

User manual

NESBO GF 350 A / 450 A / 600 / 800 / 1000 E & EL / 1250 EL

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Registration of Use

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Nesbo a/s produces high quality machines for professional users.

The warranty period on our machines is 12 months from the date of purchase and covers compensation in the event of material and production faults.

Any parts that have suffered damage as a result of material and production faults will be replaced by Nesbo a/s at no charge.

Consequential damage and wearing parts will not be replaced.

PLEASE NOTE!

To maintain warranty, the Dealer is obliged to fill in and return the "Registration for use" below to Nesbo a/s, not later than one month after delivery to the end user.

A condition for any processing of claims is that this "Registration for use" is submitted timely.

This can be done on our website www.nesbo.dk

or by completing and scanning/submitting the coupon below to:

Nesbo a/s
Daniavej 31
9550 Mariager,
Denmark
nesbo@nesbo.dk

Registration for use:

Machine number	
Model	
Delivery date	
End user	
Address	
Dealer	

EC declaration of conformity

GB

EC declaration of conformity

Manufacturer: Nesbo a/s
Daniavej 31, DK-9550 Mariager, Denmark
Telefon: +45 9858 4400

hereby declares that

machine: Nesbo
machine no.: _____
date: _____


is in conformity with the applicable requirements of:

GF 350 A/ GF 450 A	Danish Gas Regulations DG 3520
GF 600 / 800 / 1000 E & EL / 1250 EL	Danish Gas Regulations DG 3397

Order of 10 June 2013 implementing Directive 2006/42/EC of the European Parliament and of the Council as amended, as well as the EMC Directive 2004/108/EC as amended.

Standards applied:

DS/EN ISO 12100:2 011 Safety of machinery - General principles for design
- Risk assessment and risk reduction.

Signature: 
Peter Thomsen
Factory Manager

General information

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Please read the user manual before attaching or using your new NESBO weed burner.

If in doubt, contact your dealer for help.

Use only original Nesbo parts in your Nesbo machinery and implements.

This user manual includes an illustrated spare parts list. Read the introduction to the spare parts list before ordering spare parts.

Definition of warnings

The following warnings are used in this manual:



WARNING

Risk of personal injury or death

A technical procedure or similar which may be hazardous and result in personal injury or death.



CAUTION

Damage to machinery or accessories

A technical procedure or similar which may result in damage to the machinery or accessories.



NOTE

Important information

A very important technical procedure or similar.

The weed burner is used to combat unwanted plant growth in a way that does not harm the environment, without using chemicals.

To obtain the best result, it is very important to read the user manual carefully before work begins.

How is the plant affected?

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How is the plant affected?

Plants are alive, and like all other living things, they have certain basic requirements for survival. Some of these basic requirements are:

- Light
- Warmth
- Moisture/liquid
- Pollination or semination

If it is possible to deprive the plant of just one of these basic requirements (conditions for growth), it is not able to survive in that particular place.

Using the heat method it is in fact possible to deprive the plant of two conditions for growth:

- Moisture
- Ability to reproduce

Moisture

By heating up the green parts of the plant – i.e. both the leaves and stems – to boiling point, the cells are ruptured, and the plant opens up. Thus evaporation takes place in the visible part of the plant, but, most importantly, evaporation takes place from the root system.

The plant is most vulnerable when it is growing and exuding resilience and health. Then it is not able to stop the transport of moisture from the root system to the leaves, and evaporation is greatest at this stage. In periods of drought, plants are formed so that growth stops, and they attempt to conserve water in the root system for when conditions are better.

Evaporation is then minimal, and the plant has good chances of surviving the attack.

Many types of plants simply start the growth phase when the temperature reaches 3-4°C. A plant with only a small root is more vulnerable than a plant with a large root system. Young plants need less heat than adult plants. It is therefore very important to start the treatment early in spring, before growth becomes too strong.

