Registry of Ex Military Land Rovers

7610-66-130-3056

HAAS SOHN

Reliable Technology

OPERATION-, SERVICE- AND MAINTENANCE INSTRUCTIONS

PRESSURIZED VAPOURIZING BURNER TYPE V 75.1

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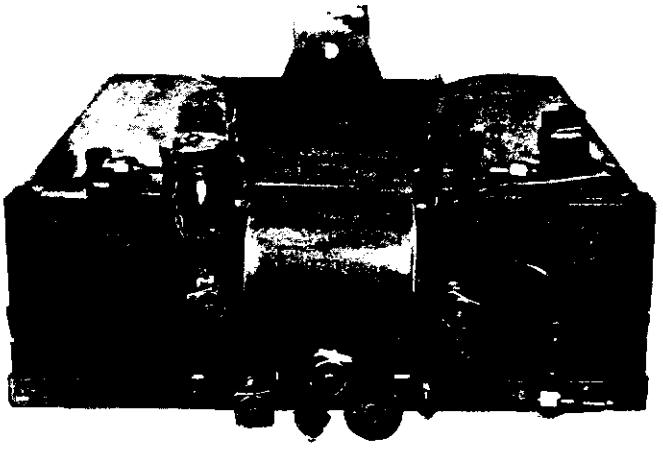
1. DESCRIPTION

1.1 GENERAL VIEW



Picture 1: Burner complete

1.2 GENERAL INFORMATION

1.2.1 EMPLOYMENT

The pressurized vapourizing burner, type V 75.1 is operational without electrical energy and complies with all requirements for field employment.

It operates on a multitude of military type liquid fuels such as:

- Diesel fuel	NATO Code F 54 and F 75
- Fuel oil, extra light EL	NATO Code F 82
- Petroleum	NATO Code F 58
- Otto fuel (Gasoline)	NATO Code F 46 and F 50

The burner is a self sustained system, and can be inserted and operated in any burner compartment, below the boiling pans, griddle plates, baking oven and deep fat fryer.

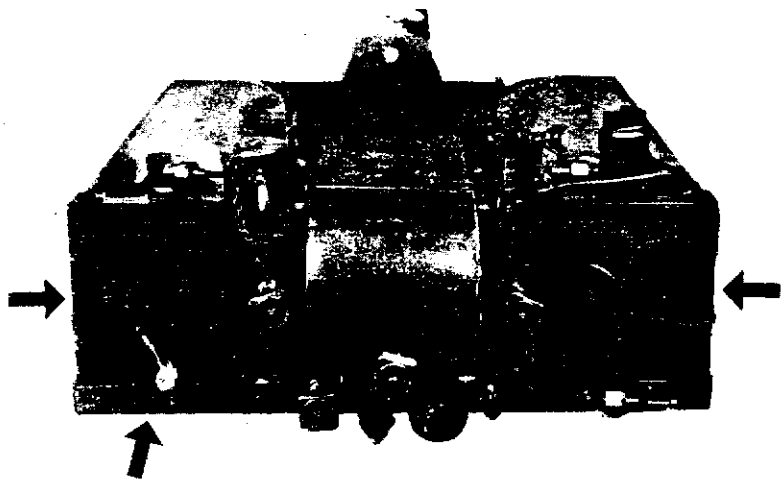
The fire adjustment capability makes the burner adaptable to all kind of operations.

For fast cooking in boiling pans ir fast frying in baking- and frying equipment, the burner shall operated at full heatoutput.

Since the heatoutput can be fine-regulated from maximum to minimum output, continuos cooking, baking or frying, is possible, as well as keeping food warm.

1.2 GENERAL INFORMATION

1.2.2 INSTRUCTION- AND TYPE LABLES



Picture 2: Instruction- and type lables

1.3 TECHNICAL DATA

OVERALL DIMENSIONS:

Width	approx.	480 mm
Length	approx.	740 mm
Height	approx.	240 mm

TANK CAPACITY:

Fuel tank	approx.	6,5 Ltr.

OPERATIONAL PRESSURE:

	1,2 bar (Overpressure)
Initial pressure	2,5 bar (Overpressure)

HEATOUTPUT:

	max.	24,4 kW (21.000 Kcal/h)

FUEL CONSUMPTION:

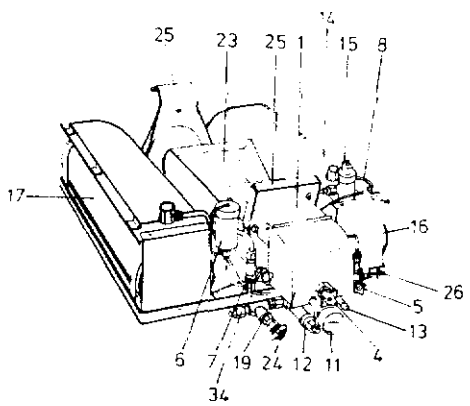
at maximum heatoutput	2,4 Ltr./h	Dieselfuel
	2,5 Ltr./h	Kerosine/Petroleum
	2,7 Ltr./h	Gasoline

WEIGHT:

Tank empty	approx.	21,5 kg
Tank filled	approx.	27,0 kg

1.4 TECHNICAL DESCRIPTION

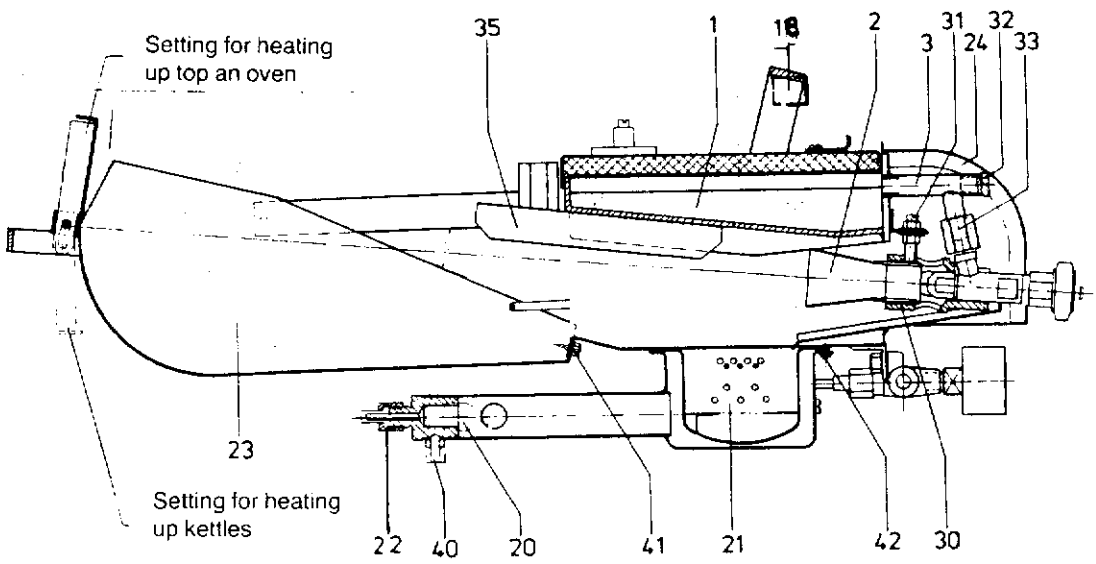
1.4.1 BURNER COMPONENTS



Picture 3: View of the burner

1.4 TECHNICAL DESCRIPTION

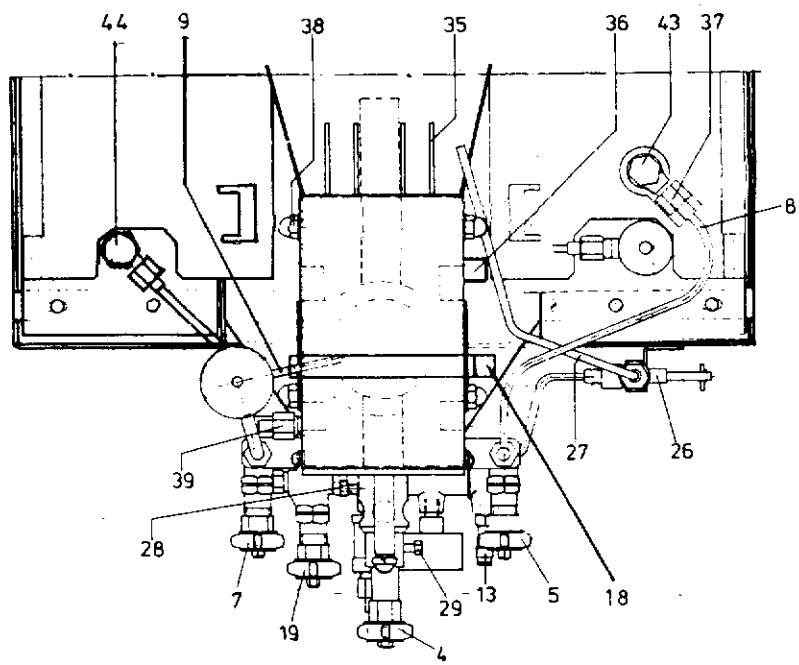
1.4.1 BURNER COMPONENTS



Picture 4: Side-view of burner

1.4 TECHNICAL DESCRIPTION

1.4.1 BURNER COMPONENTS



Picture 5: Top view of burner

1.4 TECHNICAL DESCRIPTION

1.4.1 BURNER COMPONENTS

Descriptions to pictures 3 - 5, 11 - 12.

1. Evaporator
2. Mixing- resp. flame pipe
3. Hot fuel vapour pipe
4. Flame control valve
5. Fuel valve
6. Metering vessel
7. Filling valve for metering vessel
8. Fuel pipe assy
9. Blow-off pipe assy (for pos. 12)
10. Pipe assy for fuel from metering vessel to pre-heating burner
11. Pressure gauge
12. Safety valve for tanks
13. Air inlet valve
14. Pipe assy for air from distributor to fuel tank
15. Fuel tank filler cap
16. Fuel tank
17. Air tank
18. Burner height arresting (when inserted in burner compartment)
19. Air valve (pressurized air to air nozzle)
20. Air nozzle for pre-heating burner
21. Pre-heating burner
22. Holder for nozzle (pos. 20)
23. Flame guide sheet
24. Tiltable hood
25. Carrying handles
26. Evaporator - discharge valve with overpressure - safety valve (for evaporator)
27. Blow-off pipe for overpressure-safety valve (evaporator)
28. Arresting screw for mixing- resp. flame pipe
29. Arresting screw for flame control valve
30. Injector piece with holder for mixing - resp. flame pipe
31. Arresting screws (for pos. 30)
32. Locking plug
33. Union nut (on hot fuel vapour pipe) for fastening of flame control valve
34. Union nut of pipe assy on air valve
35. Evaporator - heating ripps
36. Holder for lighting match
37. Union nut of fuel pipe assy (with fuel metering nozzle) on fuel discharge valve
38. Fastening nuts for evaporator
39. Union nut of fuel pipe assy (to evaporator)
40 Fastening nut for nozzle holder
41. Fastening nuts for flame guide sheets
42. Fastening nuts for pre-heating burner
43. Fuel-discharge valve
44. Air-discharge elbow

1.4 TECHNICAL DESCRIPTION

1.4.2 GENERAL DESCRIPTION OF THE BURNER, TYPE V 75.1

The burner consists of the following component groups:

- Tank for pressurized air (picture 3, pos. 17)
- Tank for fuel (picture 3, pos. 16)
- Evaporator (picture 4, pos. 1)
- Combustion cahmber with flame guide sheets (picture 3, pos. 23)
- Pre-heating burner ((picture 4, pos. 21)
- Pipe assies and valves

The burner is operation on liquid fuels:

- Diesel fuel NATO Code F 54 and F 75
- Fuel-oil, extra light EL NATO Code F 82
- Petroleum (Kerosine) NATO Code F 58
- Otto-fuel (Gasoline) NATO Code F 46 and F 50
- Special Diesel fuel NATO Code DISO 47

For usage of other fuel mistures, not listed above, contact factory.

