



Read the instruction sheet and the safety instructions before putting into operation and observe them !



Safety Instructions

UK

1. Do not operate machine in fire and explosion hazard areas.
2. Always wear protective clothing when using the Dry Steamer.
3. Do not allow children or untrained personnel to operate the machine.
4. Do not use in areas being used by other operators.
5. The electric supply connection must be installed by experts and must comply with IEC 364.
6. If extension cords are used, plug and socket must be of water-tight construction. The quality of the cord and the cross-section of the conductor must comply with the instructions and the electrical requirements of the machine
7. Use only fuel oil EL DIN 51603.
8. Only use cleaning and preserving agents approved by the manufacturer. Special instructions of use must be observed.
9. The thread connection for the steam hose located at each end and the thread connection at the spray lance must be screwed pressure-tight
10. Do not open the cover during operation. To open first disconnect the machine from the power source
11. **DANGER: HOT AREAS:** Do not touch hot parts - especially the non-insulated parts of the steam spray lance, the exhaust gas socket and the cover near the exhaust gas socket and non-insulated steam hose couplings.
12. Do not direct the steam jet at people, electrical components or the machine itself.
13. Provide adequate ventilation when operating oil and gas fired machines. Ensure that flue gases are properly discharged.
14. The operator must supervise the machine at all times during operation.
15. Set main switch to "0" and lock "Emergency OFF Key switch" for prolonged stoppage, for maintenance and repair purposes.
16. 15. Be aware of the kickback force of the spray lance. The operator must have a safe stand and hold the gun with the lance with both hands.
17. Do not use the machine if there is damage to the supply cord or other important parts - for example connecting cable, steam hose or spray gun.

18. Disconnect the machine from the electrical power supply for maintenance purposes. Maintenance may only be carried out by qualified personnel.
19. When descaling the heating coil, use only a descaling agent approved by the supplier. Wear protective clothing
20. Only use original spare parts and accessories approved by the manufacturer.

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Appendix

- Trolley, Holder for cleaning and preserving agent as well as steam hose
- Oil burner data

1. Use of application

The hot steam jet of this oil-heated machine removes rough grime, oil, grease, graphite and other dirt from industrial and production machines, plant equipment and can be used for decontamination and disinfection.

2. Technical data

Volume flow	
	DRY 78 kg/h
	WET 168 kg/h
Steam temperature	
	DRY 180 °C
	WET 170 °C
Mains connection	230 V 1 AC 50 Hz
Remote control, protective low voltage	24V DC
Nominal consumption	1,2 kW 2,5 A
Heat capacity	80 kW
Fuel oil consumption, fuel oil EL	7,8 kg/h-9,3l/h
Fuel oil tank – contents	23 Liter
Noise emission, sound levell	max. 75 dB (A)
Measured outside at a distance of 1 m from the machine surface and 1,6 m above the ground.	
Dimensions	
	Length with trolley 1245 mm
	Length without trolley 980 mm
	Width 590 mm
	Height 910 mm
Weight	180 kg

