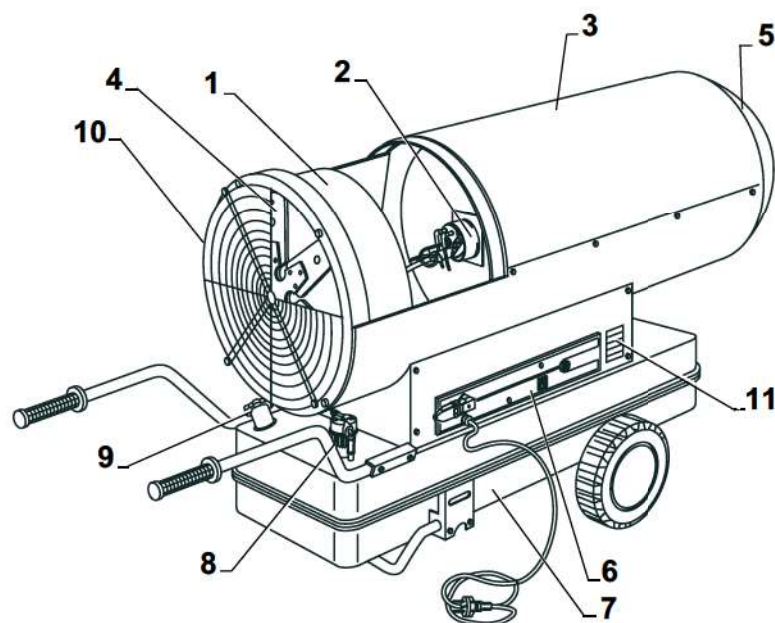


1. MAIN PARTS



Legend:

- 1. Ventilation unit
- 2. Comb. head
- 3. Chambre
- 4. Fan
- 5. Conveyor
- 6. Panel
- 7. Tank
- 8. Filter
- 9. Plug
- 10. Fan protec.
- 11. Nameplate

2. INTRODUCTION

Congratulations on making an excellent purchase.

This handbook contains standards covering safety, operation and maintenance for the **INDIRECT - DIRECT** mobile hot air generators. Keep this handbook for ready reference and in good condition: together with the spare parts list, it provides important information in the event of necessity or upkeep.

It is advisable to read this manual carefully and apply all operations described scrupulously before installation, during use and when performing maintenance operations on the generator. The Manufacturer declines any and all responsibility for damage to the machine, persons or things by nonobservance of these standards.

The instructions, drawings, tables and other information herein are confidential technical data and as such no material may be reproduced, completely or partially, or communicated to third parties without the prior written authorisation of the Manufacturer, as sole owner of all rights. The Manufacturer reserves the right to make any modifications it considers suitable.

3. CAUTIONS

Read the following instructions carefully before starting the machine to gain a clear understanding of the operating procedures essential for optimal performance while avoiding errors which may become dangerous. Always observe the instructions provided by the manufacturer.

**CAUTION**

This mobile generator can only be used on fire-proof floors. **SAFETY DISTANCE: 2 metres from walls or objects.** - The generator must not be used in rooms containing explosives, gas fumes, combustible liquids and flammable materials. - The burner must be cleaned frequently if used in dusty environments.

3.1 Use in environments where people are not normally present: mod. DIRECT

- notices should be affixed to entrances forbidding people to remain in such areas;
- the generators must only be used to dry rooms, provided sufficient air for combustion is available;
- the amount of air required is calculated when the room has a volume in cubic metres at least 10 times the rated calorific output (in kW) of all equipment used in the room;
- normal air circulation through windows and doors must be ensured.

3.2 Use in environments where people are normally present: mod. DIRECT

- direct generators may be used in well-aired rooms and when the percentage of polluting substances in the air does not reach levels harmful to health;
- good airing is provided, for example, when the volume of the room in cubic metres is at least 30 times the rated calorific output (in kW) of all equipment used in the room and when air circulation is ensured by windows and doors or permanent apertures having a total cross-section in square metres of at least 0,003 times the rated calorific output (in kW) of all equipment used in the room;
- the concentration of polluting substances in the air can be considered acceptable provided it does not reach maximum values and that the percentage of oxygen in the air is greater than 17% by volume;
- these plant systems must not be used for continuous heating of stables and animal rearing centres.