The required pressurized air can be supplied by using the foot-operated air pump, or from the tube filling system of the towing vehicle.

1.4.3.1 EVAPORATOR

The evaporator (picture 4, pos. 1) is located above the pre-heating burner. It is a hollow body, with a slanted bottom, onto which special heating ripps are welded (picture 4, pos. 35), allowing a better heat transfer.

The evaporator is made of high-heatresisting stainless steel.

the fuel-inlet is welded to the left side of the forward section.

The pipe for hot fuel vapour (picture 4, pos. 3) is welded to the front section.
Mountd to the front of the hot fuel vapour pipe, is a locking plug. For direct connection of the flame-valve, a ball-type nipple with union nut (picture 4, pos. 33) is located on the lower pipe.

The evaporator is fastened to the combustion chamber, 4 threaded bolts with hup cpas are provided.

The evaporator is heated up to the required temperature by the flame of the pre-heating burner. Once the main flame is ignited, the evaporating temperature is provided by this flame.

1.4.3.2 FUEL TANK

The fuel tank is amde of corrosion-resistance chrome-nickel steel. It is fastened to the basic frame by the tank protection sheet.

Welded and located on the forward top section, is the fuel tank filling muff, the connector for the air pipe, as well as the fuel discharge valve.

The fuel tank filling muff is air-tight closed by the fuel-tank filler cap (picture 3, pos. 15).

Pressurized air from the air tank is applied to the surface of the fuel content within the fuel tank, thus the fuel is flows through the ascending pipe of the fuel outlet valve.

1.4.3.3. AIR TANK

The air tank is made of corrosion-resistant chrome-nickel-steel. It is fastened to the basic frame by the tank protection sheet.

Welded to the forward top section is the connection piece for the air-outlet elbow.

1.4.3.4 FUEL OUTLET VALVE

The fuel outlet valve (picture 5, pos. 43) is screwed into the fuel tank.

The valve operates automatically. A blocking piece within the valve prevents fuel from running out, in case of a pipe fracture.

A fine mashed dirt filter is located at the lower end of the ascending pipe.

The fuel pipe (picture 3, pos. 8) with integrated fuel metering nozzle (picture 5, pos. 37) is connected to the cap nut side connection.

1.4.3.5 FLAME CONTROL VALVE

By turning the valve handle, the conical tip of the valve spindle is moved back and forth within the control valve nozzle bore.

Depending of the position of the tip, a larger or smaller opening exists, thus controlling the amount of hot fuel vapour to flow, and therefore controlling the flame size.

Turning the handle counterclockwise, the flame is larger.

The nozzle can be dismounted for cleaning.
The valve spindle is held in position by stuffing box bushings and a teflon special bushing. It is tightened by the union nut.

The flame control valve is connected by the ball-type nipple and union nut of the hot fuel vapour pipe. It is secured in the holder of the injector piece by the arresting srew (picture 4, pos. 29).

CAUTION: Do not close the flame control valve for cutting down burner operation. This can result in damaging the control valve spindle tip, because during cooling down of the burner, the tip can be locked in position.

1.4.3.6 FUEL VALVE

During pre-heating operation, the fuel valve (picture 3, pos.5) remains closed.

For opening the valve, turn handle counterclockwise. The spindle is moved and fuel can pass through the pipe assy to the evaporator.

For shutting-off the burner flame, turn valve handle clockwise, fuel flow is interrupted.

The valve spindle is held in position by stuffin box bushings and a conical pakcing, tighten by a union nut.

The fuel pipe assy (picture 3, pos. 8) and pipe assy to the evaporator (picture 3, pos. 39) are connected with union nuts to the fuel valve.

1.4.3.7 FILLING VALVE FOR METERING VESSEL

The valve is opened by turning the handle counter-clockwise. Fuel runs into the metering vessel.

The valve is connected to the metering vessel pipe by a union nut and conical packing.

Valve spindle packings are identical to those in pos. **1.4.3.6.**

1.4.3.8 AIR INLET VALVE

The valve (picture 3, pos. 13) consists of the valve housing and valve insert.

It closes automatically by a spring.

When attaching the end-piece of the air hose from the foot-operated airpump or from vehicle tire filling system, the valve opens and the air tank is filled according to instructions.

For releasing overpressure, press-in the valve pin with the tip of the air valve cap or screw-dirver. Air can escape through the valve.

CAUTION: During air discharge, make sure, no cigarettes or open fire is near the valve. Fuel particles can be mixed with the escaping air, which can ignite.

For protection against dust or dirt, screw cap onto air valve.

If insert is not air-tight, it can be tightened, using the rear side of the cap. Respectively, insert can be un-screwed and replaced.

1.4.3.9 PRE-HEATING BURNER

The pre-heating burner (picture 4, pos. 21) is a cup-shaped burner.

The inner burner cup has in its upper section a numer of small holes, allowing supply of sufficient combustion air.

Connected to the outer shell is a pipe onto which the nozzle holder (picture 4, pos. 22) with airnozzle is inserted, secured by a screw (picture 4, pos. 40).

Near the air nozzle, 4 holes are provided in the pipe. Air from the air tank is supplied to the air nozzle. The air-stream, escaping from the nozzle, sucks additional combustion air through these holes (injector principle).
The combustion air is inserted to the burner cup through the small holes.

The fuel in the burner cup (supplied from the metering vessel) is ignited by using the burning lighting match.
The hot flame heates up the above located evaporator.

Various fuels require a different vapourizing temperature, therefore the pre-heating time differs.

NOTE: To ensure a perfect ignition of the main burner, the flame in the pre-heating burner must be still burning, when putting the main burner into operation.

1.4.3.10 EVAPORATOR DIS-CHARGE VALVE AND OVERPRESSURE SAFETY VALVE

Once the evaporator has cooled down, a small amount of fuel remains in the evaporator.

When re-igniting rhe burner, this fuel is not 6or only partially) vapourized. then passing through the flame valve it can cause uncontrollable combustion.
Therefore, the evaporator must be fully drained. For draining, turn locking srew ith wing hanlde of evaporator dis-charge valve (picture 5, pos. 26) counter-clockwise. Open flame control valve (picture 5, pos. 4) by 5 half turns.

NOTE: Drained fuel shall be collected in a tin. Depending whether it is clean, it can be filled into the metering vessel.

NOTE: In case the evaporator is filled with fuel because of wrong operation, or insufficient pre-heating, it can be discharged by the evaporator dis-charge valve.

to 1.4.3.10:

The **overpressure safety valve** protects the evaporator from excessive overpressure, caused by uncorrect operation.
The safety valve incorporates a spring, pre-set to an overpressure of 5.6 bar.

If the pressure is exceeding this valve, the valve opens automatically, releasing the pressure via the blow-off pipe (picture 5, pos. 27) into the combustion chamber. This hot fuel evaporator is than burned in the combustion chamber.

1.4.3.11 METERING VESSEL

The metering vessel (picture 3, pos. 6) is to be filled with the correct amount of fuel (depending on fuel type), used for pre-heating operation.

When turning the locking screw with wing handle counterclockwise, the fuel flows via the pipe (picture 5, pos. 9) into the burner cup of the pre-heating burner.

For protection against dust and dirt, place lid onto metering vessel.

1.4.3.12 INJECTOR PIECE WITH MIXING- AND FLAME PIPE

Fuel vapour is passing through the nozzle of the fuel valve at a high velocity. It sucks the required combustion air through holes, located in the injector piece (picture 4, pos. 30).

The fuel vapour and combustion air is mixed within the mixing- and flame pipe.

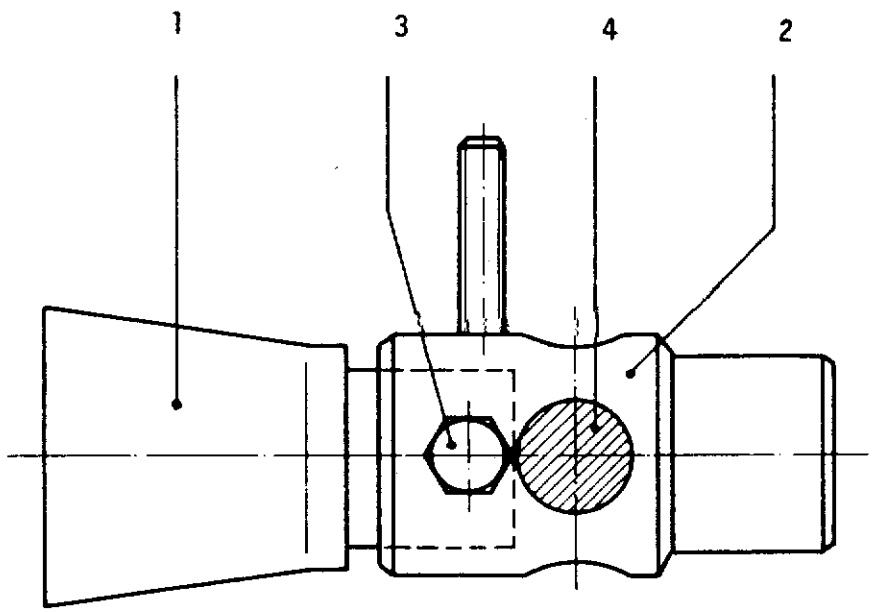
The mixture is ignited by the flame of the pre-heating burner. From now on, the main flame burns continuously (without the flame of the pre-heating burner).
The evaporator is heated by the main flame.

To heat the evaporator sufficiently, the mixing- and flame pipe is tilted slightly upwards.

The angle is checkted with the adjustment gauge (with the short mixing pipe inserted), and can be adjusted with the hexagon nuts (picture 4, pos. 31).

Depending on the type of fuel used, the respective mixing- and flame pipe must be inserted, as shown in pictures 6 - 8.

