USR Generator

# ENERGY & LIGHTING GENERATORS


## TEC series Manual

# Installation

**Please read this instruction manual carefully before installation and first use, and store it in a safe place. If you pass on the product to another person, hand over this instruction manual along with it.**





# 1 Explanation of symboles

**DANGER!**
**Safety instruction:** Failure to observe this instruction will cause fatal or serious injury.

**WARNING!**
**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.

**CAUTION!**
**Safety instruction:** Failure to observe this instruction can lead to injury. serious injury.

**CAUTION!**
Failure to observe this instruction can cause material damage and impair the function of the product.

**NOTE!**
Supplementary information for operating the product.

# 2 Safety and installation instructions

**Please observe the prescribed safety instructions and stipulations from the vehicle manufacturer and service workshops.**
The manufacturer accepts no liability for damage in the following cases:.

- Faulty assembly or connection
- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in the operating manual

Note the following basic safety information when using electrical devices to protect against:

- Electric shock
- Fire hazards
- Injury

## 2.1 Using the device

### WARINING

- Installing and repairing the device may only be carried out by qualified personnel who are familiar with the risks involved and the relevant regulations. Inadequate repairs may cause serious hazards. For repair service, please contact the service centre in your country (addresses on the back page).
- Electrical devices are not toys
  Keep electrical devices out of reach of children or infirm persons. Do not allow them to use electrical devices without supervision.
- People (including children) whose physical, sensory or mental capacities prevent them from using this device safely may not be allowed to operate it without the supervision of a responsible adult.
- Exhaust fumes contain carbon monoxide which is a highly toxic, odourless and colourless gas. Do not inhale any exhaust fumes. Do not leave the generator motor running in a closed garage or in a room without windows.

### CAUTION!

- Fire hazards
  Do not install the generator in a box or room without any openings, but in well-ventilated spaces instead.
- Only operate the generator if you are certain that the housing and the cables are undamaged.
- Install the generator on a stable surface.
- Do not tilt the generator more than 20° from the vertical position.

### NOTICE!

- Only use the device as intended.
- The generator is not suitable for use in water vessels.
- Do not make any alterations or conversions to the device.
- If a welding operation has be done on the vehicle disconnect all generator cables, otherwise the electronics may be damaged.





## 2.2 Handling electrical cables

### WARINING

- The electrical power supply may only be connected by a qualified electrician

### CAUTION!

- Attach and lay the cables so that they cannot be tripped over or damaged.

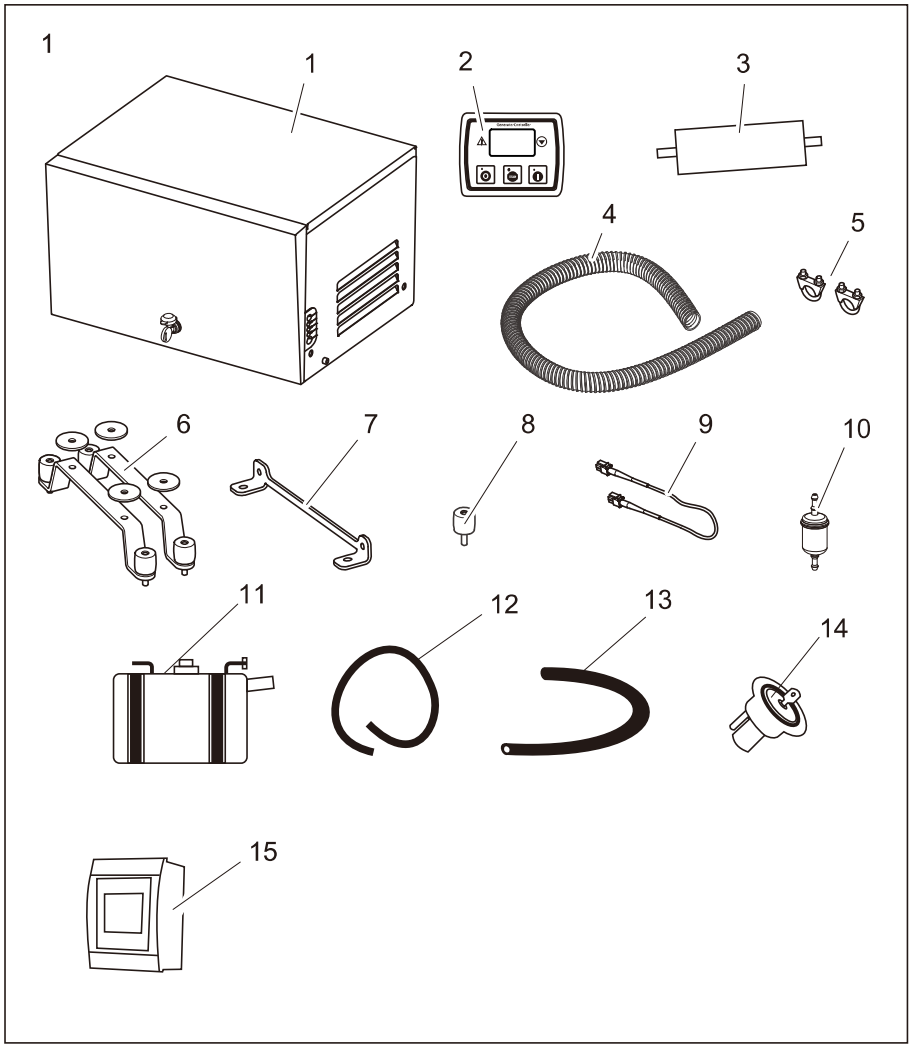
### NOTICE!

- Use cable ducts to lay cables through walls with sharp edges.
- Do not lay loose or bent cables next to electrically conductive materials (metal).
- Do not pull on the cables.

# 3 Target group for this manual

The instructions in this manual are intended for qualified personnel at workshops who are familiar with the guidelines and safety precautions to be applied.

# 4 Scope of delivery








## TEC Series generators

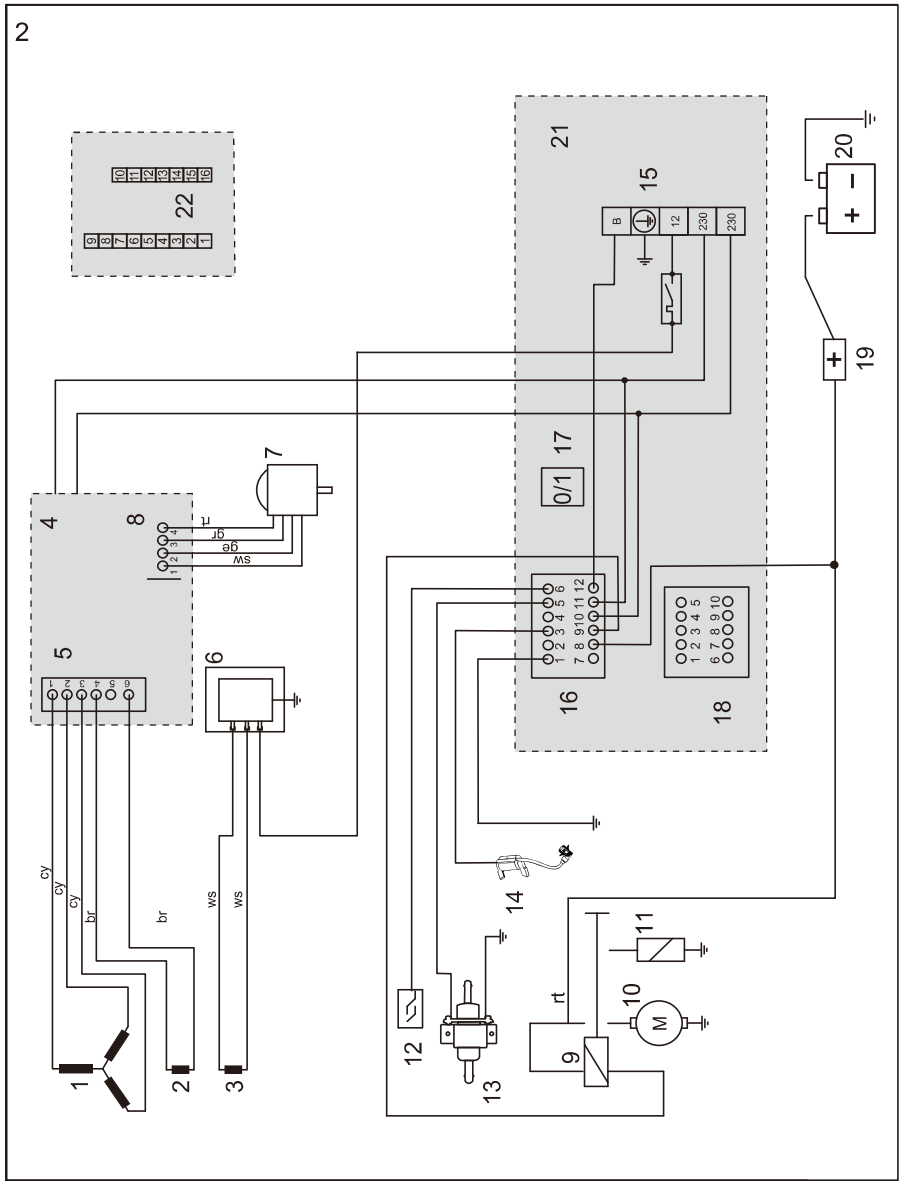
| No.in fig.1, page 5 | Number | Description |
|---|---|---|
| 1 | 1 | Generator |
| 2 | 1 | Remote control |
| 3 | 1 | Silencer |
| 4 | 2 | Exhaust pipe |
| 5 | 2 set | Mounting brackets for silencer |
| 6 | 2 set | Retaining brackets for external installation |
| 7 | 2 | Holders for internal installation |
| 8 | 4 | Spacers (Damping rubber feet) |
| 9 | 1 | Extension cable for remote control, 5 m |
| 10 | 1 | Fuel filter |
| 11 | 1 | Fuel tank |
| 12 | 1 | Air pipe (10mm),1m |
| 13 | 1 | Fuel injection pipe (38mm),1m |
| 14 | 1 | Fuel filling port |
| 15 | 1 | AG 102 (Auto exchange switch box **not provide**) |

# 5 Accessories

Available as accessories (not included in the scope of delivery):

| Part designation | Item number |
|---|---|
| Tank 30L, stainless steel | 91020210336 |
| Secondary silencer, stainless steel | 91020210328 |
| Parallel cable | 91020210323 |

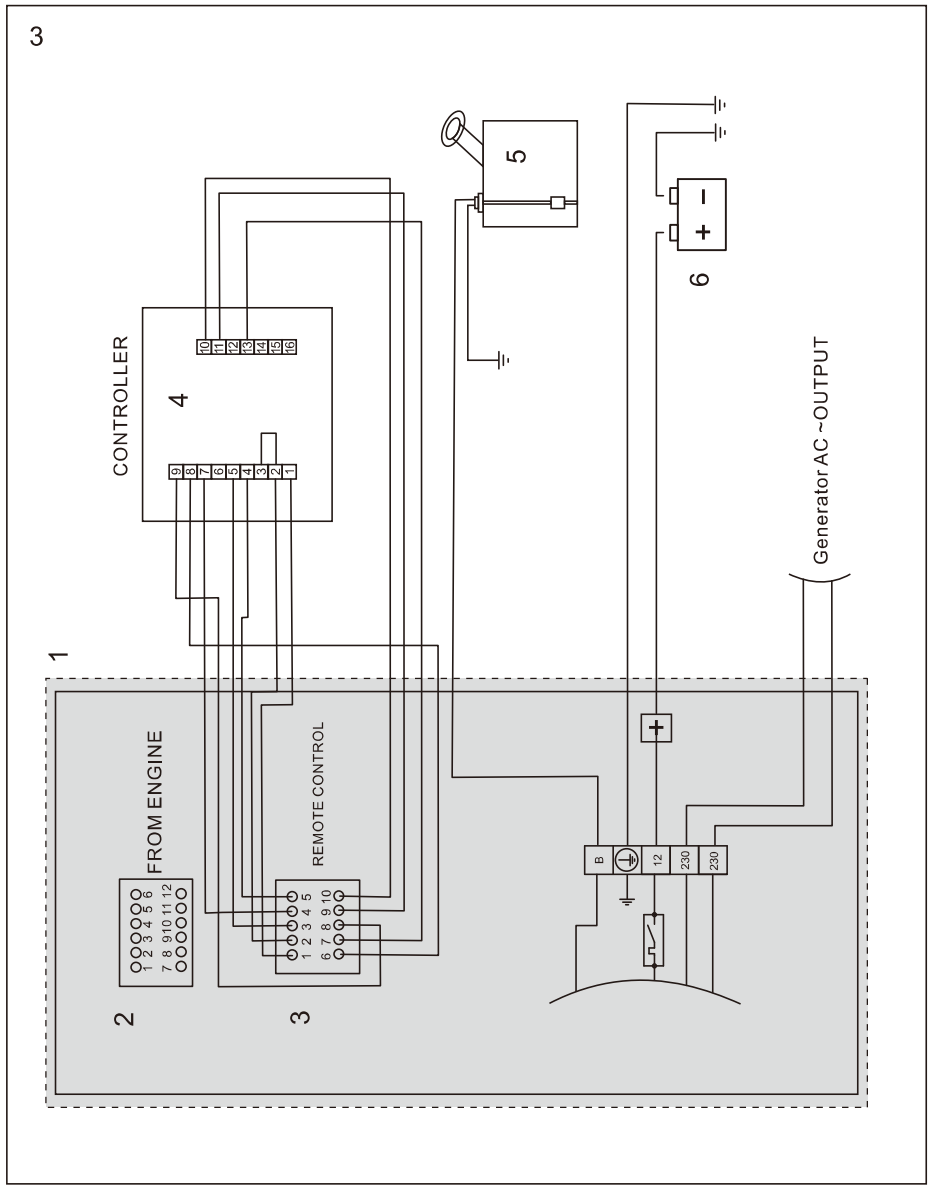
# 6 Inside of circuit diagrams




The inside circuit diagram can be found in fig. 2, page 7.

| Item | Description |
|---|---|
| 1 | 3-phase winding |
| 2 | Auxiliary winding |
| 3 | Auxiliary winding |
| 4 | Inverter |
| 5 | 6-pin plug |
| 6 | Battery charger |
| 7 | Stepper motor |
| 8 | 4-pin plug |
| 9 | Starter relay |
| 10 | Starter motor |
| 11 | Electromagnet for cold start |
| 12 | Oil level gauge |
| 13 | Fuel pump (Not equipped by default) |
| 14 | Flame ignitor |
| 15 | Thermal disconnector |
| 16 | Engine Interface module |
| 17 | Emergency shutdown switch |
| 18 | 10-pin mini-fit plug |
| 19 | Battery positive terminal |
| 20 | Battery |
| 21 | Internal control panel |
| 22 | Remote control |

# 7 Outside of Circuit diagrams




The outside circuit diagram can be found in fig. 3, page 9.

| Item | Description |
|---|---|
| 1 | Internal junction box |
| 2 | Engine lead line |
| 3 | Controller (Control panel) |
| 4 | Fuel tank |
| 5 | Bettery |
| 6 | Battery charger |

# 8 Intended use

The TEC series generators are designed for use in motor homes, camper vans and vehicles for commercial use.

The generator is **not** suitable for installation in water vessels.
The generator produces a pure sine wave voltage of 230 V/50 Hz which can be connected to the consumer with a total continuous load of 2800 W. The power quality is also suitable for sensitive consumers (such as Pcs).

The generator can charge a 12 V battery.

# 9 Labels

A label is attached to the generator. This label provides the user and fitter with information on the device specifications.

# 10 Technical description

Installing the generator must be configured according to one of the following options:

- Automatic mode switch,
  see chapter “Configuring the automatic mode” on page 29.
- Priority circuit which prioritises the 230 V external voltage over the voltage produced by the generator,
  see chapter “Creating a priority circuit” on page 30.

# 11 Installation

**CAUTION! Beware of injury**
The generator may only be installed by qualified personnel from a specialist company. The following information is intended for technicians who are familiar with the guidelines and safety precautions to be applied.

## 11.1 Note on Installation

Read the installation manual carefully before you install the generator.
When installing the generator, note the following:

**DANGER! Danger of electrocution**
Disconnect all power supplies when working on the generator.

- Improper installation of the generator can result in irreparable damage to the device and put the safety of the user at risk.
- Always wear the recommended protective clothing (e.g. protective goggles, gloves).

## 11.2 Securing the generator

### Note on installation location

- Make sure that no combustible objects are stored or installed near the air outlet or the ventilation slots. A distance of at least 50 cm should be kept.
- For a correct ventilation keep a distance of at least 30 cm from the generator's air outlet.
- For safety reasons, note the location of existing wiring harnesses, wires and other components within the installation area, in particular those which are not visible, when installing the generator (when drilling or screwing etc.).





You can secure the generator with the holders supplied in two ways:

- External installation (fig. 4, page 12):
  External installation has the following benefits: lower space requirement, fast installation, easy access for maintenance work.
  – To ensure the generator is attached securely, use the retaining bracket (fig. 4,5 , page 12) supplied.
  – If the air intake opening of the generator is located behind a vehicle wheel, you need to prevent the wheel from splashing any water into the generator interior when it rains (e.g. by using a splash guard).