When has the plant had enough exposure? Plants vary from type to type, and how vulnerable they are varies, depending on the stage each plant has reached in the growth period. It is not possible, therefore, to specify a universal amount of exposure before the cells rupture.

How is the plant affected?

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NOTE

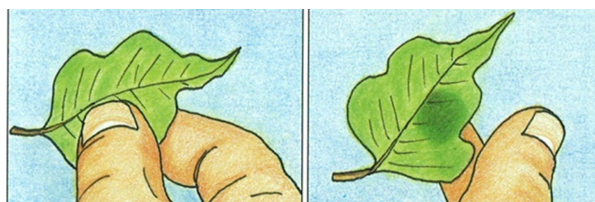
Important information

If a plant is over-treated, so that it chars or burns away right down to the soil surface, the method will not be effective, because the surface for evaporation will be smaller. The plant may regenerate the damaged leaves, and in the worst case form new shoots from the root system, so the result of treatment will be negative.

The “finger pressure” method

It may be difficult to see whether the plants have received sufficient treatment, since they may appear undamaged immediately afterwards. The full effect only appears after two or three days. To check, you can use the “finger pressure” method:

Press a leaf lightly between two fingers. If this leaves a permanent dark green mark, the plant has had the correct amount of treatment.



When is the treatment most effective?

We have mentioned this earlier: Plants are most vulnerable when young and in growth, but other factors also play a part, such as weather conditions.

The method is based on drying the plant out. Thus it is not advisable to carry out the treatment in wet weather, as the plant is covered and protected by the moisture from the rain. The moisture must be brought to boiling point or evaporated away before the heat is transferred to the plant – a process which requires time and energy.

As mentioned before, the effect is greatest when the plant is growing actively, which it does not do in frosty weather or extended periods of drought. It is not advisable, therefore, to carry out treatment at these times. The danger of fire is also greatest in periods of drought.

How is the plant affected?

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Ability to reproduce

In order to pass on its genes, a plant must be able to reproduce. It does this by spreading seeds.

Seeds can be spread in a number of ways: Via birds, other animals or the wind. Even though an area appears to be free of weeds, during the late summer and autumn, seeds will be scattered over it from the surrounding vegetation.

The ability to sprout is destroyed at about 60°C. Under a NESBO heat shield, the temperature is about 800°C.

Treatment in the autumn, when the seeds are still lying unprotected on the soil, will make the plants incapable of reproducing in the treated area. This treatment will have a preventive effect on growth in the coming year.

Where can the method be applied?

Flame treatment is especially effective in areas with covered surfaces such as:

- Paths in parks and churchyards
- Pavements
- Kerbstones
- Edges between grass and asphalt

Areas covered with:

- Gravel
- Asphalt
- Natural stone
- Concrete paving stones
- Bricks
- Cinders etc.

Gas safety

NESBO weed burners use liquid gas as fuel. Here are some general facts that users should know.

Gas is indiscriminately referred to as liquid gas, bottle gas, household gas, LPG and so on. There is the same gas in the bottles, whatever it is called. For convenience, it is referred to here as “gas”.

Gas is a by-product from refining crude oil, and it is both flammable and potentially explosive.

Gas is stored in liquid form under pressure in tanks or bottles. When the gas is used, it has to be converted to vapour or the gaseous state.

It is a great practical advantage that the gas is liquid in the bottle or tank, as the liquid form makes it possible to compress a large quantity of energy into a small volume.

When a liquid vaporises, it expands – and so does gas. Thus liquid gas is a space-saving source of gas in the gaseous form. When gas evaporates, the volume expands 250 times.

Applies to 350 A / 450 A

In the design of the NESBO GF 350 A Weed Burner, priority is given to making it as safe and simple as possible. Nevertheless, there are some safety requirements which must be observed with regard to the operator and the surroundings.

Unlike our other weed burners, which operate on gas in liquid form, the NESBO GF 350 A model uses gaseous gas (vapour). This means that the burner is subject to some limitations, and not suitable for continuous operation, only for tasks that do not take long.