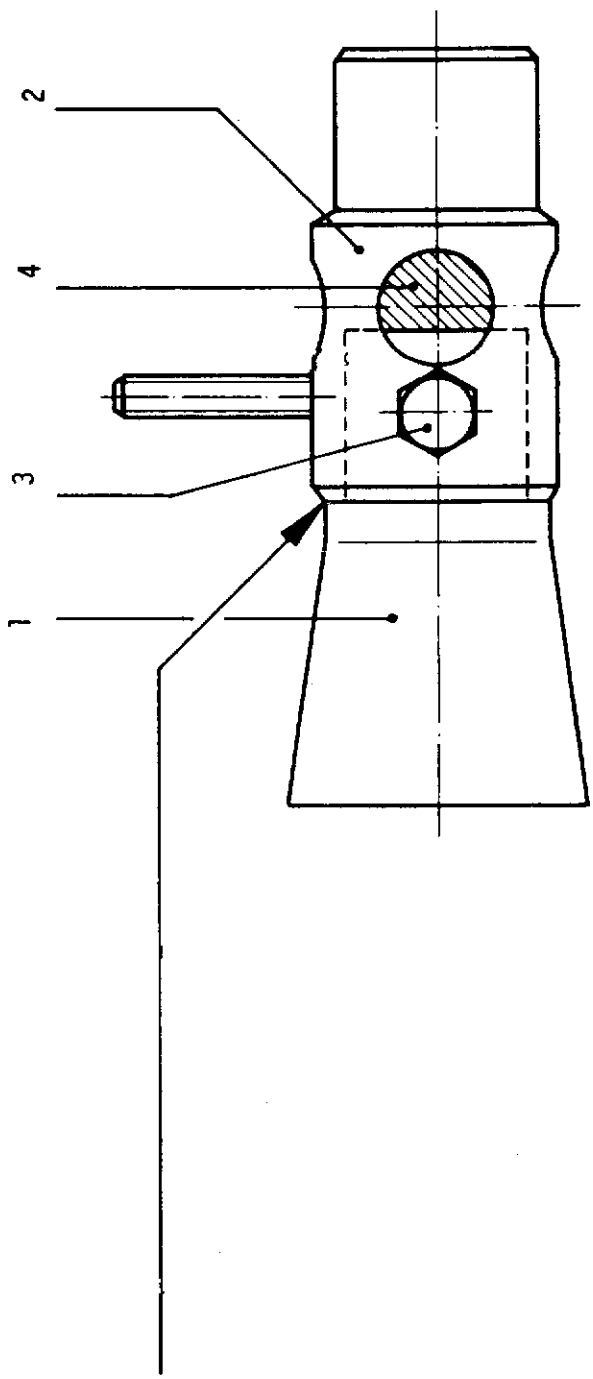
1.4.3.12 INJECTOR PIECE FOR MIXING- AND FLAME PIPE



Picture 6: Installation of mixing pipe for usage of Diesel fuel or Fuel oil EL

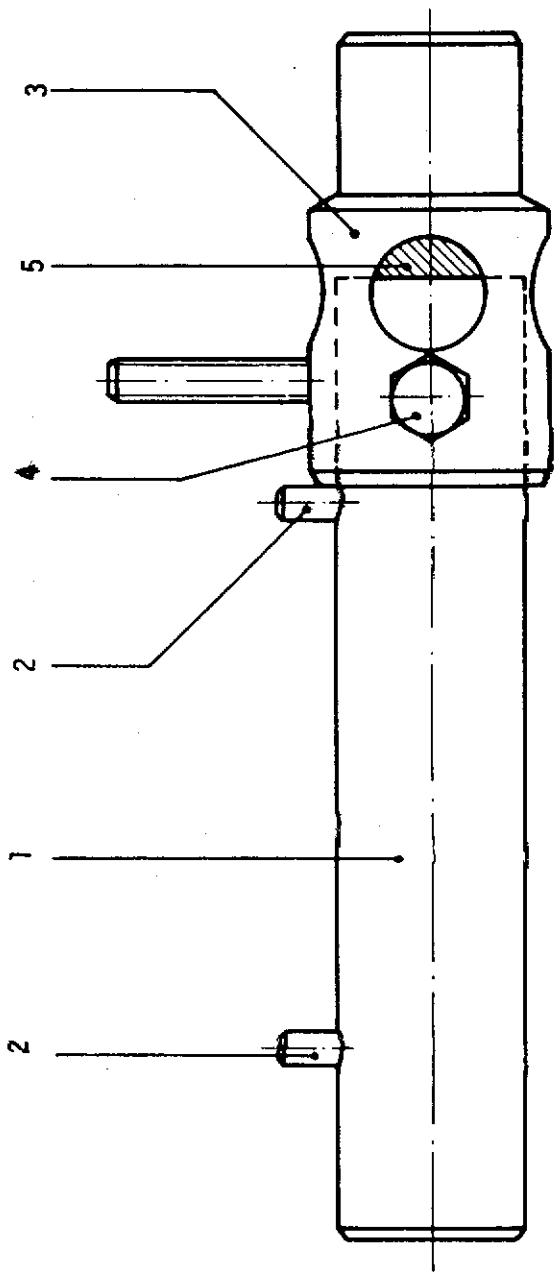
NOTE: When inserting the mixing- and flame pipe, that openings for combustion air are adjusted correctly as shown on the picture.

1.4.3.12 INJECTOR PIECE FOR MIXING- AND FLAME PIPE



Picture 7: Installation of mixing pipe for usage of Petroleum (Kerosine)

1.4.3.12 INJECTOR PIECE FOR MIXING- AND FLAME PIPE



Picture 8: Installation of mixing pipe for usage of Ottofuel (Gasoline)

1.4.13 PRESSURE GAUGE (MANOMETER)

The pressure gauge (picture 3, pos. 11) is mounted to the distributor.

The reading shows the respective overpressure and is set to bar (Kg/cm^2) overpressure.

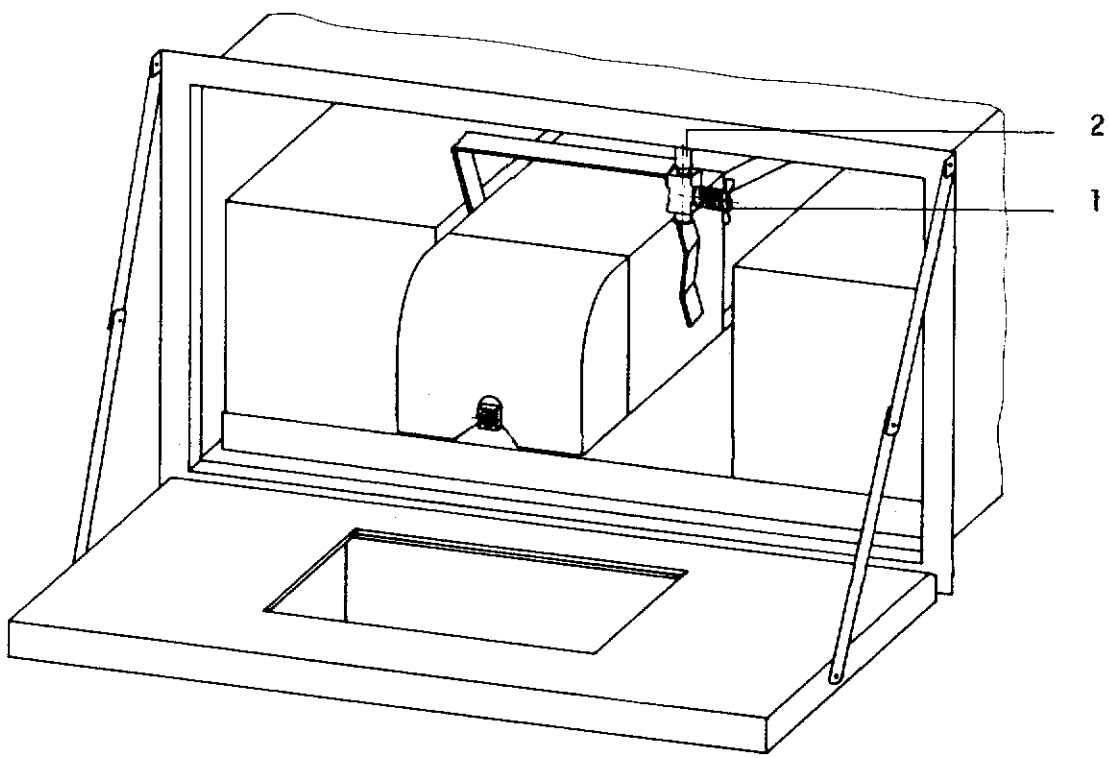
1.4.3.14 SAFETY VALVE FOR TANKS

The safety valve (picture 3, pos. 12) prevents excessive overpressure during pumping up, or heating up of the tanks. It is adjusted to an blow-off pressure of 3,2 bar (Kg/cm^2).

1.4.15 VERTICAL BURNER ARRESTING

During transport of the kitchen, the burner is arrested in the burner compartment by a vertical burner arresting (picture 4, pos. 18).

Insert burner into burner compartment, loosen butterfly-screw (picture 9, pos. 1), push arresting bolt (picture 9, pos. 2) fully upwards, up to upper burning compartment frame. Re-tighten butterfly screws.

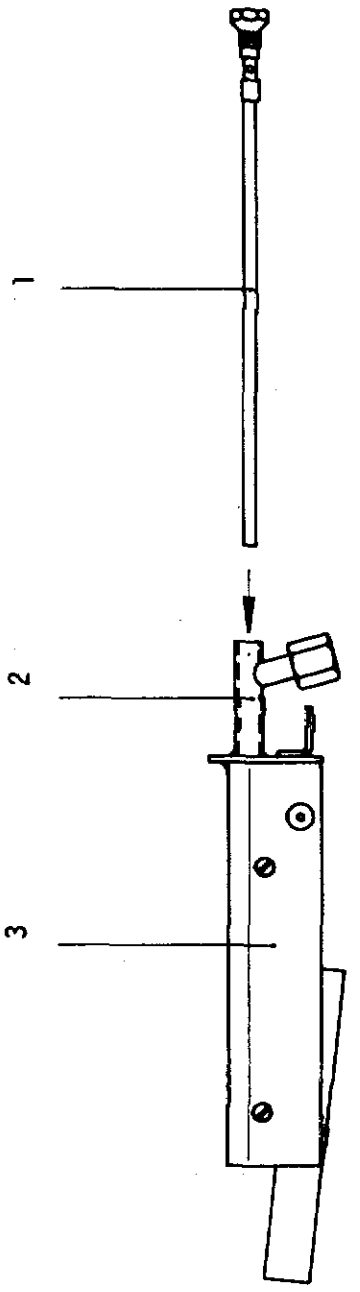


Picture 9: Vertical burner arresting

1.4.3.16 ADDITIONAL PARTS FOR OPERATION WITH SPECIAL DIESEL FUEL - DISO 47 -

This fuel contains an additive of heavy oil, causing an unsatisfactory evaporization.

To achieve a satisfactory evaporization, a special pipe (picture 10) is to be inserted into the hot fuel vapour pipe of the evaporator.



Picture 10

1.4 TECHNICAL DESCRIPTION

1.4.4 OPERATION OF THE PRESSURIZED VAPOURIZING BURNER

In order to obtain perfect combustion, the respective liquid fuel must be heated up according to its evaporation index number to 200° - 400° Celsius.

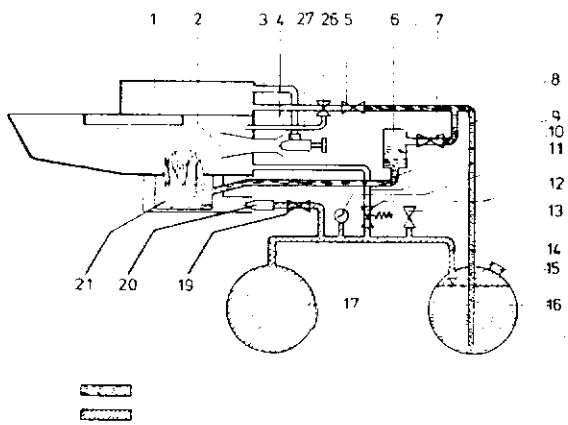
Thereby the fuel is evaporated, forming vapour.

In order to obtain the required temperature, the evaporator must be pre-heated.

Putting the burner into operation is done in two stages:

- stage 1: PRE-HEATING
- stage 2: IN OPERATION

1.4.4.1 STAGE 1: PRE-HEATING



Picture 11: Operation - Pre-heating, stage 1

Prior to pre-heating, the fuel tank (picture 11, pos. 16) must be filled. The air tank (picture 11, pos. 17) must be pumped-up to the required pre-heating pressure.