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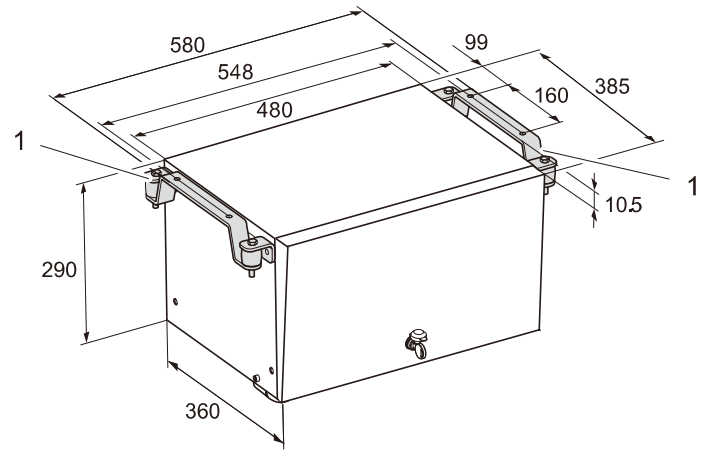


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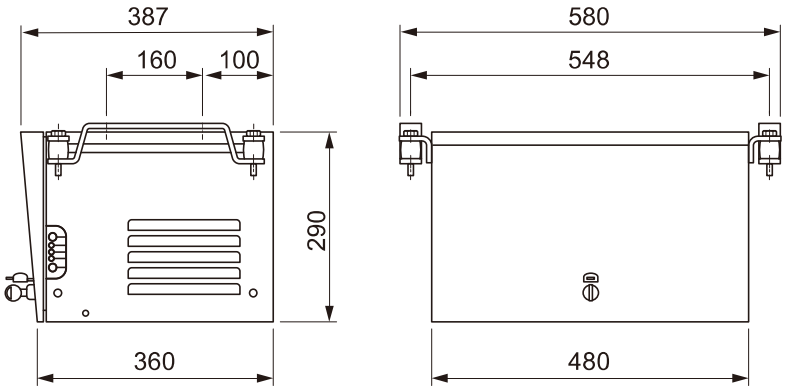
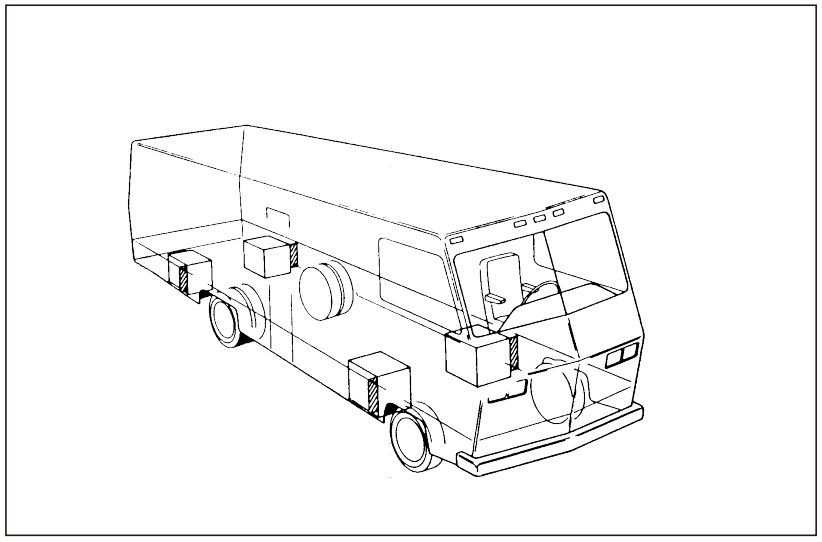


## 11.3 Location, Mounting and Enclosure

**WARINING**
The genset can fall from the vehicle if the supporting structure is weak and cause severe personal injury or death. Design the structure carefully, follow applicable mounting kit instructions and torque mounting bolts properly.

The location, mounting and enclosure of a genset must be such that mounting is secure, engine exhaust and fuel vapors are prevented from entering the vehicle, rain and road debris are prevented from entering the genset, and ready access is afforded for operating the genset and performing periodic maintenance. See Figure 2 for typical genset locations.

**1. The genset support structure must be able to resist the dynamic weight of the genset:**
cyclical vertical forces of ± 561 lbs (± 3 g) and cyclical horizontal forces of ± 187 lbs (± 1 g). Secure the genset with six 5/16-18 NC bolts. The bolts must protrude at least 1-1/2 threads beyond the base pan weld nuts but not more than 1/2 inch (13 mm), to avoid interference.







**WARINING**
FIRE IS DEADLY! Install a fire-resistive barrier of approved materials between the floor and the genset.

**WARINING**
EXHAUST GAS AND FIRE ARE DEADLY! — Install a vapor-tight and fire-resistive barrier of approved materials between the genset and the vehicle interior.
— Do not duct genset cooling air into the vehicle for heating.

2.Air intake and exhaust of the generator

A.The installation position of the generator must ensure smooth air intake:
The COOLING AIR INLET of the generator mainly enters through the louver on the right side of the generator. No matter where the generator is installed, it should not be obstructed, otherwise the generator will have insufficient power.

B.The bottom COOLING AIR OULET of the generator should not be obstructed:
There are two COOLING AIR OULET at the bottom of the generator, which discharge the hot air inside the generator and cannot be obstructed. Otherwise, the generator will not be able to dissipate heat, resulting in insufficient power. Starting the generator will overheat, protect it, and even cause a fire

B.Do not have any combustible objects near the exhaust pipe, otherwise it will catch fire and cause a fire!

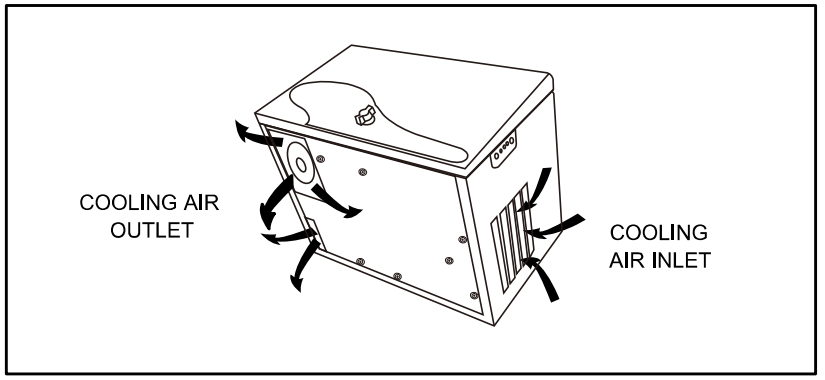



FIGURE 3. GENSET COOLING AIR INLET AND OUTLET OPENINGS

## WARINING

FIRE IS DEADLY! Install a fire-resistive barrier of approved materials between the floor and the genset.

## WARINING

EXHAUST GAS AND FIRE ARE DEADLY! — Install a vapor-tight and fire-resistive barrier of approved materials between the genset and the vehicle interior.
— Do not duct genset cooling air into the vehicle for heating.

3.There are two ways to install the generator, one below the vehicle floor installation, the other can be mounted vehicle floor installation, which depends on the design of the vehicle and the installation location.

Here's how to hang it:
Find the installation hanger that comes with the generator, and fix it to the two screw holes on the top of the generator, as shown in the figure below.

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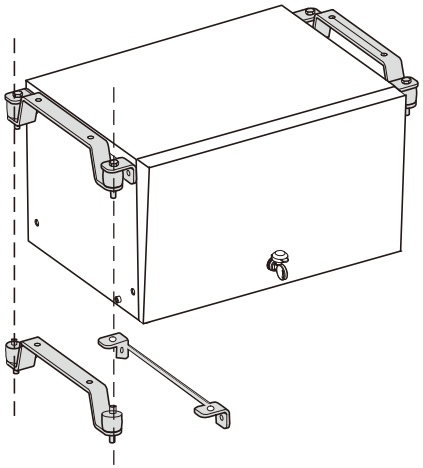
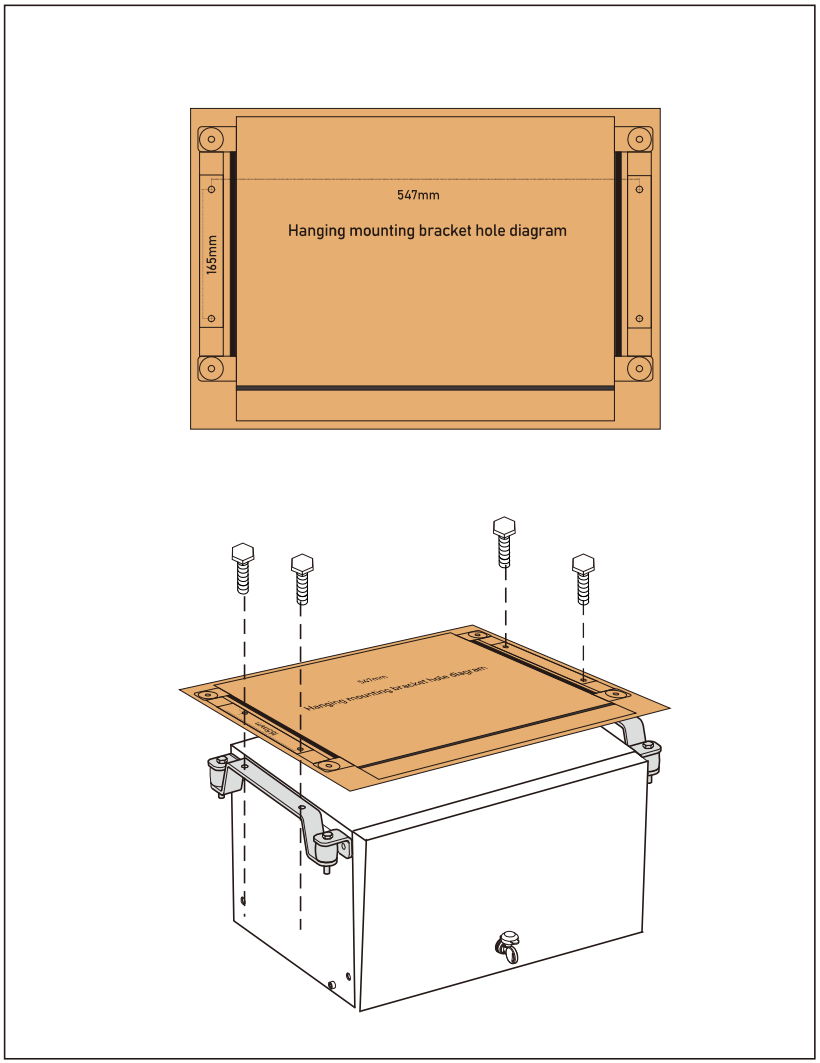






Together with the generator, we also provide a mounting hole template cardboard, which will reduce your installation work and quickly find the fixing holes of the generator hanger. In this way, where the installation hole template can be put down, the generator can be installed.
As shown below:



## WARINING

When lifting the generator, it is particularly important to pay attention to the injury caused by the generator falling off during installation.

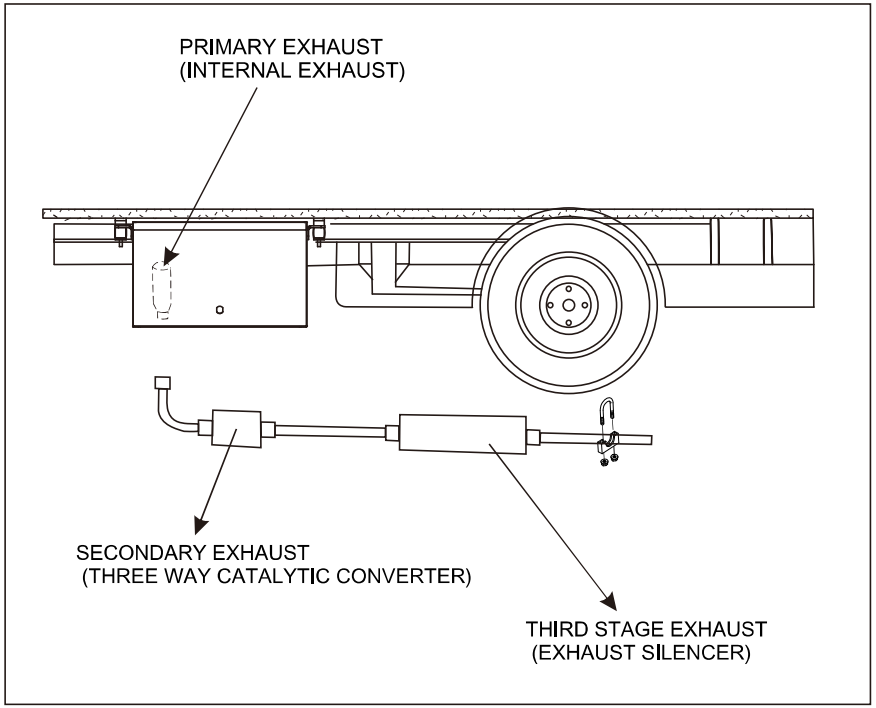
## WARINING

When installing the generator in a suspended manner, attention should be paid to the firmness of the installation to prevent screws from loosening and causing the generator to fall off,

## CAUTION!

The lowest position of the generator suspension installation cannot be lower than the lowest position on the frame of vehicle.

4.Install the generator under floor of the vehicle panel as shown in the following diagram







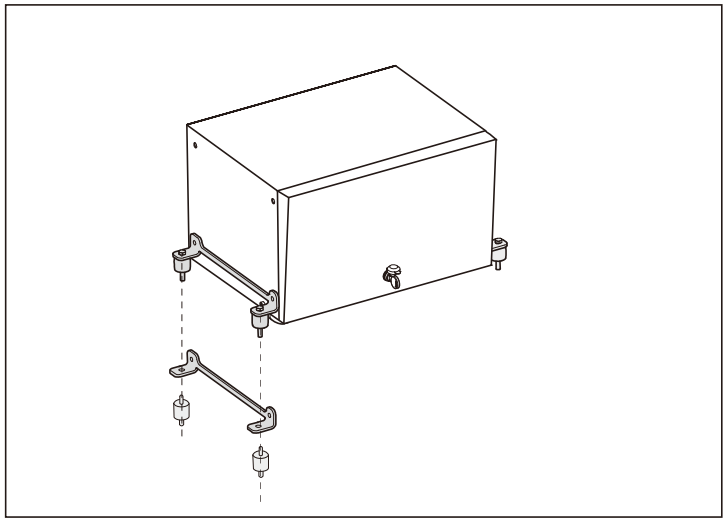

## WARINING

FIRE IS DEADLY! Internal seated vehicles must be installed to prevent proximity to flammable objects

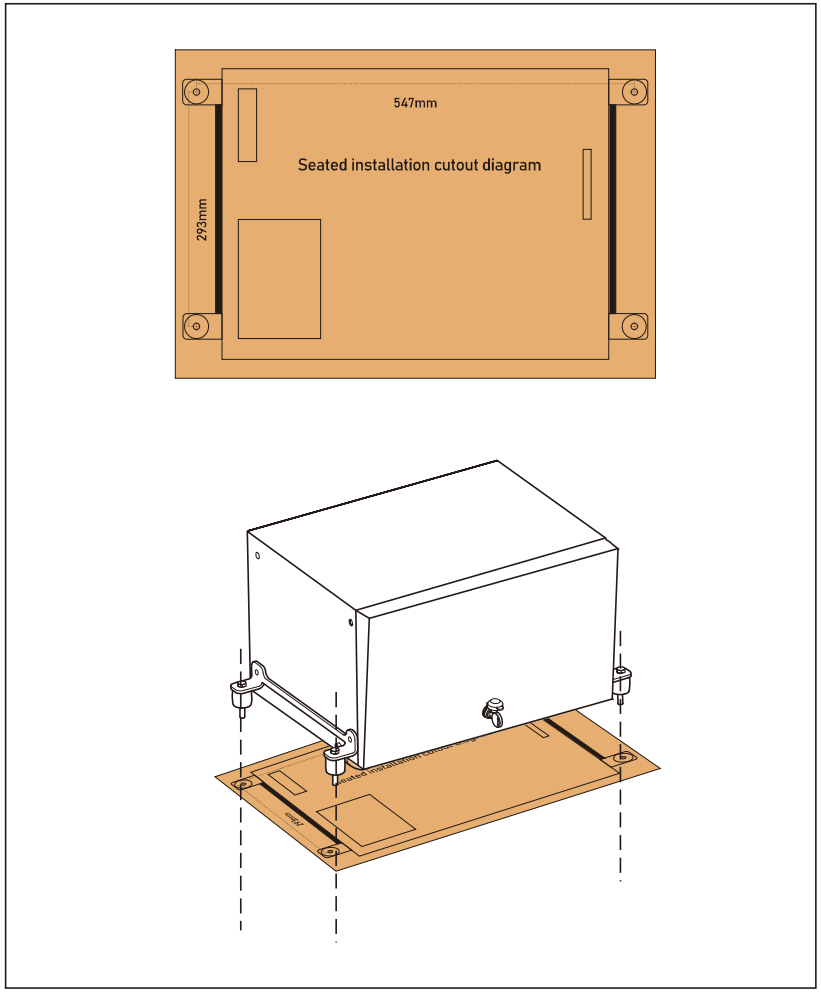
- Internal installation (fig. 6, page 13):
  For internal installation, you need to prepare a sealed compartment against the vehicle interior which can also be insulated against sound.
  – Attach exhaust and air intake openings to the floor and in front of the generator cover. The air intake openings must have cross-section of at least 240 cm2.
  – You must also fit a seal made of fire-retardant rubber with a thickness of at least 5 mm between the floor of the vehicle and the generator.

- Leave a space of at least 20 mm between the generator hood and surrounding parts so that sufficient space remains for cooling air to pass through.

Here are the methods for sitting:
Find the installation hanger attached to the generator and secure it to the bottom screw holes on both sides of the generator, as shown in the following figure.



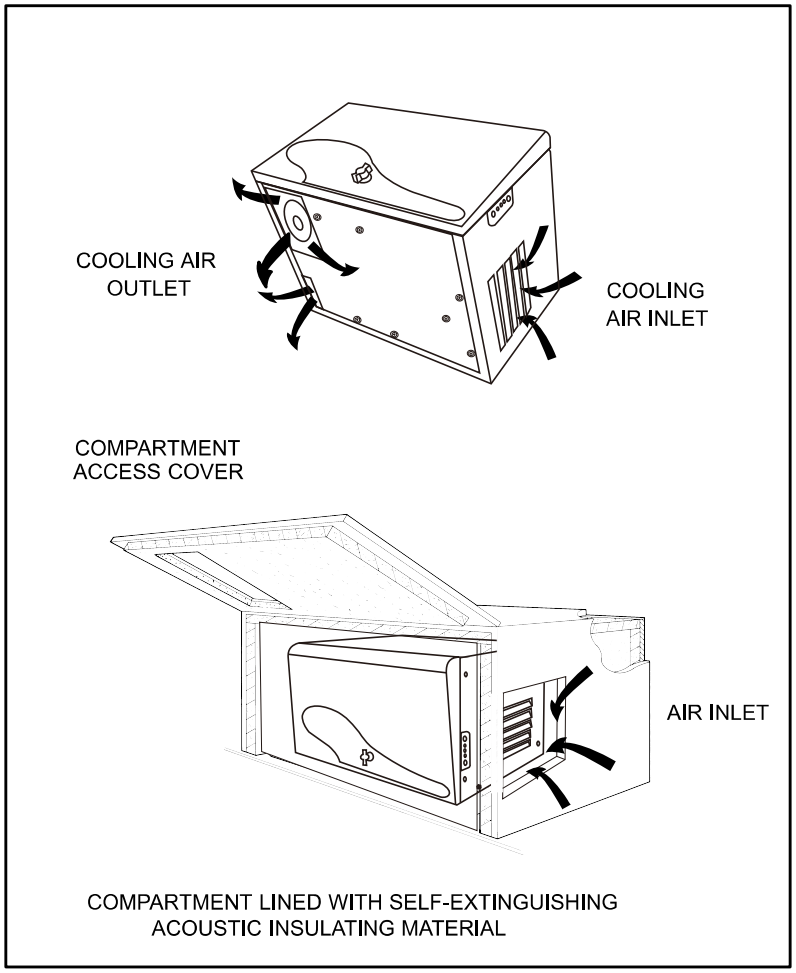
Together with the generator, we also provide a mounting hole template cardboard, which will reduce your installation work and quickly find the fixing holes of the generator hanger. In this way, where the installation hole template can be put down, the generator can be installed.
As shown below:








Together with the generator, we also provide a mounting hole template cardboard, which will reduce your installation work and quickly find the fixing holes of the generator hanger. In this way, where the installation hole template can be put down, the generator can be installed.
As shown below:



**WARINING**

A hot exhaust tailpipe can ignite oil drain spills causing severe personal injury or death. Do not route the exhaust tailpipe underneath the oil drain.

