MULTIHEAT INTERNATIONAL

Operating and installation manual

Gas heater SnookSuperior 100

TÜV NORD CERT GmbH ISO 9001

CE 0085

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1. INTRODUCTION

1.1 Information in this manual

This manual contains information and proceedings for the safe operation and maintenance of the gas heaters series SnookS. For your own safety and the prevention of injuries, you must thoroughly read, and at all times be aware of the safety instructions in this manual.

The manufacturer reserves the express right to make unannounced technical modifications if these improve performance or the standards of safety of the unit.

The information contained in this manual is based on units which were manufactured up to the time of going to print. The manufacturer reserves the right to make unannounced changes to this information.

A list of spare parts is enclosed to assist with the ordering of spare parts. If this manual is missing, a replacement can be requested from the manufacturer.

This manual refers to approved spare parts, add-on units and modifications. The use of components and accessories which are not approved or the implementation of modifications which are not approved can have the following consequences:

- The risk of serious injury for the operator and other people in the working area
- Permanent damage to the unit which is not covered by the guarantee

Note

Important! Please read!

Carefully read the instructions before commissioning / using the unit. Failure to comply with this voids the warranty. The manufacturer shall assume no liability for incidental and consequential damages resulting from non-adherence to the instructions.
This manual is an integral part of the product and must always be kept in the immediate vicinity of the installation site, or on the unit itself.

2. GENERAL SAFETY INSTRUCTIONS

2.1 Personnel qualification

These operating instructions assume the following staff qualifications:

Groups of people, qualifications	Tasks
Technically lay people e.g. caretakers	Operation
Trained installers	Set-up and assembly
Authorised electricians, installers	Installation, commissioning, maintenance, repair

Note

If a chapter contains information for all groups of people, no group of people is specified. If a chapter is addressed to a particular group of people, this is indicated under the heading.

Please read these operating instructions completely before setting up the blower so that you can use all functions correctly and safely.

2.2 Explanation of symbols

The following symbols and signal words for notes and warnings are used in the operating instructions.

Note Tips for reducing workload, efficient procedures, as well as additional information and suggestions.

VORSICHT Indicates a threat with a low level of risk, which can result in small or moderate injuries if not prevented properly.

WARNUNG Indicates a hazard with a medium level of risk, which could result in medium to serious injuries if it is not prevented.

GEFAHR Indicates a hazard with a high level of risk, which could result in serious injuries or death if it is not prevented.

2.3 Training of operator

Prior to operating this unit:
- Make sure that the manuals and operating instructions supplied with this unit have been read and fully understood.
- Become fully familiar with the correct operation of the controls and safety devices.
If additional training is required, please inform the manufacturer.

During operation of this unit:
- Do not allow the unit to be operated by personnel with inadequate training.
- The operating personnel for this unit must be fully aware of the possible risks and the dangers associated with operation.

Note **To avoid injury and material damage, these safety instructions, the applicable local building and fire protection regulations, and the guidelines of the employer's liability insurance association must be strictly observed.**

WARNUNG **The electric and gas connection of the unit must only be carried out by trained personnel according to the applicable local regulations!**

2.4 Protection of people

When the mains voltage is connected, there is a danger to health and life.

GEFAHR **Only work on the blower if it is ensured that the system is free of voltage and that the fans have come to a standstill.**

2.5 Safety instructions for the operator

The operational safety of devices and components is only given with proper usage in a fully assembled state.
The installation, assembly, and maintenance of devices and components may only be carried out by qualified personnel.
An existing touch protection (grid) for moving components may not be removed from a device during operation.
Never insert foreign objects into the devices.
Refrain from usage of devices or components with defects or damages.
Touching certain parts or components may lead to burns or injuries.
The devices or components are not to be exposed to a high mechanical load, extreme water jet, or extreme temperatures.
All casing components and openings, e.g. air inlets or outlets, must be free from foreign objects.
The devices shall be checked for functionality and safety by a trained professional at least annually. Visual inspections and cleaning can be carried out by the operator while the system is off power.

2.6 Safety instructions for installation, maintenance, and inspection work

The devices may only be operated by persons trained fur such operation.
Before maintenance and repair work, the gas supply is to be shut off and the device is to be disconnected from the power supply. (Unscrew protection, or turn off main/emergency switch)
Installation, connection, and operation of the devices and components must be carried out within the operating conditions according to the manual and comply with regional provisions.
Regional regulations and laws, as well as the Water Resources Act are to be complied with.
The devices may not be set up and operated in an environment with high risk of fire or explosions.
The devices must be set up and operated in a way that no person can by harmed by exhaust gases, hot air, or radiant heat and no fires can occur.
The devices must be set up and
operated in a way that the escaping hot air flow has no impact on the surroundings or other devices.
The devices may only be operated in places where there is enough air available for the combustion.
Mounting of devices may only be done at the intended places. The devices may only be mounted/ installed to stable constructions or walls.
The devices or components may not be operated in areas with high risk of damages. Minimum clear spaces must be met.

