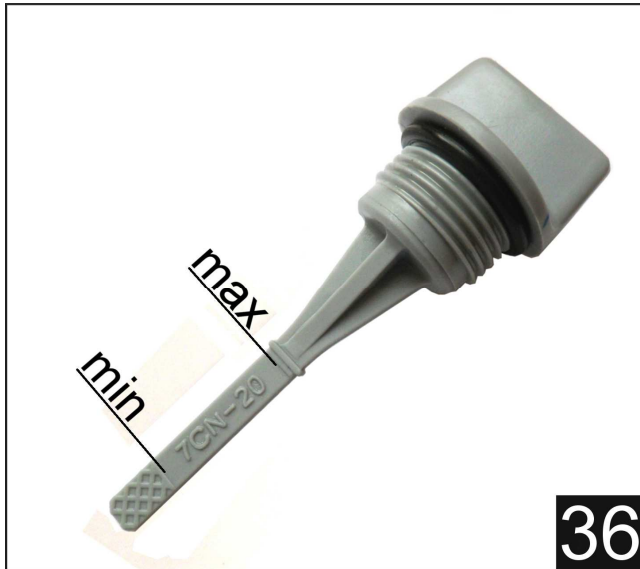
### 9.2 Checks not requiring skilled personnel

To perform this kind of inspections, it will be necessary to open the door of the generating set.

Unscrew the engine oil cap (fig. 35 ref. 1), wipe the dipstick clean if required, screw it back in its seat and then unscrew it again to obtain an accurate lubricant level reading. The dipstick must be

read after screwing the cap all the way into its seat.

If the oil level fails to reach the upper notch on the dipstick (fig. 36), top up via the access hole itself.



To restore the oil level use the same type of lubricant already present in the engine. Once the task has been completed make sure the cap is securely in its seat.



**Do not pour oil to exceed the maximum level indicated on the dipstick.**

### 9.3 Maintenance operations to be carried out by skilled personnel

#### 9.3.1 Engine oil replacement

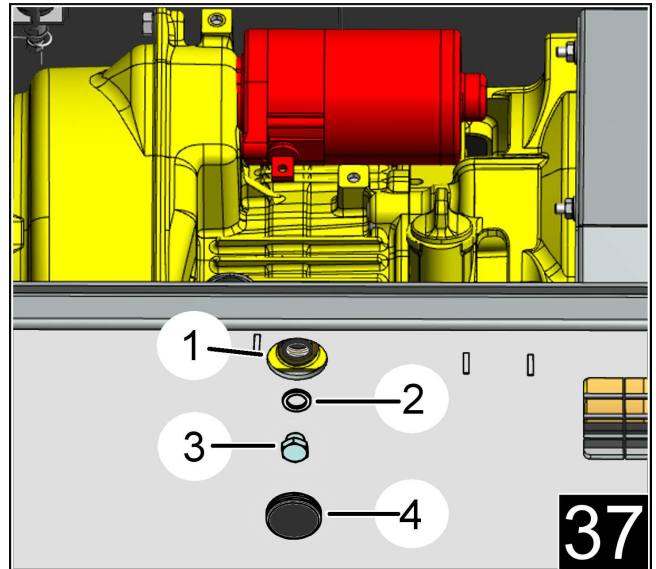


- **Hot oil can scald.**
- **Operating the generating set with a low level of lubricant would severely damage the engine.**

To make it easier to drain the spent engine oil, it is advisable to let the engine run for approximately 2 minutes; in this way, the oil will be more fluid and emptying will be quicker and more thorough.

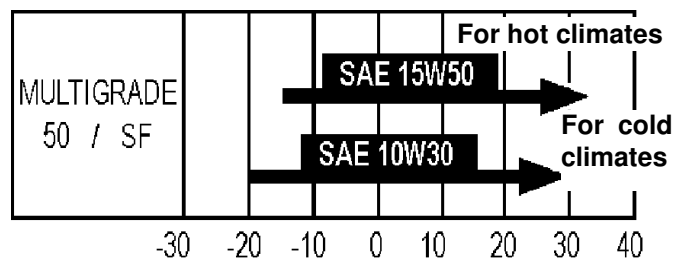
The drain plug for emptying the oil sump is located on the generator underside (fig.37 ref. 1). Remove the oil filler cap (fig. 35 ref. 1).

Remove the rubber guard (fig. 37 ref. 4) on the generator bottom. Then remove the drain plug and relative gasket (fig. 37 ref. 3 and ref. 2) and drain all the oil into a container suitable for collection of the spent lubricant.



After emptying, screw the drain plug back in and restore the lubricant level through the special filler (fig.35 ref. 1) by checking the level with the dipstick (fig.36). Fill the oil sump with approximately 0.6 litres of oil.

Use multigrade type oil for gasoline engines with a SAE viscosity degree suitable for the local climate according to the table.



**Spent oil should not be disposed freely in the environment but taken to special disposal centres carrying out disposal and/or recycling in compliance with the applicable law provisions in force in the country of use.**

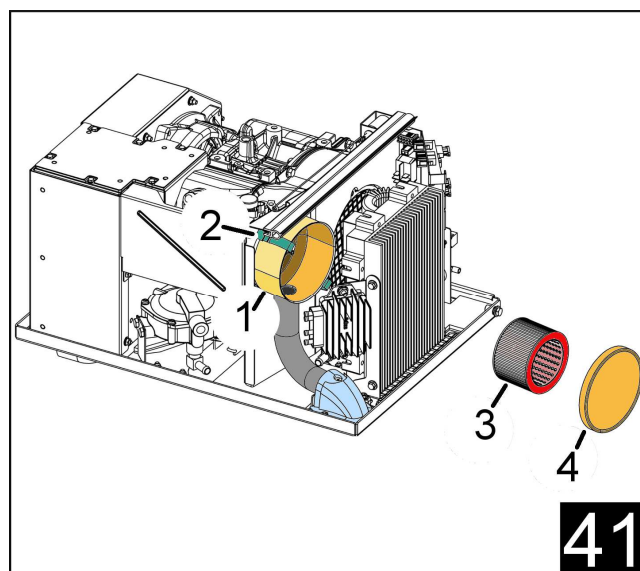
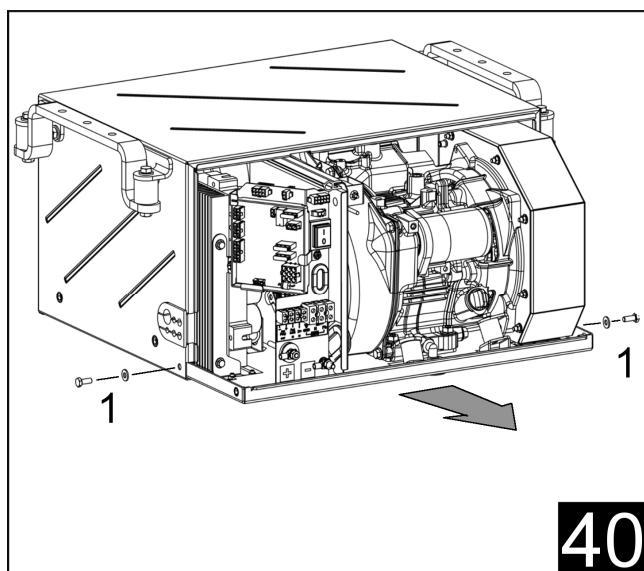
#### 9.3.2 Extraction generator from its hood