5. The genset must not share a compartment or ventilation with batteries or fuel tanks. An operating genset can ignite flammable vapors.

6. Genset cooling air (Figure 3) must not be obstructed.

A. Generally, the effect of natural convection in ventilating flammable vapors and engine heat after shutdown is better the higher the compartment air inlet. This should be especially noted when fuel vapor lock is an issue.

B. A free-air inlet size of at least 40 in2 (258 cm2) is required. Grilles, louvers and other kinds of decorative treatments for air openings are restrictive. Contact the manufacturer of the decorative assembly or material to find out how large an opening is required to obtain the minimum free-air inlet size.

C.Unless the compartment air inlet lines up directly with the genset air inlet, a clearance of at least 1-1/2 inch (38 mm) is required at the front of the genset for air to get to the genset inlet. (Staggering a compartment side opening or pulling the air up under the skirt of the vehicle will reduce line-of-sight noise but requires the extra clearance in front.)

D.When mounting the genset on a floor, use Compartment Template 539-1546 to locate the cutout for the cooling air outlet. The floor must not block off any portion of the genset cooling air outlet or cause recir-culation of hot air back into the genset air inlet.

E.Make sure the space below the genset cooling outlet is unobstructed for at least 6 inches (152 mm) and open on at least three sides.

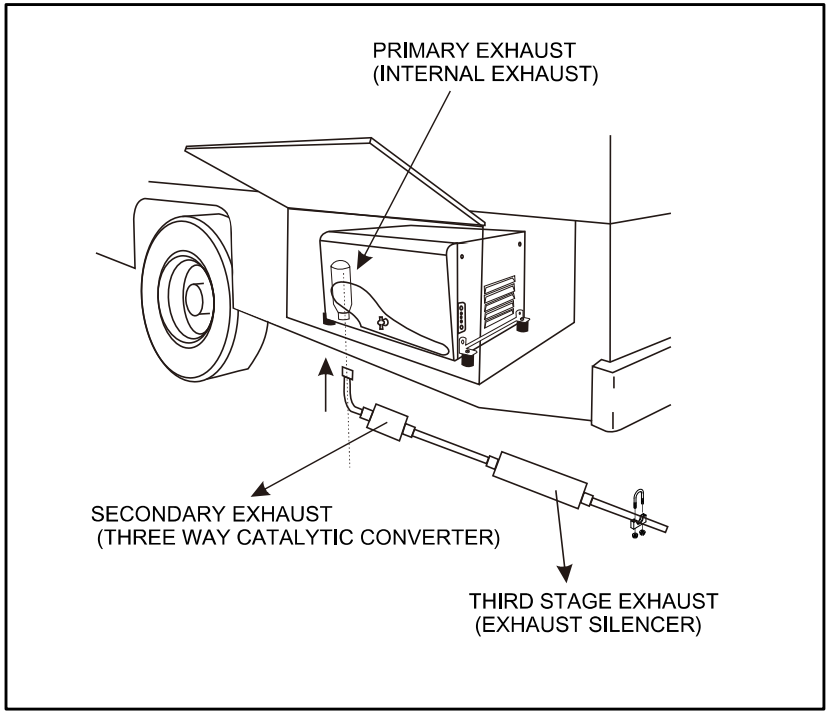
7.See the outline drawing (Page 34) for the mini-mum inside dimensions of a genset compartment. If the compartment has acoustic insula-tion (Figure 4), increase the min-imum compart-ment dimensions by the thicknesses of the insulation panels. The follo-wing minimum clearances are required between the genset and the compartment or its insulation:

A.At least 1 inch (25 mm) clearance is required in the space on the left side for fuel, AC output, battery and remote control connections (Page 11).

B.At least 1/4 inch (6 mm) clearance is re-quired on the sides and 1 inch (25.4 mm) on top.

C.At least 1-1/2 inch (38 mm) clearance is required in front if the compartment air inlet does not line up directly with the genset air inlet (Item 6. C).

8.Acoustic insulation and adhesive (Figure 4) should be Classified as “Self-Extinguishing” at not less than 200℉ (90℃). Do not line the bot-tom of the compartment with insulation insulation absorbs spilled fuel and oil.



# 11 Exhaust Connections

## WARINING

EXHAUST GAS IS DEADLY! Keep exhaust gases from entering the vehicle. Do not terminate the exhaust tailpipe underneath the vehicle or closer than 6 inches (153 mm) to openings into the vehicle or route it such that it is not protected. Use approved materials only.

The tailpipe of the generator set will be hot dur-ing operation and can cause severe burns. To reduce risk of contact, concentration must be taken and where the tailpipe will be located and routed.

The genset exhaust system must be gas-tight and designed to prevent entry of exhaust gases into the vehicle interior. The muffler is mounted inside the genset and has a collar to which the tailpipe is clamped (Figure 5).

1. Use 18-gauge 1-1/8 inch I. D. aluminized steel tubing or material of equivalent heat and corrosion resistance for the tailpipe. (Straight and elbowed tailpipe kits are available from our co..) Do not use flexible pipe, which is neither gas tight nor durable. Clamp the tailpipe to the muf-fler with a U-bolt muffler clamp (available from Onan). Support a tailpipe longer than 1-1/2 feet（457 mm) near its end and at intervals of 3 feet (900 mm) or less. Use automotive-type tailpipe hangers (available from Onan). Do not attach the hangers to combustible material such as wood.

2.See OUTLINE DRAWING (Page 34) for the location of a 5/16-18NC threaded hole in the base of the genset for attaching a tailpipe hanger. The bolt must protrude at least 1-1/2 threads beyond the base pan weld nut but not more than 1/2 inch (13 mm), to avoid interfer-ence.





3.Use U-bolt muffler clamps (available from Onan) to connect sections of tailpipe. Overlap-ping pipe should be slotted (Figure 6).

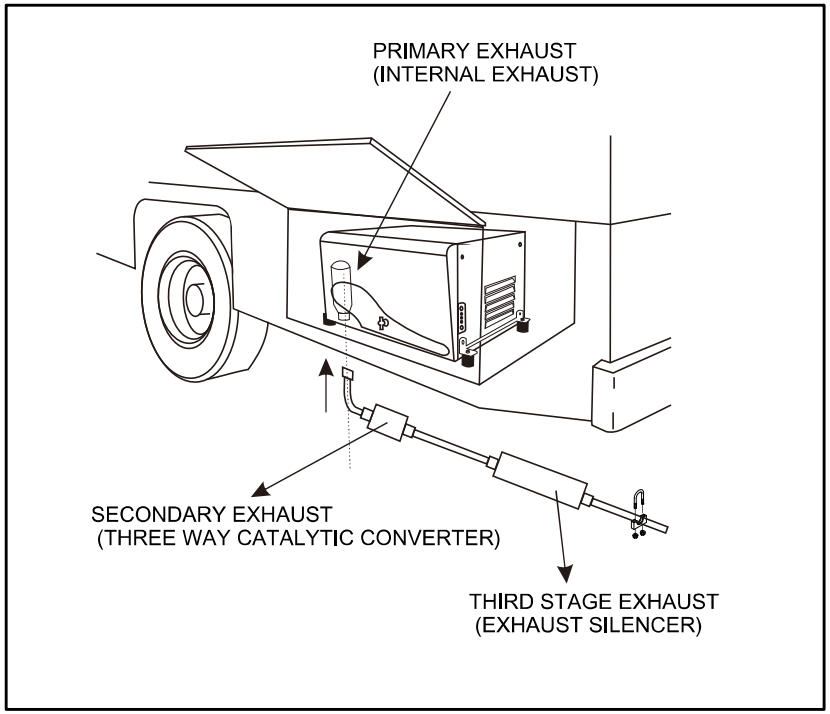



FIGURE 5. TYPICAL TAILPIPE INSTALLATION

**WARINING**

A hot exhaust tailpipe can ignite oil drain spills causing severe personal injury or death. Do not route the exhaust tailpipe underneath the oil drain.

**CAUTION**

Interconnecting engine exhaust systems will lead to migration of exhaust condensate and soot into the idle engine, causing damage.

Excessive back pressure can cause loss of performance and engine damage.

4.Do not route the tail pipe near fuel lines or fuel tanks.
5.Do not route the tailpipe closer than 3 inches (76 mm) to combustible material (wood, felt, cotton, organic fibers, etc.) unless it is insulated or shielded. The temperature rise (above ambient) on adjacent combustible material must not exceed 117˚F (65˚C).
6.Do not route the exhaust tailpipe underneath the oil drain or such that it will restrict the air out-let.

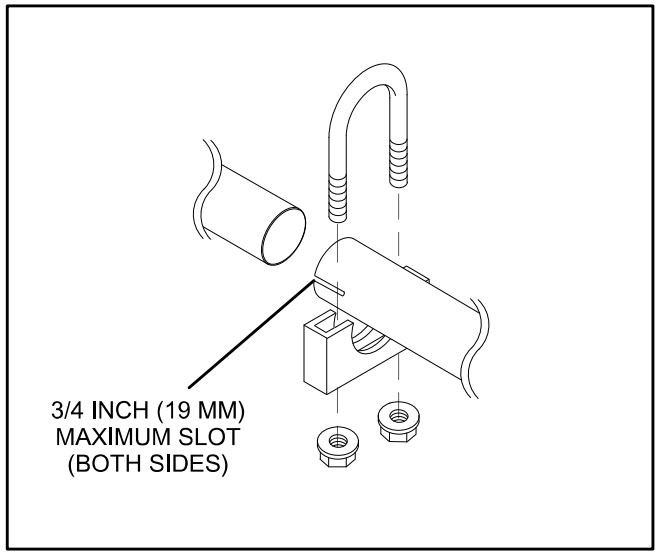



FIGURE 6. EXHAUST TAILPIPE CONNECTIONS

7.To keep the tailpipe from being damaged, do not route it such that it protrudes into the ap-proach or departure angles of the vehicle or below the axle clearance line (Figure 7).
8.Do not interconnect genset and vehicle engine exhaust systems.

9.Do not terminate the tailpipe underneath the vehicle. Extend it a minimum of 1 inch (25 mm) beyond the perimeter of the vehicle (Figure 8). Support the end of the tailpipe such that it can-not be pushed in and up under the skirt of the vehicle.
10.Do not terminate the tailpipe such that it is clos-er than 6 inches (153 mm) to any opening, such as a door, window, vent or unsealed compart-ment, into the vehicle interior (Figure 9).
11.Make sure a tailpipe deflector will not cause ex-cessive back pressure.

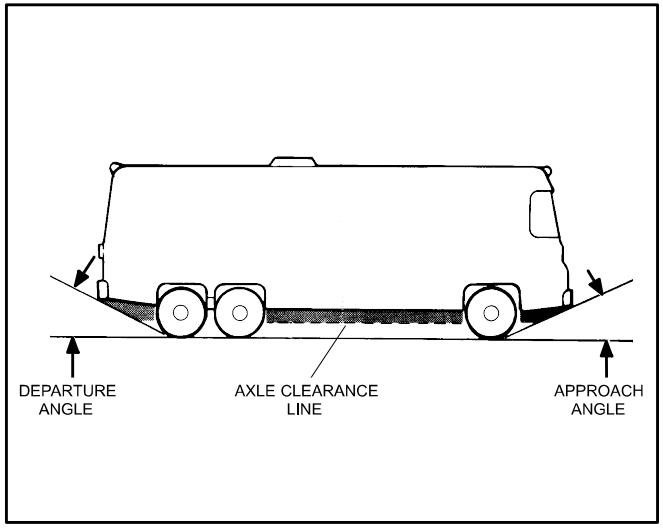



FIGURE 7. VEHICLE CLEARANCES

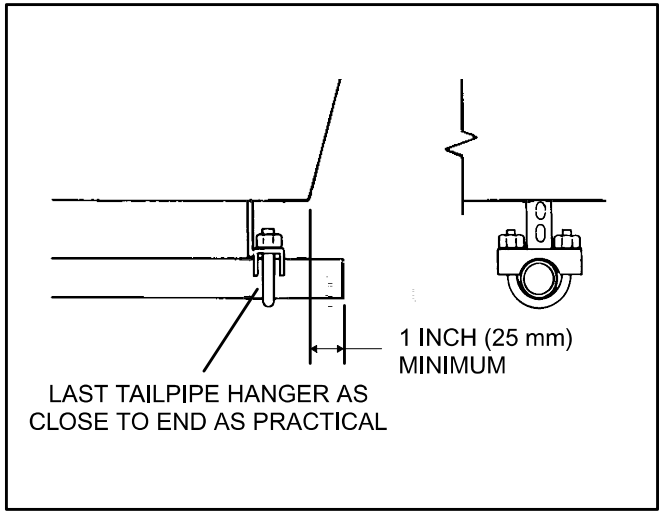



FIGURE 8. TERMINATING THE EXHAUST TAILPIPE





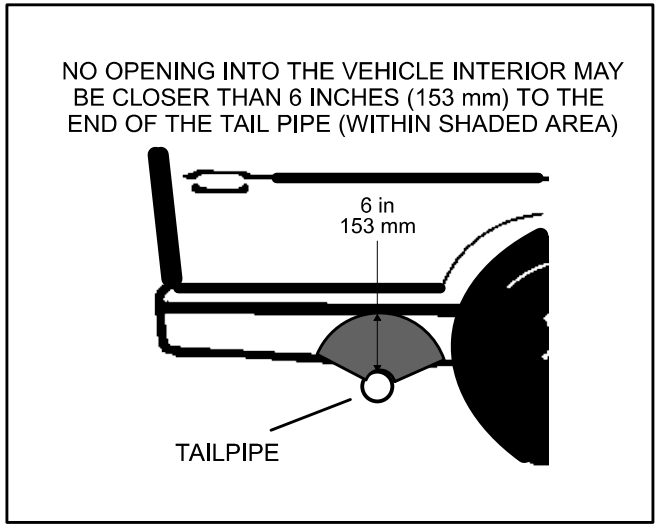


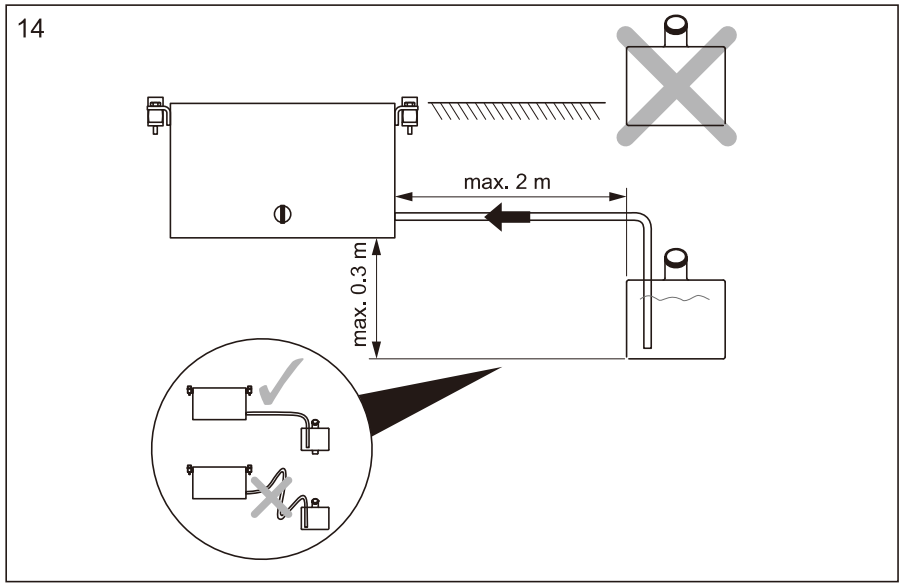

FIGURE 9. MINIMUM DISTANCES TO OPENINGS

## 11.4 nstalling the tank and fuel supply line

➤ Lay the gas line using a suitable metal pipe.

➤ Connect the gas line as shown in fig. 14, page 18.

14








## 11.6 Mounting the remote control

Please observe the following instructions for the installation location:

- Observe the length of the extension cable from the remote control to the generator.

➤ Drill the holes as shown in fig. 15, page 19.

➤ Insert the plug into the remote control.

➤ Screw on the remote control.

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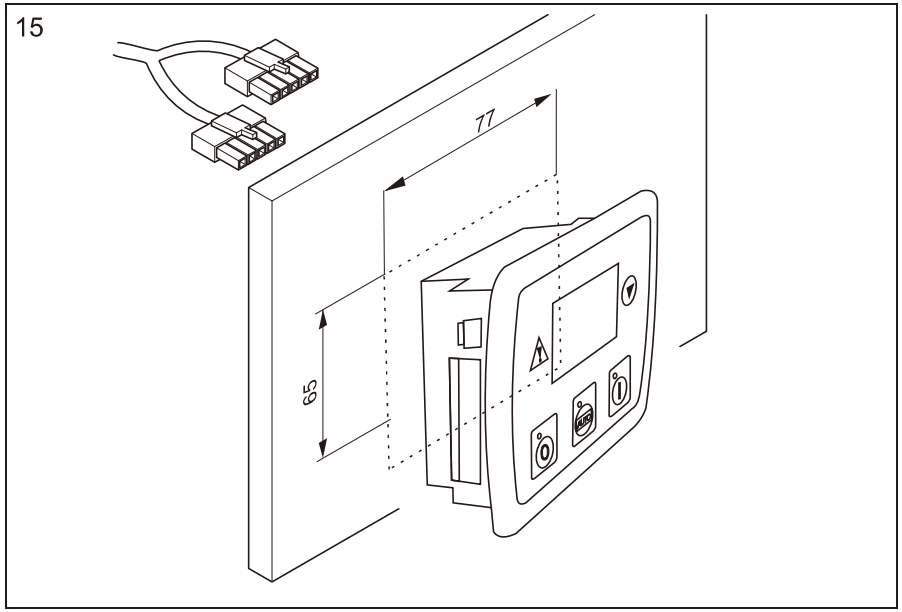


# 12 Connecting the electrical power to the Generator

**DANGER! Danger of electrocution**

Make sure there is no voltage at electrically operated components before carrying out work on them!

**NOTE**

Observe the applicable guidelines in the country of the consumer.

## 12. 1 Important notes on the electrical connection

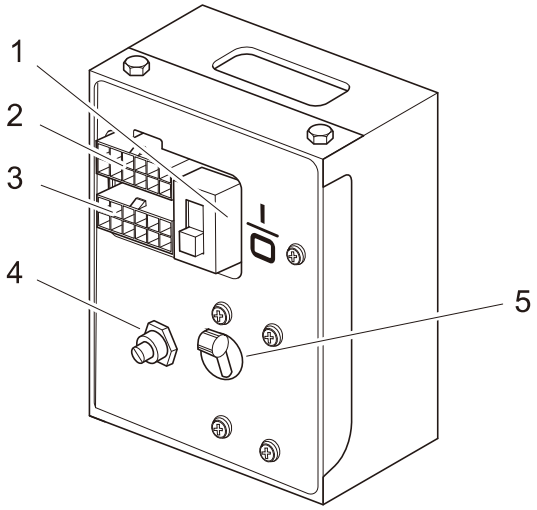
- Only a qualified electrician should connect the generator to the electrical power.
- Check that the voltage specification on the type plate is the same as that of the power supply.
- Do not lay the AC 230V mains cable and the DC12V cable together in the same cable duct.
- Do not lay cables which are loose or bent next to electrically conductive material (metal).
- Connect the generator to a power circuit which can supply the necessary current (see chapter “Technical data” on page 32).
- Select the cross-section of the cable as follows:
  - 230 V: 2.5 mm²
  - 12V battery charger: 4.0mm²
  - Battery connection (length < 6 m): 6 mm²
  - Battery connection (length > 6 m): 10 mm²
- Install a manual main switch which can disconnect all the consumers from the generator with the exception of the battery.