The burner works by drawing gaseous gas from the top of the gas bottle. **Therefore, the gas bottle must always stand upright.** The gas bottle can release approx. 0.75–1.00 kg per hour. The burner consumes 2.100 kg per hour. Its capacity is thus limited to approx. half an hour's use, until the bottle has built up pressure again. The pressure loss can be seen as frost forming on the bottle. When this happens, there is only one thing to do: to wait until the bottle builds up pressure again of its own accord. This can be seen when the frost on the bottle disappears.

Operation

- Connect the bottle. Use only Danish 5 or 11 kg domestic gas bottles for a "click-on" regulator. Place the bottle on the platform of the cart over the wheels, and attach it securely with the harness
- Check that the pressure regulator is closed (turn clockwise). Then fit the regulator onto the bottle
- Open the bottle regulator fully, turning anti-clockwise
- **Pull the safety handle up towards the handle and hold it there**
- **Ignite immediately by pressing the ignition button on the control panel**
- The burner turns off when the safety handle is released
- To restart, repeat the procedure above **(marked in red)**
- When you stop working for short or long periods, close the bottle regulator and remove it from the bottle
- When the burner is not in use, remove the pressure regulator from the bottle
- If the burner malfunctions: Never try to repair installations yourself – always call an authorised gas technician, and only use original spare parts



WARNING

Risk of personal injury or death

The safety handle must not be blocked to prevent the burner from extinguishing itself automatically when the hand releases it.

Troubleshooting

If the burner will not ignite, check:

- That the bottle valve is open.
 - That there is gas in the bottle.
 - That the battery is not flat. It is fitted in the ignition casing: unscrew the cap and replace it with a new AA battery.
 - That the cable to the dead-man's switch is intact. Restore the connection if necessary.
 - That the spark-plug cable is correctly fitted and intact. Restore contact or replace the cable.
 - Check the electrode and insulation on the spark plug. Replace it if it is defective.
 - Check that the spark plug is correctly positioned, just in front of the burner. Tighten it if necessary.
- The electrodes of the spark plug must not touch the frame.

If the defect is not found in the electronic parts by the above-mentioned tests, then the defect will be in the gas-technical part. In that case, contact an authorised gas technician.

Never begin to repair the gas-technical parts of the burner yourself.

Maintenance and storage

We recommend that at least once a year, the burner should be safety-checked for leaks and wear.

Leaving the burner

The burner must **not** be left for shorter or longer periods before the following has been done:

- Close the bottle valve
- Never leave the burner before it has cooled down, so that it is not a danger to others



NOTE

NESBO weed burners are type-approved by the Danish authorities, and are manufactured on accordance with the approval. No alterations may be made in the construction. If alterations are made, NESBO's guarantee and product liability will be rendered void.

From liquid to gaseous

The quality of gas used today has a boiling point at about -50°C. This means that it will always be boiling at our latitudes, and the bottle will be pressurised. However, the boiling process has some limitations. If too much gaseous gas is released from the bottle in a short time, the process simply cannot keep up, and the bottle will lose pressure. The loss of pressure can be seen as frost forming on the bottle.

The weed burners (but not 350 A / 450 A) are therefore equipped with an evaporation system which forces the liquid gas to evaporate in the desired volume.

A special type of bottle has been designed for this purpose, the so-called truck bottle (because it is also used for engine fuel for trucks). The bottle differs from normal bottles as it is fitted with a curved submerged nozzle inside the bottle.

When the bottle is horizontal and the arrow on the bottle is pointing upwards, the submerged nozzle turns downwards. When the hose connection is established and the bottle valve is opened, liquid gas flows forward to the above mentioned evaporator.



NOTE

Use gas with care!

Remember that the gas and gas plant must always be handled according to the instructions.

- Always follow the official regulations governing storage and transport
- Use only recognized gas suppliers

**Applies to 600 / 800 /
1000 E & EL / 1250 Pro**

Trailer model

In the design of the NESBO GF 600 E, 800 E and 1000 E, priority is given to making the weed burners safe, efficient, simple and easy to drive.