**Have appropriate equipment on hand capable of supporting the weight of the generator when not supported by the case.**



Some maintenance tasks require extraction of the generator from its hood. Once the drain hose, fuel feed hose and electrical connections have been detached, remove the two screws at the bottom of the sides (fig. 40 ref. 1) and remove the generator.



Lightly tap the cartridge on a hard surface to remove any excess dust or blow the filter clean inside out with compressed air (fig. 42). Never brush the filter cartridge, as this would push dust in between the fibres. If excessively dirty, replace the filter cartridge.

### 9.3.3 Air filter maintenance

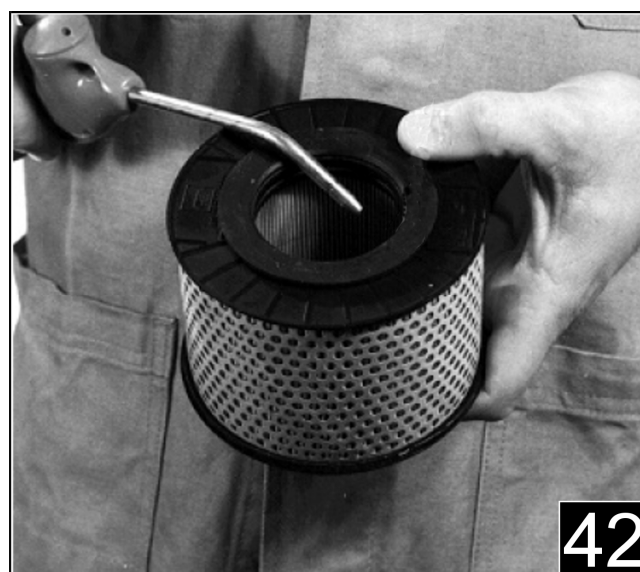


**A clogged air filter will reduce air flow to the engine. To prevent engine malfunction, check the air filter regularly. Never operate the generator without an air filter as the engine would be damaged very quickly.**



**Never use petrol or solvents with a low evaporation point to clean the air filter cartridge.**

The filter cartridge is enclosed in the sheet metal housing (fig. 41 ref. 1). Open the lid (fig. 41 ref. 4) by releasing the clips (fig. 41 ref. 2). Remove the filtration element (fig. 41 ref. 3), remove the thin layer of spongy filtration material, if very dirty wash with water and neutral detergent. Lightly tap the cartridge on a hard surface to remove traces of dust or blow the filter clean inside out with compressed air.



Lastly, refit the layer of spongy material on the filtration element, then reposition the filter in the filter box (fig. 41 ref. 1).

## 10 DECOMMISSIONING AND DISMANTLING INSTRUCTIONS

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The materials used for the construction of this appliance are recyclable. In the event of disposal, it is advisable to take the unit to a specialist workshop or designated waste collection centre.





## 11 GENERAL WARRANTY TERMS

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**TELAIR** guarantees its products against any construction material and/or manufacturing faults and defects.

*The right to warranty cover for new products is valid for a period of 24 months from the time of handing over to the end user, or for maximum 1000 operating hours, whichever limit is reached first. In all cases the warranty period will end no later than 26 months (28 months if delivered outside of Europe) after ex factory delivery.*

*For electric and hydraulic components, pipes, belts, sealing elements, injection nozzles, clutches and drives, the warranty term is 12 months from the time of handing over to the end user, or maximum 1000 operating hours, whichever limit is reached first. In all cases the warranty period will end no later than 14 months (16 months if delivered outside of Europe) after ex factory delivery.*

In any case, the costs of lubricants and consumables will be charged. Any transport expenses will have to be covered by the purchaser; the same applies to any expenses connected with inspections requested by the customer and accepted by **TELAIR**.

The manufacturer's warranty shall only be valid if:

- the customer has carried out any routine maintenance according to the recommended schedule and has promptly visited the nearest after-sale centre if required.
- the customer can produce a document showing the date of sale (invoice or receipt for tax purposes).

