

NAVADAN HOTBOX

Product number: 2009038

User manual



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High-pressure cleaner – See the manufacturer’s instructions before starting.

Rev. D20 Sep. 2019

200 - 700 bar 11.0 - 28.0 l/min.

25 bar low pressure 20.0 - 45.0 l/min.

PLC-Control Warning: Read this manual before the Hot-Box is operated

EC-DECLARATION OF CONFORMITY FOR MACHINERY

Manufacturer: **KENT HØJTRYK A/S**
Skovbrynet 10
DK – 6752 Glejbjerg
Tel: **+45 75 26 73 00**



Navadan Hotbox

Hot-Box 0.25: Hot-Box 2: Hot-Box 3: Hot-Box 5: Hot-Box 7:

Manufacturing no.:

Year:

Is manufactured in conformity with:

- Provision in the Council Directive of 17. May 2008 on mutual approximation of the laws of the Member States on the safety of machines (2006/42/EC) with special reference to Annex II, A and Annex I, of the Directive on essential safety and health requirements in relation to construction and manufacture of machines.*
- Provision in the Council Directive of 12. December 2006 on mutual approximation of the laws of the Member States on electrical equipment intended for apply to some tension limits (2006/95/EC).*
- Provision in the Council Directive of 15. December 2004 on mutual approximation of the laws of the Member States on electromagnetic compatibility (2004/108/EC).*

Is manufactured in conformity with following national / international standards and technical specifications:

- | | |
|--------------------|--|
| DS/EN 60335-2-79 | Safety - Particular requirements for high pressure cleaners and stem cleaners. 2009-11-17 |
| EN ISO 12100:2010 | Safety of machinery - General principles for design - Risk assessment and risk reduction |
| EN ISO 13857:2008 | Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs. |
| EN 349 A1:2008 | Safety of machinery - Minimum gaps to avoid crushing of parts of the human body |
| DS/EN 60204-1:2006 | Safety of machinery - Electrical equipment of machines - Part 1: General requirements |

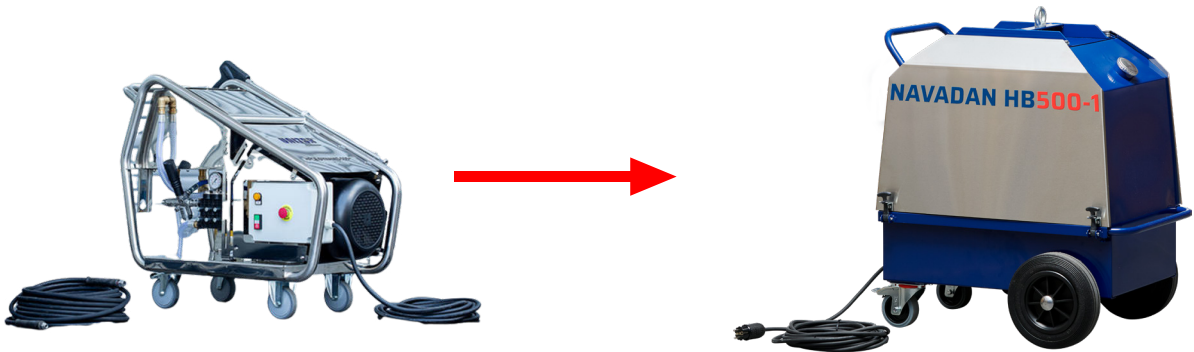
Ove Jørgensen

Date: 18/4-2017

(Underskrift)

1. Machine description

1.1 Applications:



The Navadan Hotbox is designed to provide hot water for cold water cleaners, if hot water cleaning is necessary. Hotbox 2 - 5 to be connected directly to a cold water high-pressure system which can deliver a flow of 11 - 28 litres of water per minute. Low pressure model 0.25 to be connected to a flow between 20 - 45 litres of water per minute at maximum pressure of 25 bar. The largest Hot-Box, model 5, is built with a system which can handle up to 500 bar, as the Hotbox is fitted between the high pressure cleaner and the lance. For technical reasons, the pumps in high-pressure cleaners may not work at water temperatures above 60°C, why the lance and gun is shifted to the discharge side of the Navadan Hotbox. In most cases, the water temperature can improve the cleaning process, especially on greasy surfaces.

The Navadan Hotbox may only be used with utility water or recovered rainwater with a purity corresponding to that of tap water. Substances added through a dosing installation which may improve high-pressure cleaning may only be sent through this equipment if the substances are suitable for high temperatures under high pressure. Therefore, it is necessary to adhere to the terms of use of the cleaning agents and the manual of the high-pressure cleaner in question.

Heating takes place in a closed combustion chamber where regular diesel is continuously ignited by an igniter. The tank is mounted at the front and can hold 20 litres of diesel.

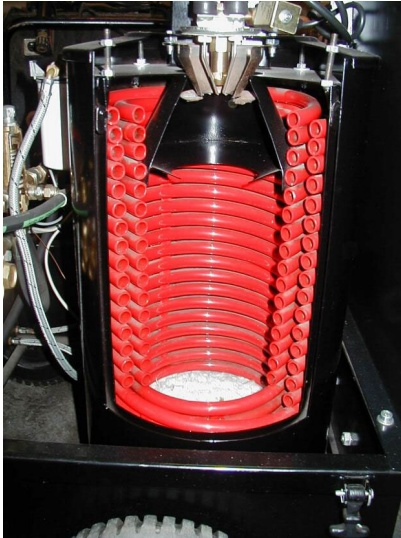
The machine is normally operated by one operator and must always be monitored when in use. It is notruled out that more operators can conduct the operation. Therefore, cleaning must be done with care.

The Navadan Hotbox is relatively quiet and has a noise level below 70 dB.

Examples of possible applications:

- Engine and chassis cleaning in the automotive industry.
- Construction equipment.
- Agricultural machinery.
- Sewage treatment facilities.

1.2 Functions:



Cross-sectional view of the boiler with the igniter and the combustion chamber at the top of the pipe coil.

The Navadan Hotbox consists of an epoxy-coated steel frame and stainless steel sheath. Connects to 230V power, or 12/24 volts if the model is to be fitted on trucks mm.

Diesel is used as a fuel to heat the water in the Navadan Hotbox. The use of other fuels, including biodiesel, is not allowed. With a double-sided, air-cooled steel boiler with flow coil, a very high degree of efficiency is ensured with minimal energy consumption. The environmentally friendly combustion values, 10-11% CO₂, soot dots 1-2, mean that the exhaust is discharged through an opening at the top of the Navadan Hotbox, and may not be extended, narrowed or covered.

The Navadan Hotbox is designed for outdoor use or in ventilated halls with good air discharge.

The water temperature is heated steplessly from 0°C to a max. of 80°C. In addition, a temperature limiter has been fitted which stops the boiler heating if the temperature reaches 108/109°C. A flow sensor also stops the heating in case of insufficient water and only allows the Navadan Hotbox to be started again, when there is water in the pipes once more.

There are manufactured 7 models, a low pressure of 25 bar and 5 high pressure of 200 to 700 bar. It is important that the high-pressure cleaner fitted to i.e. the small Hotbox is not too large. Unauthorized disassembly is not allowed, as this might affect the combustion and thereby the development of undesirable gases.

The side guards can be removed using rubber hasps, which makes it easy to service the unit. The boiler is double-walled, so that the temperature of the surface surrounding the boiler is kept below a temperature of 70°C.

2. Instructions and maintenance manual

2.1 Start-up

The Navadan Hotbox is moved either by truck by rigging a pallet on which the Navadan Hotbox is fixed or by crane lifting directly in four lifting eyes (see section 4.1). Handling must take place with the engine stopped and in a cool state.

The weight is approx. 65 kg without water.

Never lift higher than 0.5 m and never above people. Do not connect power and water before the unit is placed on a stable and level floor.

This device has been tested and subjected to a trial run at the factory, but transport can result in a fine tuning and visual check of all functions being necessary. Always check for loose power cables, screws and faulty joints. In particular, pay attention to threaded joints and where equipment is fitted to the discharge and inlet spigots of the Hotbox.



Ensure that personal protective equipment is within reach and, as a manufacturer, it is recommended to make protective clothing, goggles, gloves and protective footwear a mandatory requirement.

Always organise work according to sound, ergonomic principles and plan breaks during major and persistent work, ensuring that back and arms are not strained. Ensure variations or appropriate breaks to avoid monotonous strains.



Fit a high-pressure hose of approx. 2 metres in length with a screw coupling at both ends between the high-pressure cleaner's discharge spigot and the inlet spigot of the Hotbox. The high-pressure cleaner's pump must provide between 11 and 28 l/min. And the low-pressure cleaner must provide between 20 and 45 l/min.

Ensure that your high-pressure cleaner provides a water pressure which is less than the pressure limit of your Hotbox. This limit appears from the machine's identification plate and on the shown stickers at the inlet. This also applies to foreign high-pressure hoses and lances.

2.2 Operation

The machine may only be operated by persons over the age of 18.