## 13 Internal junction box

Internal junction box as shown in fig. 16, page 21.

| Item | Description |
|---|---|
| 1 | Emergency shutdown switch |
| 2 | Motor connection |
| 3 | Remote control connection |
| 4 | 12 V battery charger connection |
| 5 | Generator output breaker |

16








## 14 Overall electrical installation

**NOTICE!**

- Connect a relay or a switch to the vehicle's electrical system so that the generator is not damaged when the external mains is connected.
- Ensure that the electrical system is set up as follows:
  – TN network:
  The neutral conductor must be linked to the PE conductor on the terminal via a jumper with a minimum diameter of 2.5 mm2. To protect against automatic shutdown, make sure that a safety switch (FI switch, 30 mA) and an in all-pole overcurrent protection (e.g. circuit breaker, 13 A) are installed.
  – IT network:
  Ensure that an insulation monitor and an in all-pole overcurrent protection (e.g. circuit breaker, 13 A) are installed.
- Connect the generator so that it takes priority over the power supply.

**DANGER! Danger of electrocution**
Make sure there is no voltage at electrically operated components before carrying out work on them!

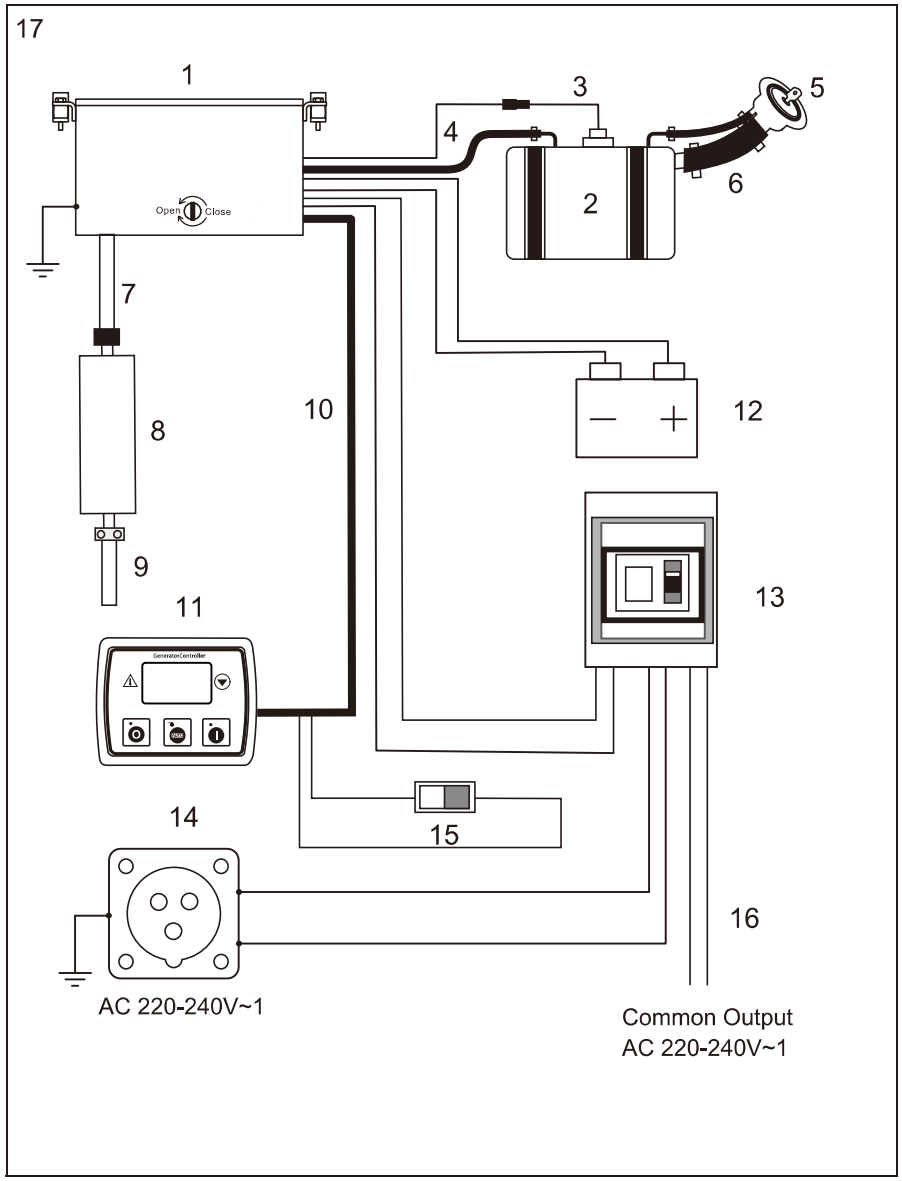
**WARNING!**
**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.

**CAUTION!**
**Safety instruction:** Failure to observe this instruction can lead to injury. serious injury.

**CAUTION!**
Failure to observe this instruction can cause material damage and impair the function of the product.

**NOTE!**
Supplementary information for operating the product.

# 15 Installation diagram








## 15.1 Accessories Group Antu

The Complete installation diagram as shown in fig. 17, page 24.

| Item | Description |
|---|---|
| 1 | Generator |
| 2 | Fuel tank |
| 3 | Fuel level sensor |
| 4 | Fuel pipe |
| 5 | Fuel injection port |
| 6 | Oil filling hose |
| 7 | Metal hose with joint |
| 8 | Silencer |
| 9 | Exhaust pipe |
| 10 | 10-pin mini-fit plug |
| 11 | Control panel |
| 12 | Battery |
| 13 | AG-102 (Not provided) |
| 14 | City Electrical insert socket |
| 15 | Automatic witch |
| 15 | Common Output cable |

## 15.2 Installation Fuel tank

**NOTE!**
The installation does not need to be carried out in the order of the illustration, the order can be made according to the model and location

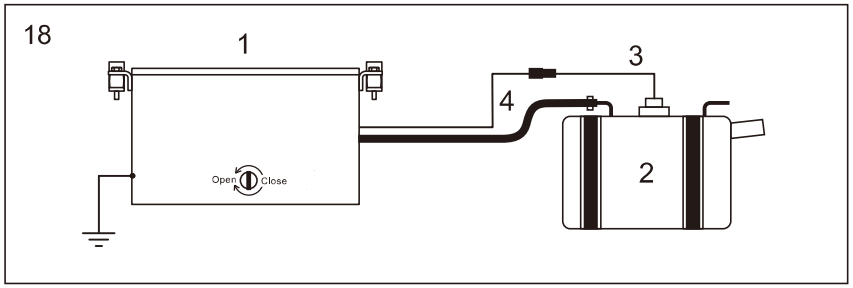
For installation of fuel tank, please refer to the installation diagram fig.18,page 25.

➤ Connect the fixed generator (1) with fuel tank (2)

– The length of the fuel pipe (4) from the fuel tank to the generator should not exceed 2 meters. If the length of the fuel pipe is too long, it will cause poor fuel delivery, and the generator will not operate stably or even start.

– Plug the two-core cable (3) fuel level sensor on the fuel tank and the two wires from the generator

18



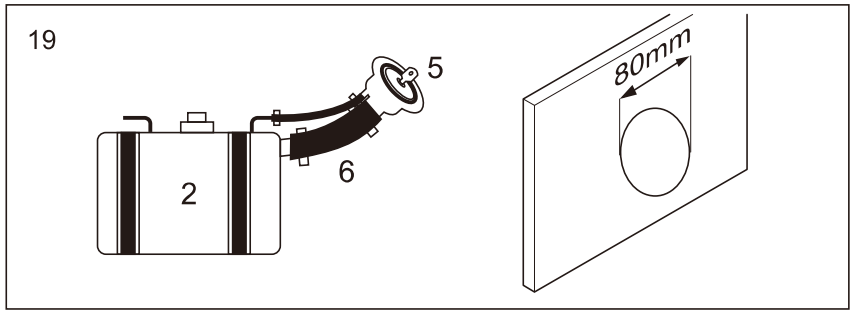

➤ Fix the Fuel injection port on the vehicle plate show down in fig.19,page 25.

– Make an 80mm hole in the proper position of the car body, and fix the fuel injection port (5) with three self-tapping screws

– Connect the fuel pipe with an inner diameter of 38mm to the fuel tank (2) and the fuel injection port (5), and lock it with a pipe buckle

– Connect the vent with an inner diameter of 10mm to the fuel tank (2) and the fuel injection port (5) respectively

19








## 15.3 Installation silencer

**WARNING!**
**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.

**CAUTION!**
**Safety instruction:** Generator exhaust will emit carbon monoxide which is harmful to the body

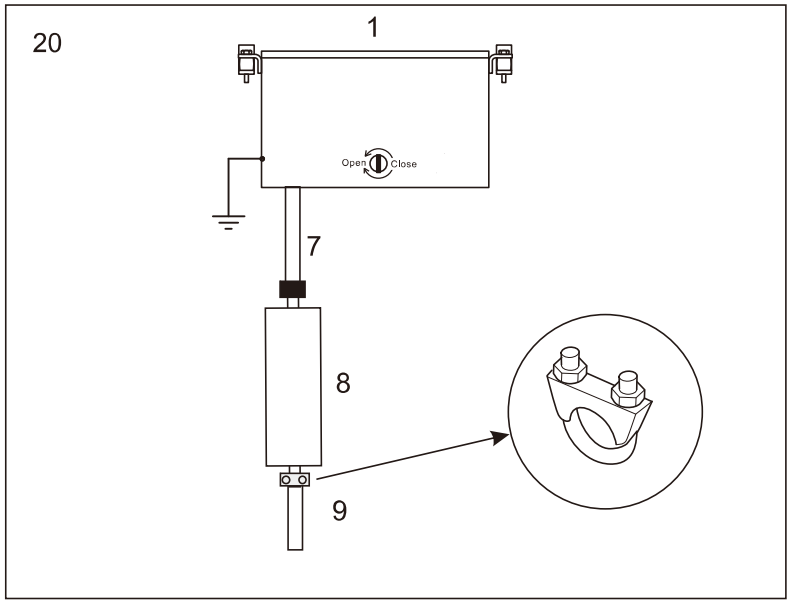
**CAUTION!**
The generator exhaust emits heat, which can cause burns to the body.
Pay attention to the installation and keep a safe distance.

➤ Install external silencer show down in fig.20,page 26.

– The external silencer (8) is fixed within 1 meter from the generator, and fixed with a wrench with a joint hose (7) with internal threads.

– Lock the extended threaded metal hose with a pipe buckle, and lead the other end of the hose to a suitable position for exhaust.

20

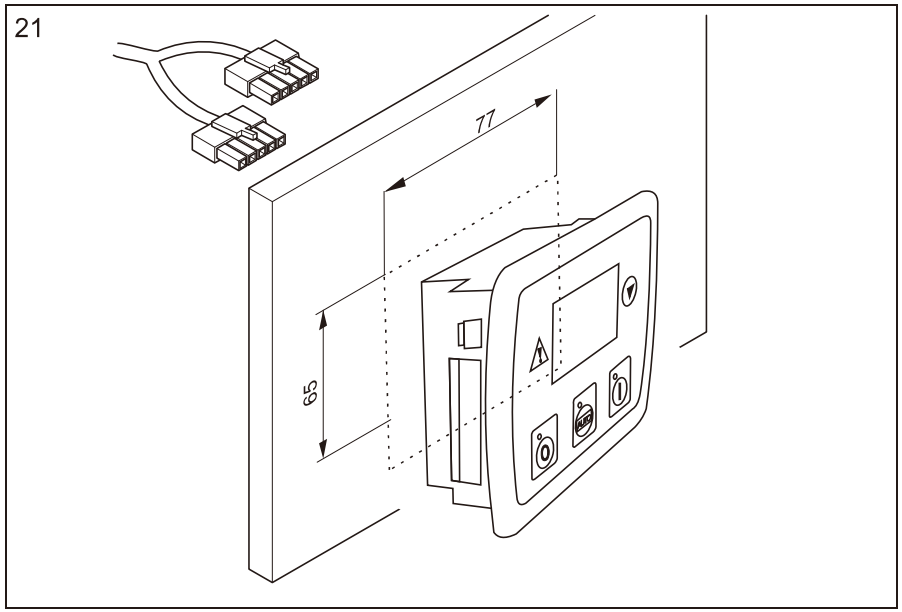


## 15.4 Installation control panel

Install the control panel in a suitable location show down in fig.21,22,page 27.

- The length of the 10-pin signal cable is 5m, and the installation position from the controller to the generator should not exceed 5m.
- The opening size is 77*65mm at a suitable position under the seat inside the vehicle
- Insert the wiring heads of the two rows into the corresponding sockets of the controller respectively, and make sure that they have been inserted tightly. Fix the control panel at the opening hole, stick it with glass glue, and make sure that it will not loosen.

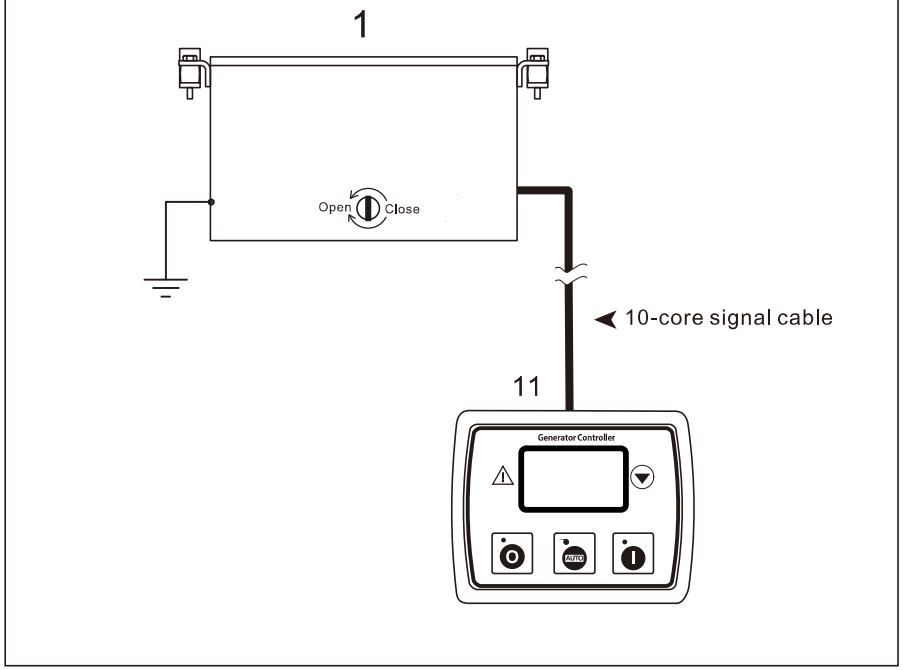
21




**NOTE!**

To install the controller, make sure that the two rows of connectors have been plugged into the socket of the controller, otherwise the generator will not start or it will stop immediately after it starts.

22



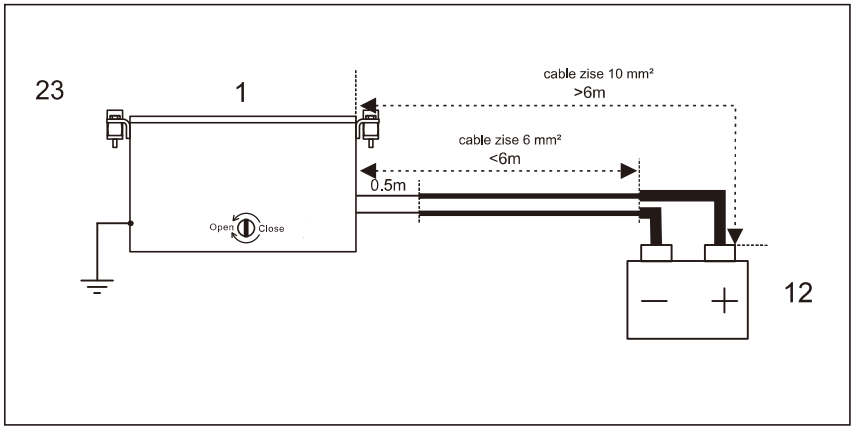
## 15.5 Connect the battery

Connect generator to battery cable show down in fig.23,page 29.

- 12V battery charger: 4.0mm²
- Battery connection (length < 6 m): 6 mm²
- Battery connection (length > 6 m): 10 mm²

- Make sure that the positive pole + of the red cable is connected to the positive pole of the battery, and that the negative pole - of the black cable is connected to the negative pole of the battery.

- Make sure that the cable connector connected to the battery has been tightened




**NOTE!**

Make sure that the cable connector connected to the battery has been tightened. Poor contact will cause the generator to fail start or turn off the fire.

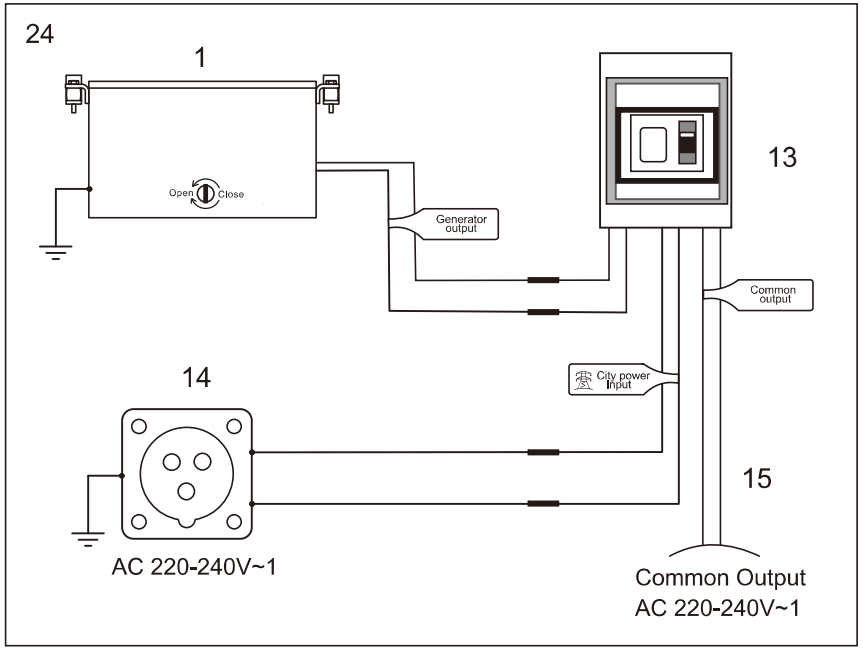
## 15.6 Connect the AG-102( Auto exchange switch box)

**WARNING!**

If the cable provided by the manufacturer is not long enough, please use a cable with a cross-section more than 2.5mm². When connecting the cable, make sure that the connection is strong. It is best to use an electric iron and solder to solder firmly, otherwise the power will not be smooth. Even cause a fire

➤ Installation of AG-102 (Automatic exchange city power and Generator) show down in fig.24,30.