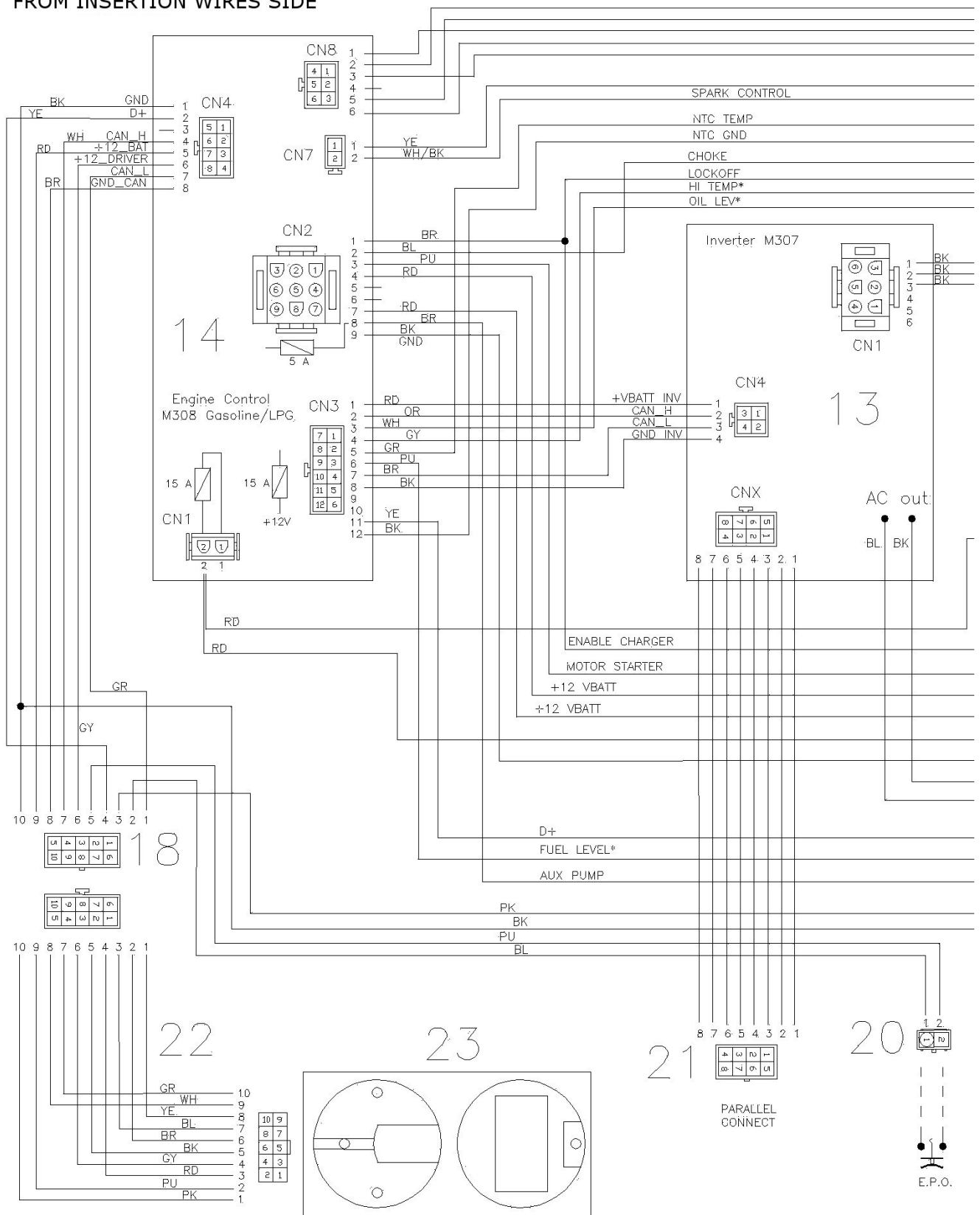
Such document will have to be kept with care and be intact when produced to the **TELAIR** After-Sales centre on requesting service.

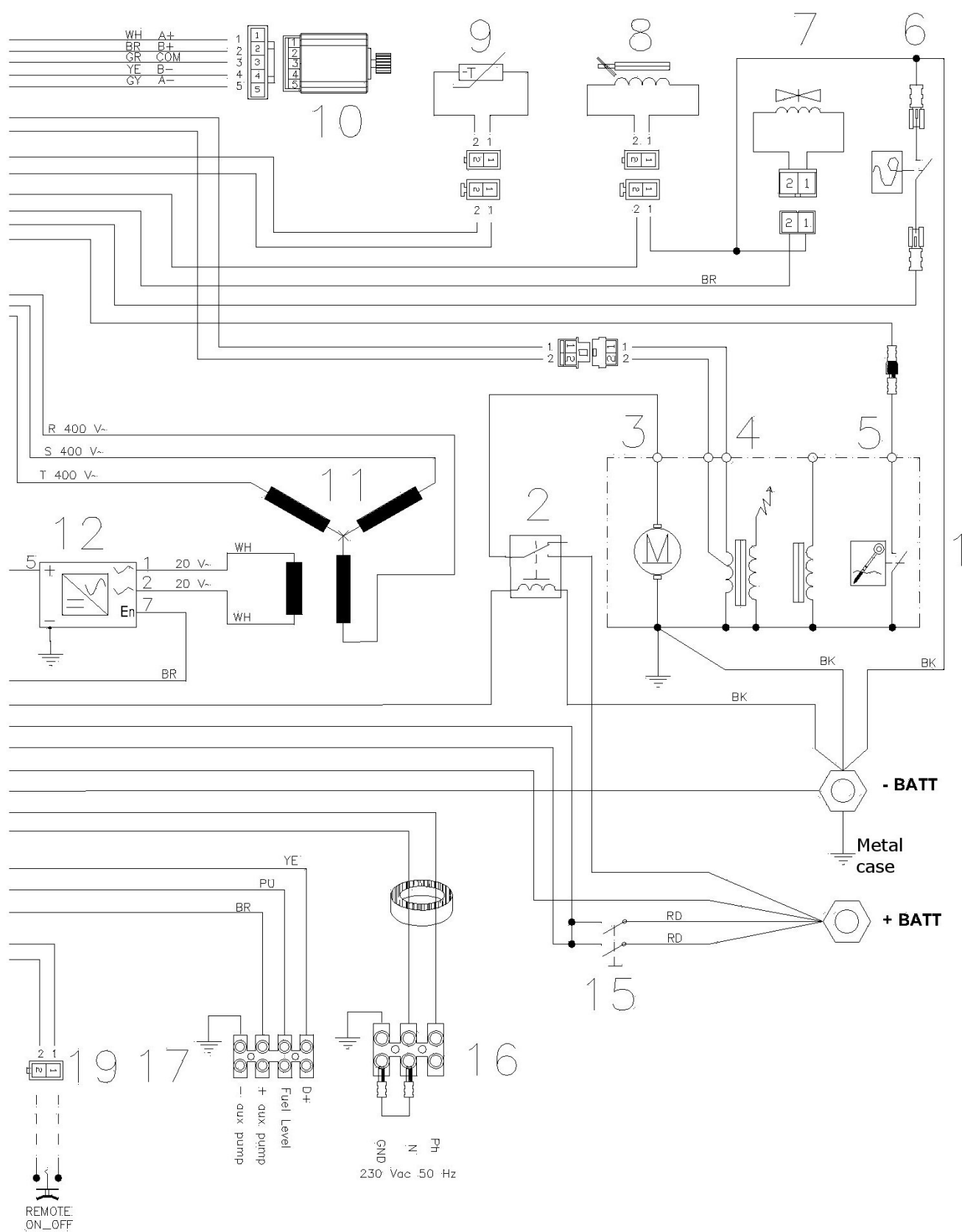
In any case, the purchaser shall not be entitled to:

- terminate the contract;
- claim damages to persons and property;
- claim the extension of the manufacturer's guarantee in case of product defects or malfunctioning.