(Danish Working Environment Guide (At-vejledning) D.2.20, November 2006):
Young people subject to compulsory education may not work with pressure systems.

Young people over the age of 15 years who are not subject by compulsory education may generally not work with pressure systems with a pressure exceeding 7 MPa (70 bar).

However, young persons aged 16 years who are not subject to compulsory education may, in agriculture and horticulture, work with pressure systems with a working pressure exceeding 7 MPa (70 bar). The pressure system may only be used for cleaning, paint, corrosion inhibitors, etc.

Minors under 18 cannot perform work which requires a self-contained breathing apparatus for more than 4 hours per day.

Before starting:

Remove items or goods which might be damaged during high-pressure cleaning.

Use chocks on one wheel, if the Navadan Hotbox is positioned on a sloping terrain.

The high-pressure cleaner may only be used on a ladder, if said ladder is a platform ladder with railings. The height of the platform may not exceed 3 m. The platform ladder must be designed according to the principles of EN 131 or have an equivalent level of safety.

Connecting the high-pressure part:

1. Connecting the one end of the high-pressure hose to the gun. The other end is mounted on the discharge from the machine. Connect the lance to the gun.
2. Before using the machine, check the high-pressure hose for ruptures. In case of replacement, verify that the new one has the same specifications as the original. The technical spec. (max. working pressure, manufacturing date and manufacturer) must be stamped on the hose.

Connection of water inlet:

1. Connect a reinforced hose with a 19 mm inside diam. (3/4") to the inlet on the machine.
2. Be aware that the water supply will decrease with the length of the supply hose.

Important:

Ensure that the water supplied to the machine is completely clean. Using the machine without water or with water polluted with sand or corrosive materials will damage the pump.

Connection to electricity:

1. Ensure that the voltage is the same as stated on the nameplate on the machine.
2. Make sure the plug is legal under Danish standards and is equipped with a grounding plug.
3. Do not connect other machines to the same electrical socket.
4. Before using the machine, check the power cord for ruptures. In case of ruptures, it must be replaced by a qualified person. Only replace the cord with one of the same type as the original. The cord is marked on the outside. Do not carry out repairs on the power cord.
5. Connect the plug after verifying that the switch on the machine is in the OFF position.

Fill the container with diesel fuel (holds max. 20 L) and mount any missing side panels.

Connect the water inlet on the cold-water cleaner with a $\frac{3}{4}$ " fabric-reinforced hose. Use tap water or the "reject water" (processed wastewater), if available.

Remove items or goods which might be damaged during high-pressure cleaning.

Connect the power plug to a 230 volt grounded electrical socket. (Check mains voltage – see nameplate)

Truck-mounted stationary [models – 12 or 24 volts](#).



Set the Navadan Hotbox thermostat to 0°
 Turn the water on.

Mount approx. 10 m of suitable high-pressure hose, gun and lance on the Navadan Hotbox' discharge spigot.
 Check pressure.

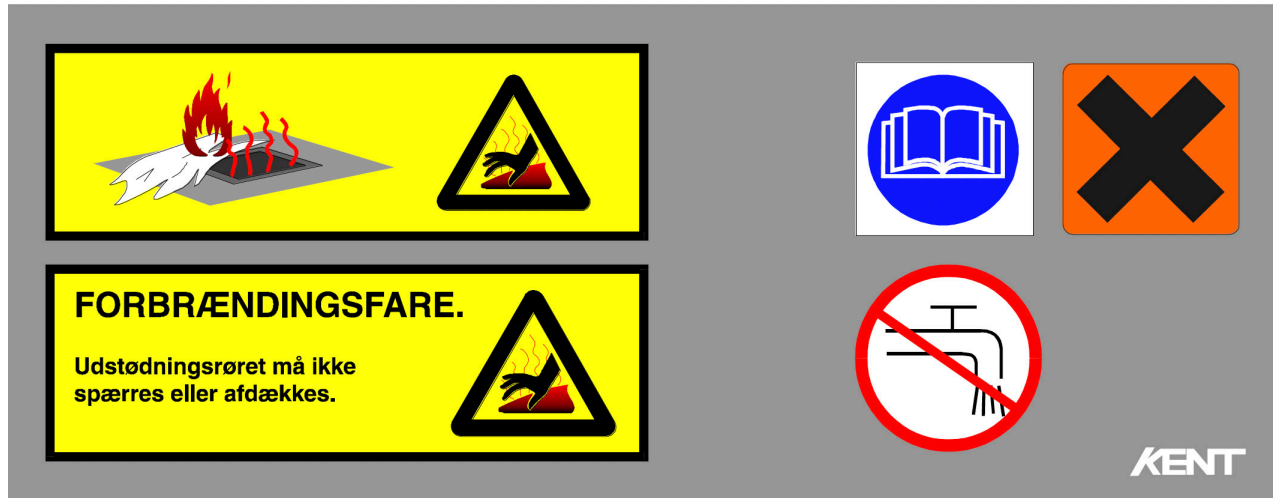
Turn the Navadan Hotbox switch to "1" to the start the burner and set the thermostat to the desired temperature 0-80°C. The boiler heats the water and, after a short time, high-pressure cleaning can begin. The temperature can be adjusted continuously – the less water, the higher the temperature.

Never pull the machine by its power cords or high-pressure hoses.
 'Beware of the hot jets of water which, under high pressure, has a cutting effect on sensitive surfaces.

Never turn the jet towards yourself or against persons or animals. Even at reduced water temperatures, it is not allowed to "bathe" animals, as the water jet can cause serious damage to the area affected.

Serious and painful disorders can occur in sensitive areas like eyes and ears.

Electrical installations and power cables should not be high-pressure cleaned, just as sensitive parts like signs and delicate surfaces must be avoided.



Avoid flammable objects near the exhaust pipe.

Indoor high-pressure cleaning is only allowed in halls and with good ventilation. If you feel unwell during cleaning, immediately stop working and go outside, into fresh air. In addition to the breathing of gases, the reason may be cleaning agents used in connection with i.e. cleaning. Therefore, carefully check whether these materials are used in a safe and environmentally responsible manner. Information on this is often found on the cleaning material's packaging. Never experiment with additives which may affect the health of people and possibly animals present. If liquid gets into contact with eyes, immediately rinse eyes under running water and consult a doctor. If possible, the information on the cleaning agent is taken along, i.e. bring the packaging, so that the doctor may provide the best possible treatment.

Cleaning agents may vary in quality and it must be verified whether or not they are suitable for high operating temperatures under high pressure. Also take the environment into account, especially where drainage takes place via an unsecured drain. If necessary, obtain data sheets wherein both the substance's hazard class and operator protection is defined by a scale from 1-6, where 6 is the most dangerous! Never use aggressive substances such as acids, thinners or explosive materials in the Navadan Hotbox.

Although the Navadan Hotbox has only been operated with "clean" tap water, the water can never be drunk, as it may have a high bacterial content and be from a previous heating.

The heated water from the Navadan Hotbox cannot be used in connection with the manufacture or preparation of foodstuffs, as extraordinary veterinary requirements are in place for machines in food production.

A lack of water or power failure does not harm the Navadan Hotbox, as both types of interruptions are monitored by the integrated controls. Upon restoration of the power and water supply, heating will start again, however.

Never leave the Navadan Hotbox in operation.

Turn the thermostat to 0°C while the pistol grip is held open for about 1 min to cool the boiler and pipe coil. Turn off the water supply and open the gun to empty the system of water, as well as to release the pressure in the hose. Turn the switch to "0" and remove the power plug.

8 The frost protection is done by removing both spigots so that all the water can run out or in accordance with the later-mentioned method with antifreeze. The high-pressure cleaner is frost protected in accordance with these instructions.





Respirator/earmuffs (Danish At-vejledning D. 2.20 November 2006):

If work is performed at under 2.5 MPa (25 bar) and if aggravating factors, such as chemicals which are harmful if inhaled, micro-organisms or remnants of organic origin are present, employees must wear appropriate respirators.

Appropriate respirators must always be worn when work is done at more than 2.5 MPa (25 bar).

The respirator's filter must be at least a P2 filter, which protects against both solid particles and liquid aerosols.

The safest approach is to use a self-contained breathing apparatus. There may often be doubts regarding the nature and concentration of air pollution, as it can be difficult to determine what is coming loose from the sprayed surfaces. If you need to work for more than three hours daily, the respirator must be self-contained or filtering with a turbo unit (fan).

Inhalation of aerosols containing surfactants (e.g. soaps) and fat and protein residues involves a risk of developing respiratory disorders and is also a mucous membrane irritant.

The employer shall ensure that employees use earmuffs as soon as work which is deemed to cause damage to the hearing begins. That is to say, noise exposure levels below 85 dB (A) may also mean that earmuffs must be worn.

Respirators and earmuffs must be compatible and should preferably be tested together.