3. Description

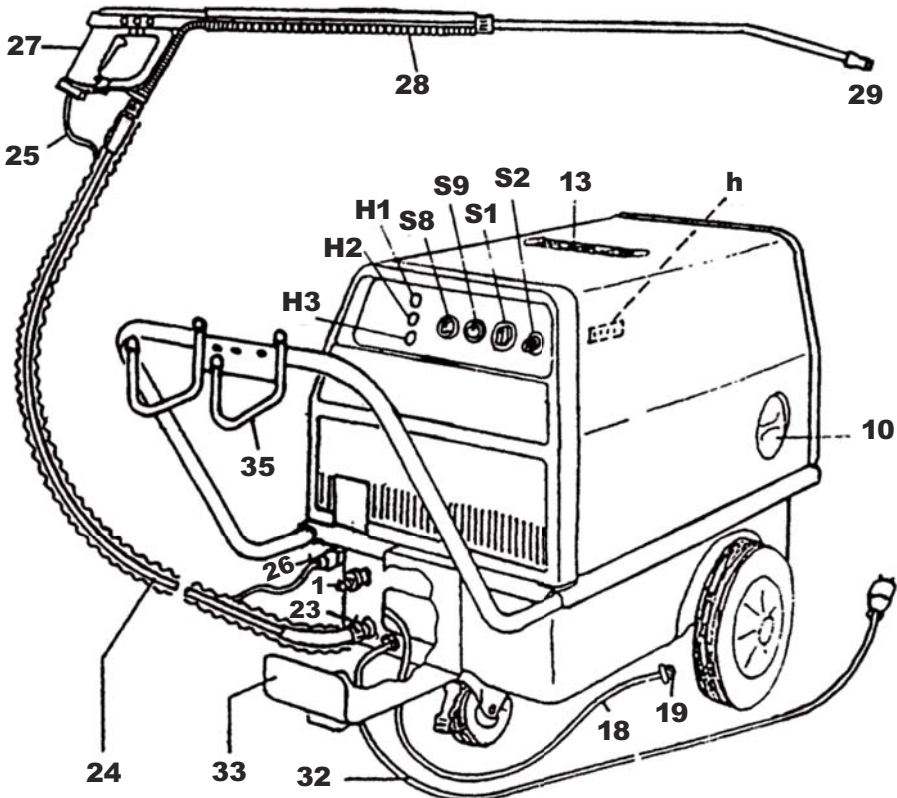
3.1 Configuration

The dry steamer is a mobile, oil-heated machine consisting of trolley, steam generator with oil burner, high pressure pump with electrical motor, dosing pump, electrical housing, water inlet tank, anti-scale protection system, fuel oil tank and steam jet lance with remote control gun.

The water tank and the fuel oil tank are equipped with level monitors.

On the pressure side of the pump, the machine is equipped with a pressure gauge and a non return valve.

The steam hose at the outlet of the steam generator is equipped with a safety valve, temperature gauge for oil burner control, temperature gauge for the signal READY FOR OPERATION, temperature limiter for failure control, solenoid valve at the steam outlet and shut-off valve for de-steaming. Cleaning and preserving agents are added to the steam in different concentrations by means of a dosing pump. The configuration is illustrated in the following schematic drawings:



- | | | | |
|-----|------------------------------------|-----|---|
| 1 | Water supply connection | 27 | Remote control spray gun |
| 2 | Float valve | 28 | Steam jet lance |
| 3 | Water inlet tank | 29 | Steam jet nozzle |
| 4 | Filter insert | 30 | Anti-scale protection pump |
| 5 | High pressure pump | 31 | Anti-scale protection tank |
| 6 | Steam generator | 32 | Connecting cable |
| 7 | Oil burner | 33 | Holder for detergent tank |
| 7.1 | Fuel oil pump | 34 | Shut-off valve |
| 7.2 | Fuel oil filter | 35 | Hose holder |
| 7.3 | Oil pre-heater | | |
| 8 | Fuel oil tank | H1 | Operation lamp "ON" – yellow |
| 9 | Fuel oil fill-in filter | H2 | Lamp "READY FOR OPERATION" - green |
| 10 | Fuel oil fill-in socket | H3 | Lamp "ERROR" - red |
| 11 | Fuel oil - suction pipe | h | Operating hour counter |
| 12 | Fuel oil - return pipe | | |
| 13 | Exhaust gas outlet | S1 | ON/OFF switch |
| 14 | Frequency converter | S2 | Emergency OFF - key switch |
| 15 | Kick back valve/Air valve | S4 | Temperature gauge – hot steam |
| 16 | Dosing pump | S5 | Water level control lamp |
| 17 | Kick back valve | S6 | Fuel oil level control lamp |
| 18 | Suction hose for detergents | S7 | Temperature gauge "READY FOR OPERATION" |
| 19 | Suction filter for detergents | S8 | Selector switch for detergents |
| 20 | Detergent tank | S9 | Steam regulator |
| 22 | Steam - safety valve | S13 | Pressure switch |
| 23 | Steam hose - plug-in coupling | | |
| 24 | Steam hose with protective hose | Y1 | Solenoid valve – fuel oil |
| 25 | Control cable | Y3 | Solenoid valve – steam outlet |
| 26 | Control cable - plug-in connection | | |

3.2.2 Water and chemical system

The incoming water from the main water supply flows past the float valve into the water tank. The water is then pumped to the steam generator. The water volume flow is regulated by means of speed control via a frequency converter. The generated steam is supplied to the steam jet lance by means of the remote control gun and the nozzle at the front of the steam spray lance then creates the steam jet.

Cleaning and preserving agents are added by means of 3 dosing pumps via kick back/air valves - depending on the program selected.