## 12 TIG 3000 G WIRING DIAGRAM

CONNECTORS ARE VIEWED  
FROM INSERTION WIRES SIDE







## WIRING DIAGRAM KEY

All connectors are shown from the wire insertion side

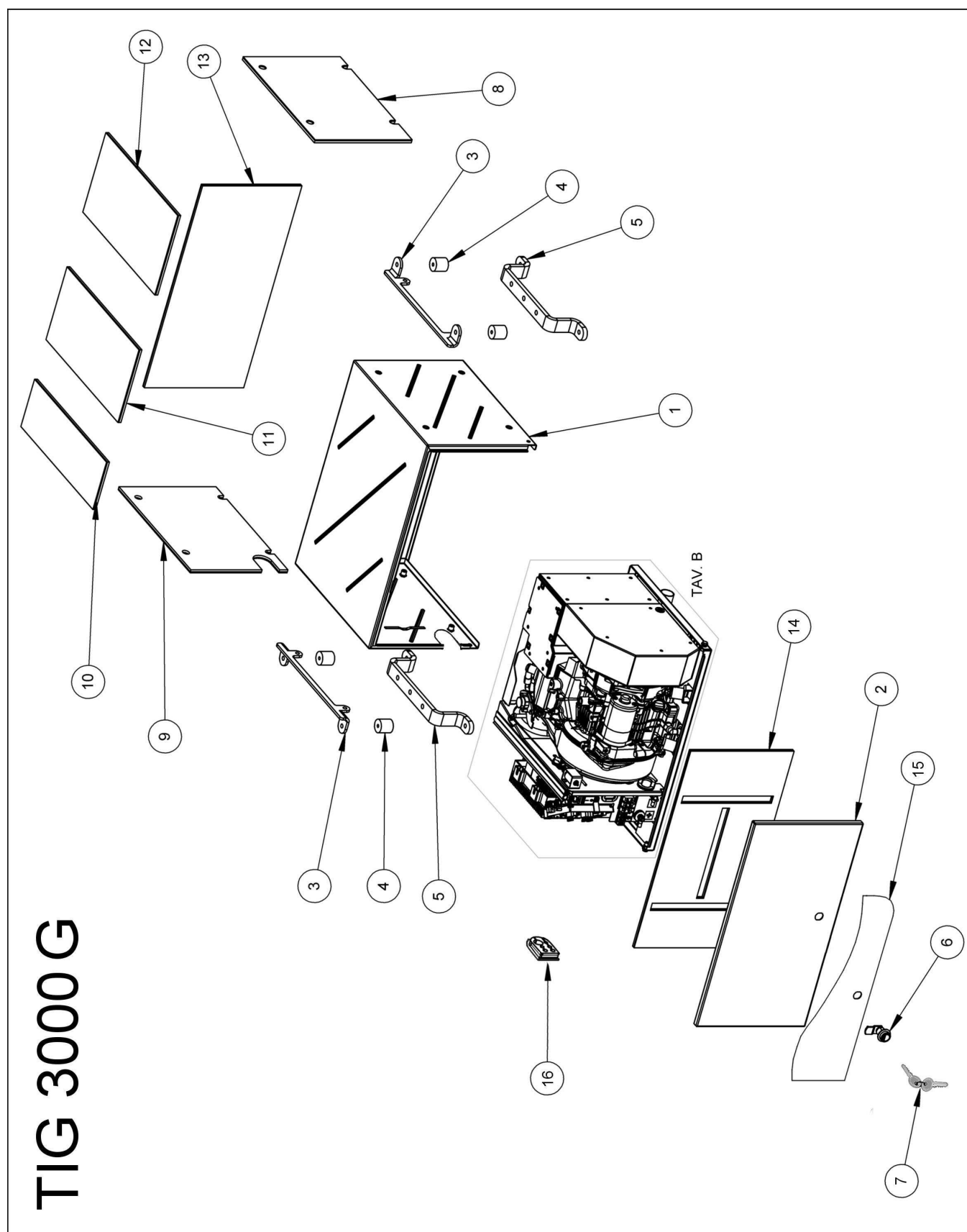
Wire colour correspondance:

BK	Black
BL	Blue
BR	Brown
GR	Green
GY	Grey
OR	Orange
PK	Pink
PU	Purple
RD	Red
WH	White
YE	Yellow
YE-GR	Yellow-Green

Key to wiring diagram:

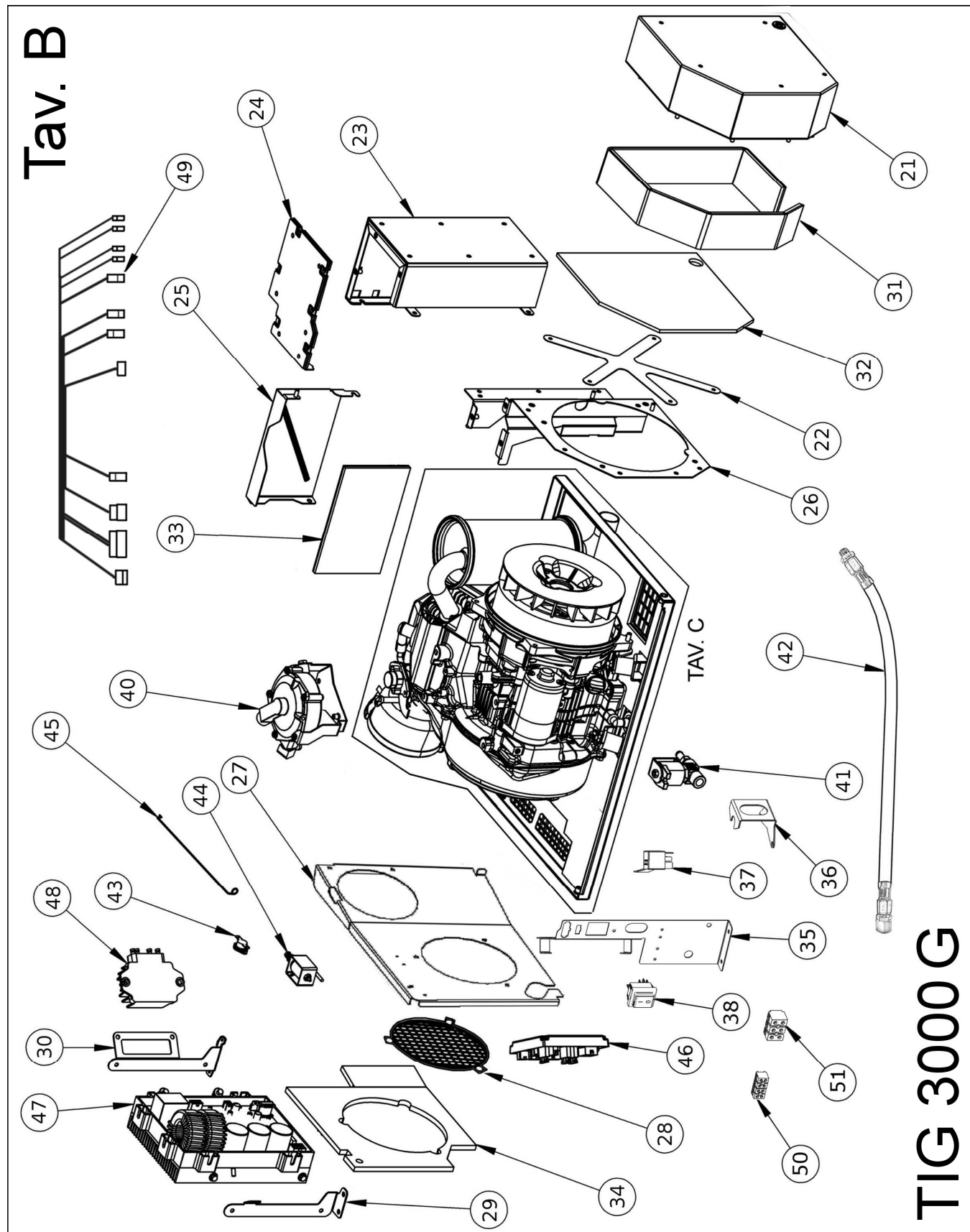
1	Combustion engine
2	Engine start relays
3	Electric start motor
4	Electronic ignition
5	Oil level sensor
6	Engine temperature sensor
7	LPG solenoid valve
8	Choke solenoid
9	Generator temperature sensor
10	Stepping motor
11	Alternator stator
12	Battery charger
13	Inverter
14	Engine control board
15	Safety breaker
16	230 V mains output terminal strip
17	Auxiliary terminal strip
18	Control panel lead connector
19	REMOTE On/Off connector
20	E.P.O. connector
21	Parallel data connector
22	Control panel signals lead
23	Control panel