At-vejledning D.5.4 January 2008:

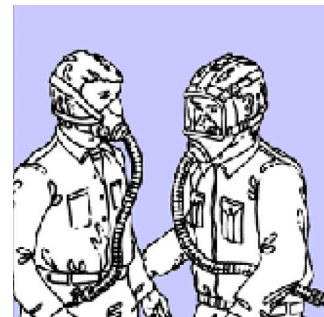


Filtering respirator.



*Filtering respirator.
Particle filters are divided into three classes:*

- P1 low efficiency filter



Self-contained breathing apparatus

Class P2

has a greater degree of separation and therefore protects to a greater extent. It can be used against harmful and toxic dust, but not against radioactive dust, bacteria and viruses. These filters only protect against solid particles, or both against solid and liquid aerosols. If the filter is tested to EN149:2001 standards, the filter protects against both solid particles and liquid aerosols. See more in At-vejledning D.5.4 January 2008.

In planning activities, the fact that aerosols, particularly smaller ones, hang in the air for a long time, even after the pressure work is ended, must be taken into account. Therefore, it will often be necessary to use personal protective equipment, even after the actual pressure work has ended. The very small aerosols can hang in the air for up to 1.5 hours.

Important

Only use biological chemicals with a pH value between 7 and 12. These chemicals must comply with the laws and regulations of the countries where they are used. Instructions for use of this machine should be strictly observed. Everything else is deemed incorrect. The manufacturer cannot be held liable for accidents caused by improper use of the machine. Under no circumstances may this machine be disassembled. In case of disassembly of the machine, the manufacturer disclaims all liability in connection with operation and safety.

Control of the water filter

It is important to check the water filter prior to the start-up of the machine. Remember that a clean water filter means longer life and operation of the machine.

General precautions for use:

1. Keep the machine away from children.
2. The high-pressure jet is dangerous if used incorrectly. In particular, the water jet must not be directed at persons, animals or electrical components or the machine itself. Do not use the machine if persons or animals are within range of the jet.
3. The user must handle the machine in such a way that he is not a danger to himself or other people.
 - In particular, the user should avoid working in uncontrollable positions.
 - Remember that the high-pressure jet may recoil when the gun is open. The pressure of the recoil is less than 20N, approx. 2 kg.
 - Wear waterproof clothing.
 - Wear safety goggles and non-slip rubber boots.
 - Do not get in contact with toxic materials.
4. This machine is manufactured in accordance with electrical safety regulations.
 - In all cases, the use of electrical machinery must be done with care and, in particular, one cannot touch uninsulated electrical parts or components
 - All service and repairs must be performed by a qualified person. Before service and repair, the electrical plug must always be removed from the power supply.
 - In cases where an extension cord is needed, make sure that the connections are watertight and keep connections off the ground to avoid contact with the water.
5. Do not pull the cord to unplug.
6. When in use, the machine cannot be covered, and cannot be placed in an area without ventilation.
7. Never let the machine run for more than 5 minutes with the gun closed, as the water in the pump will then become heated, which will damage the pump.
8. When the machine is not in use, the trigger of the gun must be locked so that it does not open by accident.
9. For the sake of safety, use original parts and accessories only.
 - If the lance needs to be replaced, the machine must first be stopped and accumulated pressure in the hose released.

The manufacturer disclaims all liability for accidents caused by non-compliance with instruction requirements and the contents of this manual.



Important

After the use of chemicals/soap, the injector's suction hose and non-return valve **MUST** be cleaned with clean water. Place the injector's suction hose in a bucket or the like with clean water, and allow the injector to suck from here for a few minutes.

Never aim the jet at electrical installations or living beings.
Never pull the machine by power cords or high-pressure hoses, as this may cause damage to machine components, voiding the warranty.
Mind the water jet which, under high pressure, has a cutting effect on sensitive surfaces.



Never aim the beam at yourself or any person or animal. Even at reduced water temperatures, it is not allowed to "bathe" animals, as the water jet can cause serious damage to the area affected. Serious and painful disorders can occur in sensitive areas like eyes and ears.

Electrical installations and power cables cannot be high-pressure cleaned.

Stop the machine.

Turn off the water, open the gun and let the machine run for 15 to 30 seconds.
Switch off on motor guard.
Release hose pressure.
Remove power plug

Frost protection.

The cleaner should be stored frost-free. If this is not possible, the pump and pump components are frost protected as follows:

Attach a short 3/4" hose to water spigot, place the other end in a 5 litres canister of spirit/alcohol. Start the cleaner, open the gun, close again when the spirit comes out of the nozzles.

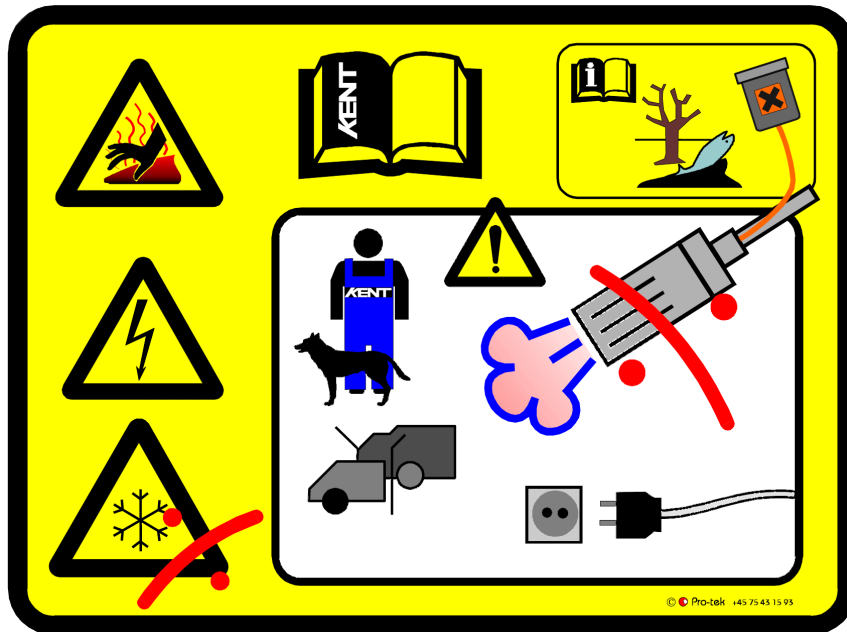
If the machine has been exposed to frost, never start it before complete thawing has occurred. Let the dealer inspect for any damage.



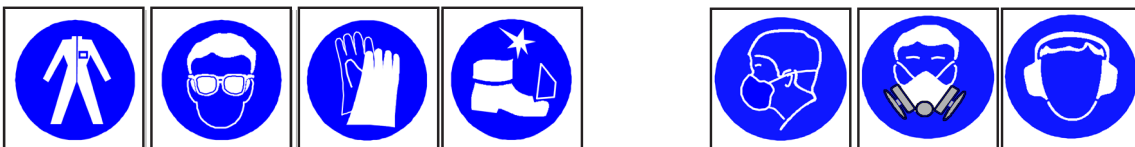
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How water which has passed through the high-pressure cleaner cannot be used in connection with the manufacture or preparation of foodstuffs, as extraordinary veterinary requirements are in place for machines in food production.

2.3 Safety regulations

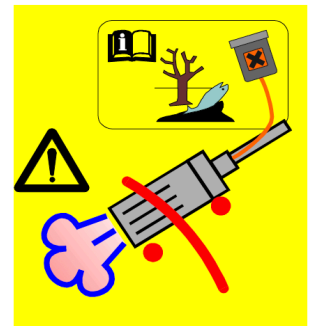
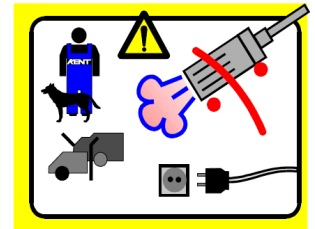
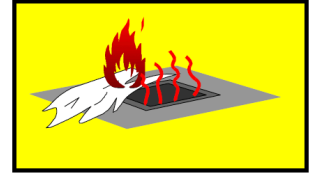


1. Always wear protective equipment as described in the work instructions. This especially applies to the use of suitable work clothing, safety goggles, gloves and safety footwear. Remember assistants. Never spray on boots or protective clothing for cleaning.



2. The risk of accidents is reduced considerably by establishing proper work light around the work site.
3. Only trained personnel may stay near the Navadan Hotbox when it is in operation.
4. This manual must be available to anyone operating the equipment.
5. The Navadan Hotbox and the high-pressure cleaner cannot be used if there are defects in the safety devices - relief valves, thermostats og mechanical parts, wich may cause scalding. All electrical couplings must be waterproof
6. High pressure hoses and lance must be approved types and without defects.