Turn handle of the flame control valve by 5 half turns counter-clockwise, thus opening the valve.

The pressurized air from the air tank is transported via the distributor and pipe assy (picture 11, pos. 44) to the fuel tank, thus applying pressure to the surface of the fuel within the fuel tank.

The fuel is transported from the fuel tank via the ascending ipe (of the fuel outlet valve) and the fuel pipe (picture 11, pos. 8) to the metering vessel filling valve (picture 11, pos. 7).

1.4.4 OPERATION OF THE PRESSURIZED VAPOURIZING BURNER

to 1.4.4.1

When opening the filling valve, the metering vessel (picture 11, pos. 6) is filled with fuel, required for pre-heating operation.

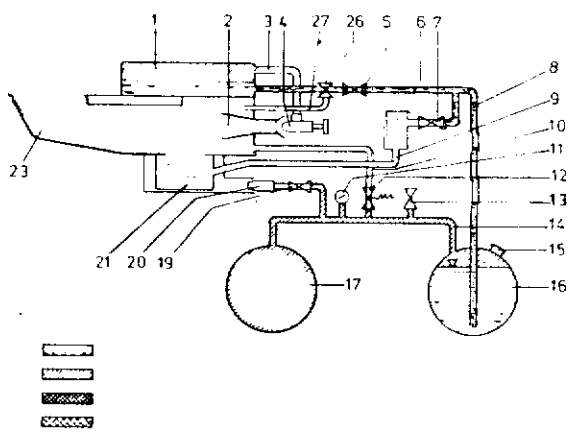
When opening the locking screw of the metering vessel, the fuel runs into the cup-shaped burner of the pre-heating burner assy (picture 11, pos. 21). The fuel is ignited by a lighting match.

Via the air valve (picture 11, pos. 19), pressurized air from the air tank (picture 11, pos. 17) is transported through the pipe assy to the air nozzle (picture 11, pos. 20) and extended pipe to the pre-heating burner.

The airjet has a kind of injector effect, drawing-in approximately half of the required combustion air through holes, provided in the extended pipe. This air is applied to the flame in the pre-heating burner (picture 11, pos. 21).

Thereby, the pre-heating fuel burns nearly without soot. The hot flame heats the empty, above located evaporator (picture 11, pos. 1), to a temperature required and within a time periode, specified according to the type of fuel used.

1.4.4.2 STAGE 2: IN OPERATION



Picture 12: Stage 2: IN OPERATION

For putting the main burner into operation, the flame of the pre-heating burner is still burning.

The pressurized air from the air tank is transported via the distributor and pipe assy (picture 12, pos. 14) to the fuel tank, applying pressure to the surface of the fuel within the fuel tank.

1.4 TECHNICAL OPERATION

1.4.4 OPERATION OF THE PRESSURIZED VAPOURIZING BURNER

to 1.4.4.2

The fuel is thus transported from the fuel tank via the ascending pipe of the fuel outlet valve through the fuel pipe (picture 12, pos. 8) to the fuel valve (picture 12, pos. 5).

When opening the fuel valve, liquid fuel is flowing into the heated-up evaporator (picture 12, pos. 1) and is evaporated.

The hot fuel vapour discharges through the hot vapour pipe (picture 12, pos. 3) into the flame control valve (picture 12, pos. 4). It is passing throught the nozzle at a high velocity into the injector (picture 4, pos. 30), succing in abouth half of the required combustion air (primary air) through the holes.

The hot fuel vapour and the combustion air is mixed within the mixing- and flame pipe (picture 12, pos. 2), and exits as an ignitable mixture.

This mixture is ignited by the flame of the pre-heating burner.

The flame is burning along the flame guide sheets of the main burner, taking the remaining required combustion air (secondary air) from the surrounding air.

After the pre-heating burner flame has died-out, the main flame is directly heating the heating ripps. and the forward section of the evaporator bottom, thus maintaining the required evaporation temperature.

Close the air valve (picture 12, pos. 19) shortly after the flame of the main burner has ignited.

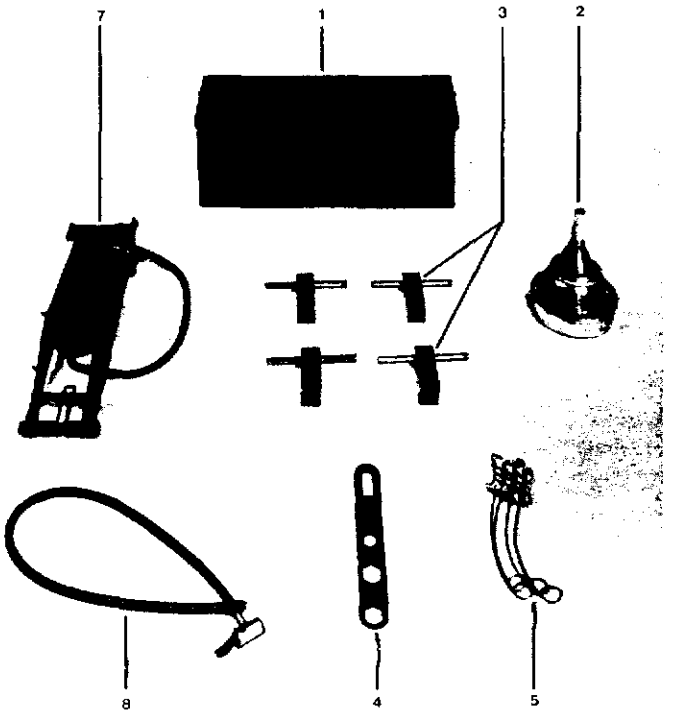
By adjusting the flame control valve, the size of the flame, respective the heatoutput of the burner is controlled according to requirements.

The airpressure (operational pressure) is required, to supply fuel from the fuel tank to the evaporator.

With decreasing fuel contents during operation, the airpressure is decreasing as well. This decrease in airpressure is partially compensated by an increasing temperature of the fuel- and air tank. If the airpressure is too low, air must again be supplied to the airtank, using the foot operated air pump.

1.5 EQUIPMENT

1.5.1 OPERATION ACCESSORIES AND SPARE PARTS

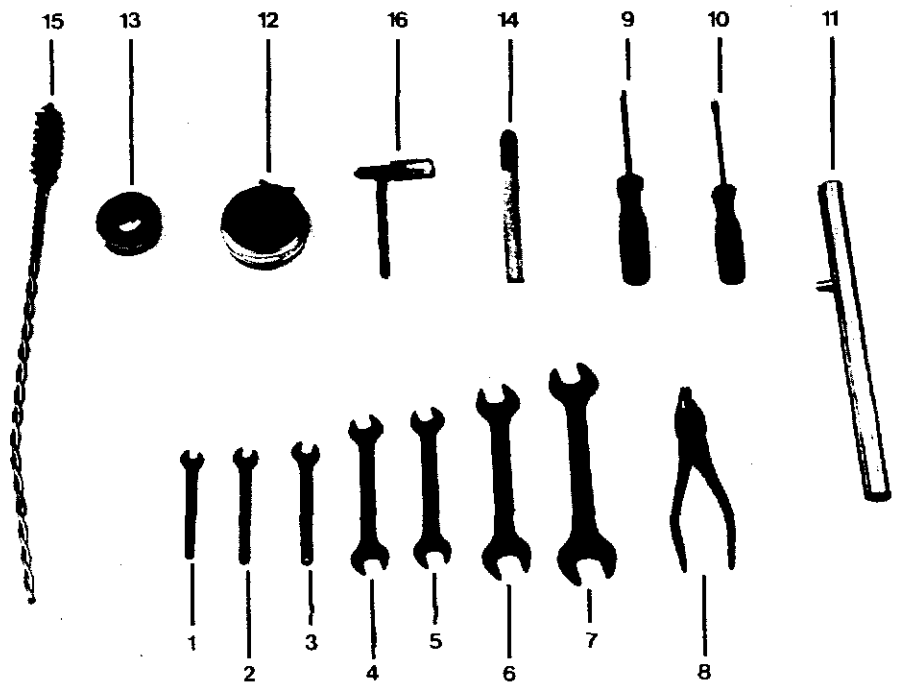


Picture 13: Operation accessories and spare parts

1	Storage box	1 piece
2	Filling funnel with strainer	1 piece
3	Insulated handle for valve adjustment	4 pieces
4	Universal spanner	4 pieces
5	Lighting matches	4 pieces
6	Spare wicks for lighting match	1 piece
7	Foot operated air pump	1 piece
8	Hose for air pump	1 piece

1.5 EQUIPMENT

1.5.2 TOOLS AND MAINTENANCE ACCESSORIES



Picture 14: Tools and maintenance accessories

1	Single-end spanner SW 8	1 piece
2	Single-end spanner SW 9	1 piece
3	Single-end spanner SW 10	1 piece
4	Double-ned spanner SW 13 x 14	1 piece
5	Double-end spanner SW 15 x 16	1 piece
6	Double-end spanner SW 17 x 19	1 piece
7	Double-end spanner SW 19 x 22	1 piece
8	Combi-pliers	1 piece
9	Srew dirver, for slotted screw heads	1 piece
10	Screw driver, Phillips	1 piece
11	Adjustment tool for mixing pipe	1 piece
12	Box with small parts	1 piece
13	Box with heatresistant sealing tape	1 piece
14	Small wire brush	1 piece
15	Cleaning brush for evaporator	1 piece
16	Pipe cleaner with reamer	1 piece

2. OPERATION AND MAINTENANCE

2.1 OPERATION INSTRUCTIONS

2.1.1 SAFETY INFORMATION

(1) Only well trained persons which are perfectly aquainted with this burner, may operate it.

(2) All parts of the burner must be undamaged, and in good working order.

(3) Do not open fuel tank cap when falme is still burning, or when burner is still hot.

(4) Refill fuel tank only, when burner has cooled down (luke-warm).

(5) Take special precautions when using Otto fuel (Gasoline).
Never refilling with gasoline near an open flame.
Do not smoke.

(6) Constantly monitor burner operation.

(7) In case of malfunctions of which the cause is not immediately evident, closed fuel valve (pictures 3 and 5, pos. 5) immediately and shutt-off burner operation.

(8) In case fuel or fuel vapour, escaping from a leak, is catching fire, close fuel valve immediately and die out flames.
Always keep a fire extinguisher near the burner.

(9) Use only provided tools when operating or maintaining connections and valves.

(10) In order to avoid injuries to your health, operate burner in closed rooms or tents only if there is sufficient aeration and sufficient evacuation of the combustion gasses is assured.

2.1.2 INSPECTION AND MAINTENANCE PRIOR TO FIRST OPERATION

Once unpacked, check whether burner is complete and inspect thoroughly for visible damages.

Tanks shall not have any dents or fractures, pipe assies shall not be bended and shall not show any cracks, all connections must be tight.

2. OPERATION INSTRUCTIONS

2.1.3 PUTTING THE BURNER INTO OPERATION

2.1.3.1 GENERAL INFORMATION

C A U T I O N !

(1) Do not refill fuel tank with fuel when flame is still burning or when burner is still hot.

Spilled fuel can ignite on flame or on hot burner parts, resulting in a possible explosion.

(2) Always keep a fire extinguisher on hand.

(3) Do not tilt burner backwards (front section showing upwards) with filled fuel tank (picture 15).

This can result in fuel running from the fuel tank via the pipes and distributor to the air tank, thus resulting in burner malfunction.