The weed burner has a lightweight construction fitted with 2 wheels.

An insulated box without base is mounted on the front, which acts as a shield for the 6, 8 or 10 nozzles of the GF 600 E, GF 800 E and GF 1000 E respectively.

A supporting roller is mounted on the front of the burner box mounted for easier driving.

The rear of the frame has a platform to hold a horizontal gas bottle (truck bottle).

The heat shield and gas bottle form a counterweight over the wheels.

The bottle can be moved back and forth to achieve perfect weight distribution, regardless of the bottle weight.



NOTE

Important information

Tyre pressure should be 1–1.5 bar.



WARNING

If the tyre pressure is too high, it can cause heat damage on the wheels.

There is an option to adjust the height of the control for optimal ergonomics.

It is also possible to set the clearance height from the ground up to the burner box, using the slotted holes in the frame.



NOTE

Make sure you maintain the smallest possible distance to the ground in order to better control heat release.

Safety

In order to avoid uncontrolled leakage of unburned liquid gas, NESBO's safety requirements state:

- **The gas must be transported in a closed system from the gas bottle to the combustion nozzles, and the gas cannot leave the system without being ignited by the nozzles.**

The burner is equipped with an electronic monitoring system consisting of:

- Ignition box
- Combined spark plug/heat sensor
- Solenoid valve

The system works by activating the spark plug and solenoid valve simultaneously, so that the gas is ignited by the nozzles as the first gas leaks out. If it does not ignite within 7 seconds, the current to the solenoid valve will be interrupted and the gas supply is shut off.

The safety system is powered by a rechargeable battery. The battery has capacity for about 1 day of use, but for safety reasons, the burner cannot function if there is no power in the battery.

A fully discharged battery cannot be recharged and must therefore be discarded (discharged batteries are not covered by the warranty).

We recommend that the battery is charged in the supplied charger each day after use. The charger will automatically terminate the process when the battery is charged.



NOTE

If there is a lack of charge / low voltage in the battery, the burner will not be able to keep the solenoid valve open and will interrupt the system.

Charge or replace the battery.

Suspending the tool carrier

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Installing the burner

The burner's mounting bracket must be individually adapted to the design of the actual tool carrier. This adjustment should be performed by the supplier of the tool carrier.

It is important that the burner is locked in place so it cannot be dropped during operation and transport. The burner must be positioned so that the heat (flames) is blown away from the tool carrier.



WARNING

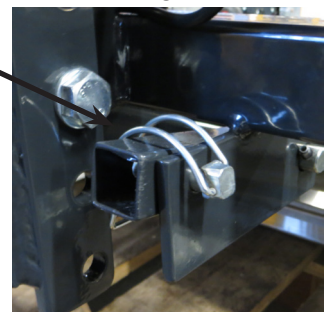
It is very important that tool carrier fuel's system is completely sealed so that flammable liquids cannot drip down onto any surviving embers.

The burner is equipped with an electronic ON/OFF function and flame monitoring. The burner must therefore be connected to the tool carrier's 12 V power supply so that power is interrupted when the tool carrier is stopped.

The burner can now be switched on and off via the control panel and driven forward at the desired and appropriate speed according to the conditions and vegetation.

As the burner box is spring loaded, you must remember to remove the locking pin in the suspension before use so the burner will follow the terrain.

When dismantling, the pin must be reinstalled before detaching the tool carrier to prevent the suspension and burner from collapsing.



WARNING

Check that the pin has been removed before driving and installed before detaching again.

Suspending the tool carrier

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We have supplied a weed burner for which we ourselves and the authorities have set high safety requirements. Nevertheless, there are some requirements that you as a user should observe in the interests of yourself and your surroundings.

Before starting

The weed burner must only be used outdoors and where there is no risk of ignition of combustible material.