The devices must be set up outside of traffic zones e.g. cranes. A protection zone of 1m must be kept free.
The devices may not be exposed to a direct water jet (e.g. high pressure cleaner etc.), or
weather conditions (such as rain, sun, etc.)
Safety devices may not be changed or bypassed.

GEFAHR **Precautions in case of gas smell**

1. Turn off device immediately.
2. Close gas isolating devices.
3. Warn all persons at risk.
4. Open windows and doors.
5. Use no electrical installations such as light switches or plugs.
6. Notify authorized personnel immediately

2.7 Warranty

The warranty does not cover defects caused by the goods delivered by us having been altered or repaired improperly by the buyer or third parties.

The warranty exclusion also applies to damage caused by the use of parts from other companies.
Our liability is excluded if the defects are due to improper transport or storage, natural wear and tear, or normal wear, which may result from previously unknown operating conditions, extraordinary loads or other unpredictable effects, unsuitable or improper assembly or use, non-compliance with technical installation and assembly instructions, protection that is not sufficiently state-of-the-art, and chemical, electrochemical, climatic influences, unless the responsibility can be attributed to us.

2.8 Control delivery

Check the delivery for completeness. The delivery contains the following individual parts:

- **1x gas heater**
- **1x operating instructions**
- **1x circuit diagram**
- **1 set exhaust pipes**

Please inform the manufacturer immediately if anything is missing.
Please inform the forwarder immediately if you notice any transport damage. Note the damage on the delivery slip and have it signed by the haulage company driver.

3. INTENDED USE

The Snook devices may only be installed and operated in commercial stables for heating and ventilation purposes for animal breeding, with regard to the according installation, service and operating instructions.

The intended use requires that the installation is carried out with the components allowed for the intended use.

Any other usage is not intended. resulting damages shall be excluded from liability. Any further uses must be approved by the manufacturer.
The intended use includes compliance with the prescribed operating and maintenance intervals.

Always observe the following installation guidelines:

- The gas heater may only be operated by persons who have been instructed in the operation of the units.
- The unit must be installed and operated so as to ensure that persons are not endangered by the exhaust or hot air.
- The unit may only be operated if sufficient combustion air supply is ensured.

GEFAHR **It is not permitted to operate the unit in a fire and explosion endangered**

The devices may not be used for the heating of living spaces.

3.1 GENERAL DEVICE DESCRIPTION

Fully automatic gas-fired unit heater with heat exchanger of the series SnookS for the heating of stables – equipped with ionization flame monitoring, electric ignition, supporting air fan and closed combustion chamber for the operation with an air exhaust system.
The devices can be switched to the other gas type by changing jets and pressure settings.
The SnookS devices are manufactured by a company certified according to EN ISO 9001 and comply with the safety and health regulations of the following EG-provisions:

Gas appliances directive: EU/2006/426
Machinery Directive: 2006/42/EC
Low-Voltage Directive: 2006/95/EC

Rating plate

Typ	: **NG-A 100**
Gasart	: Erd- und Flüssiggas
Kategorie // Install.-typ	: II 2ELL3 B/P // A3
Nennwärmebel.	: 100 kW
Anschlußdruck	: 20 - 50 mbar
Anschlußwert	: 7,8 kg/h
Luftvolumenstrom	: 10.500 m³/h
Elektroanschluß	: 230 V / 50 Hz
Nennstrom	: 5,3 A
Schutzart	: IP 44
Bestimmungsland	: DE
Produkt ID-Nr.	: CE - beantragt
Baujahr	: 2018
Fabr.-Nr.	: 000000 . 001

3.2 Build of devices

The outer casing of the devices is made of a stainless steel sheet, which guarantees a long durability.
On the upper side of the device, there is a recirculation fan with protection grid, as well as connecting pieces for the removal of exhaust gases and supply of combustion air.
At the right side element, there is gas connection, cable bushing for the electric lines, as well as the plugs for the grid connection.
Components required for control and safety are located in the sidewise control box, such as the electric circuit with wiring and the control electronics components.
The gas valve, gas burner, and the exhaust fan are located dust-protected behind the frontal cover.
Inside the device, within the air stream, the heat exchanger is located. The heat exchanger is entirely made of stainless steel. The special shape, as well as the large surface area of the heat exchanger, ensure a large effectivity and durability.