2.1.3.2 PUTTING INTO OPERATION A BURNER UNIT THAT HAD BEEN FLOODED

Flooding of the burner can occure, when driving with the kitchen (with inserted burners) through a pond or river.

(1) Drain water from burner, prior to burner operation.

(2) For doing so, tilt burner backwards (front of burner showing upwards) (picture 15), *thus* allowing the water to flow out from the flame guide sheets and *burner* cup of the pre-heating burner.

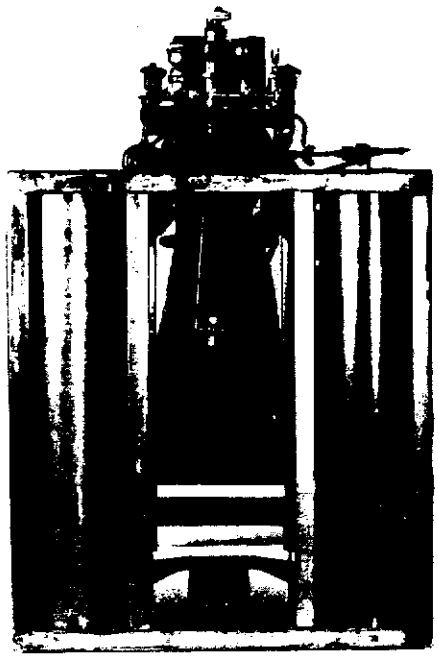
(3) Place burner in horizontal position, connect air pump hose to air-inlet valve (picture 3, pos. 13) and pump up to a pressure indication of approx. 1 bar (Kg/cm^2).

(4) Turn air valve (picture 3, pos. 3) two turns counter-clockwise, thus blowing out dirt and/or water from air nozzle (picture 4, pos. 20)

(5) In case, mud has settled in the burner cup of the pre-heating burner, it must be dis-assembled and thoroughly cleaned.
Refer to section 2.2.2.2.

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.2



Picture 15: Burner in tilted position

2.1.3.3 PREPARATION FOR OPERATION

(1) Inspect, whether correct mixing- and flame pipe (with regard to used fuel) has been installed, and whether adjustment of combustion air openings on injector piece has been made.

For installation of mixing- and flame pipe, depending on fuel type, refer to pictures 6 - 8, section 1.4.3.12.

INTRUCTIONS FOR INSTALLATION:

a) The short mixing pipe is used with Diesel fuel (F 54/F 75) and Fuel oil EL (F 82).

Combustion air openings on injector piece must be fully open, as shown on picture 6.

b) For usage of Petroleum (F57) and kerosine, use the short mixing pipe. Install as shown in picture 7. Insert in such a way, that combustion air openings on injector piece are 3/4 open.

c) Using Otto fuel (Gasoline F 46/F 50), the long flame pipe (picture 8) must be inserted. Push in fully, combustion air openings are 1/4 open.

For installation of the mixing- and flame pipe, respective for adjustment of combustion air opening, undo fastening screw (picture 5, pos. 28).

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.3

(2) When using special Diesel fuel DISO 47, install mixing pipe as described in section 1 a.

In addition, the pipe insert with locking plug (picture 10) must be inserted into the hot vapour pipe (picture 4, pos. 3).

For doing so, unscrew locking plug (picture 4, pos. 32) from hot vapour pipe.

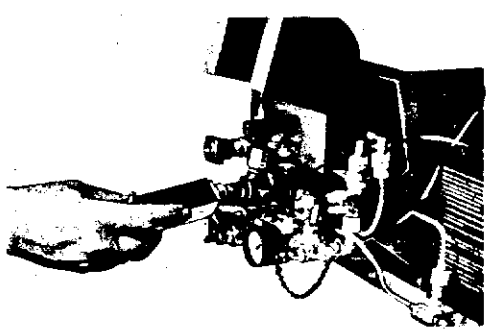
(3) A hinged flame deflection plate (picture 4, pos. 23) is mounted to the flame guide sheet.
It can be tilted upwards for flame deflection.
See picture 4.

2.1.3.4 PREPARATION FOR OPERATION

(1) Open flame control valve (picture 16) by 5 half anti-clockwise rotations by means of the valve key.

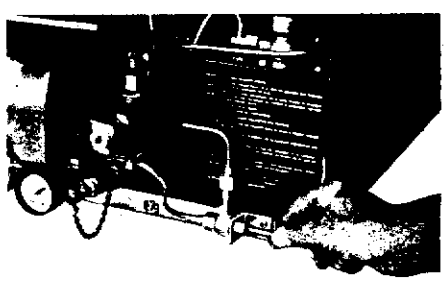
(2) Open evaporator discharge valve (picture 17) by 3 half anti-clockwise rotations, for draining all remaining fuel from evaporator. Collect drained fuel in a vessel.

After discharge, turn valve clockwise until fully closed.



Picture 16

Operation of the flame control valve



Picture 17

Operation of the evaporator discharge valve

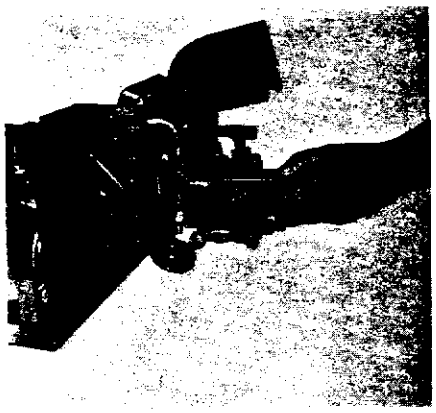
to 2.1.3.4

(3) Make sure, all closing valves (see note) are closed. If not, use valve key and turn clockwise.
Now, open flame control valve by 5 half anti-clockwise turns (picture 16).

NOTE: The following closing valves shall be closed, using the valve key. Do not use extreme force when closing valves.

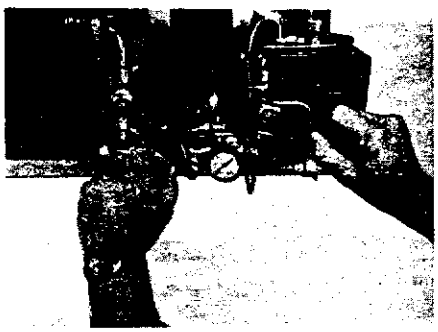
- Fuel valve (picture 25)
- Filling valve, for metering vessel (picture 18)
- Air valve, for pre-heaitng burner (picture 19)

The flame control valve is not closing valve, close only slightly in order to determine number of turns when opening.



Picture 18

Operating the filling valve for metering vessel



Picture 19

Operating the air valve and lighting match on pre-heating burner.

(4) Check, whether fuel tank is without pressure. If not, release pressure via the air-inlet valve (picture 20), by pressing the valve insert, or by opening the fuel cap (providing burner has cooled down).

CAUTION: When releasing th pressure, make sure that there is no open fire and no cigarette smoking close by. Escaping air might contain fuel particles.

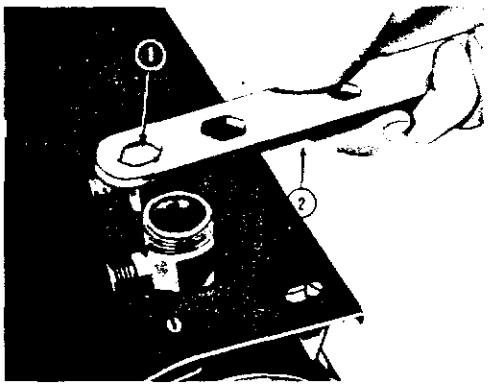
to 2.1.3.4

(5) Unscrew filler cap of fuel tank by turning it counter-clockwise with the universal spanner (picture 21). Insert filling funnel and fill tank with desired fuel. Fill tank to lower edge of filling opening. Fuel tank contens is approx. 6,5 Ltrs.

Replace filler cpa. Use universal spanner and fully tighten filler cap by turning it in clockwise direction.

Picture 20

Air-inlet valve with valve cap.

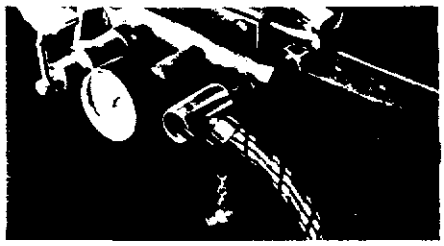


Picture 21

Open the fuel tank filler cap.

(6) Unscrew cap of air inlet valve (picture 20), connect air hose of foot pump to air inlet valve (picture 22), and pump up to initial required pressure according to table (see 20).
Disconnect air hose and close again air inlet valve with its cap.

to 2.1.3.4



Picture 22

Air hose, connected with air inlet valve.

Picture 23

Metering vessel with valve spindle.

(7) Take off cover from metering vessel and inspect, whether valve spindle (picture 23) is closed. If not, turn clockwise until fully closed.

(8) Open filling valve for metering vessel by turning it counter-clockwise (picture 18), thus allowing fuel to run into metering vessel.
Filling level depending on used fuel as follows:

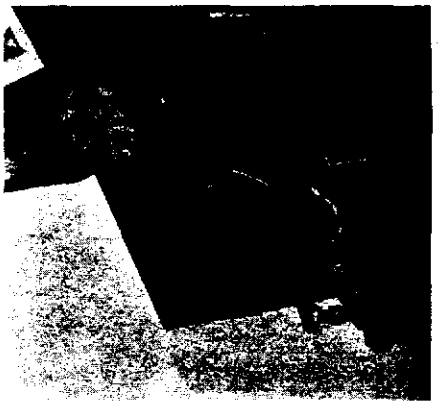
a) up to upper mark: Diesel-fuel, Fuel-oil extra light EL, Petroleum or Kerosene.

b) up to lower mark: Otto-fuel (Gasoline)

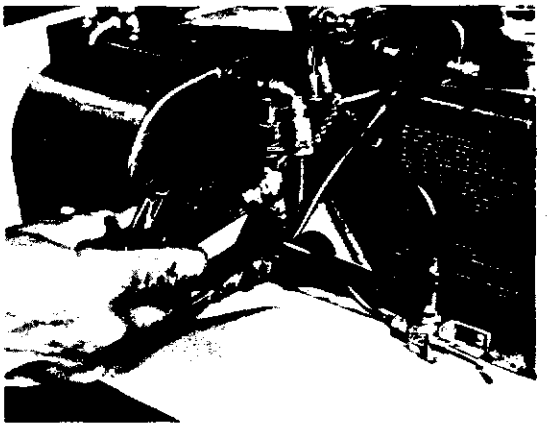
(9) Briefly dip lighting match into fuel of the metering vessel (picture 24).
Light the match and place it into the pre-heating burner (picture 19).

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.4



Picture 24
Dip lighting match into fuel



Picture 25
Operation of the fuel valve

(10) Open valve spindle in metering vessel by turning it counter-clockwise (picture 23), allowing fuel to run into the pre-heating burner.

NOTE: If fuel is not running out of the metering vessel (into pre-heating burner), open and close valve spindle several times or slightly knock with valve handle against the pipe (from metering vessel to pre-heating burner).
The cause for malfunction can be small lighting match particles or air bubbles.

(11) Place valve key onto air (picture 19), open slightly, until flame in pre-heating burner is well lit (burning with a yellow flame) and burning continously.

NOTE: If air valve is opened too much, there will be an accessive air usage, thus the pressure within the air tank drops too fast.

(12) Once the flame in the pre-heating burner burns continously, exact lighting match from pre-heating burner, blow-off flame on lighting match and re-place into its holder (picture 5, pos. 36).