Only use truck bottles (those with submerged nozzles).

- Check that the bottle contains a seal.
If it does not, return the bottle to the supplier.



When the seals are correct:

- Install the bottle horizontally on the bottle carrier according to the instructions indicated on the bottle and tighten with the strap.



WARNING

Avoid naked flames, smoking tobacco and other ignition sources

- Screw the hose fitting on the bottle valve
- Tighten securely with a wrench
- Open the bottle valve
- Use a leak spray to check that:
 - Your bottle valve assembly is tight.
 - Hoses and connections to the solenoid valve are tight.

If the leakage liquid bubbles, there will be a leak.

If a leak is found at the bottle valve:

1. Close the valve, check the seal again, replace if necessary and repeat the same procedure.

If a leak is found elsewhere in the hose system:

1. Close the bottle valve and detach the hose.
2. Contact an authorised gas technician.
Unauthorized persons must not carry out repairs on gas installations.

Operation

The above mentioned procedure must be performed every time a new bottle is installed.

When the hose system is proven to be tight:

- Insert the key in the key switch and turn to the right to standby mode. The red indicator light comes on.
- Check that no persons, animals or combustible material are in the vicinity of the burner box.

The burner shield must be kept near the ground.

- **Activate the dead-man's switch on the handle then turn the key to the right again and release. The burner and the green indicator light switch on.**
- The burner is switched off by releasing the dead-man's switch again or by turning the key to the left.
- To reignite, repeat the procedure above marked in **red**.



WARNING

The safety handle must not be blocked to prevent the burner from extinguishing itself automatically when the hand releases it.

- If you stop working for a period of time, always turn the key switch to the OFF position. (the green indicator light goes off) so that the burner cannot be switched on accidentally.
- If the burner is left, always remove the key.
- The burner must be left or placed out of sight until it has cooled down.
- Never process weeds near flammable material such as dead leaves, etc.
- Always keep a safe distance from flammable buildings, vehicles, etc.

After using the burner:

- Close the bottle valve, ignite the burner and let it burn until the hose is empty of gas.
- Remove the key.
- Do not place the burner near any combustible material and do not leave it until it has cooled down.
- Insert the charger cable in the socket on the control panel and connect the 220 V power supply from the mains.

If the battery has been fully discharged, it cannot be recharged.

The charger will automatically terminate the process when the battery is fully charged.

We recommend that the charger is connected when the burner is not in use.

Troubleshooting

If the burner will not switch on and the red light does not illuminate, check:

- The fuse in the fuse holder and replace if necessary (max 5 amp.)
- That the bottle valve is open.
- That there is gas in the bottle.
- That there is power in the battery.
 - 1. If not 100% discharged, then recharge.
 - 2. If 100% discharged, replace the battery.
- That the cable to the dead-man's switch is intact. Restore the connection if necessary.
- That the spark-plug cable is correctly fitted and intact. Restore contact or replace the cable.
- Check the electrode and insulation on the spark plug. Replace it if it is defective.
- Check that the spark plug is correctly positioned, just in front of the burner. Tighten it if necessary. The electrodes of the spark plug must not touch the frame.

If the defect is not found in the electronic parts by the above-mentioned tests, then the defect will be in the gas-technical part. In that case, contact a gas technician.

Never begin to repair the gas-technical parts of the burner yourself.

Maintenance and storage

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Maintenance and storage

We recommend that at least once a year, the burner should be safety-checked for leaks and wear by an authorised gas technician.

Recharge the battery regularly (to maintain it).

Leaving the burner

The burner must not be left for shorter or longer periods before the following has been done:

- Close the bottle valve and do not turn off the switch until the hose system is completely empty of gas
- Then turn off the switch
- Turn the key switch to “OFF” and remove the key
- Never leave the burner before it has cooled down, so that it is not a danger to others.