3.2.3 Steam jet lance with remote control gun

The remote control gun is equipped with an ON/OFF program switch and selector switch for detergents.



The steam jet lance with remote control gun is a safety device. Replacements and repairs may only be carried out by qualified personnel. In case of replacement, only parts authorized by the manufacturer may be used.

3.2.4 Anti-scale protection

The anti-scale protection pump delivers a very small amount (7.0 ml/h) of anti-scale protection agent to the water tank. This agent prevents the build-up of limescale deposits in the steam generator and steam pipes.

3.2.5 Switch on and off delays

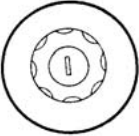






When actuating the ON/OFF switch at the machine, the burner motor with fuel oil pump and ignition electrodes are switched on without delay. Thereafter the remote control gun can be used with the following functions:

- With the setting “Steam” or “Steam with detergents” the function of the switch lever is released.
- When activating the gun switch lever the following actions are released:
 - The water pump and the anti-scale protection pump are switched on without delay. The solenoid valve at the steam outlet of the machine is opened. The operating hour counter is switched on.
 - The oil burner is switched on with delay by opening the burner solenoid valve. This switch-on-delay makes sure that there will be water in the steam generator and combustion air for flame formation.
- When releasing the gun switch lever the following actions are released:
 - The water pump, dosing pump, anti-scale protection pump, burner solenoid valve and operating hour counter are switched off with delay.

In order to prevent excessive temperatures when taking the machine out of order, the selector switch must be set to 0. The cooling process starts by means of air flow of the oil burner fan. Main switch must be set to 0 after approx. 5 minutes. The machine is completely

taken out of operation by actuating the ON/OFF switch on the machine

3.2.6 3.2.6 Switches and lamps in the machine operating screen

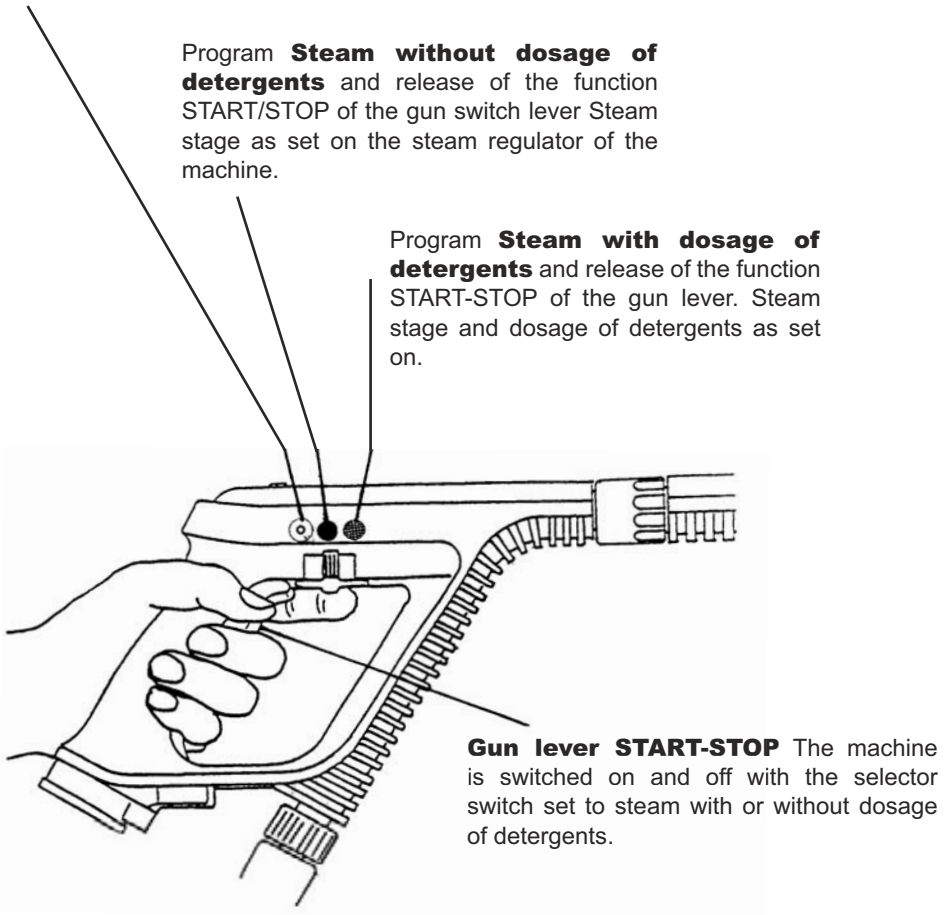
<p>STOP</p> 	<p>EMERGENCY OFF – Key switch STOP with locking device and key releasing device</p>
<p>ON / OFF</p> 	<p>ON/OFF– Switch</p>
<p>STEAM</p> 	<p>Steam regulator</p>
<p>DETERGENT</p> 	<p>De detergent selector switch</p> <ul style="list-style-type: none"> - low dosage LOW 160 ml/min - medium dosage MEDIUM 260 ml/min - high dosage HIGH 480 ml/min
<p>ON </p> <p>READY </p> <p>ERROR </p>	<p>Operating lamp ON, yellow</p> <p>Lamp READY (ready for operation), green Release of steam jet lance operation</p> <p>Lamp“ ERROR, red Possible faults: Low water level Low fuel oil level</p>