7. The Navadan Hotbox cannot be covered, as the exhaust gets very hot.
8. Ensure good ventilation of exhaust gases if necessary.
9. Never aim the water jet at yourself, people or animals.
10. Do not spray on electrical wiring and installations.
11. Avoid delicate and expensive facilities.
12. Avoid cleaning parts which come into contact with food.
13. Use only approved cleaning agents suitable for hot-water cleaning.
14. Also choose based on environmental considerations and dispose of empty containers at approved municipal transfer stations.
15. If necessary, use respiratory protection if there is a risk of inhaling vapours. See hazard classes on the detergent's packaging.
16. Frost can result in pipe rupture and will immediately damage the Hot-Box. The machine should always be stored in a frost-free place, if this is not possible, the machine must be frost protected as described in the next section.
17. Hot-water cleaning in frosty weather requires immediate start-up, after which the hot water is used immediately. Be aware that cleaning can result in icing.
18. Never leave the Navadan Hotbox in operation.
19. If necessary, the Navadan Hotbox is kept stationary with chocks.
20. No one can stay underneath a Hot-Box being lifted.
21. Repairs or adjustments can only be conducted when it is ensured that main power cannot be switched on.
22. Incorrect installation and use can result in serious accidents.



Construction changes to the machine's design is at your own risk. Impairment of the health and safetyfunctions can bring the owner into legal disadvantage, especially when changes or own action causes person accident. Significant changes usually require a new CE marking on the Navadan Hotbox.

3. Maintenance manual



Repairs or adjustments may be conducted only when the main switch is locked in the off position and when the Navadan Hotbox cannot be switched on unintentionally. A removable power plug also provides good safety for the repair person.

Ensure that all pressure is equalised before dismantling high-pressure pipes and hoses.

Each start-up:

Assessment of exhaust smoke (must be invisible) and, if necessary, soot dot and CO₂ measurement.

Visually check hoses for ruptures and tears.

Visually check for diesel leakage.

Visually check for clogged exhaust.

Visually check for water leaks at startup.

Monitor for thermostat stop.

Observe whether there is noise from the blower motor/motor bearings.

Every year:

Measurement of soot dots and CO₂ (must be performed by technician authorised by the Danish OR or a Navadan technician).

Inspect the chassis and lifting brackets visually for cracks and loose bolts.

Test the thermostat by measuring the temperature. Must stop heating at 80°C.

Test of the flow meter.

Exhaust inspected for soot.

Check threaded joints at inlet and outlet.

Seals on all electrical installations.

Review chassis for corrosion and impact damage.

If needed, light oil lubrication of the wheel hubs.

Frost protection:

The Navadan Hotbox is emptied by removing the inlet from the outlet pipe so that the water may be drained out the bottom of the pipe coil in the boiler. Tilt the machine a little to ensure that all the water runs out.

The high-pressure cleaner is frost protected in accordance with its user guide – usually done by sucking anti-freeze into the pipe system.

Descaling:

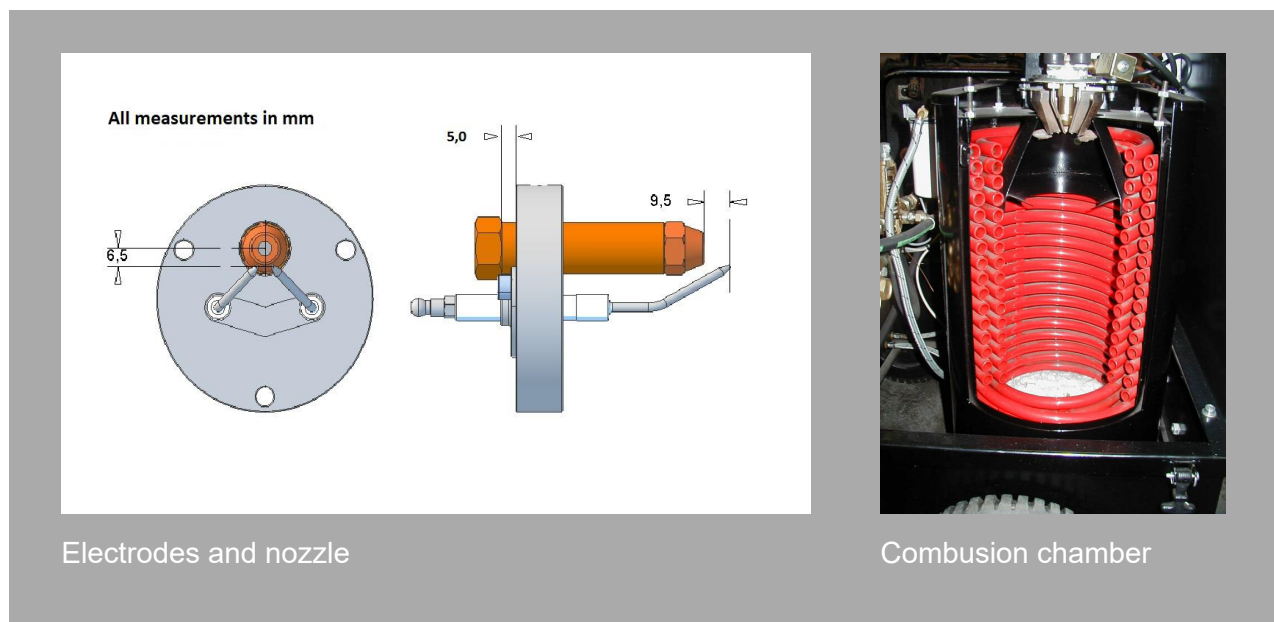
Performed as needed and is important to prevent clogging of the pipe coil in the boiler. Add water and acetic acid in a mixture proportion of 1 part acetic acid and 10 parts water and let it sit for a few hours, subsequently flushing loosened scale and dirt. If there is a lot of scale in the water, an additional treatment may be needed to prevent future clogging of the nozzle of the gun.

Diesel nozzle:

The nozzle is replaced as needed or at least once every year during maintenance, which must be performed by an authorised person. A statutory OR test completes this process. Also observe any national requirements.

Electrodes:

Clean electrodes are a condition of a good operating economy and stable operation. We therefore recommend disconnecting the electrodes as needed or at least once per year during maintenance, which must be performed by an authorised person. The entire igniter unit is mounted below the top plate and after a thorough cleaning (wire brush), the below distances are controlled (see diagram) prior to re-assembly. If the electrodes are burned away, the entire igniter is exchanged, if needed along with a new nozzle. Preferably, this is completed with an OR test and by an authorised technician.


Combustion chamber:

We advise that the boiler and the combustion chamber which includes electrodes, nozzle, isomax etc. is serviced as required or at least once a year.

Best cleaned with a long brush and a subsequent vacuuming down into the chamber. An OR-test performed by an authorised technician completes this process. Observe national requirements which may vary from country to country.

Generally:

Repeated safety outages may be due to errors in control or in the electric devices, and fault currents may cause electrical shock. (230 volts)

Repairs may only be done by a qualified technician who is capable of localising the error and carry out a proper repair before use of the Navadan Hotbox is resumed.

The machine itself can withstand washing using i.e. a regular car shampoo, while the electric parts may only be cleaned with high pressure air and wiping with a clean cloth. Only when cold. Lacquer damage is repaired by grinding and subsequent priming and top coating (1 component top coating)

When the Navadan Hotbox has one day served its time, it must be disposed of according to the municipal recycling regulations in force at the time in question.

3 Troubleshooting

Errors	Possible Cause	Solution
Hotbox does not start	Fuse defective Power plug dirty Defective motor Clogged nozzle	Replace fuse Cleaning the plug Call authorised technician Book an OR test
The engine is noisy	1 phase is missing Error in cable	Check electrical connectors Check electrical cable
Oil burner does not ignite	Flow switch stuck or broken. Faulty thermostat. Defect in electrical box.	Call authorised technician
Oil burner stops during use Immediately stop the Hotbox. (Turn the switch to 0)	Diesel tank empty. Electrodes misaligned or dirty. Oil nozzle blocked Defect in electrical system	Add diesel fuel Electrodes being cleaned and adjusted Nozzle being cleaned Call authorised technician
Oil burner sooting	Wrong oil pressure. Water or dirt in the diesel fuel	Use only clean diesel fuel
The machine heats poorly	Calcified coil or sooted chamber	Descale piping Clean the coil Or call authorised technician

PLC Alarms:

For reset of PLC alarm 1, 2 and 3 – turn the cleaner OFF and ON on the turn switch.

3.3 Spare parts

Specify the model and the machine number that is attached to the Hot-Box, so that we can deliver the ordered spare parts for your machine. Always use original spare parts.