Rules for gas hoses

Approval labels for hoses

Nesbo recommends that the supplier attaches an approval label on the hoses valid for 2 years at a time. This label should indicate the next replacement, based on the year printed on the hose. This avoids any waste of resources and scrapping of otherwise excellent hoses “from last year”.



NOTE

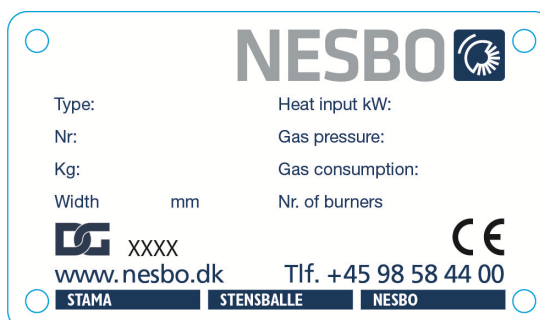
NESBO weed burners are type-approved by the Danish authorities, and are manufactured on accordance with the approval.

No alterations may be made in the construction. If alterations are made, NESBO's guarantee and product liability will be rendered void.

Marking/labelling

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Type plate



The type plate identifies the machine. It carries the following information:

- Type description
- Machine number
- Production year
- Net weight in kg
- DG number (Danish Gas Regulations)
- CE labelling
- Gas consumption / pressure / KW
- Factory website and phone number.

Warning!

In order to maintain the NESBO guarantee and product liability the product must be inspected and approved at least once a year.

Important points to remember when working with weed burners:

Always use work gloves!

Always be aware of the risk of fire!

Use only specified and approved gas bottles!

Gas must be treated with respect and care!

Never attempt to carry out any work on gas installations!

Use only approved repairers!

Customer services and claims

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Service

It is the dealer's responsibility to deliver the machine (and assemble if required), to start it on delivery or first use, and to instruct the operator about the use and maintenance of the machine (including tightening nuts and bolts).

The dealer is also obliged to make sure that the user manual and spare parts list is delivered to the customer and that the registration for use is completed correctly and sent to Nesbo a/s no later than 1 month after delivery to the user. (See page 3)

Claims

The warranty period on Nesbo is 12 months from the purchase date, and covers any material or manufacturing defects. These parts will be replaced by Nesbo a/s free of charge. Consequential damage and wear and tear will not be replaced.

Any components which are not manufactured by Nesbo a/s are included under the terms of the warranty to the extent authorised by the supplier of the parts in question.

Nesbo a/s reserves the right to assign a claim of this kind to the relevant supplier and not to reach a decision until the relevant supplier has responded.

The following must be observed when working on a claim:

- report the claim to Nesbo before the repair is started
- agree a time period with Nesbo for qualified technicians to carry out the repair
- any labour costs will only be approved at a fixed net price.

If Nesbo a/s has not authorised repair work in advance, any invoice submitted for repair work will not be approved.

At Nesbo a/s' request, before the claim can finally be handled, any parts that were replaced must be sent carriage paid to the factory.

Nesbo a/s retains the exclusive right to determine the extent to which a part shall be replaced or repaired.

Customer services and claims

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The warranty does not cover:

- normal wear and tear or damage which has resulted from inadequate maintenance.
- damage caused by collision.
- non-compliance with the product's technical specifications or if the product is used for a purpose other than that described in the ser manual.

If the product is altered or if non-original spare parts are used, all rights under the warranty will be rendered void.

The purchaser does not have the right to require that design changes on future models are implemented in a pre-existing machine.

In the event of a complaint

Complaints must be registered directly with Nesbo a/s. Complete a complaint report, stating the machine type, production number and date of its delivery to the customer, and send it to us. This is done via the dealer login on our website www.nesbo.dk.

If questions arise about claims on imported machines, we reserve the right to present the claim to the manufacturer before making any decision about whether the claim can be accepted.

Our machinery is subject to the EC Machinery Directive and quality assured within the European Union. We make every effort to comply with these requirements and do our utmost to supply high quality machinery.

Mariager, 01.06.2017
Nesbo a/s



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