4. DESCRIPTION OF MACHINE AND APPLICATIONS

The **DIRECT** mobile hot air generator is available with various outputs and was designed and manufactured to meet special needs, such as temporary heating in outside or semiopen areas and drying applications where operators are not required. It is easy to move the unit since it is mounted on a sturdy chassis with large diameter wheels.

Functional features were designed to simplify use as far as possible.

The **INDIRECT** mobile hot air generator is also available with various outputs and was designed to meet further needs not available with the **DIRECT** model: as well as drying applications, this unit is ideal for heating any interior civil, agricultural and industrial environment. The wide range of models provides logical and optimal solutions to all heating requirements.

INDIRECT - Hot air generator with airfume heat exchanger and combustion product discharge through a stack.

DIRECT - Direct hot air generator with dilution of combustion products in the flow of heated air.

Systems of very sturdy construction, comprising:

COMBUSTION HEAD, to an design, manufactured using precision engineering operations. The head is fitted with air adjustment fins which can be set easily and efficiently through a graduated scale.

Designed to optimise air flow and mixture with fuel oil.

CYLINDRICAL BOILER, high performance with a combustion chamber entirely in stainless steel.

VENTILATION AND COOLING UNIT, high capacity, with fan fitted with aluminium blades and guards. Onboard fuel oil pump. All components are pretested individually on a test bench.

AIR OUTLET pre-arranged for channelization only for **INDIRECT** generator.

ELECTRICAL SYSTEM in compliance with the protection degree IP 44, with a easily understood, easy to use control panel. Fitted with safety fuses, flame control equipment and indicators for correct function. An external connection can be made with an environment thermostat.

FUEL OIL TANK, large capacity.

STRUCTURE entirely metallic and treated with epoxy resin paints.

5. RECOMMENDATIONS PRIOR TO USE

The **INDIRECT** generators can be used in interior environments but nevertheless require a sufficient supply of fresh air for correct combustion. In the event that the air supply is inadequate, connect the unit's air intake to the outside. The **DIRECT** generators are used exclusively in exterior or wellaired environments. Avoid use in the presence of foodstuffs.

IMPORTANT! Never obstruct the unit's intake grille. All work on the equipment must be performed cold with the mains power detached. The electrical connection must be fitted with an efficient earth (ground). Do not place flammable or explosive materials near the unit. There must be sufficient exchange of air where the unit is installed and no powder residues, gas or flammable/toxic vapours at high temperatures. Do not fill the fuel tank while the unit is working; any drips of fuel on the floor must be dried carefully. Make sure that the fan does not attract papers, cloths, powders or any other material which may obstruct or damage the unit. Do not start the generator without fuel oil; despite the intervention of the flame control device, the fuel oil pump could grip. Only use the fuel oil indicated on the information plate giving technical data for the machine.

N.B. Never add petrol or other solvents to approved fuels; when operating at particularly low temperatures, use fuels with readily available additives.

5.1 Electrical Connection



CAUTION Before starting the unit, make sure that the mains electricity supply corresponds to the supply value indicate on the label affixed to the machine. - Mains connection must conform to applicable standards, with a properly functioning earth (ground) connection. Call in a skilled electrician to fit a high sensitivity differential switch with a 30 mA or lower tripping threshold. - In case of need, it is possible to use feeding cable extension with wire section of 1,5 mm² for lenghts up to 10 mt. and 2,5 mm² for lenght between 10 and 30 mt. If the original power supply cable must be replaced, use a new cable having a suitable crossection with an earth (ground) lead; the cable must have a continuous insulating sheath suitable for use both outside and inside; combustion product discharge must take place in conformity with applicable standards.