- The clean solution

CE

Alarm

1. Flame Failure:
1 Second On / 1 Second Off
2. Microterm Failure:
2 Seconds On / 2 Seconds Off
3. Thermal relay Failure:
3 Seconds On / 3 Seconds Off

Kent Højtryk A/S, Skovbrynet 10, 8752 Gløjbjerg, Tel. +45 75198033

Signs:

◀ Alarm label

Machine label ▶



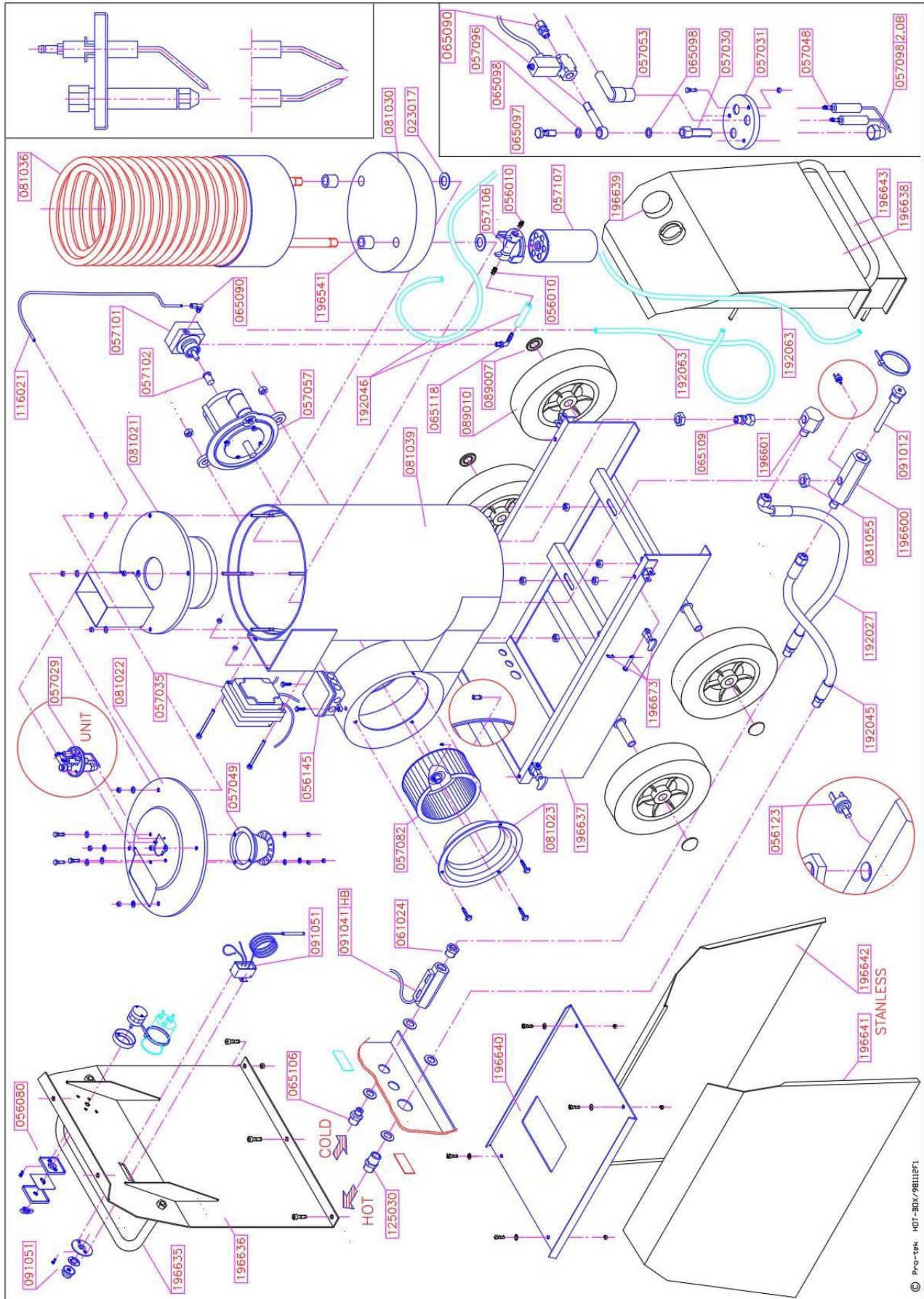
- The clean solution

CE

Serie no.: 08181871
 Model: HOT BOX 500
 Rated pressure: 50/500 Pa / Bar
 Allowable pressure: 50/500 Pa / Bar
 Max. flow rate: 1680 l / h
 Max. Reted temp. 80 Gr. C
 Water Heater: 90 KW
 Voltage: 1x230 Volt IP: X5
 Frequency: 50 Hz
 Power: 1.4/0.28 Amp / KW
 Weight: 95

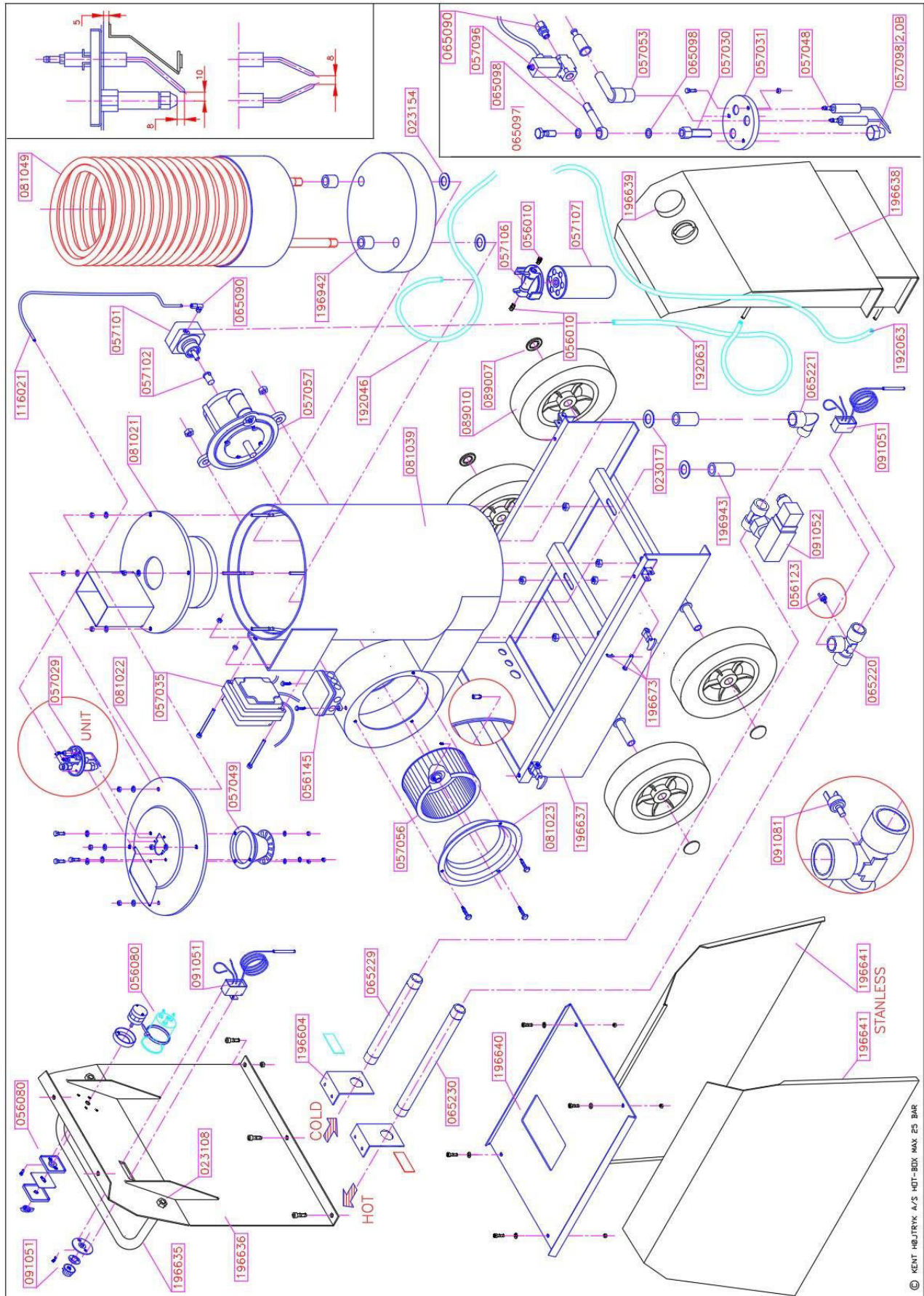
Kent Højtryk A/S, Skovbrynet 10, 8752 Gløjbjerg, Tel. +45 75198033

Spare part drawing for High pressure model: 2 - 3 - 4 - 5 - 7



© Pro-tek HOT-30x/98112F1

Spare part drawing for Low pressure model: 0.25



© KENT INDUSTRIES A/S HOT-BODY, MAX. 25 BAR

4 Installation and mounting

4.1 Moving

Crane lifts must be done by hooking into 4 pcs. M10 lifting eyes, which replace the original bolts in the top plate. Lifting by other parts can lead to accidents and is done at your own risk.

The lift must be done while power is disconnected and the machine is cold. All pressure in hoses and boilers must be equalised. Truck lifts can only happen across the machine and when it is strapped to a pallet.

Weight: approx. 65 kg without water

The handling may only be performed by qualified personnel, certified in the handling of loads. Never lift above people.

Avoid lifting higher than 0.5 meters. Ensure the transportation route is free of people and obstacles.

The machine must always be lowered with great caution. Shock and impact can affect the boiler combustion chamber and igniter and result in reconfiguration for a reliable and economical burning.

The Hot-Box is approved for installation in industrial environments, as EMC requirements from internal electrical components are not approved for use in residential areas.