(13) **NOTE:** During pre-heating (caused by wind-influence or fuel drops running out of the fuel control valve) small flames can burn around the burner hood.
This is not dangerous. Flames die out automatically, once the operation of the pre-heating burner is ended.

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.4

(14) Close valve by turning it clockwise and replace lid onto metering vessel.

(15) Once the pre-heating time (according to table, pos. 20) has lapsed, open fuel valve (picture 25) with valve key, turning it counter-clockwise by 1 half turn in order to start operation of the main burner flame.

NOTE: During this operation, flame of pre-heating burner must be still burning.

CAUTION: If pre-heating burner flame has died out prior to opening of the fuel valve, pre-heating burner must be lit again.

NOTE: If the main flame does not burn satisfactory (even and long yellow flame), close fuel valve, and allow a slightly longer pre-heating time, thus increasing the temperature of the evaporator.

(16) Close air valve on pre-heaitng burner (picture 19) by turning it clockwise. Bring air pressure to required operating pressure (table 20).

Air pressure too high: press air-inlet valve (picture 20) to release pressure to required reading.

CAUTION: During air-release, keep away from open fire or burning cigarattes. Air can contain fuel particles.

Air pressure too low: pump up to required pressure.

(17) After 3 - 5 minutes (with special fuel DISO 47) open flame control valve (picture 16) fully (approx. 8 half turns).

NOTE: If flame is not burning satisfactory (uneven, reddish color) close flame control valve by 1 half turn, until flame is burning even, showing a yellow color.

(18) The burner heat output is regulated with the flame control valve.
See also: operation of the cooking-, frying-, baking- and griddle components.

(19) For low burner operation (minimum output), use valve key and turn flame control valve slowly clockwise, until the flame tips are slightly extending over the heating ripps of the evaporator (picture 5, pos. 5).

NOTE: In case flame is flashing (meaning, the flame length rapidly changes from long to short) open flame control valve slightly until flame burns evenly.

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.4

(20) TABLE FOR INITIAL- AND OPERATING AIR PRESSURE, AND PRE-HEATING TIME

FUEL TYPE	INITIAL AIR PRESSURE IN BAR (Kg/cm^2)	OPERATING AIR PRESSURE IN BAR (Kg/cm^2)	PRE-HEATING TIME IN MINUTES
DIESEL FUEL F 54 / F 75	2,5	0,8	7 - 8
FUEL-OIL EL F 82	2,5	0,8	7 - 8
PETROLEUM F 58 (KEROSENE)	2,5	1,0	7
OTTO FUEL (GASOLINE) F 46 / F 50	2	1,2	3 - 4
SPECIAL DIESEL FUEL DISO 47	2,5 - 3	0,8	10 - 12 *

NOTE: When using this fuel, the metering vessel must be filled initially to upper marking, and than again to lower mark.

2.1.3.5 OBSERVING THE BURNER DURING OPERATION

(1) Keep air pressure (depending on fuel type) to value as given on table 2.1.3.4, pos. 20.

Air pressure too high: reduce via air inlet valve.

Air pressure too low : pump up to required value.

(2) The flame shall burn even, with a yellow color.
If flame is reddish and sooting (smoke escapes from the chimney), the burner is malfunctioning.
To eliminate this malfunction, open and closed flame valve several times (make sure, flame is not cutt-off).

If malfunction is not eliminated, put burner out of operation by closing the fuel valve.
Search for cause of malfunction.
Refer to **TROUBLESHOOTING**, section 2.3.

2.1.3 PUTTING THE BURNER INTO OPERATION

to 2.1.3.5

(3) Inspect burner for leakages.

CAUTION: In case of malfunction, follow safety information, section 2.1.1.

(4) If the main flame dies out although fuel tank is filled with fuel, **immediately** close fuel valve (picture 25), thus preventing that the evaporator is flooded with fuel and liquid fuel is leaking from the flame control valve.

(5) **CAUTION!**

NEVER PULL OUT A BURNER FROM BURNER COMPARTMENT WHEN BURNER IS OPERATING AT FULL BLAST.
FOR PULLING OUT BURNER, IT MUS BE SLIGHTLY LIFTED ON FRONT, THUS RESULTING THAT ECCESSIVE FUEL FLOWS INTO EVAPORATOR. THIS CAN CAUSE A SUDDEN FLAME BURST, WHICH CAN CAUSE BURNINGS.

BURNER SHALL ALWAYS BE SHUT-OFF FOR EXTRACTION FROM BURNER HOUSING.

2.1.3.6 PUTTING THE BURNER OUT OF OPERATION

For putting the burner out of operation, close **only** the fuel valve, by turning it clockwise (picture 25).

NOTE: The flame control valve is not a shut-off valve. Do not close when hot, it can cause damage to the valve spindle.

The flame starts burning slower and dies out, once the evaporator has cooled down and no more fuel is evaporated.

2.2 PREVENTIVE MAINTENANCE, CLEANING AND INSPECTION

2.2.1 MAINTENANCE AFTER BURNER OPERATION

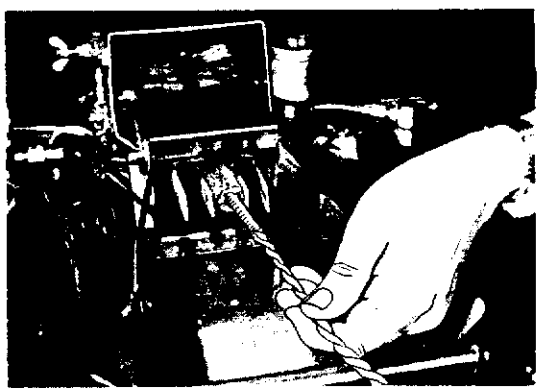
(1) **CAUTION!** In case, fuel tank is fully filled, the burner shall not be placed into the following positions:

- Tilted backwards, front section pointing upwards
- Tilted sideways, fuel tank in upper position
- Tilted forward, front section pointing down

In these positions, fuel from the fuel tank can flow via the distributor to the air tank, which can cause burner malfunctions.

(2) Allow burner to cool down, prior to performing the following activities:

- Inspection of pipe connections, pipes and armatures for visible damages and leakages.
  see section 2.4.11.
- For easy opening and closing of all valves.
- Removing of soot from the bottom of the evaporator, the evaporator ripps and flame guide sheets. Use cleaning brush (picture 26) and tip of the screw driver. Tilt burner for discharging soot.
- Cleaning of tank covers, protection hood and valves.



Picture 26

Cleaning of the evaporator

Picture 27

Dismounting of air pipes on nozzle holder

2.2 PREVENTIVE MAINTENANCE, CLEANING AND INSPECTION

2.2.2 CLEANING AND INSPECTION WORK

2.2.2.1 MAINTENANCE WORK AFTER FIRST BURNER OPERATION, AND IN CASE OF VALVE LEAKAGES

- Flame control vlave
- Fuel valve
- Air valve
- Filling valve for metering vessel

Tighten union nuts on stuffing box bushing screw connection. Make sure valve spindles can be turned with ease by means of the valve handle.

2.2.2.2 DISMOUNTING AND CLEANING OF THE PRE-HEATING BURNER

(1) Place the burner vertically, front section pointing upwards (picutre 15).

(2) Dismount air pipe for air nozzle from nozzle stock (picture 4, pos. 22), see picture 27.

(3) Unscrew 3 sheet metal screws with screw driver (picture 28). Pull out complete pre-heating burner (with pipe extension).

(4) Unscrew 3 sheet metal screws from outer casing of the pre-heating burner (picture 29) and take out burner ring.

Picture 28

Dismounting of the pre-heating burner

Picture 29

Unscrewing sheet metal screws from burner ring

(5) Remove soot from burner cup with screwdriver tip, discharge soot.
Pierce through holes, located around burner cup, using a thin wire or drill.

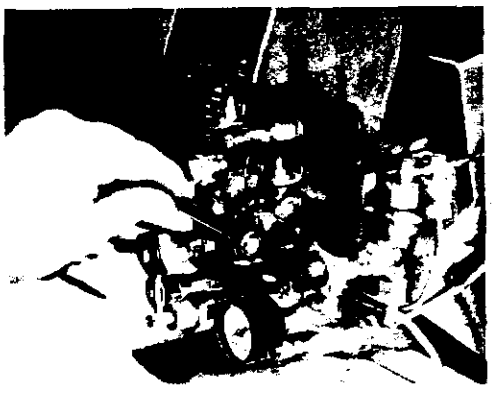
2.2.2.3 DISMOUNTING AND CLEANING OF THE MIXING PIPE

(1) Unscrew fastening nut (picture 30), and pull-out mixing-pipe in direction towards the flame guide sheets.

(2) Clean with cleaning brush (for evaporator) and remount in reverse order.

Picture 30

Unscrew fastening nut on mixing pipe



Picture 31

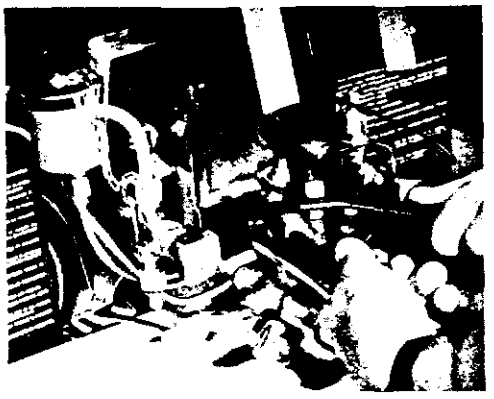
Unscrew fastening nut on flame control valve

2.2.2.4 DISMOUNTING AND CLEANING OF THE FLAME CONTROL VALVE

(1) Unscrew fastening nut on injector piece (picture 5, pos. 29 and picture 31).

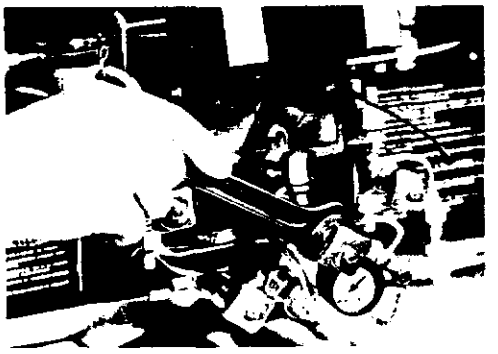
(2) Use a spanner (picture 32) unscrewing the union nut between evaporator and flame control valve.
With one hand, hold valve handle.

to 2.2.2.4



Picture 32

Dismounting of union nut between evaporator and flame control valve



Picture 33

Dismounting of union nut of stuffing box bush connection on flame control valve

(3) Pull-out flame control valve from injector piece.

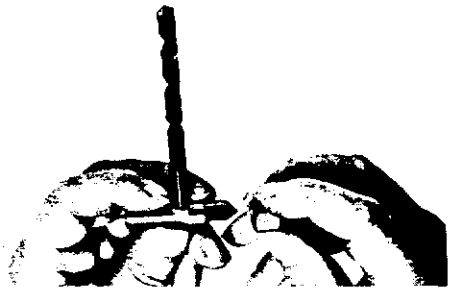
(4) Dismounting of the flame control valve:

- Unscrew union nut (picture 33)
- Pull-out valve spindle from valve housing by turning it counter-clockwise.
  Take care, that valve spindle tip is not damaged.
- Clean spindle tip carefully with the small wire brush. Be careful not to bend spindle tip.
- Use a screwdriver to remove evaporation remainders from inside of valve housing, clean thoroughly with fuel.
- Using a spanner SW 15, unscrew fuel nozzle from valve housing (picture 34) and counteract with spanner SW 14 on valve housing.

to 2.2.2.4

Picture 34

Disconnecting nozzle from flame control valve

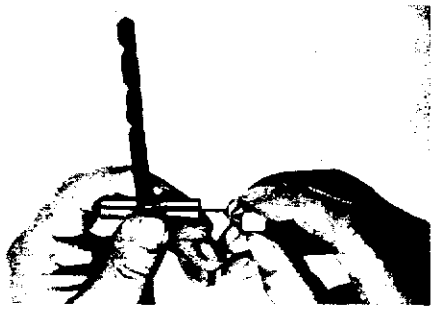


Picture 35

Nozzle rear part
Cleaning of nozzle inside

Clean inside of nozzle with reamer of the pipe cleaner (picture 35).