3.3 Safety and monitoring system

As a safety measure against overheating, the device type SnookS is equipped with a safety temperature limiter (STB).

The STL will switch off the unit when the fixed temperature is exceeded.
The integrated restart lock prevents the unit from restarting.

After the cooling of the unit, the cause for the fault trigger must be fixed first and the STL can be unlocked by hand. The release button is located in the switch box under the black screw cap.

The built-in ionization electrode serves as a flame monitoring device and is connected to an automatic burner, which controls and monitors the overall functions of the gas heating device.

4. INSTALLATION/ ASSEMBLY

4.1 Surrounding conditions

Note **All work in this chapter must be carried out exclusively by qualified personnel: mechanical work by instructed fitters, electrical work by electricians.**

Environmental conditions: Operation and storage

Environmental temperature:	**Operating: -10°C to +50°C**
	Storage: -15°C to +60°C
Air humidity:	**5% to 95% relative air humidity**
Mounting height:	**<1.000m**
Not permitted in the environment:	**Dust, steam, corrosive or flammable gases, oil mist, dripping water**

GEFAHR **It is not permitted to operate the unit in a fire and explosion endangered environment.**

Note **To avoid injury and material damage, the applicable local building and fire protection regulations, as well as the guidelines of the employer's liability insurance association, must be strictly observed.**

VORSICHT **Prior to set-up it must be ensured that the local supply conditions (gas type, pressure) and the current setting of the unit match.**

5. PLACEMENT

The gas heater must be placed on a flat, stable and non-flammable ground. No hazards or unacceptable nuisance may result. A level, horizontal surface must be provided for this purpose.

The distance to flammable components should be at least 1.0m, on the exhaust side at least 5,0 m.

The built-in ionization electrode serves as a flame monitoring device and is connected to an automatic burner, which controls and monitors the overall functions of the gas heating device.

The differential pressure control monitors the fan function and interrupts the gas supply in case of fan failure.

The gas heater may only be used in a well ventilated stable, **not** in living spaces or similar areas.
A sufficient combustion air supply must be ensured.

It is not permitted to operate the unit in a fire and explosion **endangered environment.**

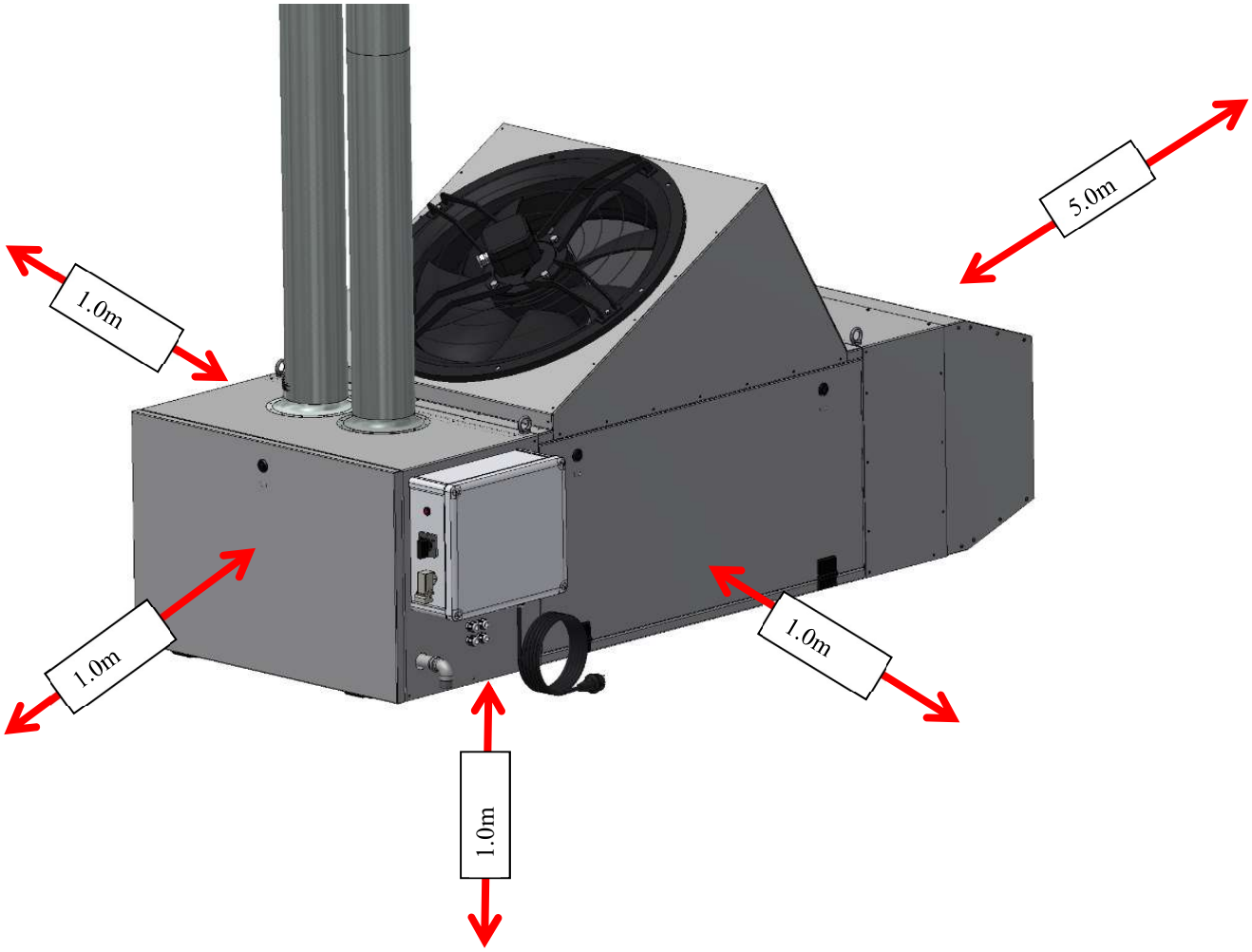
The gas heater may be mounted to a wall or can be freely hanged horizontally with appropriate chains on the intended four eyelets.