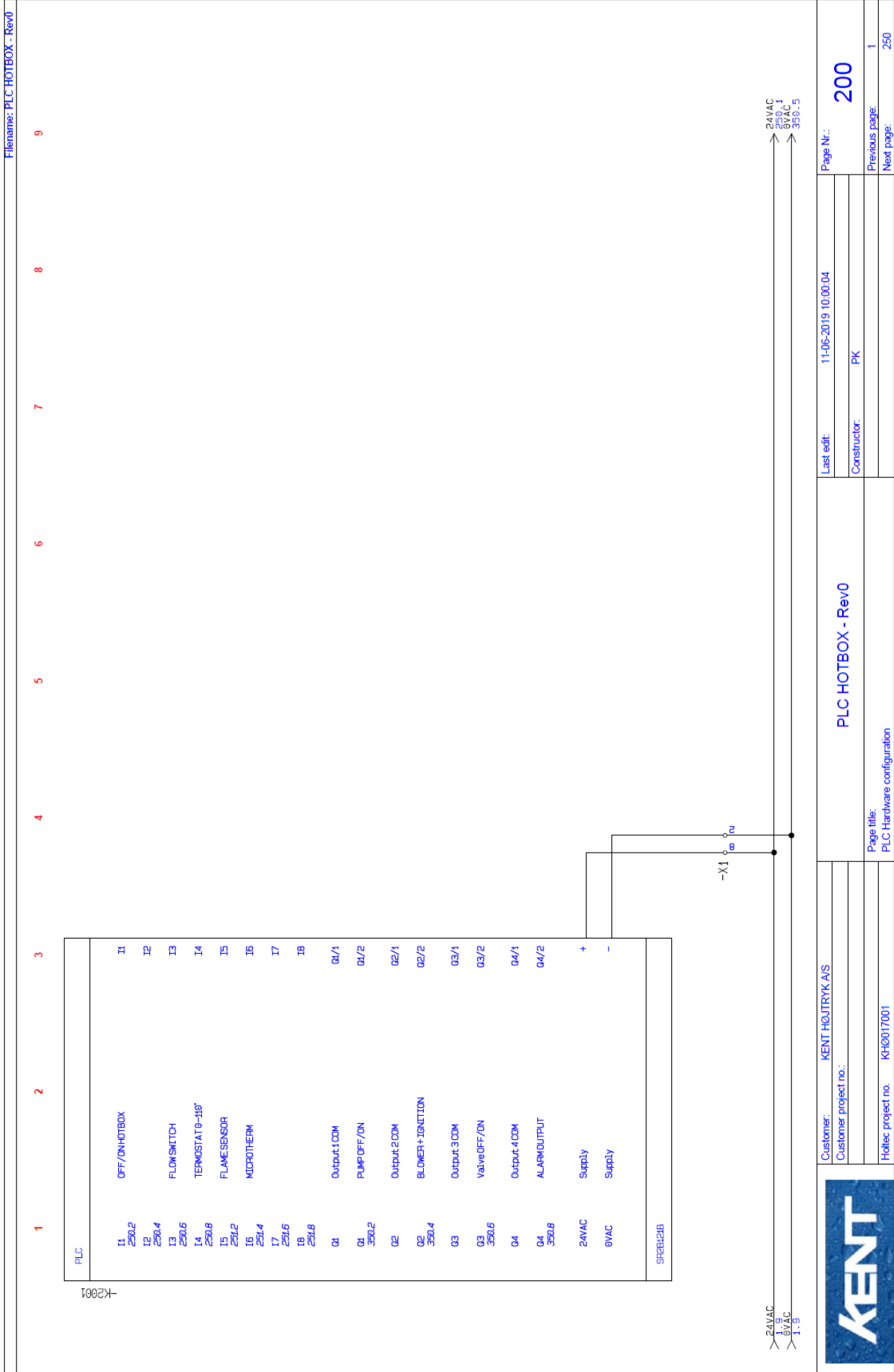
4.2 Technical Data

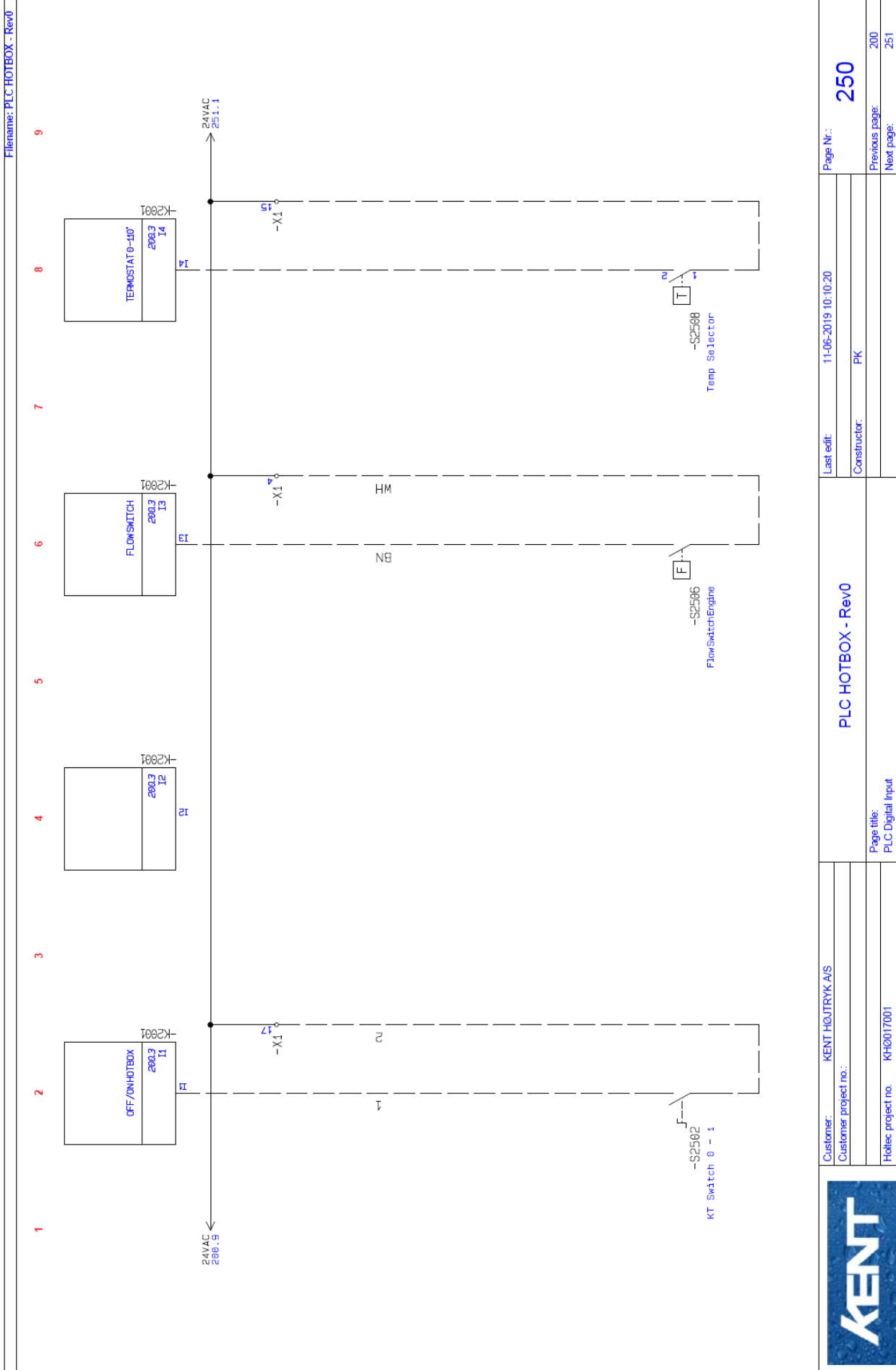
Navadan Hotbox

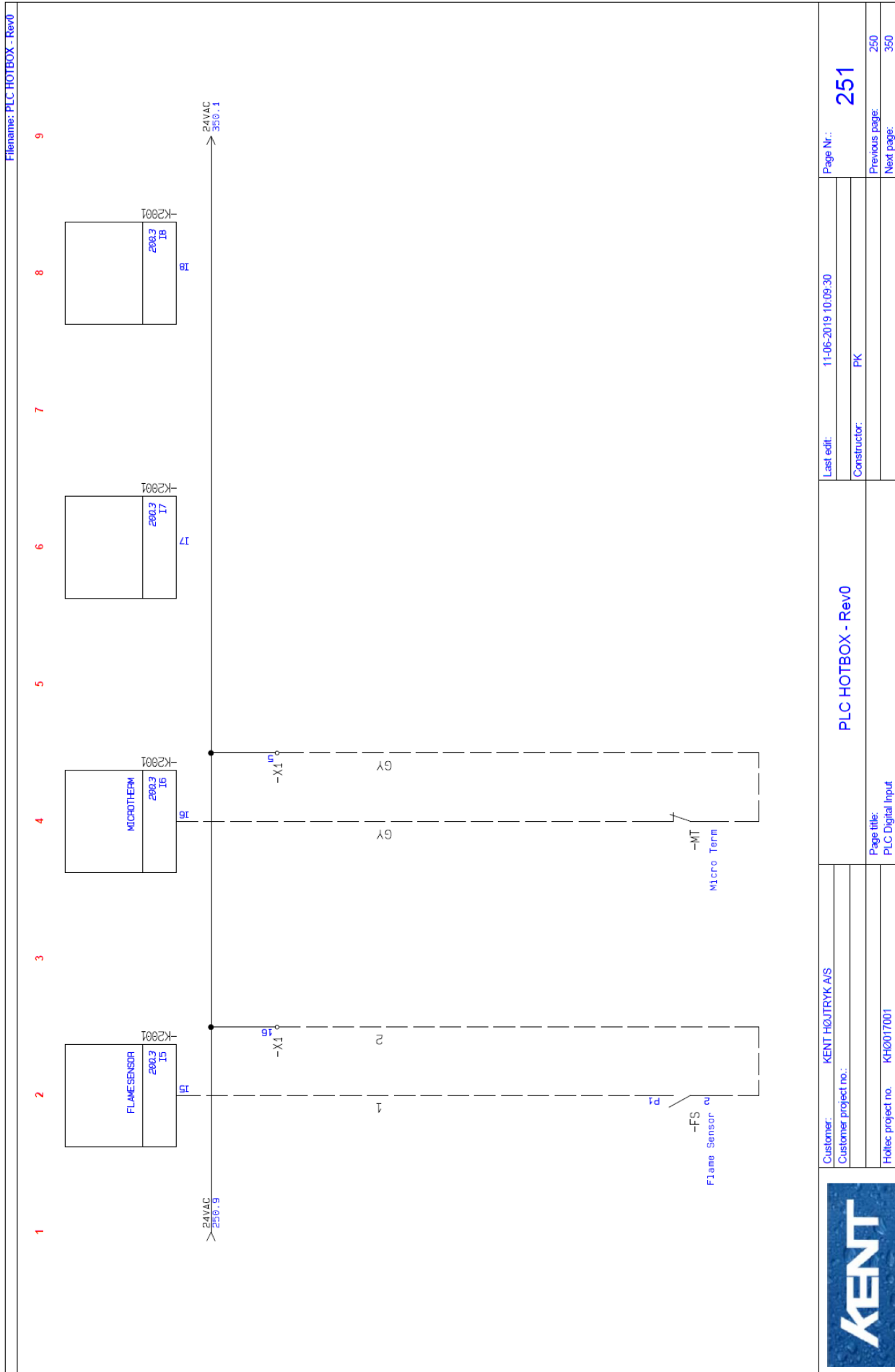
Length:	700 mm.
Width:	570 mm.
Height:	800 mm.
Temperature range:	0-80°C (Sealed)
Thermostat stop:	108-109°C
Noise level:	Below 70 dB
Weight without water:	65 Kg
Diesel tank:	20 litres
Current:	230 volt 50 Hz – 175 Watt – 2 Amp.



Hot-Box 0.25 = Working pressure	25 bar.
Hot-Box 2 = Working pressure	200 bar.
Hot-Box 3 = Working pressure	300 bar.
Hot-Box 4 = Working pressure	400 bar.
Hot-Box 5 = Working pressure	500 bar.
Hot-Box 7 = Working pressure 7	00 bar.
Combustion Values:	10-11% CO2, soot dots 1-2.