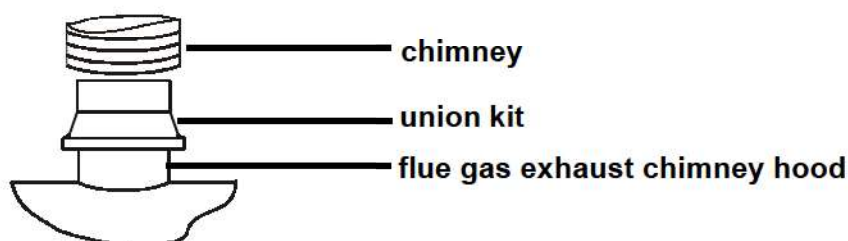
5.2 Connection To The Stack

INDIRECT models require a fume discharge system. A stack must be installed (flexible tubing is allowed) with a minimum diameter of 120 - 150 mm.

DIRECT models should be used exclusively in wellaired environments.



CAUTION Please, connect the chimney using the union kit (see picture).



6. START - STOP

6.1 Start (without environment thermostat)

- Fill the tank with fuel.
- Insert the plug in the mains socket (the red LED comes ON).
- Place the ignition switch to ON (the green LED comes ON and the fan begins operating).
The automatic ignition cycle commences, through the control equipment.

After a few seconds of automatic monitoring, the generator begins operating normally. If the unit comes to a halt because of minor functional irregularities and the RESET PUSH-BUTTON LED comes ON, press this button to repeat the ignition cycle.

6.2 Stop (without environment thermostat)

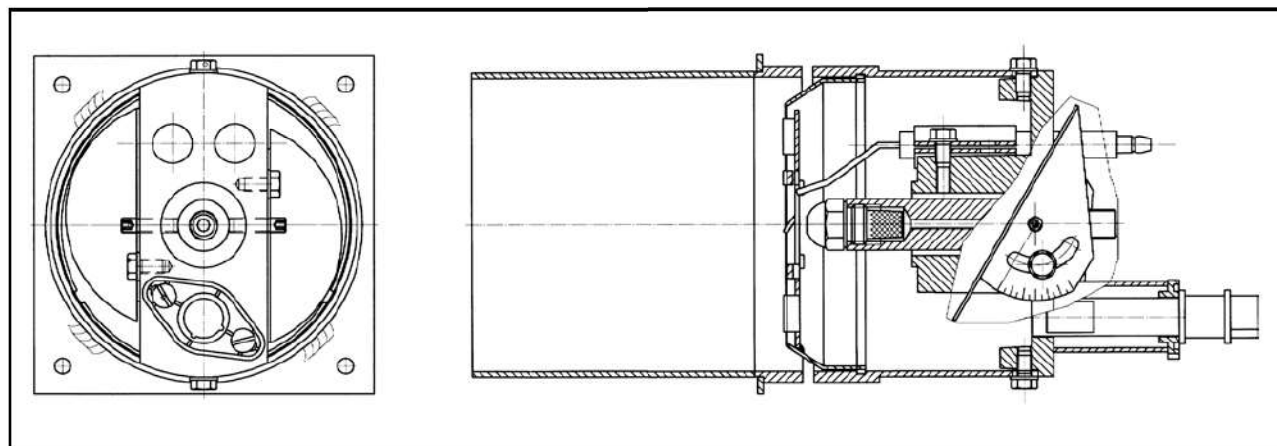
- Place the main switch to OFF.
- Combustion halts while the fan continues to cool the interior of the generator. During this stage, fan operation may be continuous or intermittent until complete cooling is achieved, as measured by the postcooling thermostat located onboard the boiler.

6.3 Start (with environment thermostat)

- The unit is pre-set for connection to an environment thermostat (not supplied as standard).
 - Connection should be made using the plug on the control panel.
 - Having set the environment thermostat, place the switch to **AUT**. To halt the generator, operate either the main switch or the environment thermostat.
- In both cases, the generator undergoes a correct cooling cycle.

When the machine is in normal duty condition the reset button will flash. In case of bad working, the reset button will stay alight for about 10 sec. Please detect and solve the problem causing the failure and reset the machine by pressing the button. **(only for SATRONIC DKO 970)**

7. CLEANING THE TURBO



- The turbo disc is an integral part of the tapered inlet.
- To clean the disc, it must be removed from the support.

Proceed as follows:

- Remove the fuel oil pipe.
- Slide out the photosensitive cell and the HT leads from the electrodes.
- Unscrew the four screws securing the head to the boiler (the head is removed complete).
- Slacken the two screws: the entire internal section of the head slides out; only the cylindrical body and the tapered inlet remain accessible for cleaning.