Pipes, hoses or similar must not be fitted on the inlets or outlets and no changes to the cross-section may be made.

It is **essential** that an adequate distance to flammable objects and components is maintained, particularly in the discharge direction and this must be checked on commissioning.

An appropriate distance to flammable materials is to be considered for the placement. There can be exhaust or surface temperatures of up to 100°C.

Safety distances



WARNUNG **Never interrupt the power plug or power supply to the control box when the device is heated.**

WARNUNG **The electric and gas connection of the unit must only be carried out by a trained specialist according to the applicable local regulations! (For example, the TRGI and TRF (Technical Guidelines for Gas Installations and Technical Regulations for Liquid Gas) in Germany)**

Electrical connection:

The electrical connection is made via an attached power cable with plug and earthing contact to an AC 230V/50 Hz mains power supply.

Thermostat connection

The cable for a room thermostat or the potential free contact of a ventilation control can be connected to the thermostat socket which is present by means of the corresponding plug.

It is not permitted to operate the unit in a fire and explosion endangered environment.

Gas connection:

The gas heater is equipped with a gas connection G ¾”-internal thread.

The connection to a gas pipe must be made with suitable connectors.

As there may be regional differences in the gas composition, it is necessary to check for flawless ignition when commissioning on site.

The position of the ignition electrode must be adapted if ignition is less than flawless.
This check must be repeated at appropriate intervals.

CONVERSION INSTRUCTIONS

The gas heater is set up for a specific type of gas and equipped with corresponding jets. If the gas heater shall be operated with a different type of gas, the jet pressure is to be adjusted according to the following chart, and the jets possibly have to be exchanged.

Type		**SnookSuperior**					
Gas type		Liquid gas P / B	Natural gas L L	Natural gas E			
		G30	G25	G20			
Connection pressure mbar		50	20	20			
Main jet	mm	8 x 2.3	8 x 3.7	8 x 3.7			
Jet pressure	mbar	10	8.5	6			

The connection pressure is 50 mbar for liquid gas and 20 mbar for natural gas.

6. EXHAUST GAS CONNECTION

General remarks

The gas heater operates with a closed combustion cycle. The blower is located behind the heat exchange. The exhaust gas eduction, or combustion air supply must be planned carried out according to local provisions. The classification of different installation variants
is made according to the European norm EN 1020 or DVGW-TRGI guideline 2008 and is part of the CE approval in the in-factory configuration.
The installation of exhaust and supply pipes can be done in different ways.

Gas fired heaters type C:

The combustion cycle is impermeable by the environment in which it is installed. Combustion air is supplied from the outside.
The devices may only be operated with appropriate exhaust gas lines. The components deliverable as accessories comply with all requirements.

The usage of synthetic exhaust lines is not permitted.

The exhaust pipes do not require any special thermal insulation to prevent the development of condensation, because the device is suitable to collect condensation water. The occurring condensation water is discharged through the central condensation water disposal.