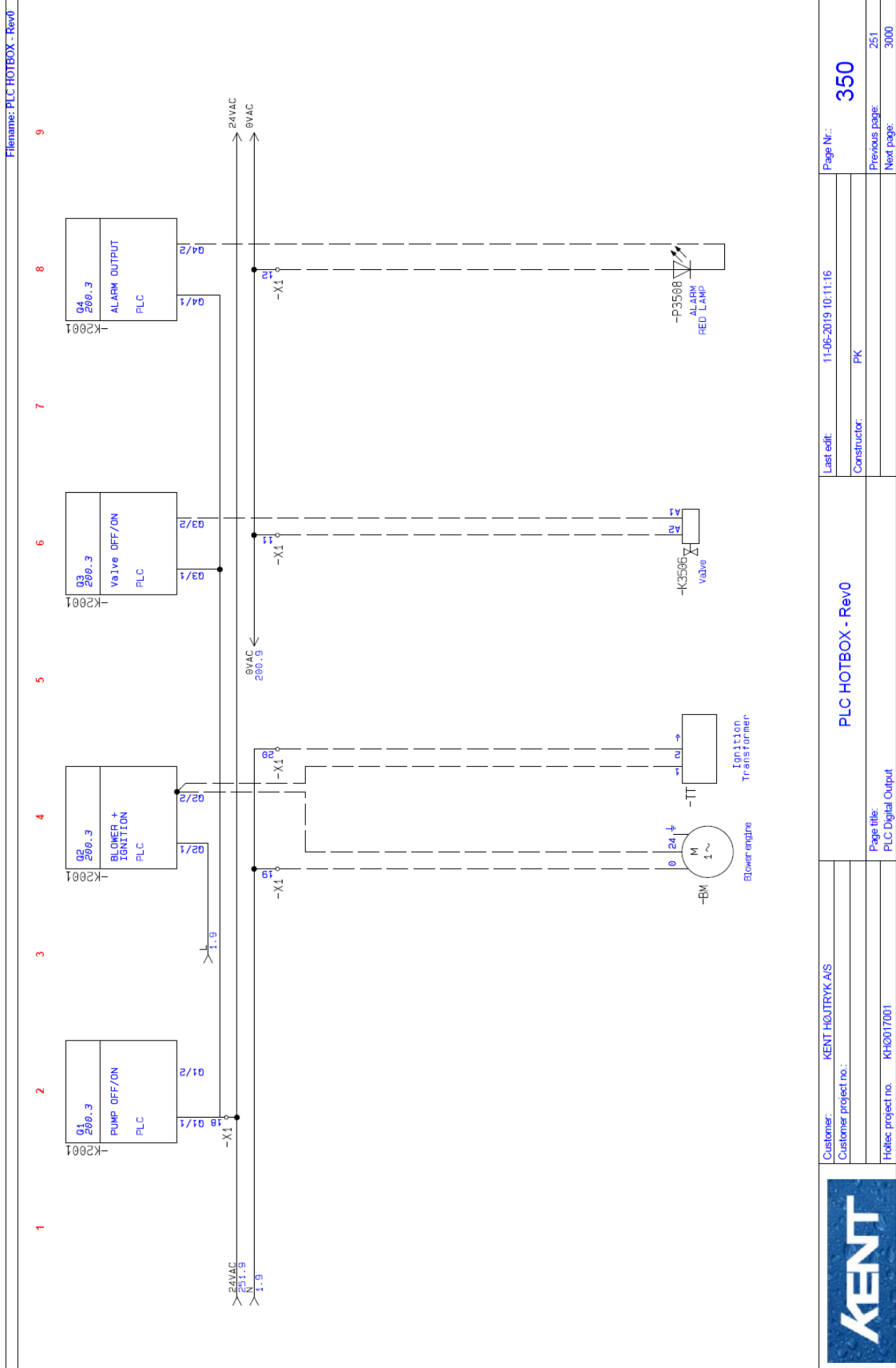




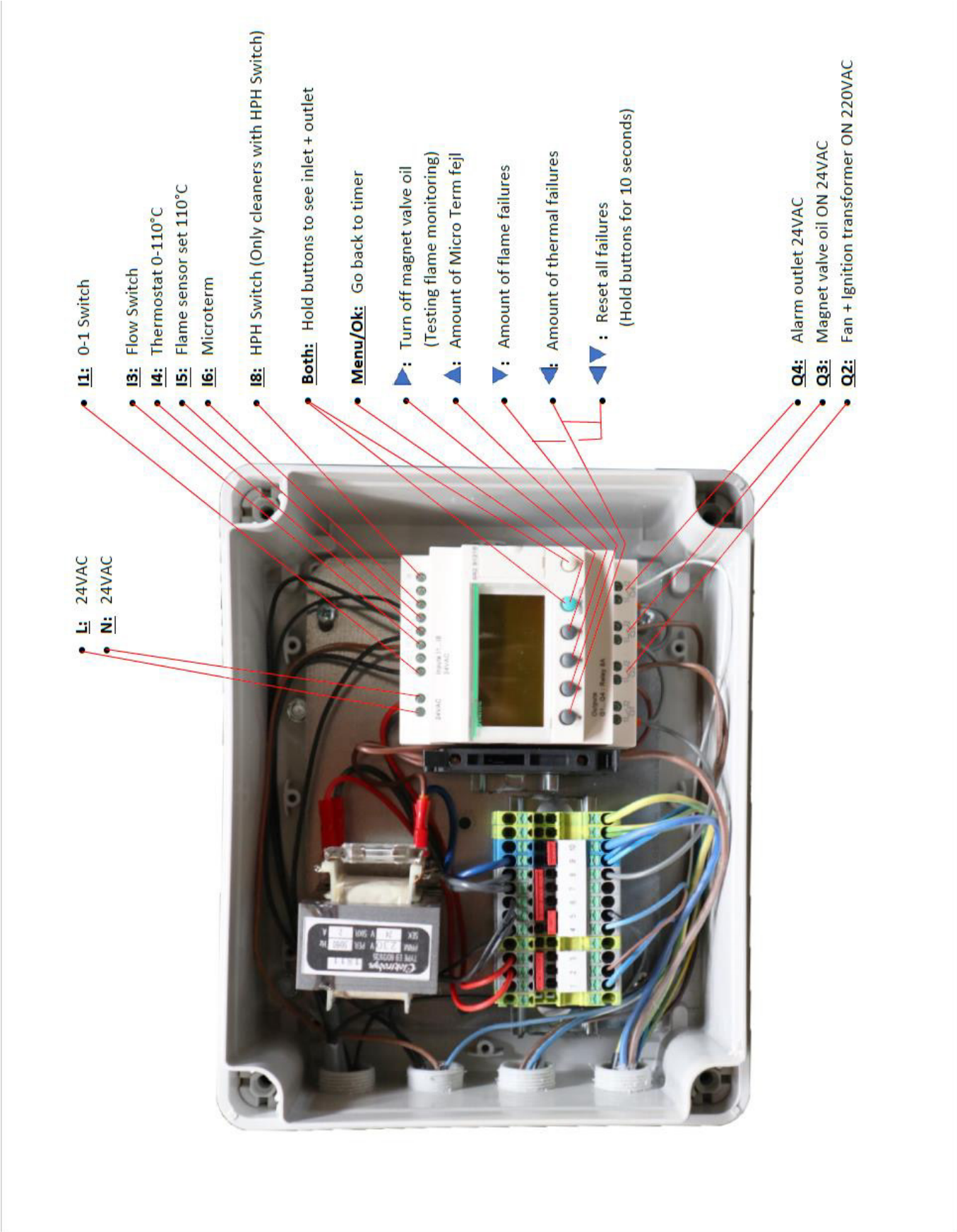
Customer:	KENT HØJTRYK A/S	Last edit:	11-06-2019 10:09:30	Page Nr.:	251
Customer project no.:		Constructor:	PK	Previous page:	250
Holtec project no.:	KH0017001			Next page:	350

PLC HOTBOX - Rev0

Page title:
PLC Digital Input



		Customer:	KENT HØJTRYK A/S	Page title: PLC Digital Output
		Customer project no.:		
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Constructor: PK		Constructor: PK		Next page: 3000
PLC HOTBOX - Rev0				



L: 24VAC
N: 24VAC

- I1:** 0-1 Switch
- I3:** Flow Switch
- I4:** Thermostat 0-110°C
- I5:** Flame sensor set 110°C
- I6:** Microterm
- I8:** HPH Switch (Only cleaners with HPH Switch)
- Both:** Hold buttons to see inlet + outlet
- Menu/Ok:** Go back to timer
- ▲:** Turn off magnet valve oil (Testing flame monitoring)
- ▲:** Amount of Micro Term fejl
- ▲:** Amount of flame failures
- ▲:** Amount of thermal failures
- ▲:** Reset all failures (Hold buttons for 10 seconds)
- Q4:** Alarm outlet 24VAC
- Q3:** Magnet valve oil ON 24VAC
- Q2:** Fan + Ignition transformer ON 220VAC

STC-1000 Operation Instruction

Main function

Switch the modes between cool and heat; Control temperature by setting the temperature set value and the difference value; Temperature calibration; Refrigerating control output delay protocol; Alarm when temperature exceeds temperature limit or when sensor error.

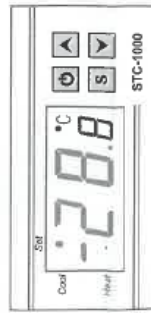
Specification and size

- ◆ Front panel size: 75(L)×34.5(W)(mm)
- ◆ Product size: 75(L)×34.5(W)×85(D)(mm)

Technical parameters

- ◆ Temperature measuring range: -50℃~89℃
- ◆ Accuracy: ±1℃(-50℃~70℃)
- ◆ Power supply: 12V 24V 110-220VAC 50Hz/60Hz
- ◆ Sensor: NTC sensor (1PC)
- ◆ Relay contact capacity: Cool(10A/220VAC); Heat(10A/220VAC)
- ◆ Ambient temperature: 0℃~60℃
- ◆ Relative humidity: 20~85%(No condensate)
- ◆ Storage temperature: -30℃~75℃
- ◆ Resolution: 0.1℃
- ◆ Power consumption: <3W

Panel instruction



Display instruction: Three-digit LED +Minus digit + Status indicator light
(Status indicator light (Cool, Heat) + Set indicator light, (Set)

Key instruction: "S" key: the key to set; "▲" key: Up key; "▼" key: Down key; "⊕" key: the key to turn on and off the power

Indicator light status instruction

Indicator light	Function	Note
Cool indicator light	On: Refrigeration starts; Off: Refrigeration stops; Flash: compressor delay	Cool, Heat indicator light can not be on simultaneously
Heat indicator light	On: heating starts; Off: heating stops	
Set indicator light	On: parameter setting status	

Key operation instruction

- The way to check parameter:
Under normal working status, press "▲" key it displays temperature setting value; press "▼" key it displays the difference value.
- The way to set parameter:
Under controller normal working status, press "S" key for 3s or more to enter parameter modifying mode, and the "Set" indicator light on, screen displays the first menu code "F1".
Press "▲" key or "▼" key to adjust up and down and display the menu item; Press "S" key to display the parameter value of the current menu. Press both "S" key and hold "▲" key or "▼" key simultaneously to choose and adjust the parameter value of the current menu value promptly. After finishing the setting, press and release the "⊕" key instantly to save the parameter modified value and return to display the normal temperature value. If no key operation within 10 seconds, system won't save modified parameter, screen back to display normal temperature.