3.2.7 Remote control gun

Remote control with safety extra-low voltage 24 V AC

The gun is to be operated as follows:

Function of the gun switch lever is blocked



3.2.8 Pressure switch

In case of low pressure, i.e. at lack of water, the pressure switch shuts down the burner solenoid valve without delay and thus the burner flame and anti-scale protection pump.

3.2.9 Safety valves

The safety valves protect the machine from inadmissible high pressure.

3.2.10 Temperature control

At 150°C, one of the 2 temperature controllers signals "readiness for operation" by means of the green lamp.

The second temperature controller switches off the burner at 210 °C by closing the burner solenoid valve. At drop of temperature, the burner is switched on automatically by opening the burner solenoid valve.

The integrated temperature limiter switches off the machine completely at 250 °C. This is due to a fault and its cause must be clarified and remedied by an expert.

3.2.11 Oil atomizing burner with oil-preheater

The oil pre-heater in the oil burner guarantees clean combustion and ignition at low oil temperature during cold temperatures.

3.2.12 Operating hour temperatures

The operating time of the water pump is counted.

4. Installation

4.1 Location

The machine is not restricted to any particular location. However, it must neither be installed nor operated in fire and/or explosion hazard areas. When the machine is installed in closed rooms, make sure the exhaust gas is properly disposed of and adequate ventilation conditions are provided.

5. Operation

5.1 Operating media

5.1.1 Fuel oil

Use extra light fuel oil DIN 51603. Other oils and dirty fuel oil must not be used since those may cause malfunctions and inadmissible emission rates. The filter within the fuel oil inlet must not be removed.

5.1.2 Cleaning, preserving and anti-scale protection agents



Only the cleaning, preserving and anti-scale protection agents approved by the manufacturer may be used since material compatibility can only be guaranteed in this case. Observe the instructions for the use of these agents.

5.2 Preparations for commissioning, factory settings

Compare the specifications on the machine label to the technical data of this operation manual.

Factory settings

In our factory the machine is set and tested for the values specified under section 2. Technical Data. The initial settings and tests in our factory are performed under the following conditions

Ambient temperature (air temperature): 18°C

Medium atmospheric pressure: 986 mbar (740 Torr)

Extra light EL DIN 51603

Density: 0,842 kg/l bei 15°C

Viscosity: 4,5 cSt bei 20°C

Calorific value: 42,7 MJ/kg (10200 kcal/kg)

5.2.1 Trolley, holder for steam hose and tank for cleaning and preserving agents

Mount trolley and holder, see annex.

5.2.2 Electrical supply



The machine comes with a supply cable with mains plug. Insert plug into a properly earthed socket. The electrical supply with socket must conform to the latest issue of the applicable ICE standards and must be installed by a qualified electrician. The socket must be secured with 16 A.

It is recommended to equip the electrical supply of the unit with a fault current monitor type B (AC/DC sensitive) breaking the circuit when the leakage current to the ground exceeds 30 mA for a period of 30 ms.



When using an extension cable; this cable must conform to HO7RN-F quality and have a grounded lead wire properly connected to the plug-in connections. The lead wires of the extension cable must have a minimum cross section of 1,5 mm². The plug-in connections must be splash-proof and must not be placed on wet ground.

ATTENTION!