- Fix the AG-102 in a suitable position in the car, preferably a position that can be touched by your hands.
- Connect the cable with a cross-section more than 2.5mm² to the lead of AG-102 with text. Please confirm that the cable connection corresponding to the text on the label is correct.



## 16 Disposal

➤ Place the packaging material in the appropriate recycling waste bins wherever possible.

If you wish to finally dispose of the product, ask your local recycling centre or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.


**Protect the environment!**

Do not dispose of any batteries with general household waste.
Return defective or used batteries to your retailer or dispose of them at collection points.

| | TEC30 |
|---|---|
| Rated output voltage: | 220-240V~ / 50 -60Hz |
| Max. constant output (at 25°C at sea level): | 2650 W |
| Battery charger output voltage | 12V⎓ |
| Battery charger max output Current: | 8A |
| Operating temperature range: | –15°C to +50°C |
| Distortion factor: | 1% |
| Fuel: | -15 °C to +50 °C |
| Consumption: | 300 g/kWh<br>max.1.2l/h |
| Motor output: | 4.0kW (5.5PS) |
| Guaranteed Sound level: | 86 dB(A) |
| Sound level at distance of 7 m: | 54-59 dB(A ) |
| Dimension: | 480*385*290mm |
| Weight: | 45kg |
| Inspection/certification: | CE NSAI EU TYPE-APPROVAL |





| | TEC40 |
|---|---|
| Rated output voltage: | 220-240V~ / 50 -60Hz |
| Max. constant output (at 25°C at sea level): | 3450 W |
| Battery charger output voltage | 12V⎓ |
| Battery charger max output Current: | 8A |
| Operating temperature range: | –15°C to +50°C |
| Distortion factor: | 1% |
| Fuel: | -15 °C to +50 °C |
| Consumption: | 350 g/kWh<br>max.1.5l/h |
| Motor output: | 5.0kW (6.7PS) |
| Guaranteed Sound level: | 86 dB(A) |
| Sound level at distance of 7 m: | 54-59 dB(A ) |
| Dimension: | 480*385*290mm |
| Weight: | 52kg |
| Inspection/certification: | CE NSAI EU TYPE-APPROVAL |

USR Generator

# ENERGY & LIGHTING GENERATORS


## TEC series Manual

## Operating

**Please read this instruction manual carefully before installation and first use, and store it in a safe place. If you pass on the product to another person, hand over this instruction manual along with it.**

# 1 Explanation of symboles

**WARNING!**
**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.

**CAUTION!**
**Safety instruction:** Failure to observe this instruction can lead to injury. serious injury.

**CAUTION!**
Failure to observe this instruction can cause material damage and impair the function of the product.

**NOTE!**
Supplementary information for operating the product.

# 2 Safety and installation instructions

The manufacturer accepts no liability for damage in the following cases:

- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in the operating manual

In particular, the manufacturer will not be liable for any consequential damage, especially consequential damage caused by failure of the generator.

Note the following basic safety information when using electrical devices to protect against:

- Electric shock
- Fire hazards
- Injury





## 2.1 General safety

**WARNING!**

- **Electrical devices are not toys**

  Keep electrical devices out of reach of children or infirm persons. Do not allow them to use electrical devices without supervision.
- People (including children) whose physical, sensory or mental capacities prevent them from using this device safely may not be allowed to operate it without the supervision of a responsible adult.
- Only use the device as intended.
- Do not make any alterations or conversions to the device.
- Installation, maintenance and repairs of the generator may only be carried out by qualified personnel who are familiar with the risks involved when handling generators as well as the relevant regulations. Inadequate repairs may cause serious hazards. For repair service, please contact the manufacturer's branch office in your country (addresses on the back page).
- Exhaust fumes contain carbon monoxide which is a highly toxic, odourless and colourless gas. Do not inhale any exhaust fumes. Do not leave the generator motor running in a closed garage or in a room without windows.

**CAUTION!**

- The generator may only be used with the front door closed.
- Remove all flammable materials such as petrol, paints, solvents, etc., from the vicinity of the generator.
- Ensure that hot parts of the generator do not come in contact with any flammable materials.
- Only refuel the generator when it is switched off and in a well-ventilated area. Petrol and liquid gas are highly flammable and can explode.
- Do not refuel the generator when the vehicle engine is running if the tank is in the vicinity of the generator.
- If petrol is spilled, wipe it up properly and wait until the fumes have cleared before turning on the engine.

## 2.2 Operating the device safely

**WARNING**

- Always disconnect the power supply when working on the device.

**NOTICE!**

- Only operate the device if you are certain that the housing and the cables are undamaged.

# 3 Operating the device safely

This operating manual is for the user of the generator.





# 4 Scope of delivery

## TEC Series

| Designation | Reference number |
|---|---|
| TEC generator | 6587730278 |
| Installation manual | |
| Operating manual | |
| Other | |

# 5 Accessories

Available as accessories (not included in the scope of delivery):

| Part designation | Item number |
|---|---|
| Tank 20L, stainless steel | 91020210336 |
| Secondary silencer, stainless steel | 91020210328 |
| Parallel cable | 91020210323 |

## 6 Intended use

The generator is not suitable for installation in water vessels.
The generator produces a pure sine wave voltage of 120-240 V/50/60 Hz which can be connected to the consumer. The power quality is also suitable for sensitive consumers (such as PCs).
The generator can charge a 12 V battery.

## 7 Technical description

The generators consist of the following main parts (fig. 1, page 6):

- Combustion engine (1)
- Alternator (2) with permanent magnets
- Inverter (3)
- Internal control panel (4)
- Remote control (5)

The The combustion engine (1) drives the alternator (2) connected to it, which in turn generates AC voltage.
The inverter (3) transforms this AC voltage into a stable voltage of 230 V and 50 Hz.
The terminals, the socket for the connection cable to the remote control (5) and the main switch are installed in the internal control panel (4).
Overview of the components:

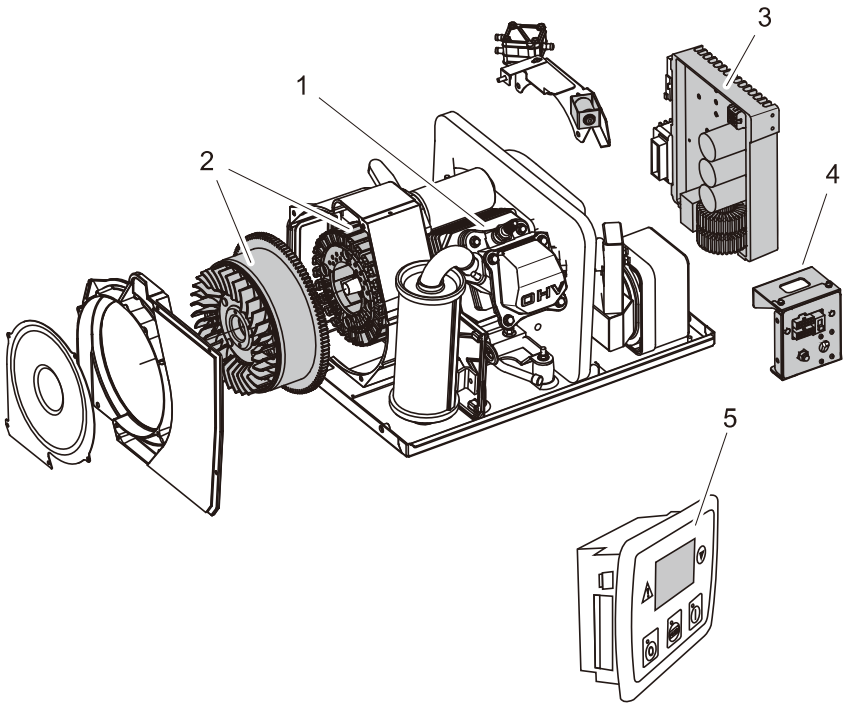
The generator has the following features:

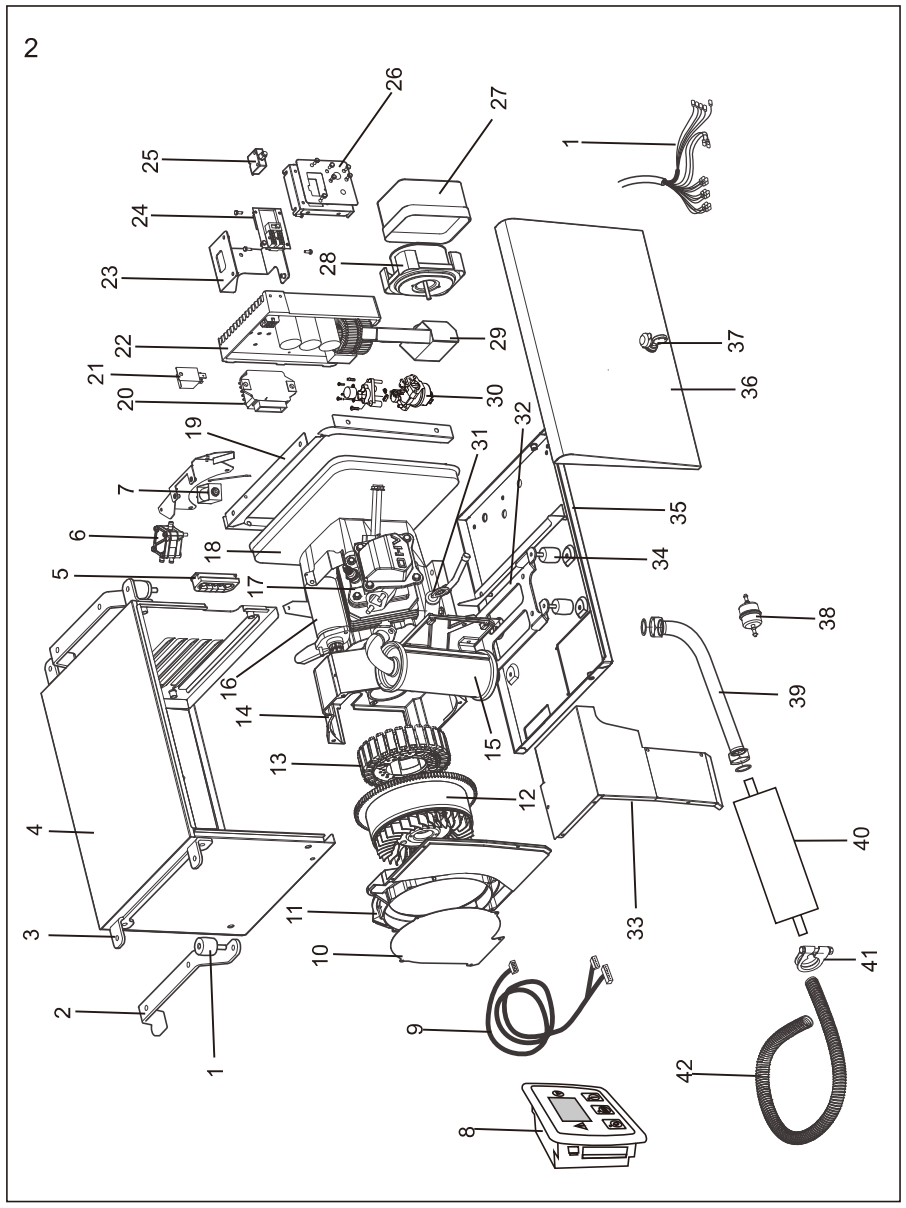
- Integrated battery charger for charging the connected battery
- Automatic mode for charging the connected battery automatically (must be configured accordingly when installed)





1






## 7.1 TEC series Generator Exploded view: fig. 2, page 7.

| No. in fig.2, page 7 | Number | Description |
|---|---|---|
| 1 | 4 | Damping rubber feet |
| 2 | 2 | Hanger of Retaining brackets |
| 3 | 2 | Support of Retaining brackets |
| 4 | 1 | Generator shell |
| 5 | 1 | Lead rubber |
| 6 | 1 | Fuel pump |
| 7 | 1 | Throttle push solenoid |
| 8 | 1 | Generator controller (control panel) |
| 9 | 1 | 10-pin signal cable, 5 m |
| 10 | 1 | Windshield |
| 11 | 1 | Fan shield |
| 12 | 1 | Permanent magnet rotor |
| 13 | 1 | Stator |
| 14 | 1 | Alternator cover |
| 15 | 1 | Internal silencer |
| 16 | 1 | Starter (Start motor) |
| 17 | 1 | Honda Engine (Honda motor) |
| 18 | 1 | Partition |
| 19 | 4 | Rubber rails |
| 20 | 4 | DC12V voltage regulator |
| 21 | 1 | Start motor relay |
| 22 | 1 | Inverter |
| 23 | 1 | Junction box base |
| 24 | 1 | Excessive wire board |

## TEC series Generator Exploded view: fig. 2, page 7.

| No. in fig.2, page 7 | Number | Description |
|---|---|---|
| 25 | 1 | 12V DC overload protector |
| 26 | 1 | Junction box |
| 27 | 1 | Air filter box |
| 28 | 1 | Air filter |
| 29 | 1 | Air intake |
| 30 | 1 | Carburetor |
| 31 | 1set | Engine oil nozzle and Dipstick |
| 32 | 1 | Engine chassis |
| 33 | 1 | Silencer cover |
| 34 | 4 | Damping rubber feet |
| 35 | 1 | Generator shell chassis |
| 36 | 1 | Generator shell door |
| 37 | 1 | Door lock |
| 38 | 1 | Fuel filter |
| 39 | 1 | Internal thread exhaust hose,1m |
| 40 | 1 | External silencer |
| 41 | 2 set | Mounting brackets for silencer |
| 42 | 1 set | Exhaust pipe,1m |





# 8 Operating the generator

**DANGER!**
**Safety instruction:** Failure to observe this instruction will cause fatal or serious injury.

**WARNING!**
**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.

**CAUTION!**
**Safety instruction:** Failure to observe this instruction can lead to injury. serious injury.

**CAUTION!**
Failure to observe this instruction can cause material damage and impair the function of the product.

**NOTE!**
Supplementary information for operating the product.

## 8.1 Basic notes on operation

**NOTICE!**
Do not run the generator over 70% of the maximum constant output for the first 50 operating hours (run-in phase).

**NOTE**
Run the generator at a maximum of approx. 75% of the maximum continuous load after the run-in phase.
By doing this you can prolong the service life of the generator and maximise its efficiency.

**CAUTION! Beware of injury**
Do not insert your fingers or objects into the air nozzles or the intake grille.

Please note the following basic information:

- Always check the oil level before use (chapter “Checking the oil level” on page 21).
- Check there are no leaks from the gas supply using a leak detection spray before every use.
- Even small overloads in the long-run will cause the cut-out switch or the fuses to trigger.
- Leave the generator running for a few minutes after use without any consumers before stopping it.
- Abrupt braking, accelerating and driving round bends in the vehicle can cause problems in the generator's pump system and lead to unwanted shutdown.
- If you are not using your generator for a longer period of time, start it up at least every 30 days and leave it running for 15 minutes or more.

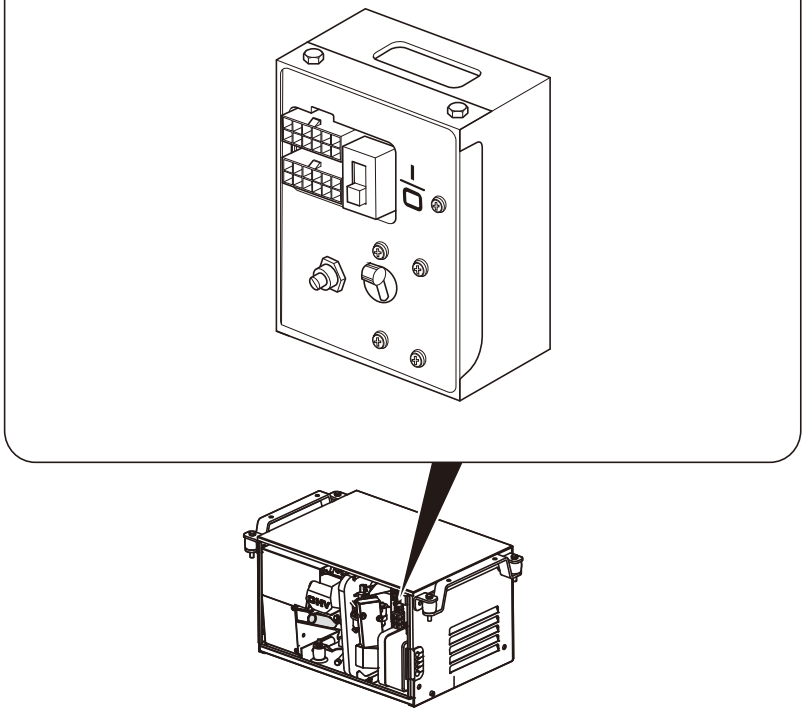




## 8. 2 Switching the generator to standby or no function

The generator can be switched to standby or no function with the main switch (fig. 3, page 12) in the control panel.

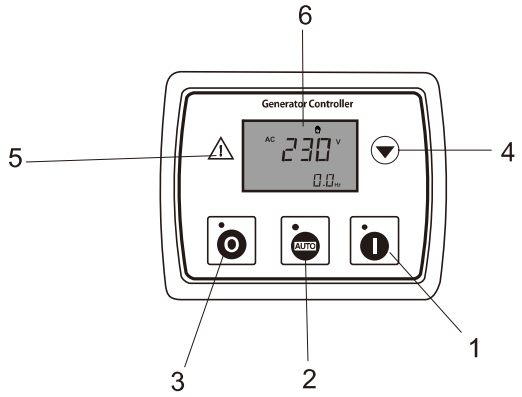
3



## 8. 3 Generator controller (control panel)

the control panel diagram show down in fig.4,page 13.