Clean nozzle front opening carefully with the small drill on pipe cleaner (picture 36).
CAUTION: Do not enlarge nozzle front opening.



Picture 36

Cleaning of nozzle opening

Picture 37

Dismounting the fastening nut on nozzle stock

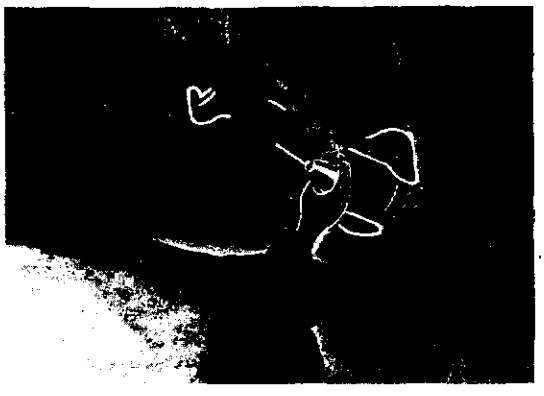
2.2.2.5 DISMOUNTING OF THE NOZZLE STOCK AND CLEANING OF THE AIR NOZZLE FOR PRE-HEATING BURNER

(1) Place burner vertically, front section showing upwards (picture 15).

(2) Disconnect fastening nut for nozzle stock (picture 4, pos. 40 and picture 37), pull-out nozzle stock from pipe.

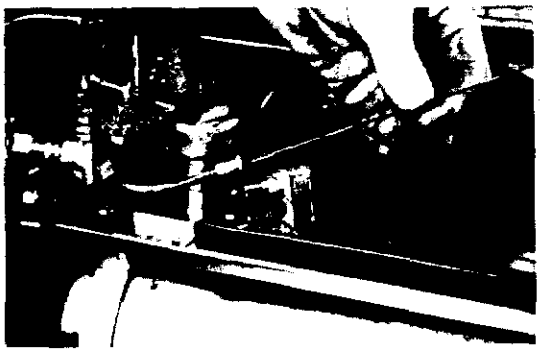
(3) Use a spanner and unscrew air nozzle from nozzle stock (picture 38). If needed, pierce through with a wire Ø 0,2 mm. Clean nozzle with fuel and blow through nozzle. Clean internally located filter with fuel, or, if needed, replace with a new filter.

(4) Remounting is done in reverse order.



Picture 38

Dismounting the air nozzle from nozzle stock



Picture 39

Dismounting and cleaning of fuel metering nozzle

2.2.2.6 DISMOUNTING AND CLEANING OF THE FUEL METERING NOZZLE

(1) Release pressure from fuel tank.

(2) Use a spanner and unscrew union nut (picture 5, pos. 37) of the fuel pipe from fuel outlet valve (picture 5, pos. 43).

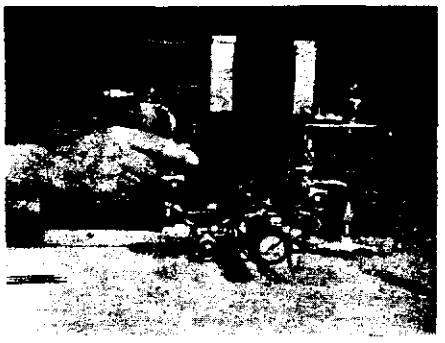
(3) Pierce fuel meterin nozzle with drill Ø 0,6 mm or with a wire (picture 39).

2.2.2.7 CLEANING OF THE HOT FUEL VAPOUR PIPE ON EVAPORATOR

(1) Unscrew locking plug (picture 4, pos. 33 and picture 40).

(2) Clean horizontal hot vapour pipe with large drill of the pipe cleaner (picture 41).

Clean vertical pipe branch with drill (picture 42).

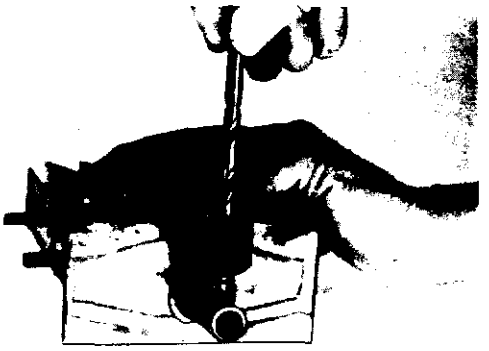


Picture 40

Unscrew locking plug

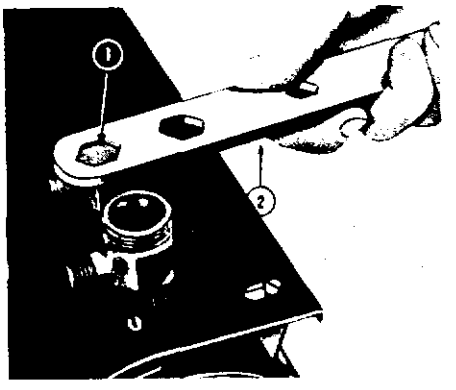
Picture 41

Cleaning of the horizontal hot vapour pipe



Picture 42

Cleaning of the vertical pipe branche



Picture 43

Dismounting of the fuel-outlet valve

2.2.2.8 DISMOUNTING AND CLEANING OF THE FUEL OUTLET VALVE

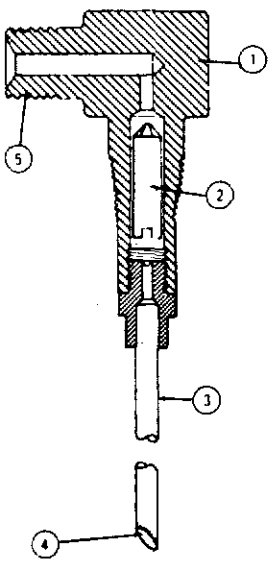
(1) Release pressure from fuel tank.

(2) Dismount union nut of fuel pipe (picture 5, pos. 37) and carefully bend sideways.

(3) Use a spanner and dismount fuel outlet valve (picture 43).

(4) Dismount ascending pipe from upper section (picture 44) and take-out blocking means. Clean all parts with fuel. Replace blocking means according to picture 44 and connect ascending pipe to upper section.

(5) Use high resistant sealing tape on thread of the fuel outlet valve. Screw into socket of the fuel tank.



1. Valve housing
2. Blocking means
3. Ascending pipe
4. Filter
5. Connection for short fuel pipe

Picture 44

Fuel outlet valve, sectional drawing

2.2.2.9 CLEANING OF THE METERING VESSEL

After a number of burner operation, the inside of the metering vessel shall be cleaned from lighting match remainders, using a clean, non-fluffy cloth. Unscrew valve spindle and pierce descending pipe with a wire.

2.2.2.10 DISMOUNTING AND CLEANING OF SPECIAL PIPE INSERT FOR HOT VAPOUR PIPE

After approximately 10 - 15 burner operation hour with special diesel oil DISO 47, the special pipe insert shall be dismounted and cleaned.

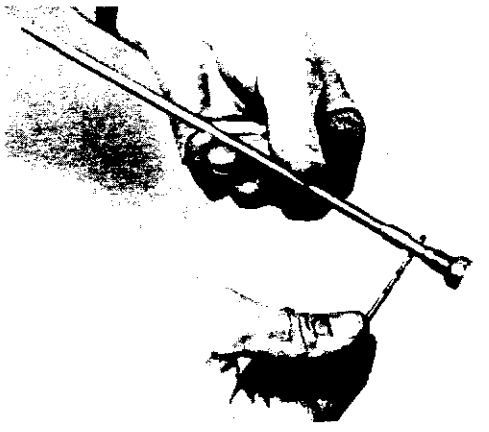
(1) Unscrew special pipe insert with spanner from the hot vapour pipe.

(2) Clean front pipe opening with drill (picture 45).

(3) Clean both side-openings with drill (picture 46).

Picture 45

Cleaning of the front opening of the pipe isnert



Picture 46

Cleaning of the side openings of the pipe insert

2.3 INFORMATION TO POSSIBLE TROUBLES, CAUSES AND ITS REMEDY

TROUBLE	CAUSE	REMEDY
Burner cannot be pressurized	Air inlet valve insert is stuck (picture 3, pos. 13)	Replace insert see section 2.4.6
	Air pump defective	Check pump and pump hose
	Fuel tank cap is not tight	Tighten fuel tank cap
		Replace plug
Fuel flows out of the flame control valve nozzle, when burner is cold	Fuel valve (picture 5, pos. 5) is not closed, with tanks under pressure	Close fuel valve
	Fuel valve is leaky	Replace fuel valve
Fuel flows out of the nozzle of the flame control valve during pre-heating	Fuel valve (pict. 5, pos. 5) was open when pumping up	Close fuel valve. Pull-out burner from burner compartment, after flame becoms smaller.
	Evaporator is filled with liquid fuel	Open evaporator discharge valve (pict. 5, pos. 26) and drain evaporator.
Fuel flows out off the flame control valve nozzle, when main burner is in operation	Evaporator is not sufficiently heated due to soot deposites For other possible causes, refer to 'Output too high'	Clean evaporator with cleaning brush (see 2.2.2.1, pos. 2 and picture 26)
Burner output is not sufficient	Valve spindle and nozzle of flame control valve is dirty	Clean flame control valve, see 2.2.2.4
	Spindle tip is broken	Replace spindle see 2.2.2.4
	Hot vapour pipe is clocked (Picture 3, pos. 37)	Clean vapour pipe with the pipe cleaner, see 2.2.2.7
	Fuel metering nozzle is dirty (Picture 5, pos. 37)	Clean the nozzle see 2.2.2.6 and picture 39
	Blocking means in fuel outlet valve is stuck	Detach blocking means by tapping at the casing or dismount the valve and check it, see 2.2.2.8
	Operating pressure is too low	Rise pressure by pumping up

2.3 INFORMATION TO POSSIBLE TROUBLES, CAUSES AND ITS REMEDY

TROUBLE	CAUSE	REMEDY
Burner output is too high	Operating pressure is too high	Reduce pressure by means of the air valve, see 2.1.3.4, pos. 16
	Evaporator is too cold because fuel valve has been opened prematurely after pre-heating	Close fuel valve, and as soon as the flame is burning smaller, open it again
	Evaporator is too cold because of soot and carbon deposits on the lower surface of the evaporator	Clean with cleaning brush, see 2.2.2.1, pos. 2 and picture 26
	Evaporator is too cold, although pre-heating time was sufficient, because air nozzle of pre-heating burner is clocked and insufficient combustion air is supplied	Clean air nozzle, or replace, see 2.2.2.5
	Nozzle of flame control valve is too large, because of wrong cleaning	Replace nozzle, see 2.2.2.4
Flame is producing soot	Nozzle and/or tip of valve spindle is partially dirty	Clean the nozzle and tip by briefly opening and closing the flame control valve.
	Flame burns to much to one side	See 2.1.3.5, pos. 2 or clean flame valve see 2.2.2.4
	Pressure is too low	Rise pressure by pumping up
	Evaporator is not sufficient heated, because of soot or carbon deposites	Clean evaporator with cleaning brush see 2.2.2.1 and picture 26
	Sloped position of mixing pipe has changed	Check mixing pipe sloped position with adjustment tool, readjust if needed, see 2.4.12
	Installed mixing pipe is not in accordance with used fuel	Install correct mixing pipe see 2.1.3.3 and pictures 6, 7 and 8
	When operating with Diesel fuel -DIS0 47- the special pipe insert for the evaporator has not been installed	Install special pipe insert, see 2.1.3.3, pos. 2