# 13 TIG 3000 G SPARE PARTS LIST



TIG 3000 G

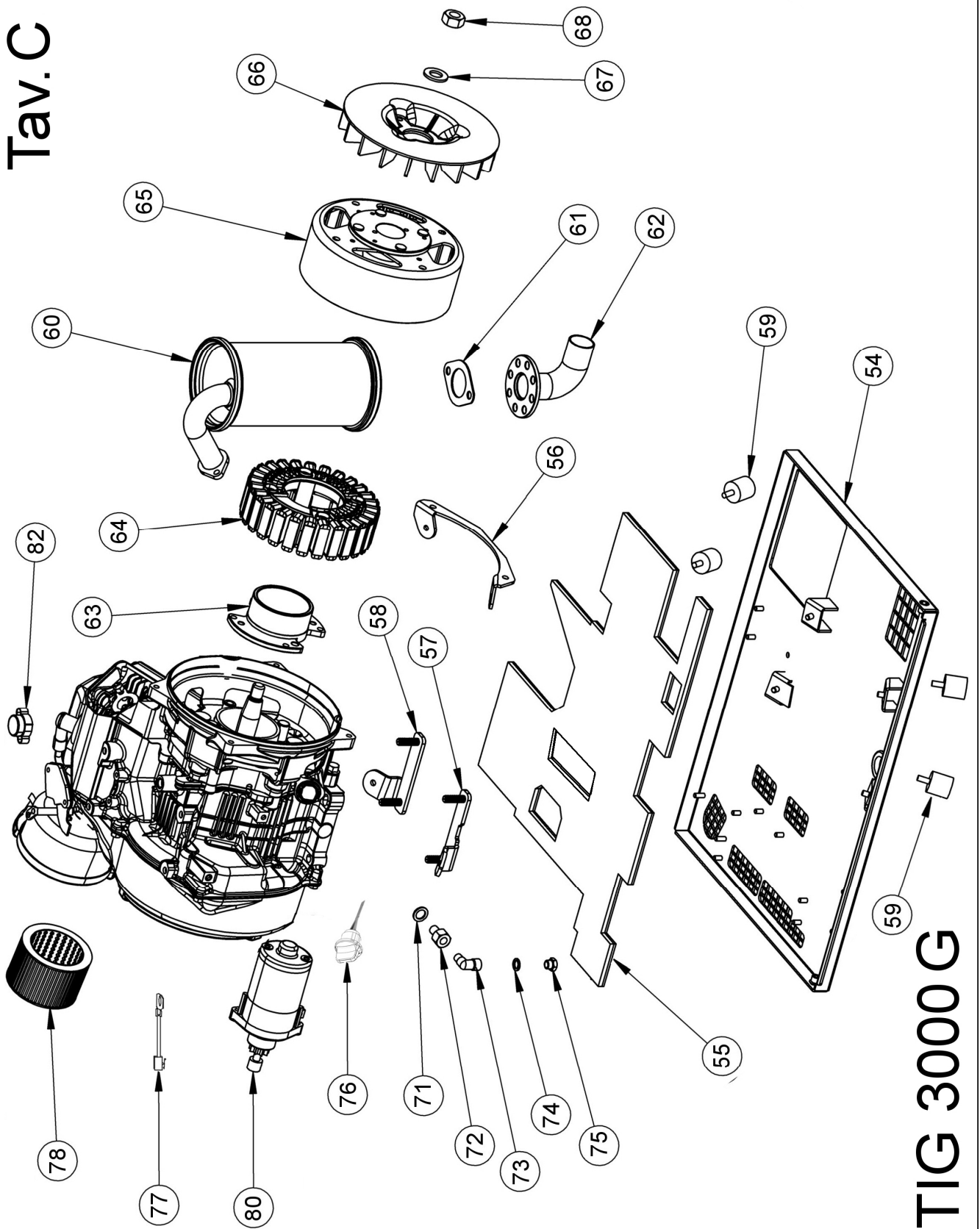
Tav. B



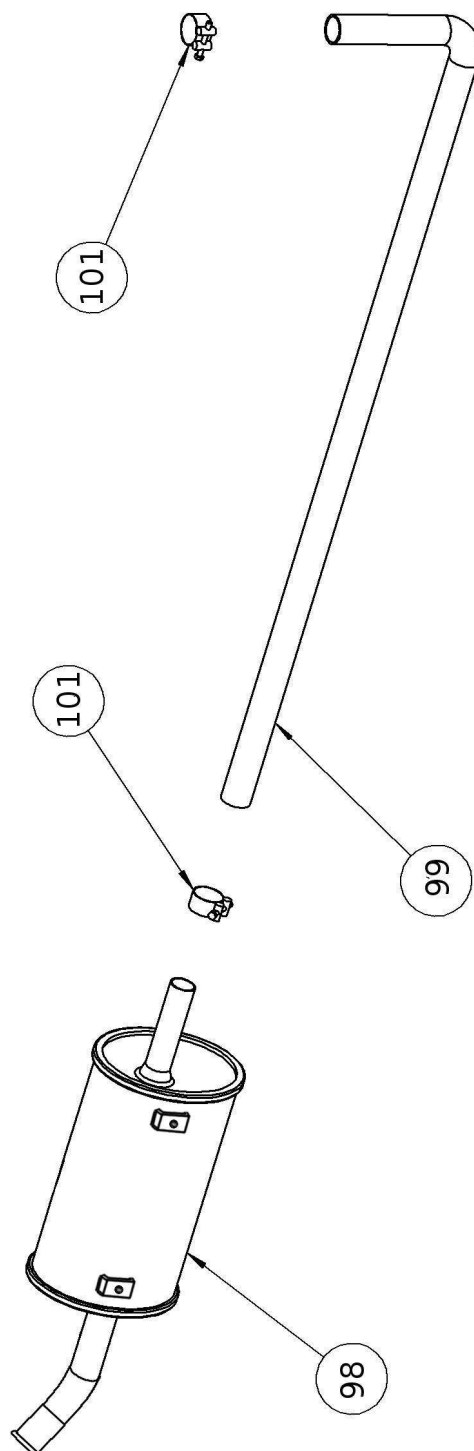
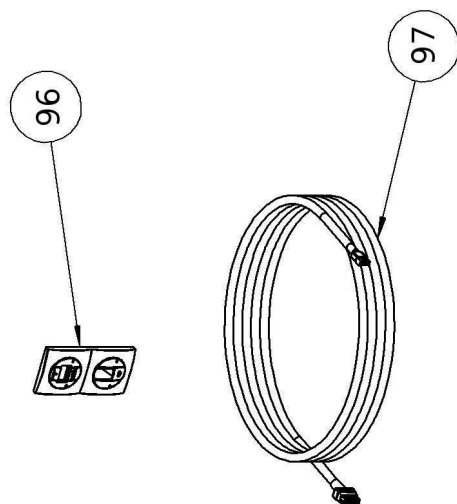
TIG 3000 G

Tav.C

TIG 3000 G



# TIG 3000 G





Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
1		N. 1	Cofano superiore	Capot supérieur	Bovenste kap
			Upper hood	Obere Haube	Capó superior
2		N. 1	Sportello cassa	Porte du boîtier	Deurtje kast
			Case door	Tür	Puerta caja
3		N. 4	Staffa di sostegno	Bride de Support	Steunbeugel
			Support bracket	Haltebügel	Estribo de Soporte
4		N. 4	Antivibrante	Anti-vibration	Trillingsdempers
			Vibration damper	Schwingungsdämpfer.	Antivibrador Cilíndricos
5		N. 2	Staffa di fissaggio	Bride de fixation	Verankeringsbeugel
			Fixing bracket	Befestigungsbügel	Estribo de Anclaje
6		N. 1	Serratura	Serrure	Slot
			Lock	Schloss	Cerradura
7		N. 1	Chiave per serratura	Clé de la serrure	Sleutel
			Lock key	Schlüssel	Llave de la cerradura
8		N. 1	Isolante Destra Cofano	Isolation Droite Capot	Isolatie rechts voor kap
			Right hood insulation	Isolierung rechts für Haube	Aislante Derecho Capó
9		N. 1	Isolante Sinistra Cofano	Isolation Gauche Capot	Isolatie links voor kap
			Left hood insulation	Isolierung links für Haube	Aislante Izquierdo Capó
10		N. 1	Isolante 1 Superiore Cofano	Isolation 1 Supérieur Capot	Isolatie 1 Bovenste Kap
			Upper hood insulation 1	Obere Isolierung 1 Haube	Aislante 1 Superior Capó
11		N. 1	Isolante 2 Superiore Cofano	Isolation 2 Supérieur Capot	Isolatie 2 Bovenste Kap
			Upper hood insulation 2	Obere Isolierung 2 Haube	Aislante 2 Superior Capó
12		N. 1	Isolante 3 Superiore Cofano	Isolation 3 Supérieur Capot	Isolatie 3 Bovenste Kap
			Upper hood insulation 3	Obere Isolierung 3 Haube	Aislante 3 Superior Capó
13		N. 1	Isolante Posteriore Cofano	Isolation Arrière Capot	Isolatie achter voor kap
			Rear hood insulation	Isolierung hinten für Haube	Aislante Trasero Capó

Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
14		N. 1	Isolante Sportello	Isolation de porte du boîtier	Isolatie laag van Gevaldeur
			Case door Isulation	Isulation Tief der Falltür	Bajo de Isulation de la puerta
15		N. 1	Adesivo sportello	Image adhésive de porte du boîtier	Zelfklevend beeld van gevaldeur
			Adhesive image of case door	Anhaftendes Bild der Falltür	Imagen adhesiva de la puerta
16		N. 1	Tassello Passacavi Carburante	Serre-câbles Carburant	Kabeldoorvoer Brandstof
			Fuel Cable Holder	Kabelschelle Kraftstoff	Taco Portacables Carburante
21		N. 1	Carter della ventola	Logement de ventilateur	Ventilatorhuis
			Fan housing	Lüftergehäuse	Cárter del ventilador
22		N. 1	Telaio per isolamento del carter	Châssis pour l'isolation du carter de ventilateur	Frame voor isolatie van het ventilatorhuis
			Frame for insulation of the fan housing	Frame für die Isolierung des Lüftergehäuse	Chasis para el aislamiento del cárter del ventilador
23		N. 1	Convogliatore marmitta	Convoyeur pot d'échappement	Geleider knaldemper
			Muffler conveyor closure	Auspufftopf-Leitblech	Transportador silenciador escape
24		N. 1	Chiusura per convogliatore marmitta	Convoyeur pot d'échappement	Geleider knaldemper
			Muffler conveyor	Auspufftopf-Leitblech	Transportador silenciador escape
25		N. 1	Copertura testata motore	Couverture de la tête du moteur	Motor hoofdbedekking
			Engine head cover	Abdeckung des Zylinderkopfes	Protección de la cabeza del motor
26		N. 1	Base carter ventola	Fond du logement de ventilateur	Basis voor ventilatorhuis
			Fan housing base	Basis des Lüftergehäuse	Base del cárter del ventilador
27		N. 1	Parete divisoria intermedia	Séparateur intermédiaire	Intermediaire scheidingswand element
			Intermediate sheet-metal	Zwischenplatte	Separador intermedio
28		N. 1	Protezione per ventola	Protection du ventilateur	Bescherming van de ventilator
			Fan guard	Lüftergitters	Protección del ventilador

Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
29		N. 1	Supporto anteriore in- verter	Bride antérieur de l'on- duteur	Inverter frontbeugel
			Inverter front bracket	Inverter vordere Halterung	Soporte delantero del in- versor
30		N. 1	Supporto posteriore in- verter	Bride arrière de l'onduteur	Inverter achterbeugel
			Inverter rear bracket	Inverter hintere Halterung	Soporte trasero del inver- sor
31		N. 1	Isolante per carter ventola	Isolation pour logement de ventilateur	Isolatie voor het ventila- torhuis
			Fan housing insulation	Lüftergehäuse Isolierung	Aislamiento por el cárter del ventilador
32		N. 1	Isolante per base carter ventola	Isolation de la base du carter de ventilateur	Isolatie voor de basis van het ventilatorhuis
			Fan housing base insula- tion	Lüftergehäuse Basis Isolierung	Aislamiento de la base del cárter del ventilador
33		N. 1	Isolante per copertura te- stata motore	Isolation pour couverture de la tête du moteur	Isolatie voor motor hoofdbedekking
			Engine head cover insula- tion	Isolierung für Abdeckung des Zylinderkopfe	Aislamiento de la protección de la cabeza
34		N. 1	Isolante per parete inter- media	Isolation pour séparateur intermédiaire	Isolatie voor intermediaire scheidingswand element
			Intermediate sheet-metal insulation	Zwischenplatte Isolierung	Aislamiento para separa- dor intermedio
35		N. 1	Supporto per connessioni elettriche	Support pour connexions électriques	Ondersteuning voor elek- trische aansluitingen
			Bracket for electrical con- nections	Halterung für elektrische Verbindungen	Beugel voor elektrische aansluitingen
36		N. 1	Supporto elettrovalvola gas	Support pour électro- vanne de gaz	Gas solenoïde klep ondersteuning
			LPG solenoid valve sup- port	Gasventil träger	Soporte de electroválvula de gas
37		N. 1	Relè motorino avviamento	Relais de démarreur	Relais starter.
			Starter relay.	Anlasserrelais.	Relé de arranque.
38		N. 1	Interruttore di sicurezza	Interrupteur de sécurité	Veiligheidsschakelaar
			Safety switch	Sicherheitsschalters	Interruptor de seguridad
40		N. 1	Regolatore gas	Régulateur de gaz	LPG regulator
			LPG regulator	Gasregler	Regulador de gas
41		N. 1	Elettrovalvola gas	Electrovanne de gaz	Gas solenoïde klep
			LPG solenoid valve	Gasventil	Electroválvula de gas

Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
42		N. 1	Tubo gas	Tuyau de gaz	Gaspijp
			LPG pipe	Gasleitung	Tubo de gas
43		N. 1	Termostato temperatura motore	Thermostat de température du moteur	Motor temperatuur thermostaat
			Engine temperature thermostat	Motortemperatur Thermostat	Termostato de temperatura del motor
44		N. 1	Solenoid choke	Bobine d'étranglement	Choke magneetventielen
			Choke coil	Choke-Magnetspule	Solenoid del estrangulador
45		N. 1	Asta comando choke	tige de commande du starter	Bedieningsstang choke
			Control shaft choke	Drosselsteuerschaft	Vástago de control del estrangulador.
46		N. 1	Scheda controllo motore	Platine de commande Moteur	Besturingskaart van de Motor
			Engine Control Board	Motorsteuerplatine	Tarjeta Electrónica Control de Motor
47		N. 1	Inverter	Onduleur	Inverter
			Inverter	Inverter	Inverter
48		N. 1	Caricabatteria	Chargeur de Batterie	Batterij Oplader
			Battery Charger	Ladegerät	Cargador de Batería
49		N. 1	Cablaggio elettrico completo	Câblage électrique complet	Volledige elektrische bedrading
			complete electrical wiring	Komplette elektrische Verdrahtung	Cableado eléctrico completo
50		N. 1	Morsettiera ausiliaria 4 poli 2,5 mm <sup>2</sup>	Bornes auxiliaire 4 pôles 2,5 mm <sup>2</sup>	Bijkomend Contactblok 4-polige 2,5 mm <sup>2</sup>
			Auxiliary Terminal block 4-pole 2.5 mm <sup>2</sup>	Zusatz klemmenblock 4-polige 2,5 mm <sup>2</sup>	Bornes auxiliar de 4 polos 2,5 mm <sup>2</sup>
51		N. 1	Morsettiera di uscita 3 poli 4 mm <sup>2</sup>	Bornes de sortie 3 pôles 4 mm <sup>2</sup>	Uitgangcontactblok 3-polige 4 mm <sup>2</sup>
			Output Terminal block 3-pole 4 mm <sup>2</sup>	Ausgangs klemmblock 3-polig 4 mm <sup>2</sup>	Bornes de salida de 3 polos 2,5 mm <sup>2</sup>
54		N. 1	Base generatore	Base du Générateur	Generator Grondslag
			Generator Base	Basis der Generator	Base del Generador
55		N. 1	Isolante base generatore	Isolation du Base	Isolatie voor Generator Grondslag
			Generator Base Insulation	Isolier für Basis der Generator	Aislante para Base del Generador

Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
56		N. 1	Supporto destro motore	Support droit de moteur	Rechter motorsteun
			Right engine bracket	Rechts Motorhalterung	Soporte derecho de motor
57		N. 1	Supporto anteriore motore	Support avant du moteur.	Voorste motorsteun.
			Front engine bracket	Front motorhalterung	Soporte delantero del motor
58		N. 1	Supporto posteriore motore	Support arrière du moteur.	Engine achterste beugel.
			Rear engine bracket	Hintere Motorhalterung.	Soporte trasero del motor
59		N. 4	Antivibrante per Motore 25X25 MF M6 SH40	Anti-vibration Moteur 25X25 MF M6 SH40	Trillingsdemper Motor 25X25 MF M6 SH40
			Engine Vibration Damper 25X25 MF M6 SH40	Motor Schwingungsdämpfer 25X25 MF M6 SH40	Antivibrador para Motor 25X25 MF M6 SH40
60		N. 1	Marmitta	Echappement	Uitlaatdemper
			Muffler	Auspuff	Tubo de Escape
61		N. 1	Guarnizione per manicotto di scarico	Joint pour Manchon d'échappement	Pakking voor Mof Uitlaatdemper
			Gasket for exhaust Muff	Dichtung für Verbindungsmuffe Auspuff	Junta para Manga de Escape
62		N. 1	Manicotto di scarico	Manchon d'échappement	Mof voor Uitlaatdemper
			Exhaust Muff	Verbindungsmuffe Auspuff Motor	Manga de Escape
63		N. 1	Flangia dello statore	Bride de stator	Statorflens
			Stator flange	Statorflansches	Brida de estator
64		N. 1	Statore alternatore	Stator du Alternateur	Stator Wechselstromdynamo
			Alternator Stator	Drehstromgenerator Stator	Estator del Alternador
65		N. 1	Volano Rotore Alternatore	Volant Moteur et Rotor du Alternator	Vliegwiél Rotor Wechselstromdynamo
			Flywheel Rotor Alternator	Schwungradrotor Drehstromgenerator	Rotor del Alternador
66		N. 1	Ventilatore del rotore	Ventilateur du rotor	Ventilatorrotor
			Rotor fan	Lüfter Rotor	Ventilador del rotor
67		N. 1	Rondella	Rondelle	Washer
			Washer	Wäscher	Arandela



Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
68		N. 1	Dado fissaggio rotore	Écrou de fixation du rotor.	Rotor bevestigingsmoer
			Rotor fastening nut	Rotor befestigungsmutter	Tuerca de fijación del rotor
71		N. 1	Guarnizione 22x18x1,2	Joint 22x18x1.2	Afdichting 22x18x1.2
			Gasket 22x18x1.2	Dichtung 22x18x1.2	Junta 22x18x1.2
72		N. 1	Raccordo tappo olio motore	Raccord bouchon huile moteur	Koppeling oliedop
			Motor oil cap union	Anschluss der Ölschraube	Unión tapón aceite
73		N. 1	Raccordo 90° 1/8 MF	Raccord 90° 1/8 MF	Koppeling 90° 1/8 MF
			1/8 MF union elbow	Anschlussstück 90° 1/8 MF	Empalme 90° 1/8 MF
74		N. 1	Rondella alluminio per tappo scarico olio	Rondelle en aluminium	Onderlegging van aluminium
			Aluminium Washer for Stopper	Alu-Scheibe	Arandela aluminio
75		N. 1	Tappo scarico olio	Bouchon de vidange d'huile	Olieaftapschroef
			Lubricant Discharge Stopper	Ölablassschraube	Tapón de vaciado de Aceite
76		N. 1	Asta livello olio motore	Vente aux enchères niveau je huile moteur	Veiling niveau ik motorolie
			Auction level motor oil	Versteigerung Niveau ich Motoröl	Venta a las pujas nivel engraso motor
77		N. 1	Sensore NTC	Sonde NTC	NTC probe
			NTC probe	NTC Fühler	Sonda NTC
78		N. 1	Filtro aria	Filtre à air	Luchtfilter
			Air cleaner	Luftfilter	Filtro aire
80		N. 1	Motore Elettrico Avviamento	Moteur de démarrage électrique	Elektrische startmotor
			Electric motor Starter	Elektrischer Anlassermotor	Motor eléctrico de arranque
82		N. 1	Motore passo-passo	Moteur Pas à Pas	Stappenmotor
			Stepper motor	Schrittmotor	Motor paso a paso

Pos.	Code	Q.tà	Descrizione	Désignation	Beschrijving
			Description	Bezeichnung	Descripcion
96		N. 1	Pannello di controllo	Tableau de contrôle	Schakelpaneel
			Control Panel	Bedienpanel	Panel de control
97		N. 1	Cavo di 5 m tra generatore e pannello di controllo	Câble 5 m du Générateur au Panneau de Contrôle	5 m kabel van generator naar bedieningspaneel
			5 m Cable from generating set to control panel	5 m Kabel von Generator zu Bedienpanel	Cable 5 m de generator a panel de control
97		Opt.	Cavo di 7 m tra generatore e pannello di controllo	Câble 7 m du Générateur au Panneau de Contrôle	7 m kabel van generator naar bedieningspaneel
			7 m Cable from generating set to control panel	7 m Kabel von Generator zu Bedienpanel	Cable 7 m de generator a panel de control
97		Opt.	Cavo di 10 m tra generatore e pannello di controllo	Câble 10 m du Générateur au Panneau de Contrôle	10 m kabel van generator naar bedieningspaneel
			10 m Cable from generating set to control panel	10 m Kabel von Generator zu Bedienpanel	Cable 10 m de generator a panel de control
98		N. 1	Silenziatore Esterno	Silencieux Externe	Externe Uitlaatdemper
			External Silencer	Externe Schalldämpfer	Silenciador Externo
99		N. 1	Tubo flessibile ø30 L = 2 mt	Tuyau souple ø30 L = 2 mt	Slang ø30 L = 2 mt
			Flexible Hose ø30 L = 2 mt	Schlauch ø30 L = 2 mt	Tubo flexible ø30 L = 2 mt
101		N. 2	Fascetta acc. speciale 32-35	Collier acier spécial 32-35	Bandje speciaal staal 32-35
			Special steel clamp 32-35	Schelle Spezialstahl 32-35	Abrazadera acero especial 32-35



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