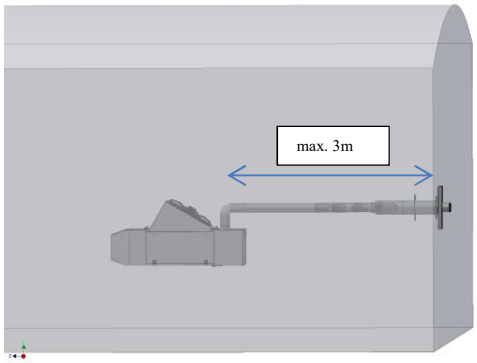
The horizontal exhaust gas sections can be installed with a slight slope of 1°- 3° to the device. The occurring condensation water is then discharged through the central condensation water disposal.
To prevent the leakage of gases, only pipes with pipe seals are to be utilized. The seal must be suitable for a temperature of up to 160°C.

Instructions for selection
If the exhaust gas end piece is not directly connected to the device and longer exhaust gas distances have to be covered, it must be ensured, according to length and geometry of the exhaust system, that the end and extension pieces, as well as the curves have the right diameter.

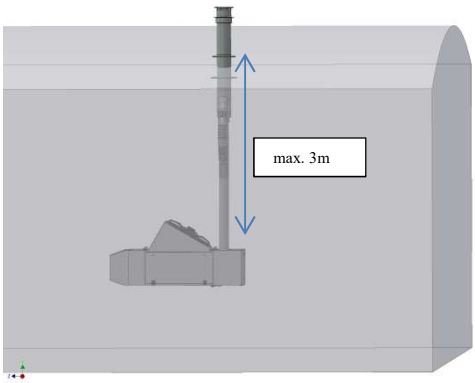
Hereinafter, examples for the implementation of exhaust lines and combustion air supplies are presented.

The devices are classified for the installation variants C12 / C32.

Type C12 horizontal wall bushing



Type C32 vertical roof bushing



Type C12 horizontal

Room-air-independent combustion system. The combustion cycle is impermeable by the environment in which it is installed. Combustion air is supplied from the outside. The pipes run horizontally through the outer wall. Exhaust and combustion air are lead through the wall via a LAS end piece.

Type C32 vertical

Room-air-independent combustion system. The combustion cycle is impermeable by the environment in which it is installed. Combustion air is supplied from the outside. The pipes run vertically through the roof. Exhaust and combustion air are lead through the roof via a LAS end piece.

Note

Maximal exhaust pipe length

Horizontal: 3 meters is the maximal length between the device and the end piece.
Vertical: 3 meters is the maximal length between the device and the end piece.
Curves lead to a pressure drop, which is why a 90° curve is calculated as 2 meters and a 45° is calculated as 1 meter.
For further information about the exhaust system, please contact your supplier.

7. COMMISSIONING

The first commissioning may only be carried out by a contract installation company or the factory customer service.

Carry out the following steps before the first commissioning:

- Check all connections and screw joints of the device and the gas supply for tightness.
- Check all accessible electric screw and plug connections.
- Check the electric connection for polarity and the power supply (230V/50Hz).
- Check if the device is properly connected to a functioning earthing system which complies with the
- valid safety regulations. Only then, the electric safety and functionality of device is guaranteed.

The devices are delivered with factory default settings according to the desired gas type.
It must be ensured that, according to thelocally available gas type, a standard gas supply pressure is continuously available.
The supplied gas must match the gas category set on the device.

After opening the gas valve, put the operating switch to '**heat'** .

When operating with a room thermostat, the thermostat must be set via ambient temperature.

The ignition is switched on at the same time as the fan and the solenoid valve is opened after a short purging time.
The ignition is switched off once the flame is formed. The gas heater has reached its operational position.

If the flame has not formed after the ignition time, the above described ignition process is repeated up to three times. If no flame has formed by then, the magnetic valve will automatically close the gas supply.
If the flame is extinguished during the operation, the magnetic valve will also close the gas supply.

An error shutdown and locking has been carried out. The red fault light on the switch box is illuminated.

As soon as the potential error has been fixed, the gas heater can be put back into operation by pressing the according button. The red fault lamp goes out and the turn-on process described above is repeated.

8. DECOMMISSIONING

Move main switch to **'0'** and shut off the gas supply.

The unit must be completely cooled before transport.

9. MAINTENANCE TASKS

To ensure operational reliability and to achieve maximum efficiency, the unit must be serviced and cleaned at appropriate intervals.

WARNUNG **The inspection of safety devices may only be carried out by professional or authorized personnel.**

WARNUNG **Close gas supply and pull the power supply for maintenance**  **work.**

- The gas heater, especially the ignition and ionization electrode, the burner, and the fan must be inspected for contamination in appropriate time intervals and cleaned if necessary.
- Do **not** use water for cleaning!
- Use only original spare parts!
- Maintenance work at live power and gas components is only to be done by trained professionals!
- Observe the enclosed electrical wiring diagrams as well.