2.3 INFORMATION TO POSSIBLE TROUBLES, CAUSES AND ITS REMEDY

TROUBLE	CAUSE	REMEDY
Flame is producing soot	Fuel tank has been filled with incorrect fuel	Drain fuel tank, refill with required fuel
Operating pressure is decreasing	Air valve, fittings or connections are leaky: - screw cap - air inlet valve - pressure gauge - air valve - tank safety valve - threaded pipe connections - packings on fuel outlet valve (fuel tank) - packings on air outlet elbow (air tank)	Detect leak and remedy by sealing or tightening or if essential, replace defective components
Excessive pressure increase during burner operation	Main burner operation had been started at an excessive operational pressure	Deflate pressure, see 2.1.3.4, pos. 16
	Very dirty tank insulation sheets	Clean the sheets
	Burner output is too high	see "Burner output too high"
Fuel cannot be drained from metering vessel	Discharge opening clocked	Pierce with a wire
	Air bubbles in pipe assy	Tap at the pipe assy

2.4 SERVICE AND MAINTENANCE WORKS

2.4.1 REPLACEMENT OF THE EVAPORATOR

(1) Undo union nut (picture 4, pos. 33) between hot vapour pipe and flame control valve, use a spanner (picture 32) and apply counter pressure on valve.

(2) Loosen locking screw (picture 5, pos. 29) on injector piece (picture 31), and pull-out flame control valve from injector piece.

(3) Unscrew nut (picture 49) on support (picture 4, pos. 31), take out support with mixing pipe.

(4) Undo union nut (picture 5, pos. 39) of fuel pipe from evaporator (picture 48).

(5) Undo 4 cap nuts with spanner (picture 47), and take off insulating sheet with tiltable hood.
Keep hold of the insulating mat.

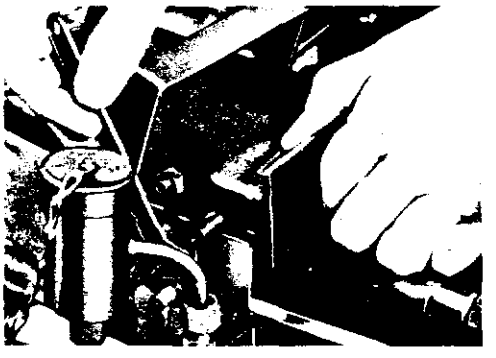
(6) Take out evaporator.

(7) **INSTALLATION** of the evaporator in reverse order.

(8) Once the evaporator had been installed, inspect slope of mixing pipe, readjust if essential. Refer to 2.4.12.

Picture 47

Mounting of the evaporator



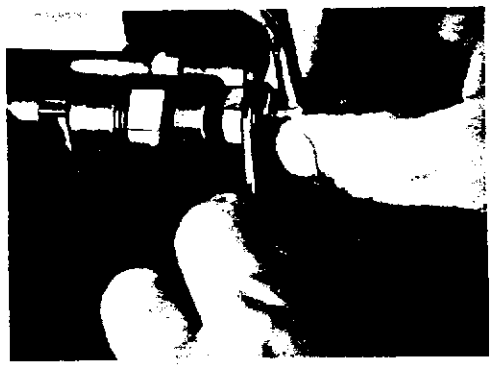
Picture 48

Disconnection of the fuel pipe assy on evaporator

to 2.4.1

Picture 49

Disconnection of the nuts of the injector piece



Picture 50

Disconnection of the blow-off pipe from the safety valve

2.4.2 REPLACEMENT OF THE FUELTANK - SAFETY VALVE

(1) Deflate pressure from burner.

(2) Unscrew union nut on blow-off pipe (picture 50) and take out blow-off pipe!

(3) Unscrew safety valve from distributor.

(4) **NOTE**: Safety valve shall not be opened or adjusted.

(5) **INSTALLATION** of the valve-replacement in reverse order.

2.4.3 REPLACEMENT OF THE FLAME GUIDE SHEETS

(1) Place burner in vertical position, front showing upwards.

(2) Unscrew both mounting screws on flame guide sheet (picture 4, pos. 41).

(3) Slacken both mounting joints on forward located mounting screws.

(4) Take out flame guide sheets.

(5) **INSTALLATION** of new flame guide sheets in reverse order.

2.4.4 REPLACEMENT OF PRESSURE GAUGE (MANOMETER)

(1) Unscrew pressure gauge with spanner from distributor. Insert spanner on rear square connection.

(2) Use high-heat resistant sealing tape on thread of new pressure gauge and screw onto distributor.

2.4.5 REPLACEMENT OF THE AIR OUTLET ELBOW

(1) Slacken union of pipe on air outlet elbow (picture 5, pos. 44), and bend pipe carefully sideways.

(2) Unscrew elbow with spanner from air tank.

(3) Use high-heat resistant sealing tape on thread of new elbow, screw elbow into socket.

2.4.6 REPLACEMENT OF THE AIR INLET VALVE INSERT

(1) Unscrew insert with special key, located on rear side of valve cap (picture 20).

(2) Replace with new insert.

2.4.7 REPLACEMENT OF EVAPORATOR SAFETY VALVE

(1) Slacken union nut of blow-off pipe (picture 5, pos. 27), and pull out blow-off pipe.

(2) Unscrew overpressure safety valve with spanner on lower square connection from evaporator discharge vale (picture 5, pos. 26).

(3) **NOTE:** Overpressure safety valve shall not be opened or adjusted.

(4) Apply high-heat resistant sealing tape onto to thread, screw safety valve into socket of evaporator discharge valve.

2.4.8 REPLACEMENT OF PIPE ASSIES

(1) Slacken union nut on respective pipe assy. Use a spanner for doing so, insert screwdriver into slot and counteract.

(2) When replacing pipe assy, insure that connection surfaces are undamaged.

(3) Re-tighten union nut, but to not apply too much force.

2.4.9 REPLACEMENT OF COVERING SHEETS FOR AIR- AND FUEL TANK

(1) Unscrew respective pipe assy.

(2) Unscrew plate with operation instructions.

(3) Unscrew screws on covering sheets.

(4) **INSTALLATION**, in reverse order.

2.4.10 DISMOUNTING THE TANK

(1) Dismount the tank.

(2) Undo screws on rear and front tank mounting. Take out tank.

(3) **INSTALLATION**, in reverse order.

2.4.11 INSPECTION OF AIR TIGHTNESS ON BURNER

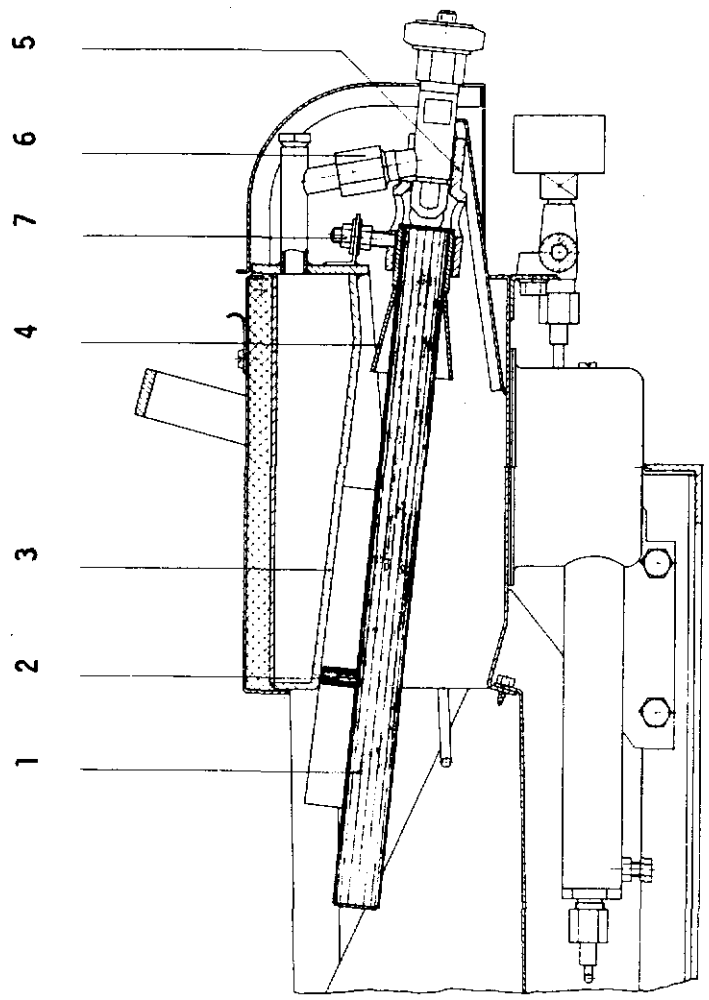
(1) Close all valves, with the exception of the flame control valve.

(2) Pump up pressure on tank to 2,5 bar (Kg/cm^2). Leave burner under pressure for several hours.

(3) In case pressure is dropping, apply soapy water to connections. If bubbles occure, this shows a leakage.

(4) Tighten union nuts. If this does not show a positive result, this part is damaged and must be replaced.

2.4.12 ADJUSTMENT OF INCLINATION OF THE INJECTOR PIECE WITH MIXING VALVE (Picture 52)



Picture 51

Sectionized few of pressurized vapourizing burner with adjustment tool for mixing pipe

For adjustment, insert the short mixing pipe (pos. 4) into injector piece (pos. 5).

Adjustment procedure

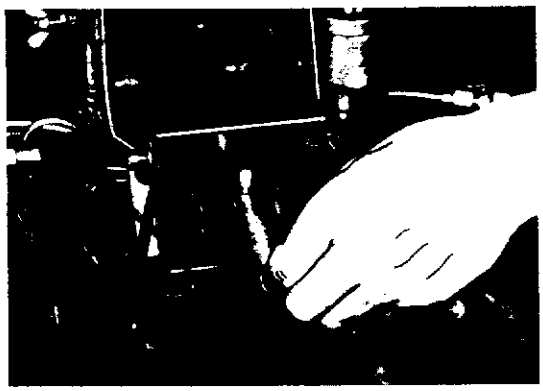
(1) Insert adjustment tool (pos. 1) into mixing pipe (pos. 4).

(2) The stop-pin (pos. 2) must now be below the evaporator bottom (pos. 3).

(3) If there is too much play, or if the adjustment tool cannot be pushed-in, slacken union nut (pos. 6). Now slacken both hexagon nuts on support (pos. 7), (picture 49). Adjust accordingly and retighten nuts.

2.4.12 ADJUSTMENT OF INCLINATION OF THE INJECTOR PIECE WITH MIXING VALVE (Picture 52)

(4) Retighten union nut (pos. 6), and re-check adjustment by inspecting the play between stop pin and evaporator bottom. If needed, readjust.



Picture 52

Inspection of mixing pipe inclination with adjustment tool