Too long extension cables will cause a voltage drop and thus operating and start-up problems:

5.2.3 Steam hose with control cable and steam jet lance

Tightly screw-fasten the steam hose to the steam supply of the machine by means of the plug-in connection in a way that it is sealed against pressure. Connect control cable to the machine by means of the plug-in coupling. Tightly fasten the steam jet lance to the remote control gun in a way that it is sealed against pressure. The steam hose and steam lance, which are both a part of the machine equipment, are made of high-quality material, adapted to the operating conditions of the machine



In case spare parts are needed, only those parts may be used which have been approved and marked by the manufacturer. The steam hose and steam lance must not be run over, excessively tugged at or twisted.

5.2.4 Water connection

The machine must be connected to the water supply using a 1/2" hose with an inner diameter of 13 mm suitable for the supply pressure. A minimum supply corresponding to the maximum flow rate of the applicable machine type must be ensured. Flow pressure must be minimum 2 bar. Static pressure must not exceed 10 bar.

5.2.5 Fuel oil

Fill extra light fuel oil into the fuel oil tank. Close oil inlet using the proper cap.

5.2.6 Cleaning and preserving agents

Fill suitable cleaning agent into a 25 l tank. Put full tank on the bracket holder. Insert appropriate suction hose with filter as deeply as possible into the tank.

5.2.7 Anti-scale protection

Fill an anti-scale protection agent approved by the manufacturer into the appropriate tank.

5.2.8 Hood cover



The machine must not be operated without its hood cover.

Mount hood cover according to the instructions and lock in place using the 4 bolts in the head parts of the hood cover.

5.3 Winter operation

The machine must be installed in such a way that it is protected against frost, especially during operational interruptions.

5.4 Commissioning



Operating personnel must wear protective clothes, protective gloves, ear protectors and safety goggles.

- EMERGENCY - OFF - Unlock key switch.
- Set thermostat to "DRY".
- Set ON/OFF switch to 1-ON, yellow light signal appears
- Set gun selector switch to Steam without detergents
- Actuate gun lever

Machine is ready for operation when the green signal lamp is on. After long operational interruptions, when the machine is cold, the green signal appears approx. 4 minutes after having taking the machine into operation. Set steam regulator and dosage of detergents as required. Dosage of cleaning and preserving agents "HIGH" is suitable for rinsing processes.

5.5 Operational interruptions

For short interruptions, release gun lever. Set gun selector switch to 0.

5.6 Taking the machine out of operation

- Release gun lever

- Set gun selector switch to 0 .Cooling process by means of air flow starts
- After approx. 5 minutes set ON/OFF switch on the machine to 0-OFF
- EMERGENCY OFF– Lock key switch

5.6.1 De-steaming with cooling process

For short interruptions

- Release gun lever
- Set gun selector switch to 0
- Open de-steaming shut-off valve and drain the remaining steam from the machine
- Set ON-OFF switch on the machine to 0-OFF.
- EMERGENCY OFF – Lock key switch

6. Maintenance



Maintenance and repair works may only be done by qualified personnel.

6.1 Descaling

The integrated anti-scale protection system prevents limescale deposits in the steam generator and in the steam pipes. In case the anti-scale protection agent is not refilled in good time, there will be limescale deposits in the steam system if no softened water is used.



Descaling may only be carried out by experts. Only use anti-scale agents which are approved by the manufacturer. Observe the instructions for use of the descaling agent. Descaling dilution is corrosive. Protective clothes must be worn. Contact with skin must be immediately rinsed off with water. After completion of the descaling process, the descaling dilution must be properly disposed of.

Fill descaling agent into 20 l tank and dilute it with hot water as per instructions for use. Loose suction connection on water pump. Connect a descaling hose to the water pump inlet and put the other end into the tank. Put steam jet lance with gun and steam hose into the tank in a way that the descaling dilution can flow into the tank.

Fill descaling agent into 20 l tank and dilute it with hot water as per instructions for use. Unfasten suction connection on water pump. Connect a descaling hose to the water pump inlet and put the other end into the tank. Put steam jet lance with gun and steam hose into the tank in a way that the descaling dilution can flow into the tank.

Unfasten oil burner cable and remove connecting plug from the oil burner. Lead dosing hose from the anti-scale protection pump outside into a small tank

- Set steam regulator to WET
- Set ON/OFF switch to 1-ON
- Set gun selector switch to steam without detergents
- Actuate gun lever and fix position ON for the descaling process only.

The water pump pumps the descaling agent into the circuit system. The descaling process is completed as soon as the liquid does not foam any longer.