10. Loading and unloading, transport

The device is safely packaged in a box on a pallet for transportation. The loading or unloading must occur with forklift trucks or other suitable lifting equipment.
When loading/unloading and transporting by forklift, ensure that the forks are long enough to go right under the full width of the pallet.
Severe damage or injuries caused by falling loads. Pay attention to
the safety regulations of transportation vehicles. Do not stand under suspended loads!

11. Environment protection and recycling

The gas heater is only made from high-quality materials which can mainly be recycled.

Dispose of packaging material
Dispose of the packaging material in accordance with the local environmental regulations.

Disposal of old electrical and electronic units

The device is marked with the symbol of a crossed out garbage can. This means, it may not be disposed of in the regular domestic waste, but rather in a separate collection in an environmentally friendly way.

In case of doubt, please inform yourself at your point of sale about the intended way of disposal and ensure a disposal according to the valid legal provisions.

Proper disposal of this unit prevents negative effects on people and on the environment, assists with the targeted treatment of harmful substances and makes re-use of valuable raw materials possible.

Note The electronic components are subject to special rules for disposal.

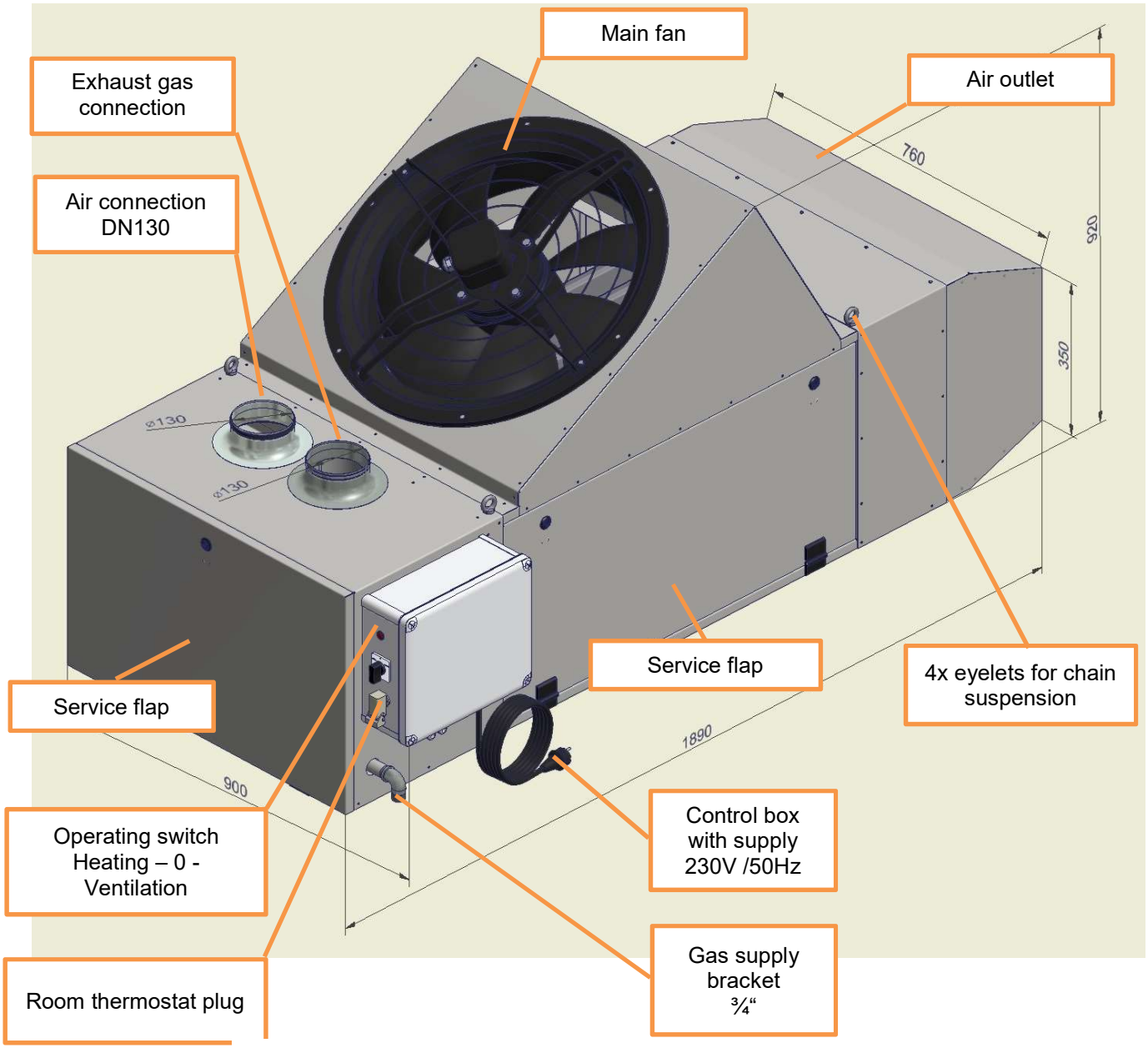
Please contribute to a better environment by disposing of your old appliance in an environmentally friendly manner