4




| No. | Defined | Description |
|---|---|---|
| 1 | Manual start button | Push this button, generator will start, and the module comes into manual state |
| 2 | Auto state button | Push this button, Wireless remote control mode |
| 3 | Stop button | Push this button, generator will stop, and the module comes into stop state. In the standby mode, if long pressing the button for 3 seconds all LED lights |
| 4 | LCD page button / confirm button | Change the page display, used for LCD and can move the cursor in the parameter Settings and confirm set information |
| 5 | Alarm light | When an alarm occurs, exhibit of lanterns flicker |
| 6 | LCD Display | Show current content |





## 8.3 Controller function

The meaning of each icon of the controller

| Symbol | Defined | Symbol | Defined |
|---|---|---|---|
| | High Temperature | AUTO | Automatic state |
| | Low Oil Press | O | Stop state |
| | Over Speed | | Manual states |
| | Under speed | AC | Generator voltage |
| | Emergency Stop | DC | Battery voltage |
| V↑ | High voltage | % | Amount of fuel |
| V↓ | Low voltage | RPM | Speed units (rpm/minute) |
| | Over Crank | kPa | Oil pressure unit |
| | Warning | V | Voltage unit |
| | Stop alert | A | Current unit |
| | Stop Failure | % | Fuel level units ( Percentage ) |
| | Rotation during normal operation | ℃ | Temperature unit |
| | flywheel tooth number | Hz | Frequency unit |
| | Battery voltage is abnormal | H | Total running time |
| | External alarm | SET | Parameter setup instructions |
| | Low fuel level | L1–L2 | L1-L2 Line voltage |
| L2–L3 | L2-L3 Line voltage | L3– L1 | L3-L1 Line voltage |
| L1- - -N | L1 Phase voltage | L2– –N | L2 Phase voltage |
| L3–N | L3 Phase voltage | | Panel lock（ Close button function ） |

## 8.4 Display discripion

Generate output voltage V,
Frequency Hz


Battery voltage,
Engine speed


Oil pressure


Fuel level %,
Total running time


### 8.4.1 Operation of Controller

Module has three states: stop state  AUTO state  Man start state 

### 8.4.2 Man start

Start by pressing the start button  on the control panel is a manual start.

At this time, a small hand  will be displayed on the LDC.

### 8.4.3 AUTO state

- The generator is in the state of wireless remote control when it leaves the factory, the AUTO light  is on.
- When the generator is under manual control, first press the stop button, then press the AUTO button  , the generator is in the wireless remote control state, and the wireless remote control can be used to control the switch.

### 8.4.4 Stop state

- When the generator is in the AUTO state, it can be stopped by the wireless remote control, or it can be stopped by the stop button  on the control panel





- When in manual mode, press the stop button to stop 

  In the case of troubleshooting, when the Alarm light ⚠ is flashing, you can use the stop button to cancel

### 8.4.5 Alarm light ⚠

Alarm light will flash in the following situations

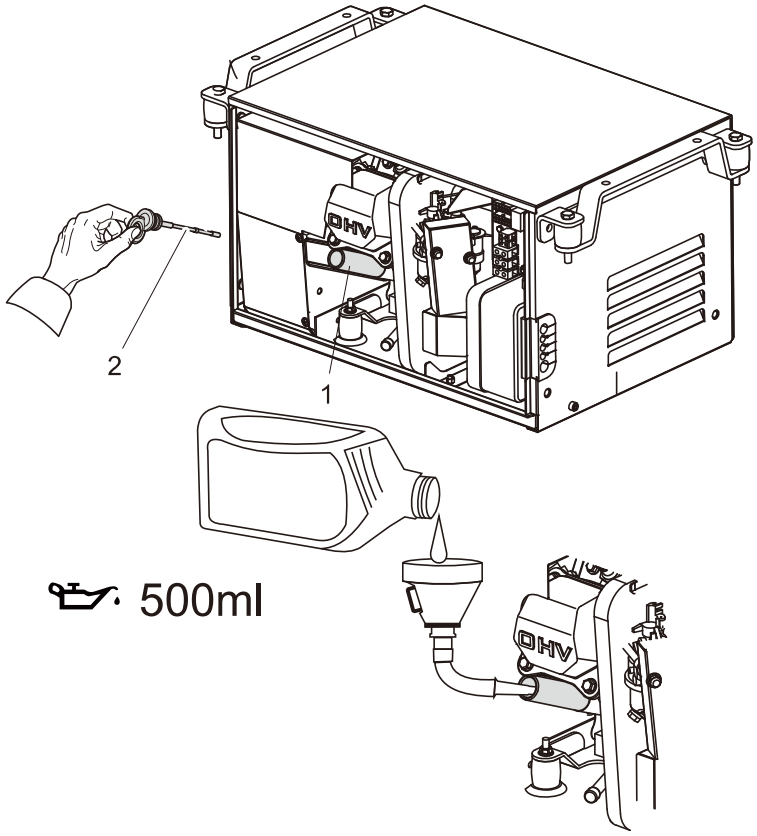
- Low Oil Pressure: check after the safe delay, the duration of 5 seconds above, the module will alarm and stop engine.
- High Temperature：check after the safe delay, the duration of 10 seconds above,the module will alarm and stop engine.
- Low Fuel Level: When the fuel level is consistently below the preset value of 10 seconds, and issuing fuel level is too low signal, this value is only a warning will not stop.
- Over speed: check after the preheat delay, the duration of 2 seconds above, the module will alarm and stop engine.
- Under speed: check when engine run at full tilt, the duration of 15 seconds above, the module will alarm and stop engine.
- Over Crank: when engine crank fail over the times of configure, the module will alarm and stop engine.
- Stop Failure: when engine is stop fail, the module will warn.
- Battery over voltage: The DC supply has risen above the high volts setting level for the duration of the high battery volts 20 seconds.
- Battery under voltage: The DC supply has low above the under volts setting level for the duration of the low battery volts 20 seconds.
- Emergency Stop: When emergency stop input, ETS solenoid stop immediately output, and then fuel disconnect, preheat and start signal emit emergency stop alarm signal.
- Gen Over Voltage: When the continuous sampling voltage higher than the preset value, at the end of the abnormal delay, signal generator voltage is too high, ouage alarm at the same time.
- Gen Under Voltage: When sampling the voltage is lower than the preset value continuously, at the end of the abnormal delay signal generator voltage is too low, outage alarm at the same time.

## 9 Inject engine oil, show following in fig.5,page 17

**NOTICE!**
No oil is added to the generator when it leaves the factory.

**NOTICE!**
Inject 500ml of engine oil labeled SAE 10W-30

5




Please use SAE 10W-30 engine oil

- Open the generator door, find the oil injection port, and unscrew the oil dipstick.
- Inject 500ml of engine oil labeled SAE 10W-30, and add the oiler to the dipstick to the flat part.

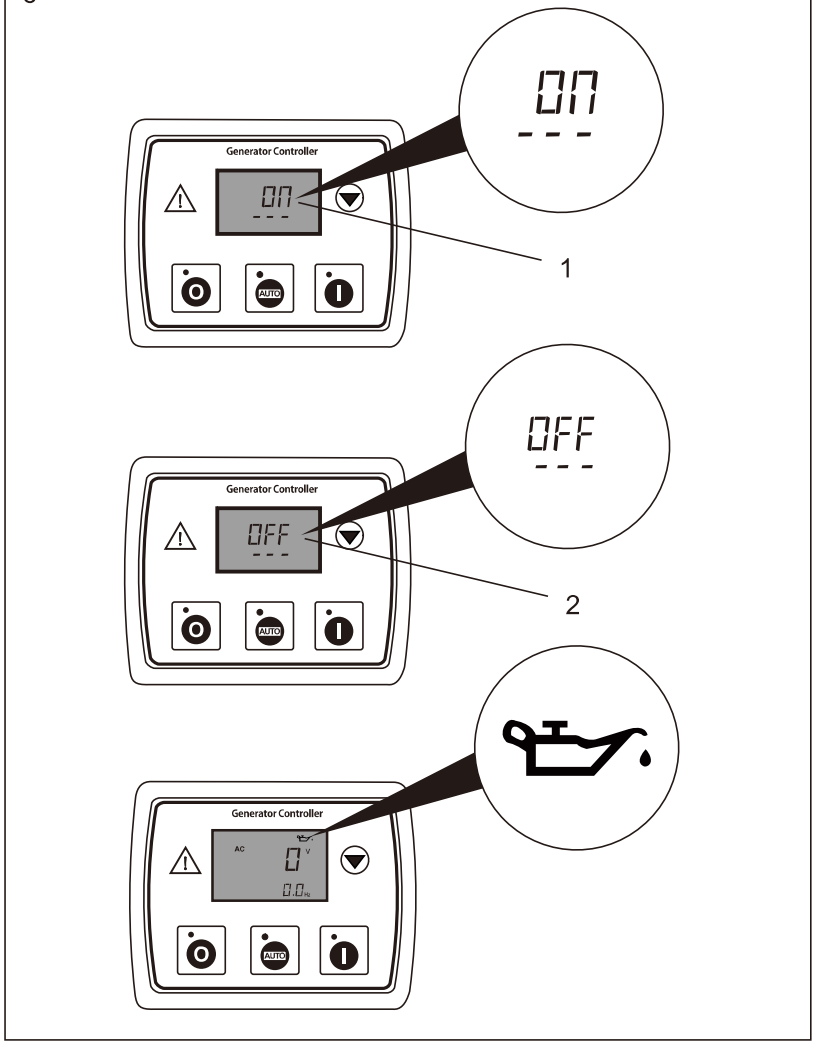




Check whether the oil is also added show down in fig.6,page 18.

- Press the LCD page button ⏬ to check whether the oil has been added, ON (1) will appear on the LCD screen after the oil has been added, and OFF (2) will appear if the oil has not been added.

6



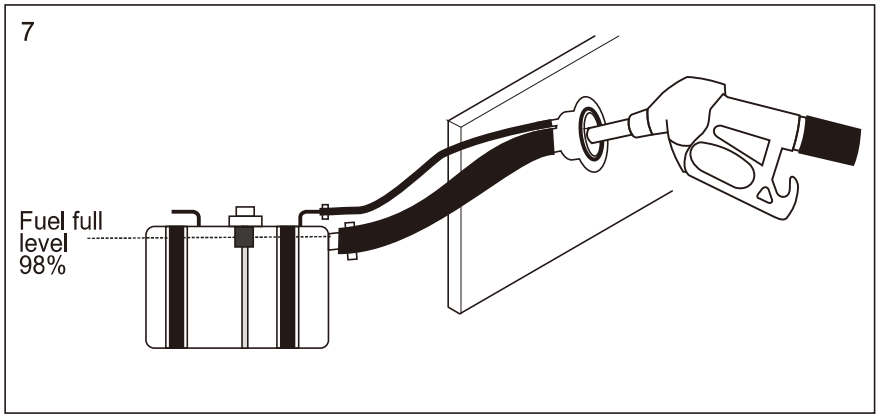
## 10 Inject gasoline fuel, diagram in fig.7,8,9,page 19-20.

**DANGER!**
**Safety instruction:** Gasoline is a flammable and explosive dangerous product. Make sure there is no fire nearby when filling it.

**WARNING !**
Make sure that the fuel tank and the fuel pipe have been fixed.
Make sure that all tubing and pipe clamps are fastened.
Make sure that all pipes from the fuel tank to the generator are unblocked.

Inject Gasoline

7



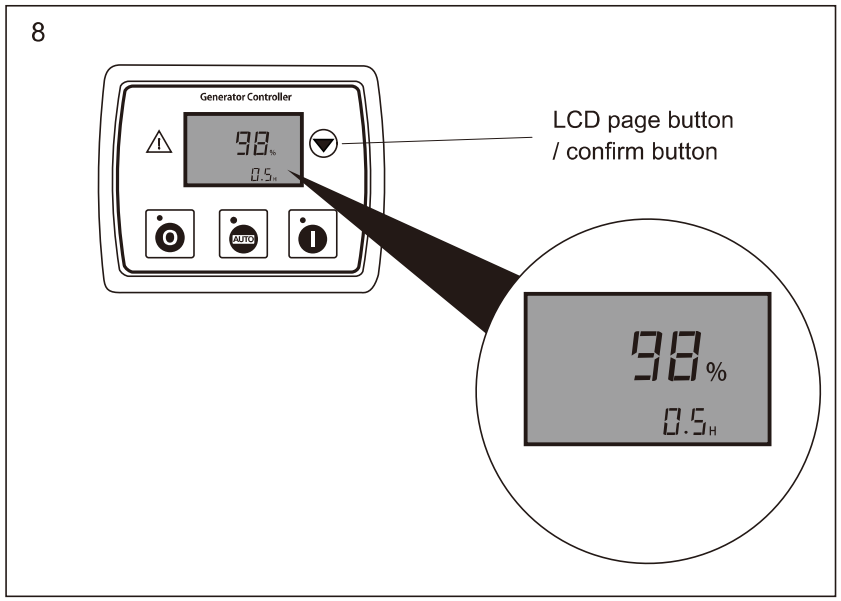

- Please use unleaded gasoline above 92#
- The manufacturer provides a 20L fuel tank,Do not overfill when filling gasoline, and do not exceed 98%

Check the fuel level on the control panel

**NOTICE!**
The fuel level can only display the accurate fuel level when the fuel tank is completely stationary

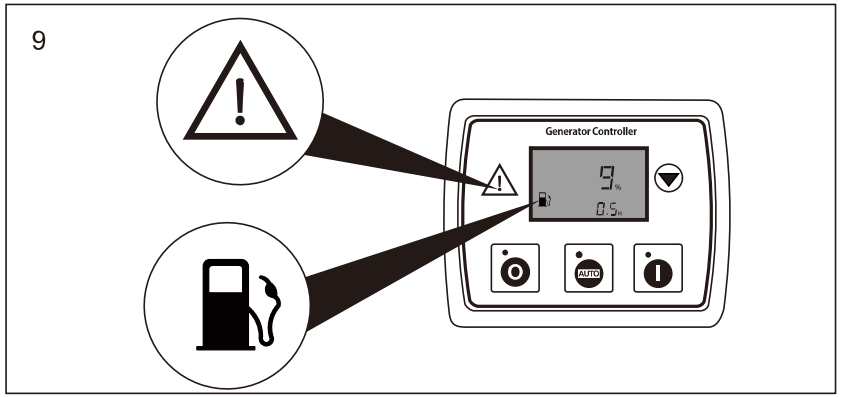
Check the fuel level on the control panel

8




- Press the LCD page button, when the oil level is displayed as %, it means the current tank oil level
- When the fuel in the fuel tank is less than 10%, the Alarm light will flash and the low fuel level icon will appear on the LCD screen.

9



## 11 Start and control the generator with the control panel

**WARNING !**
Please check multiple times before starting the generator, the cable wiring is correct, the air intake is sufficient, the exhaust is smooth, and the oil pipeline is unobstructed

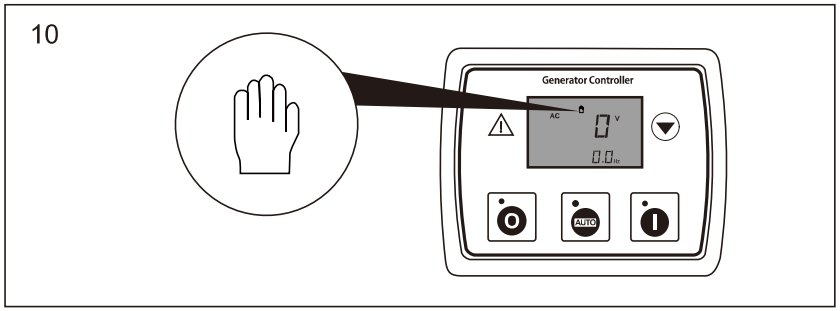
**NOTICE!**
It usually takes 5-9 times to start the generator for the first time, please be patient and wait

The generator controller is designed to start a group of 5 times, and it will start continuously 5 times until it starts.

**DANGER!**
**Safety instruction:** The generator is modulated to start a group of 5 times. During the start of the generator, it is forbidden to perform any operation on the generator. It is forbidden to open the generator cover or reach out to touch the flywheel of the generator, which may cause injury and electric shock.

Control panel button to start the generator: diagram show down in fig.10,page 21

10




- The generator is in the state of wireless remote control when it leaves the factory, the AUTO light is on.
- Start by pressing the start button on the control panel is a manual start. At this time, a small hand will be displayed on the LDC.
- Press the start button to start the generator, and you will hear the sound of the starter motor driving the rotor. The generator controller is designed to start a group of 5 times, and it will start continuously 5 times until it starts.

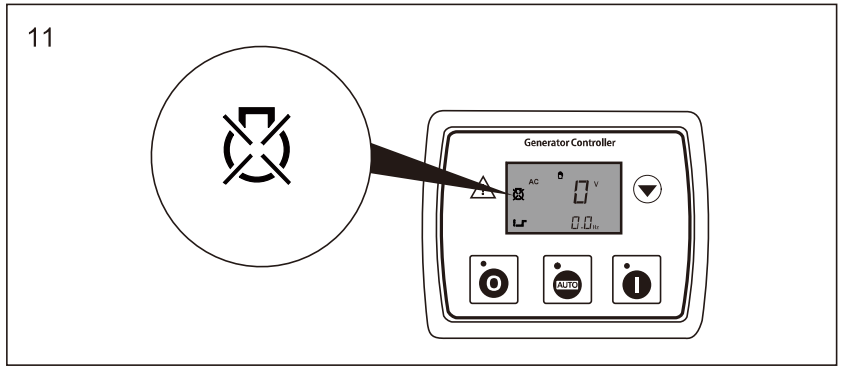




**NOTICE!**
The new generator needs to run-in with low power for about 20 hours, and the load power should be kept within 2000W

- When the generator is not started for the first 5 times, the control panel will display the start failure icon , then press the stop button to clear the start failure icon, and then press the start button to start 5 times until the generator is started, diagram as following fig.11,page22.

11




- The new generator needs to run-in with low power for about 20 hours, and the load power should be kept within 2000W

Control panel button to stop the generator:

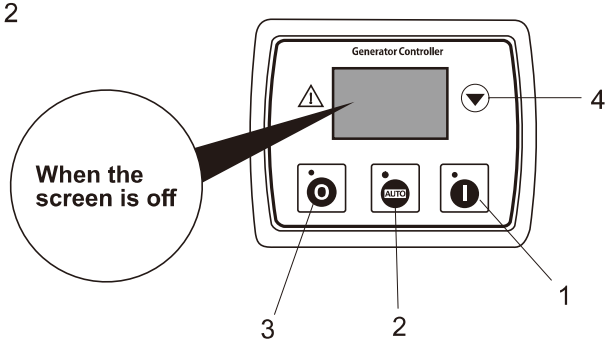
- Press the stop button to stop the generator
- Press the stop button and the generator will stop after 11 seconds, and press the generator again to stop immediately

**NOTICE!**
Press the stop button and the generator will stop after 11 seconds, and press the generator again to stop immediately

## 11 Controller screen off function

**NOTICE!**
When the generator is stopped for more than 5 minutes, the controller screen will automatically turn off to reduce battery consumption. When the generator needs to be used, press any key to activate the controller.