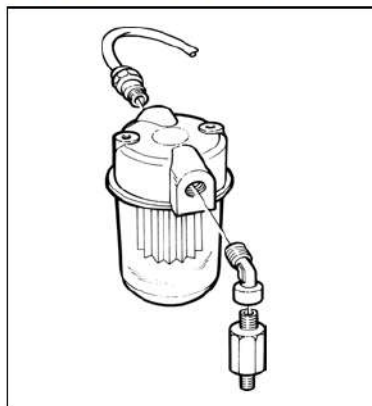
N.B. - When refitting the combustion head after cleaning operations, do not move the nozzle holder. Make sure, as required, that the nozzle is flush with the inside of the turbo. The position of the electrodes must be respected, as well as the angle of the air adjustment fins.

8. MAINTENANCE

The maintenance intervals recommended in this manual refer to generator operation of 8 ÷ 10 hours/day.

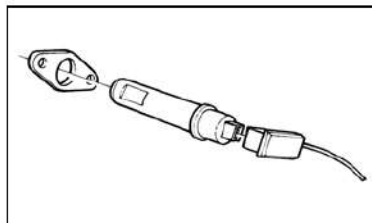
- Every month: clean the photosensitive cell, the ignition electrodes and the flame turbo.
- Every 2 months: clean the fuel filter.
- **Direct** 30kW - 40kW - 50kW **Indirect** 20kW - 25kW : every three months or every 300 hours of operation, replace the filter of the diesel.
- Every 6 months: clean the fuel tank.

FUEL OIL FILTER



- Unscrew the clear cup and remove deposits.
- Slide out the filter element and clean.
- Fill the fuel cup to approx. 1/4 to facilitate operational reset.
- Refit all components making sure that gaskets are properly fitted and located.

PHOTOSENSITIVE CELL



- Slide out the photosensitive cell.
- Clean the lens with a soft cloth.
- Refit the cell in its seat with reference to the centring tooth.

10. TROUBLE-SHOOTING TABLES

PROBLEM

CAUSE & REMEDY

The generator does not start (red phase LED OFF)	Check: - correct electrical connections - if the environmental thermostat is fitted, make sure that it is not set too low
The fan does not start (red phase LED ON)	Check: - motor power supply cable - safety fuse F1 - fuel oil pump: if gripped, replace
The fan starts but there is no combustion (the RESET push-button LED comes ON after a few seconds)	- Check the fuel level - Make sure that the fuel oil filter is not clogged - Make sure that the nozzle is not obstructed - Make sure that the nozzle is not obstructed - Make sure that the nozzle is not obstructed - Make sure that no air enters the fuel circuit: make sure that the filter cup is properly tightened and the seal ring is correctly positioned in its seat - Dirty photo sensitive cell: remove from support and clean - Check the integrity of the plastic joint connecting the motor and the fuel pump: if broken, replace - Flame control system faulty: replace - Make sure there is a spark between the electrodes. If this is not the case, check the position of the electrodes, their integrity and the status of the high voltage cables. Make sure that the transformer is not burnt out.
The unit overheats during normal operation	- Excess flow of fuel caused by nozzle wear or installation of a nozzle having different features than the original - Poor flow of air caused by faulty setting of combustion head fins - Obstructions in the ventilation air route
When the unit is switched off using the main switch or the environment thermostat, the fan does not operate and the generator overheats	- Cooling thermostat faulty. Replace
The unit discharges lightcoloured fumes	- Excess air or poor fuel - Impurities in the fuel circuit: clean the tank, the filter and the ducts. Change the fuel - Air adjustment modified: return the fins to their original positions
The unit discharges dark fumes	- Air defect or excess fuel, caused by: - clogged or nonconforming nozzle: replace
The unit discharges dark fumes	- modified fuel pressure - flame turbo obstructed: clean - air adjustment modified: return the fins to their original positions.



CAUTION Never halt the generator simply by removing the power plug. This would exclude postcooling. Never change the fuel oil pump pressure setting. This would modify all combustion features. When replacing the nozzle, use a spare with an identical capacity to the nozzle fitted by the manufacturer.