12. TECHNICAL SPECIFICATIONS

Type		SnookSuperior 100
Rated heat load	kW	100
Gas type / category		II 2 E LL 3B / P
Connection pressure Natural gas / liquid gas	Mbar	20 / 50
Connection value	kg/h	7.78
Gas supply	Inches	¾
Air flow rate	m³/h	10,500
Electrical connection	V/Hz	230 / 50
Nominal current	A	5.3
Discharge range	m	45
Length	mm	1,890
Width	mm	900
Height	mm	920
Combustion air supply	mm	130
Exhaust gas connection	mm	130
Weight	kg	210
Product ID no.		CE-0085

Subject to technical and dimensional changes

12.1 Measurements and build of device

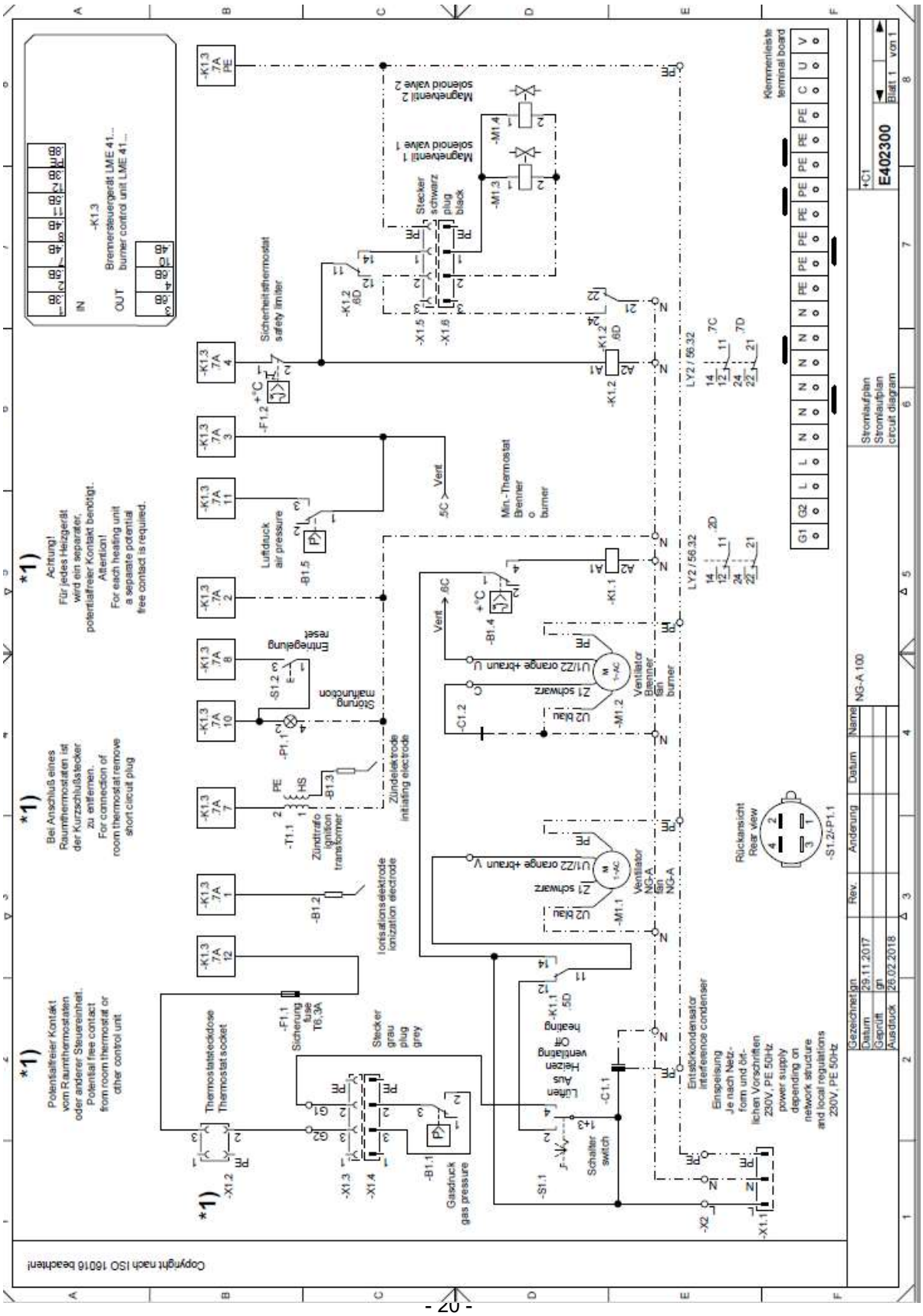


13. POSSIBLE MALFUNCTIONS AND THEIR CAUSES

Malfunction:	Cause:	Remedy:
DEVICE does not start	No room thermostat is connected	Put dummy connector on the thermostat outlet
	Room thermostat set incorrectly	Check setting
	Electricity supply	Check mains plug and power supply
	No gas	Check gas supplies
DEVICE starts, ignition works, but magnetic valve does not open .....Shutdown due to malfunction	Safety temperature limiter is triggered or malfunctioning	Unlock or replace
	Automatic burner control unit defective	Replace
	Electric connection polarized incorrectly	Check polarity
	Differential pressure control not shifted	Check
DEVICE starts, no ignition Solenoid valve opens, gas flows in..... Shutdown due to malfunction	Ignition electrode defective	Replace
	Ignition gap too great	Reduce
	Ignition cable defective	Replace
	Automatic burner control unit defective	Replace
DEVICE starts, ignition works, Ignition works, magnetic valve opens, gas flows in, is ignited..... after a few seconds the shutdown due to malfunction occurs	Ionization electrode contaminated or defect	Clean or replace
DEVICE starts, ignition works, works, magnetic valve opens no gas flows in..... Shutdown due to malfunction	Gas valve defect	Replace
	Gas pressure	Check
	Nozzle contaminated	Clean, replace
DEVICE opens occasionally malfunction	Ionization electrode	Check
	Ignition	Check
	Switch box	Check for loose terminals
	Gas pressure	Check

14. ELECTRICAL CIRCUIT DIAGRAM

Type of device: SnookSuperior 100



15. LIST OF SPARE PARTS

Item	Designation	SnookS. 100 Art.-No.	
1	Gas valve	103417	
2	Capacitor	1-02039	
3	Thermostat socket	3-01510	
4	Operating switch Ventilation – 0 – Heating	1-01744	
5	Main fan	1-02762	