- Set ON/OFF switch to 0 – switch off water pump

Empty tank. Dispose of descaling agent according to the regulations. Fill in approx. 16 l of clear, cold water and add 0.5 l of alkaline cleaning agent. Put descaling hose and steam lance back into the tank.

- ON-/OFF switch to 1-ON and rinse the machine with the alkaline liquid for approx. 5 minutes.
- Set ON/OFF switch to 0-OFF, connect suction hose of the water tank of the machine to the water pump
- Reconnect oil burner connecting cable with plug to oil burner.
- Put dosing hose into water tank coming from the anti-scale protection pump
- Remove fixation of gun lever

For commissioning the machine, refer to section 5.4. For taking the machine out of operation, refer to section 5.6.

6.2 Cleaning of heating coil of the steam generator

In our factory the burner is adjusted so that in normal operation contamination of the heating coil is unlikely. However, under special circumstances, there is a possibility of contamination of the heating coil. Therefore a regular check of the condition of the heating coil is required every 6 months.

The cleaning of the heating coil should be performed as follows:

Remove hood, remove oil burner from mounting plate and close burner flame tube. Remove rear heating coil cover after unfastening the 3 screws. In case of serious dirt remove heating coil. Properly drain and dispose of dirty water.

Spray heating coil with an appropriate cleaning agent and remove the dissolved dirt particles by means of a water jet after a contact time of 1 minute.

With the heating coil dismantled, dry clean heating jacket inside. Use brush to remove dirt particles.

Reassemble removed parts. The ceramic sealing profile of the heating coil cover must be replaced by one of same quality and dimensions. Check the chamotte stone plate for

breakage or cracks and replace, if necessary. Replace insulating disk, if damaged. Seal opening between chamotte stone plate and guiding ring with bag in the area of the bag with the help of the ceramic sealing profile. Securely tighten the 3 fastening screws on the heating coil cover, but do not use too much force to prevent the heating coil cover from deforming.

Mount high pressure pipe and associated joints, particularly the brass connectors at the heating coil inlet and outlet in such a way that they are sealed.

6.3 Oil atomizing burner

The correct burner setting must be controlled through regular checks of its function and exhaust gas rates. If necessary, have the burner reset by an expert technician.

7. Tests

The machines must be checked by an expert in accordance with the “Guidelines for Liquid Spray Appliances (VBG87)”, but, if required, at least every 12 months to ensure that safe operation is still guaranteed. The test results have to be recorded.

8. Prevention of accidents

The machine has been designed as to exclude accidents if used properly. The “Guidelines for Liquid Spray Appliances” should be observed.

9. Safety, Quality

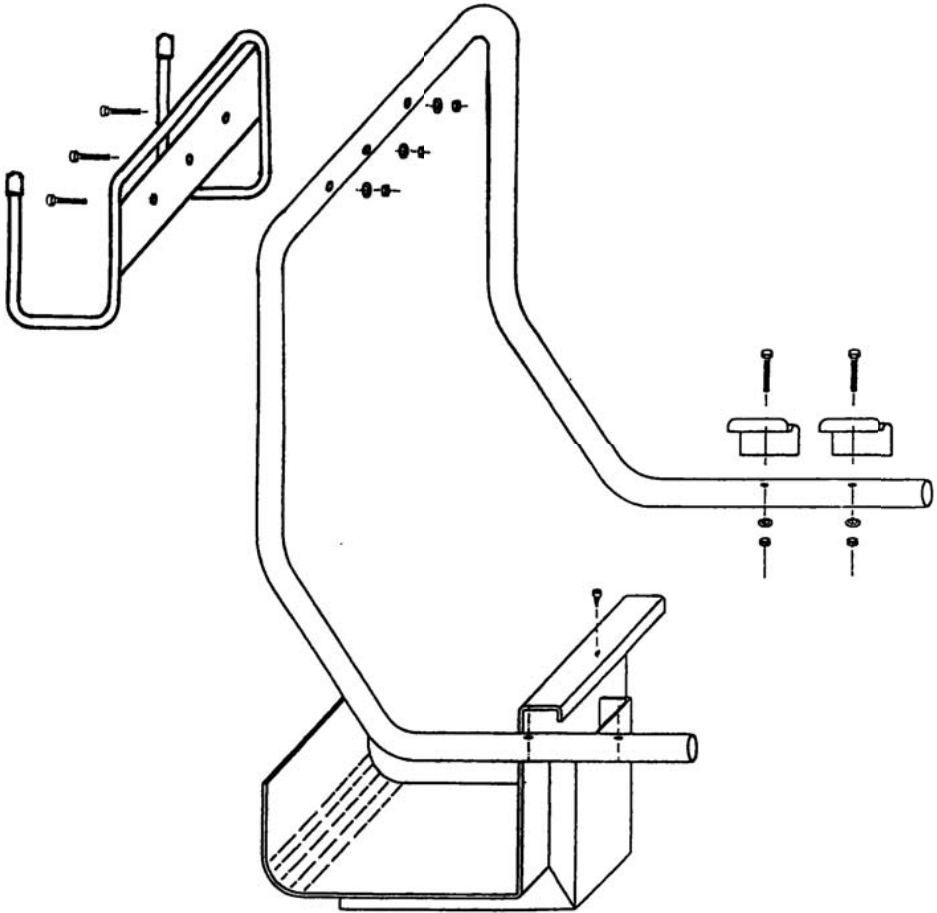
The manufacturer may only be responsible for effects on safety, reliability, and machine performance, if the machine is used in accordance with the operating instructions.