- Restore system data
When electrified, system will check itself, screen will display "Er". If error exist, please press any key at this time, and it restores default value and enter into normal working mode, it is advised to reset the parameter value under such conditions.

Operation instruction

Under controller normal working status, press and hold "⊕" key for 3s can turn off the controller; Under controller "off" status, press and hold "⊕" key for 1s can turn on the controller.

Under the controller normal working status, screen displays the current measuring temperature value; also the controller can also switch the working mode between heating and cooling.

Controller starts refrigerating with cool indicator light on when the measuring temperature value ≥ temperature set value + difference value, and the refrigerating relay is connected; If the "Cool" indicator light flashes, it indicates the refrigerating equipment is under compressor delay protect status; when the measuring temperature values temperature set value, the Cool indicator light on, and refrigerating relay disconnects.

System starts heating when the measuring temperature value ≤ the temperature set value - difference value, and the "Heat" indicator light on, the heat relay connects; When the measuring temperature ≥ temperature set value, the "Heat" indicator light is off, and the heat relay disconnects.

Menu instruction

Code	Function	Set range	Default	Note
F1	Temperature set value	-50.0~99.9℃	10.0℃	
F2	Difference set value	0.3~10.0℃	0.5℃	
F3	Compressor delay time	1~10 minutes	3 minutes	
F4	Temperature calibration value	-10.0℃~10.0℃	0℃	

Error description

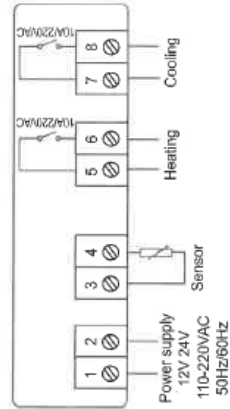
Alarm when sensor error: Controller activate the sensor error alarm mode when sensor open circuit or short circuit, all the running status is closed off with the buzzer alarms, and the nixie tube displays "EE", press any key can cancel alarm sound, system back to display the normal temperature when the error and the fault is cleared.

Alarm when the measuring temperature exceeds temperature measuring range: Controller activates the error alarm function when the measuring temperature exceeds the temperature measuring range, all the running status is closed off with the buzzer alarms, and the nixie tube displays "HT". Press any key can cancel alarm sound, system back to display the normal working mode when the temperature restore to normal measuring range.

Safety Regulations

- ★Danger:
 - Strictly distinguish the sensor down-lead, power wire and output relay interface from one another, and prohibit wrong connections or overloading the relay.
 - Dangers: Prohibit connecting the wire terminals without electricity cut-off.
- ★Warning:
 - Prohibit using the machine under the environment of over damp, high temp., strong electromagnetism interference or strong corrosion.
- ★Notice:
 - The power supply should conform to the voltage value indicated in the instruction.
 - To avoid the interference, the sensor down-lead and power wire should be kept a proper distance.

Wiring diagram



wilhelmsen.com

Wilhelmsen Ships Service

Phone: (+47) 67 58 40 00

Fax: (+47) 67 58 40 80

Postal Address:

PO Box 33, NO-1324

Lysaker, Norway