6	Ignition electrode	103311	
7	Control box	3-02916	
8	Differential pressure control	1-02876	
9	Safety temperature limiter (STL)	100219	
10	Automatic burner control unit	1-03451	
11	Release button	1-01047	
12	Relay	1-00676	
13	Fuse	1-00562	
14	Anti-interference capacitor	1-00394	
15	Jet	101381	
16	Ignition cable	1-00153	
17	Heat exchanger	3-02925	
18	Burner:	1-03359	
19	Exhaust gas fan	1-03446	
20	Ignition device	101265	

Only use manufacturer's original parts for repair purposes!

EC – Conformity – Declaration

In the sense of the EC direction of machines (2006 / 42 / EC), Annex II A

We herewith declare that the machine indicated as follows meets the requirements of the fundamental demands in respect of safety and health of the EC direction of machines in its development, construction and design. The declaration will lose its validity when a modification of the machine will be made without having been coordinated with us.

Manufacturer	:	**Abbi Aerotech b.v.** *Smederij 23* NL – 3371 MC Hardinxveld
Kind of product	:	*Gas fired warm air heating system: stationary without heat exchanger*
Description of product	:	*Fully automatic gas fired warm air heating system for stable heating*
Model designation	:	**NG-A 100 / SnookSuperior 100**
Applied EC direction	:	*Gas appliance regulation GAR (EU) 2016/426* *Machine direction 2006 / 42 / EC* *Low voltage direction 2006 / 95 / EC* *EMV direction 2004 / 108 / EC*

Applied harmonized standards

DIN EN 12100-1 01:2003	*Safety of machines – basic concept, general guiding principles of Construction* Part 1: General terminology, methodology
DIN EN 12100-2 02:2003	*Safety of machines – basic concept, general guiding principles of Construction Part 2: Technical guiding principles and specifications*
DIN EN 60204-1; 06:2007	*Safety of engines, electrical equipment of machines*
DIN EN 61000-6-4; 09:2007	*Electromagnetic compatibility, specialist basic standard interference emission, industrial areas.*

Applied national standards as well as technical specifications

DIN EN 1020 05: 2010	*Non-domestic forced convection gas-fired air heaters for space heating*

EC type approval by: *GWI Gaswärme-Institut e.V., Hafenstr. 101, 45356 Essen (Germany)Test report no.* 138225bE1 / 15061

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