12




| No. | Defined | Description |
|---|---|---|
| 1 | Manual start button | Push this button, generator will start, and the module comes into manual state |
| 2 | Auto state button | Push this button, Wireless remote control mode |
| 3 | Stop button | Push this button, generator will stop, and the module comes into stop state. In the standby mode, if long pressing the button for 3 seconds all LED lights |
| 4 | LCD page button / confirm button | Change the page display, used for LCD and can move the cursor in the parameter Settings and confirm set information |



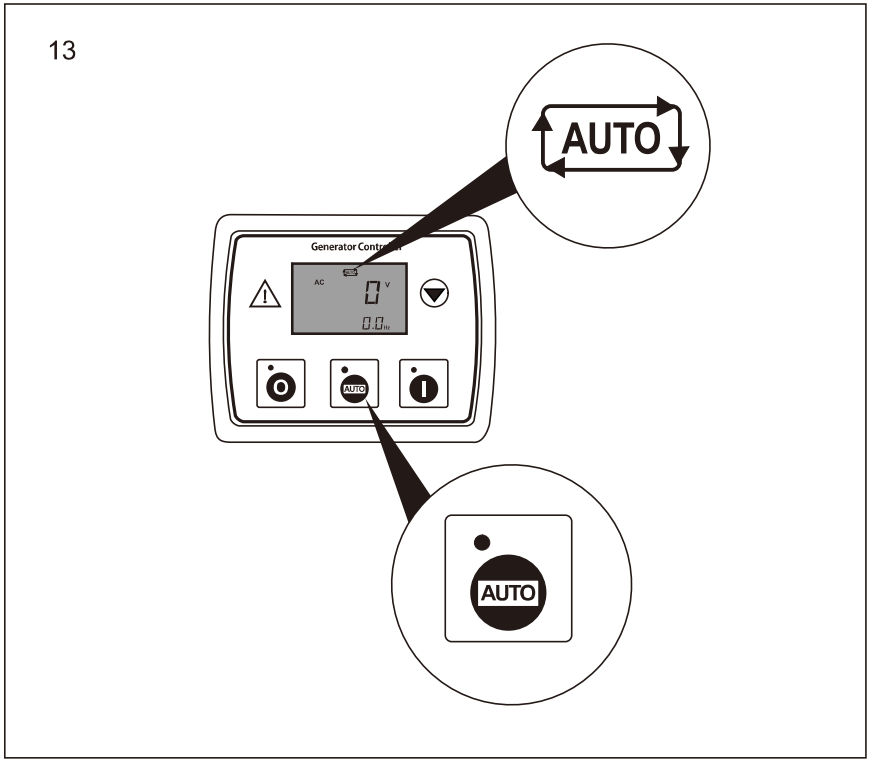


➤ When the generator is stopped for more than 5 minutes, the controller screen will automatically turn off to reduce battery consumption. When you need to use the generator, press any key to activate the controller. Please see the 4 buttons in the figure 12 on the left.

**NOTICE!**
When the generator needs to start and stop automatically, you need to press the AUTO button.

➤ When the generator needs to start and stop automatically, you need to press the AUTO button . When the generator stops for 5 minutes, the controller will turn off the screen. After the screen turns off, the automatic start and stop functions will still be executed.

13



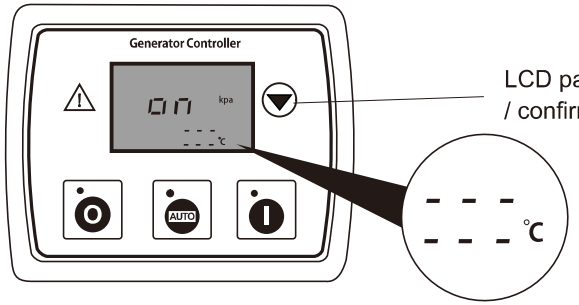
## 12 Temperature display and over-temperature protection

**NOTICE!**

The factory setting of the generator chassis shall not exceed 92 degrees Celsius. When the temperature inside the generator chassis exceeds 92 degrees Celsius, the generator will shut down immediately.

➤ When the temperature inside the generator case is lower than 40 degrees, the temperature value will not be displayed. As shown below:

14

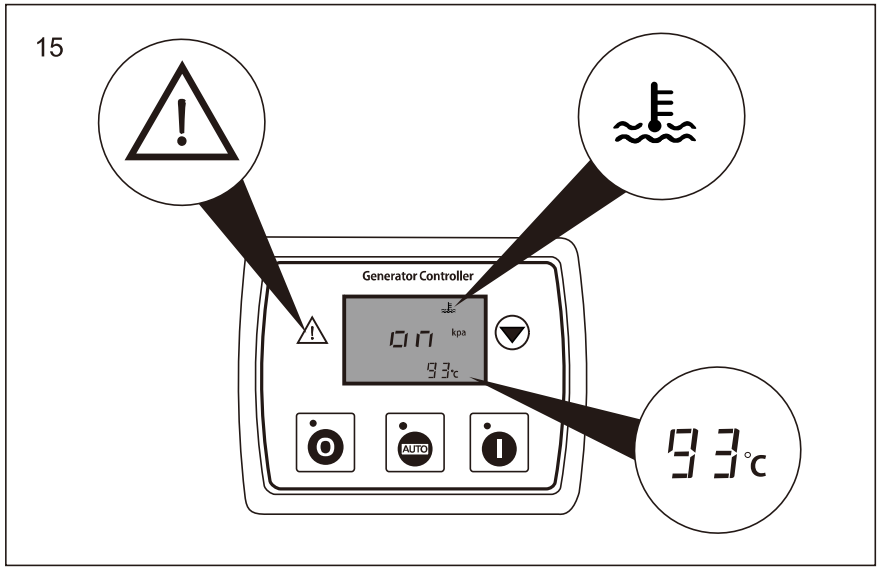







➤ In order to make the generator durable and high-temperature protected, the temperature inside the generator chassis is set at the factory not to exceed 92 degrees Celsius. When the temperature inside the generator chassis exceeds 92 degrees Celsius, the generator will shut down immediately.

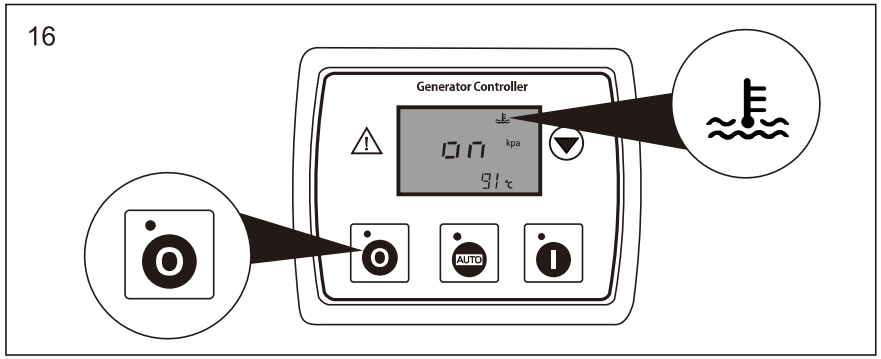
15




➤ After high temperature shutdown, the generator can be started again after the temperature drops below 92 degrees.

After pressing the stop button to reset, the warning light can be eliminated and the machine can be started again.

16



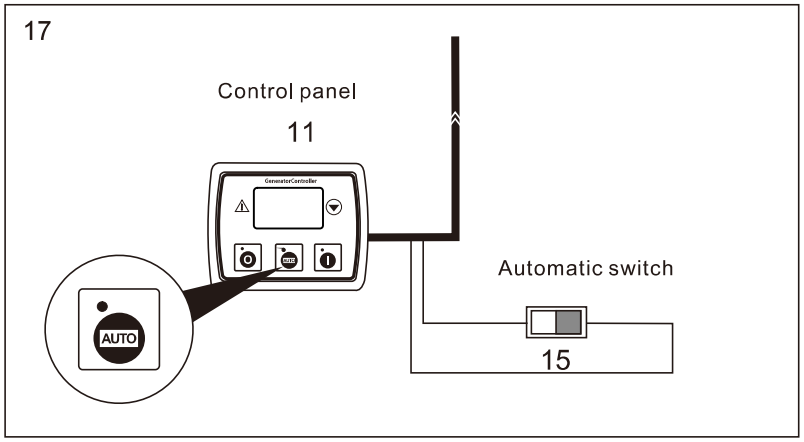
## 12 Automatic switch

**NOTICE!**
When using the automatic start and stop, please press the AUTO button first, otherwise the automatic function will not be activated.

**NOTE!**
Customers can also make automatic start or stop switches, which can be short-circuited when the machine needs to be started and disconnected when the machine needs to be stopped.

the Automatic control show down in fig.12,page23.

17



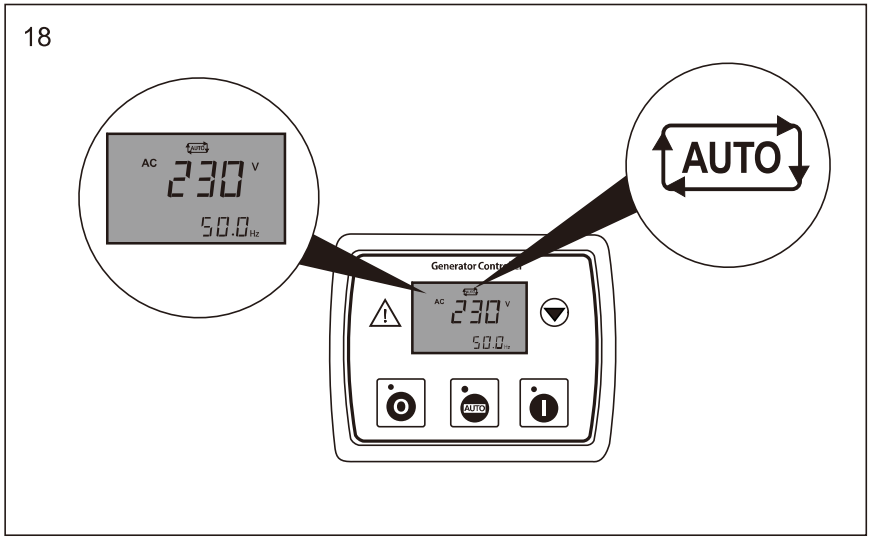

➤ Press the AUTO button (AUTO) before using the wireless remote control, At this time,The AUTO icon will appear on the LCD screen of the generator (automatic control mode can be used if necessary)





➤ Customers can also make automatic start or stop switches, which can be short-circuited when the machine needs to be started and disconnected when the machine needs to be stopped.

18




## 8. 3 Operating two generators in parallel (optional)

**NOTICE!**
The maximum power of two generators in parallel cannot exceed the sum of the rated powers of the two generators.

Without the parallel cable or with a damaged parallel cable the proper operation of the system is not guaranteed, especially in terms of load sharing.

You can independently turn each generator on and off. If the load is more than rated power, you can start both generators in parallel.

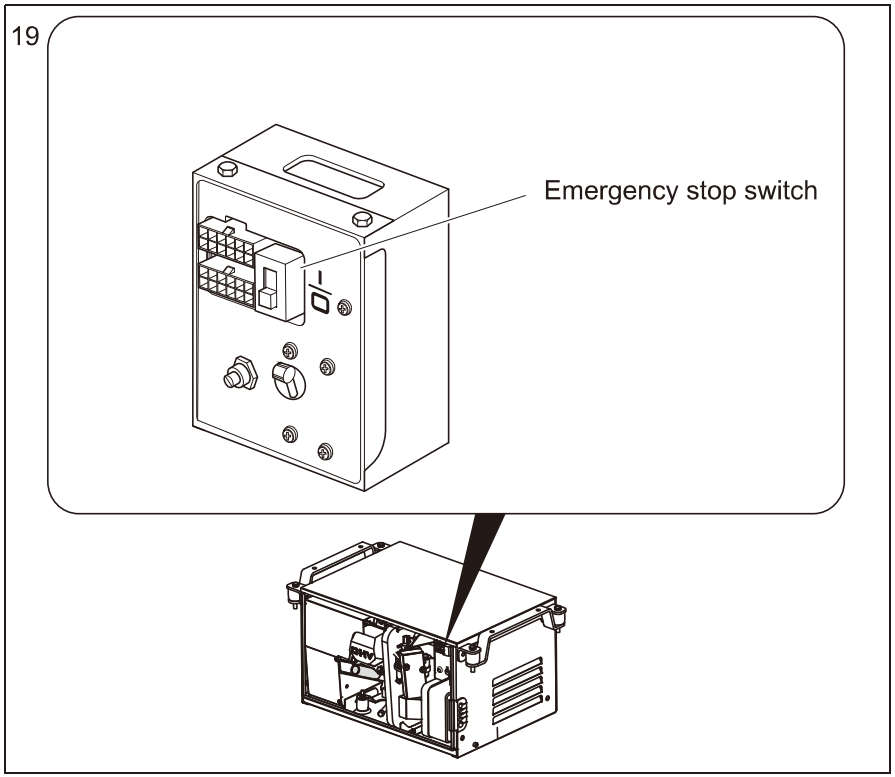
**In case both generators are turned on:**
**Disconnect the load before switching off the system.**

## 13 Stopping the generator

There are three modes of stopping the generator show down in fig.14,page 25.

- When the generator is in the AUTO state, it can be stopped by the wireless remote control, or it can be stopped by the stop button on the control panel
- When in manual mode, press the stop button to stop
- You can also open the cover of the generator, and use the emergency stop on the junction box to turn off to stop.

19







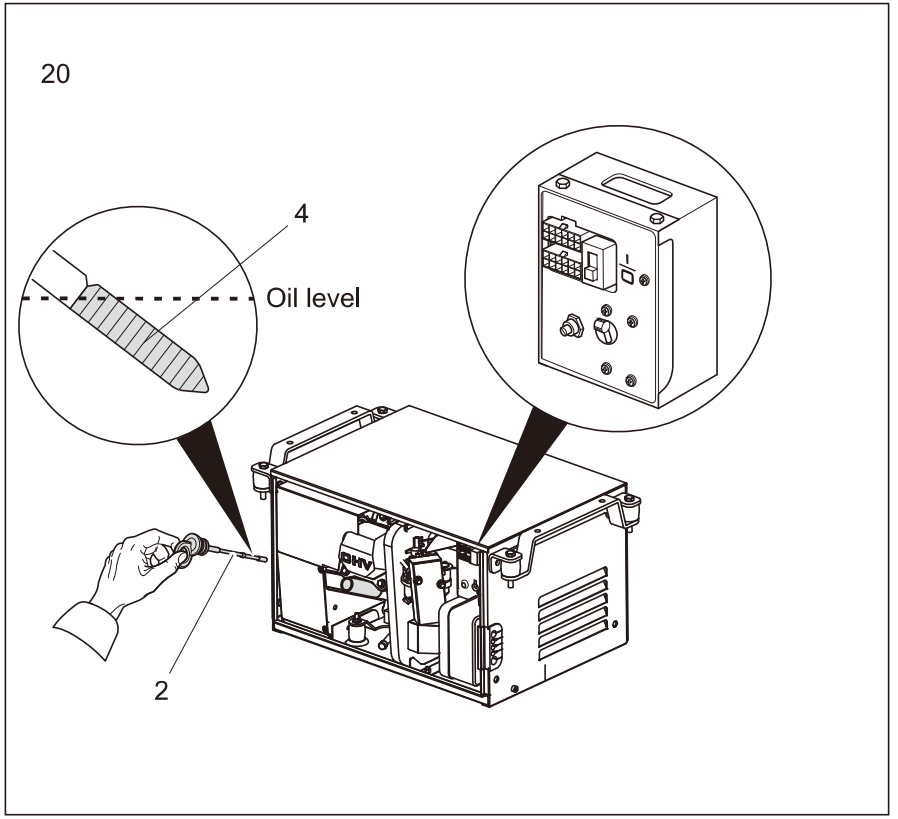

## 14 Checking the oil level

**CAUTION!**
Hot oil can cause burns.
Only check the oil level when the generator is switched off.

**NOTE!**
The generator must be level.

Always check the oil level before use. To do this, proceed as follows fig.15,page 26:

20



- ➢ Open the generator front door.
- ➢ Turn the emergency switch on the junction box to the O position(1).
- ➢ Disconnect the positive terminal of the supply battery.
- ➢ Take the dipstick (2) out of the filler neck (3).
- ➢ Clean the dipstick (2) with a cloth.
- ➢ Put the dipstick (2) back into the filler neck (3).
- ➢ Take the dipstick (2) out of the filler neck.
- ➢ Check that the oil level is between the notch (maximum filling level) and the tip of the dipstick (4) If not, top up with more oil.
- ➢ Put the dipstick ( 2) back into the filler neck (3).
- ➢ Check that the oil level is not above the maximum level.
- ➢ Connect the generator to the positive terminal of the supply battery.
- ➢ Turn the emergency switch on the junction box to the I position(1).
- ➢ Close the generator front door.

## 14.1 Changing the oil, diagram in fig.16,17,page 28.

**CAUTION!**
Hot oil can cause burns.

**NOTE!**
Only dispose of used oil at a specialist recycling station and observe the local laws for environmental protection.

You may use the following oil:

- API SG or SF grade oil for four-stroke engines.
- SAE 10W-30 grade oil (can be used at any temperature).
- Oil with single grade oil viscosity.

  Select the appropriate viscosity according to the average temperature on-site.

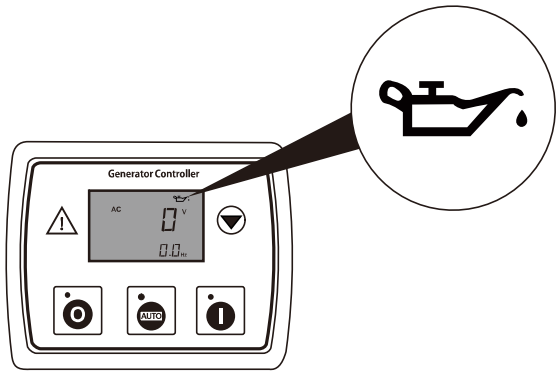
Change the oil as follows:

- ➢ Allow the generator to run until warm so that the oil can drain off faster and completely.
- ➢ Place a suitable receptacle under the drain plug (1).
- ➢ Take out the drain plug (1).

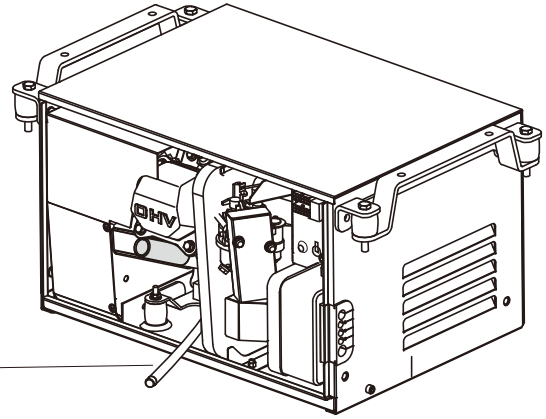
Low oil reminder and replacement:

➢ When there is no engine oil or insufficient engine oil, the Alarm light ⚠ will flash, and the Low oil Press icon will appear in the upper right corner of the LCD screen.

21




22




- ➢ The oil drains off
- ➢ Pour fresh oil into the nozzle. The amount of oil is: 500ml.