These operating instructions should be made available to the operator.

Trolley,

Holder for cleaning and Preserving tank

Holder for steam hose

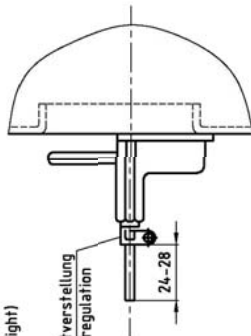
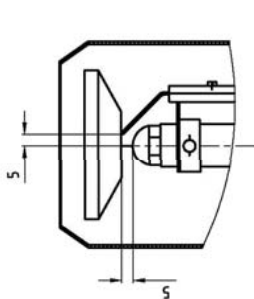
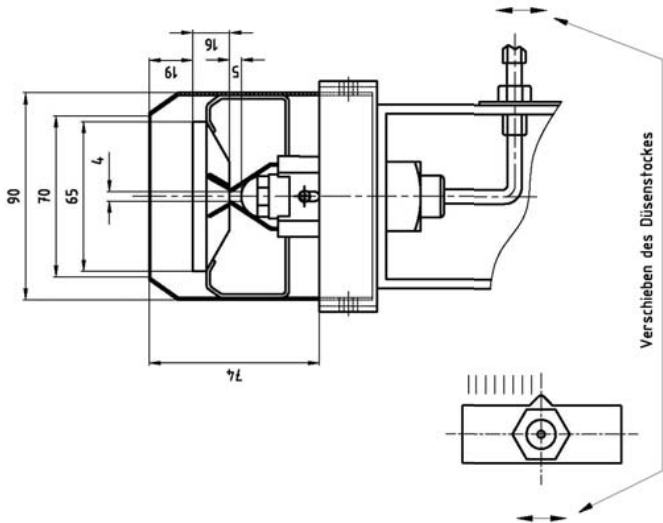


Ölbrennerdaten

Ölzerstäubungsbrenner LB03-H
 in Kombination mit dem
 Wasserdurchlauferhitzer (Heizschlange) 07
 Technische Daten:
 Brenner-Nennwärmeleistung 80kW (68800 kcal/h)
 Brennstoffverbrauch 7,5 kg/h (9,0 l/h) Heizöl EL
 Abgastemperatur 205 °C
 Abgasverlust 10,5 %
 Rußzahl 0-1
 Abgasmassenstrom 185,6 kg/h
 Abgasvolumenstrom (205 °C) 252 m³/h

Oil atomizing burner LB03-H

In combination with the water heater (heating coil) 07
 Technical data:
 Burner nominal heat capacity 80 kW (68800 kcal/h)
 Fuel consumption 7,5 kg/h (9 l/h) fuel oil EL (extra light)
 Flue gas temperature 205 °C
 Flue gas loss 10,5 %
 Smoke number 0-1
 Flue gas mass flow rate 185,6 kg/h
 Flue gas volume flow rate (205 °C) 252 m³/h



Ölbrenner / oil burner - Type LB03-H

Ölbrennerdüse oil burner nozzle	Öldruck oil-pressure	Luftverstellung air regulation
Delavan 2.00/45° B	8-10 bar	24-28 mm

gez: Artan Gojani, 16.03.10

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