# 15 DC generator and charging protection

**WARNING !**

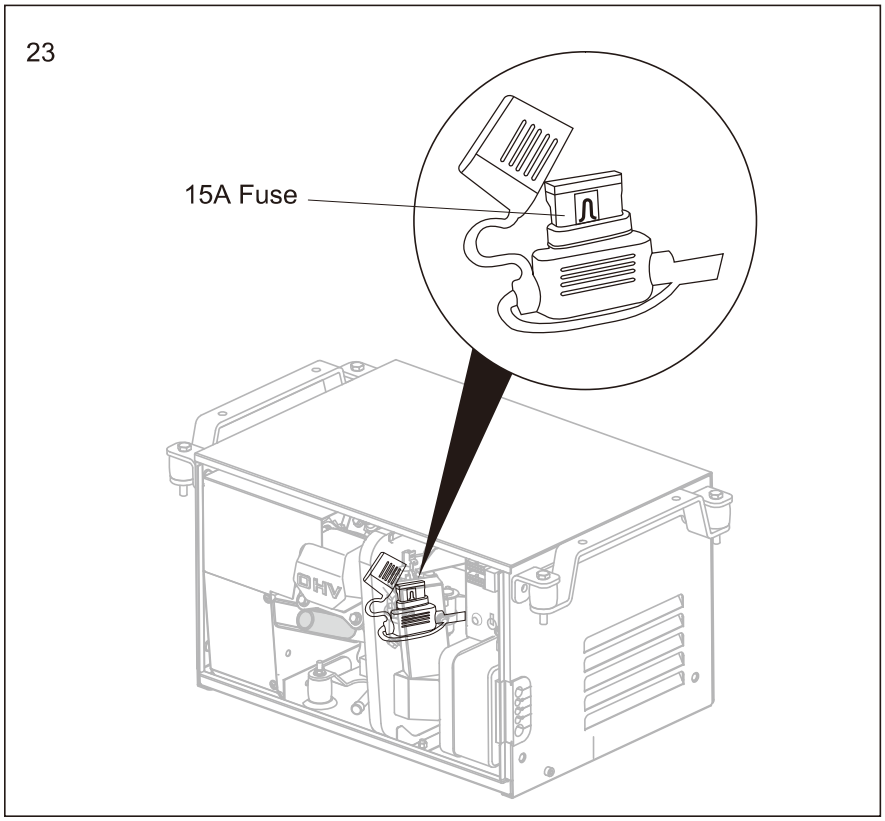
Do not use a battery higher than DC13V as the starting power source for this generator, otherwise the alternator's electrical winding will burn out.

**WARNING !**

Do not use a lithium battery higher than 13V as the starting power source for this generator, otherwise it will cause the alternator's electrical winding to burn out.

If you use a battery higher than 13V or a lithium battery as the starting power source for this generator, you must disconnect the charging fuse, as shown below:

23








## 15.1 DC overload protecstion switch reset and Replace the fuse

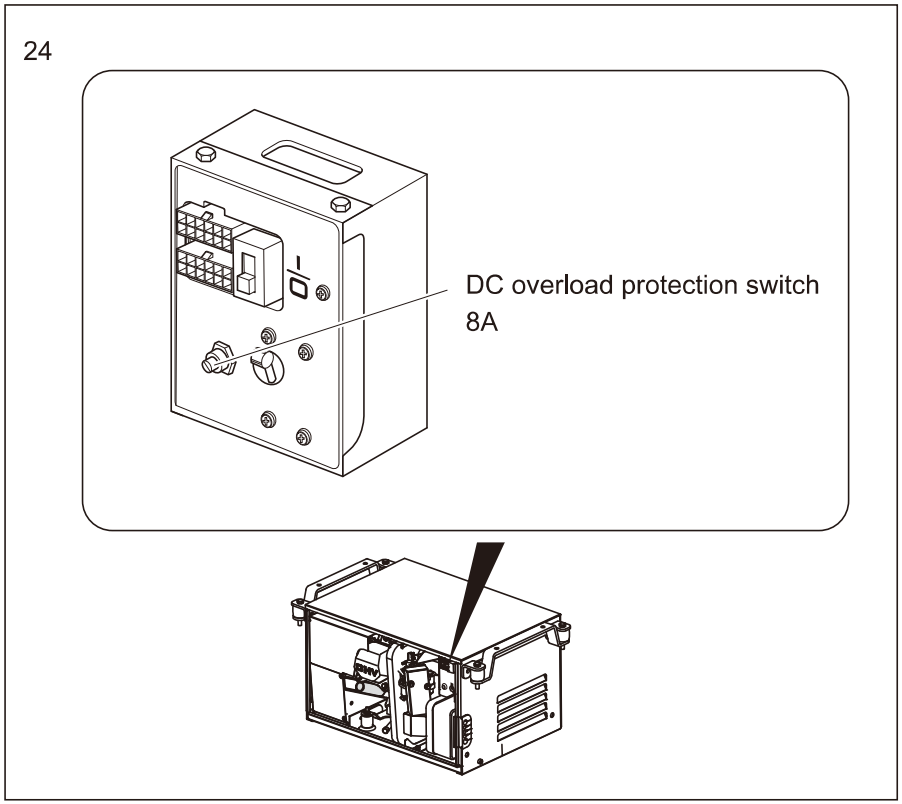
**NOTICE!**

Do not short-circuit the positive and negative terminals of the 12V battery, otherwise the DC overload protection switch and fuse will burn out.

When the DC generator current exceeds 8A, the DC overload protection switch will pop up and disconnect. After eliminating the cause of the current overload, press the DC protection switch to reset it.

When the DC generator current exceeds 10A, the 15A fuse will automatically burn out. You need to eliminate the fault and then replace the 15A fuse.

24



## 16 Cleaning the generator, diagram in fig.18,page 29.

### OTICE! Beware of damage

- Do not clean the generator with a high-pressure cleaner. Exposure to water can damage the generator.
- Do not use sharp or hard objects or cleaning agents for cleaning as these may damage the generator.
- To clean the generator, use water with a gentle cleaning agent. Never use petrol, diesel or solvents.

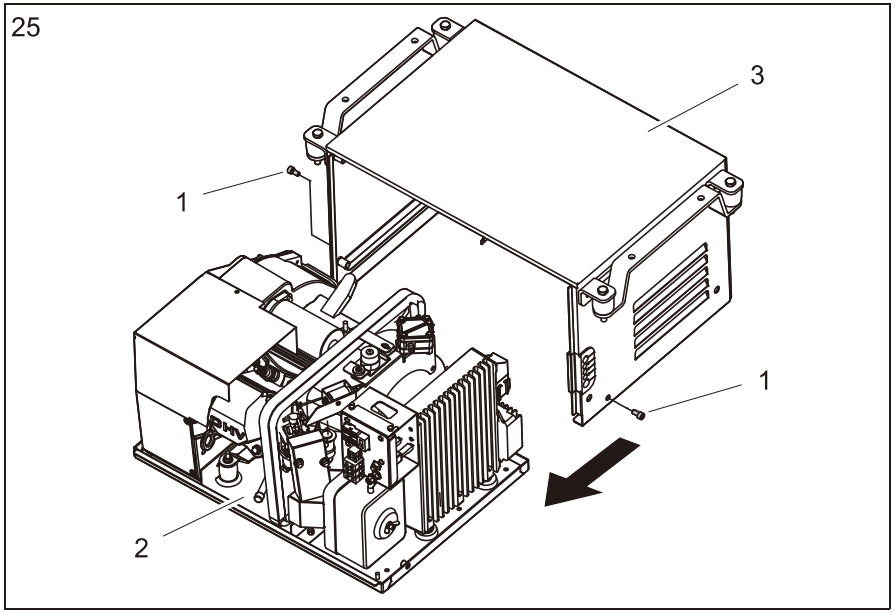
➢ Loosen the screws (1) on both sides

➢ Hold the generator shell (3) and pull out the chassis(2) with the generator

➢ Clean the generator with a damp cloth from time to time.

➢ Remove any dirt from the air vents in the generator at regular intervals. Make sure you do not damage the grilles of the generator in the process.

25








## 17 Servicing the spark plugs, diagram in fig.19,page 30

### NOTICE!

- Screw the spark plugs in carefully. A loose spark plug can get very hot and damage the engine.
- Only use the same type of spark plugs.
- When you insert a new spark plug, screw it in by 1/2 a turn once it is firmly on the washer. If you are using used spark plugs, turning them 1/8 or 1/4 is suffice.

➢ Remove the spark plug connector.

➢ Remove the spark plug using a spark plug wrench.

➢ Make a visual inspection of the spark plugs.
Replace the spark plug if it is clearly worn or the isolator is damaged or broken.
If the spark plug is just dirty, clean it with a steel brush.

➢ Measure the distance between the electrodes with a thickness gauge (8).
It must be 0.7 – 0.8 mm and can be corrected by bending the electrode if necessary.

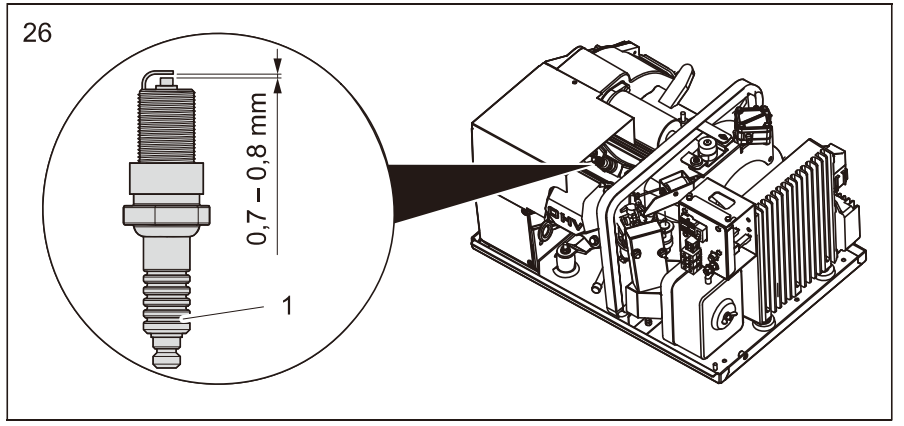
➢ Check whether the spark plug seal is intact.

➢ If so, screw in the spark plugs by hand to avoid damaging the thread.

➢ Tighten the spark plugs using a spark plug wrench so that the washer is pressed together.

➢ Finish the maintenance work.

26



## 18 Servicing the air filter

**WARNING! Danger of explosions**
Do not use diesel oil or solvents with low boiling points for cleaning the air filter. They could ignite or explode.

**NOTICE!**
Never leave the engine running without an air filter. Otherwise this quickly wears out the engine.

**NOTE!**
If the air filter is dirty, the air flow to the carburettor is reduced. Check the filter regularly so that the carburettor can function properly. Check this more frequently if the generator is being used in particularly dusty environments.

- ➢ Prepare the maintenance work and pull the generator out of the housing slightly: see chapter “Preparing maintenance work” .
- ➢ Remove the butterfly nut (1) and the filter cover (2).
- ➢ Remove the butterfly nut (3).
- ➢ Take out the air filter (4).

  The air filter consists of two parts: a sponge filter and a paper filter.
- ➢ Check the condition of both parts of the filter carefully. Replace the damaged filter parts.
- ➢ Clean the undamaged filter parts; see the following section.
- ➢ Finish the maintenance work, see chapter “Finishing maintenance work” .

### Cleaning the sponge filter

- ➢ Wash the sponge with a neutral detergent solution and rinse it thoroughly.
- ➢ Leave the sponge to dry completely.
- ➢ Soak the sponge in fresh engine oil.
- ➢ Squeeze out the excess oil.



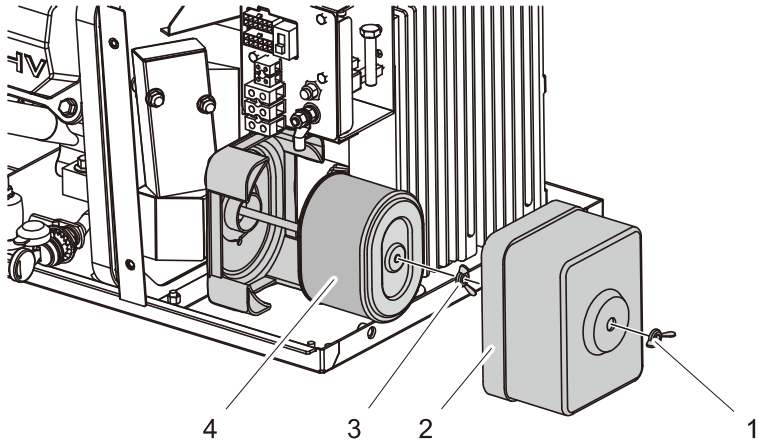


## 19 Cleaning the paper filter, diagram in fig.20,page 32.

- ➢ Knock the dirt off the paper by banging it lightly on a hard surface or use compressed air to blow through the filter.

  Do not brush the paper as this will push the dirt into the fibres of the paper filter.
- ➢ Change the paper filter if it is heavily soiled.

27



# 20 Servicing the generator

NOTE
Find your local agent
http://www.usrgenerator.com

## 20.1 Maintenance table

**WARNING!**
Only have maintenance work carried out by specialist personnel who are familiar with the relevant regulations. Inadequate maintenance may cause serious hazards.

**NOTE**
Have the following maintenance work performed at regular intervals or after the specified number of operating hours, whichever is sooner.

| Interval | Inspection/maintenance |
|---|---|
| In the first month or after 20 hours | ➤ Change the oil<br>➤ Check the air filter (chapter “Servicing the air filter”) |
| Every 3 months or aer 50hours | ➤ Check the airfilter (chapter “Servicing the air filter”) |
| Every 6 months or aer 100hours | ➤ Change the oil<br>➤ Check the spark plug (chapter “Servicing the spark plugs). |
| Once a year or every 300 hours | ➤ Check the valves‘ adjustment.<br>➤ Check the fuel tank and fuel filter.<br>➤ Check the vibration damper (rubber feet). |
| Every two years | ➤ TEC Check the petrol supply lines.<br>➤ LPG model Check the gas supply lines. |





## 20.2 Preparing maintenance work

**CAUTION!**
Note the following for all maintenance work:
- The generator must not be running.
- All the parts must be cooled down.

➤ Switch the generator to no function with the main switch.

➤ Disconnect the positive terminal of the supply battery.

➤ Open the generator front door.

For maintenance work, you can take the generator out

**WARNING!**
The mounting plate with generator is very heavy (> 40 kg) and could fall out the housing if you take it out too far.

➤ Undo the fastening screws (1).

➤ Remove the mounting plate (2) with the generator from the housing (3).

## 20.3 Finishing maintenance work

➤ Connect the generator to the positive terminal of the supply battery.

➤ Switch the generator to standby with the main switch.

➤ Close the generator front door.

# 21 Troubleshooting

| Fault | Cause | Remedy |
|---|---|---|
| The controller does not come on when the on/off switch is pressed. | Starter battery is flat. | ➤ Charge the starter battery. |
| | Power cable is disconnected or the plug is removed. | ➤ Contact an authorised workshop. |
| | Generator earth cable is disconnected or the fuse (if available) is blown. | |
| The starter does not work when the start button is pressed. | Starter battery is flat. | ➤ Charge the starter battery. |
| | The main switch is at “0”. | ➤ Set the main switch to “I” or “1”. |
| | Starter sha is dirty. | ➤ Clean the starter shaft. |
| | Too much oil in the engine. | ➤ Drain the oil. |
| | Inverter is damaged. | ➤ Contact an authorised workshop or agent. |
| | Power cable is disconnected or the plug is removed. | |
| | Generator earth cable is disconnected or the fuse (if available) is blown. | |
| | Starter is not receiving any p | |
| The starter turns but the generator does not start. | No petrol/LPG. | ➤ Fill up with petrol/LPG. |
| | Spark plug is not receiving any power. | ➤ Check the electric connections. |
| | Carburettor is not receiving any petrol. | ➤ Clean the carburettor. |
| | Air intake is blocked. | ➤ Check the air filter (see chapter “Servicing the air filter |
| | The ambient temperature is below 0°C. | ➤ Use pure propane gas. |
| | Inverter is damaged. | ➤ Contact an authorised workshop. |
| | Power cable is disconnected or the plug is removed. | |





| Fault | Cause | Remedy |
|---|---|---|
| The generator tends to stall. | Too much oil in the engine. | ➤ Drain the oil. |
| | Load is over Rated power. | ➤ Reduce the consumers. |
| | Carburettor is not receiving any petrol. | ➤ Clean the carburettor. |
| | Air intake is blocked. | ➤ Check the air filter (see chapter “Servicing the air filter |
| | Inverter is damaged. | ➤ Contact an authorised workshop. |
| | Electromagnet is blocked. | |
| | Air filter is dirty. | |
| The generator is running but does not supply any voltage. | Inverter is damaged. | ➤ Contact an authorised workshop. |
| | The stepper motor is faulty or the cable is disconnected | |
| | Electromagnet is blocked. | |
| | The throttle valve is blocked. | |
| The generator start up very fast and then the “GENERATOR ALERT”message appears. | Inverter damaged | ➤ Contact an authorised workshop. |
| | The stepper motor is faulty or the cable is disconnected | |
| The generated voltage is unstable. | Inverter damaged | ➤ Contact an authorised workshop. |
| | The stepper motor is faulty or the cable is disconnected | |

# 21 Warranty

The statutory warranty period applies. If the product is defective, please contact the service partner in your country.

Our experts will be happy to help you and will discuss the warranty process with you in more detail.

## 22 Disposal

➤ Place the packaging material in the appropriate recycling waste bins wherever possible.

If you wish to finally dispose of the product, ask your local recycling centre or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.


**Protect the environment!**

Do not dispose of any batteries with general household waste.
Return defective or used batteries to your retailer or dispose of them at collection points.

| | TEC30 |
|---|---|
| Rated output voltage: | 220-240V~ / 50 -60Hz |
| Max. constant output (at 25°C at sea level): | 2650 W |
| Battery charger output voltage | 12V⎓ |
| Battery charger max output Current: | 8A |
| Operating temperature range: | –15°C to +50°C |
| Distortion factor: | 1% |
| Fuel: | -15 °C to +50 °C |
| Consumption: | 300 g/kWh<br>max.1.2l/h |
| Motor output: | 4.0kW (5.5PS) |
| Guaranteed Sound level: | 86 dB(A) |
| Sound level at distance of 7 m: | 54-59 dB(A ) |
| Dimension: | 480*385*290mm |
| Weight: | 45kg |
| Inspection/certification: | CE NSAI EU TYPE-APPROVAL |





| | TEC40 |
|---|---|
| Rated output voltage: | 220-240V~ / 50 -60Hz |
| Max. constant output (at 25°C at sea level): | 3450 W |
| Battery charger output voltage | 12V⎓ |
| Battery charger max output Current: | 8A |
| Operating temperature range: | –15°C to +50°C |
| Distortion factor: | 1% |
| Fuel: | -15 °C to +50 °C |
| Consumption: | 350 g/kWh<br>max.1.5l/h |
| Motor output: | 5.0kW (6.7PS) |
| Guaranteed Sound level: | 86 dB(A) |
| Sound level at distance of 7 m: | 54-59 dB(A ) |
| Dimension: | 480*385*290mm |
| Weight: | 52kg |
| Inspection/certification: | CE NSAI EU TYPE-APPROVAL |