

A 1,1,c



VARME
CHALEUR
HEATING
HEIZUNG

HS-TARM

Note:

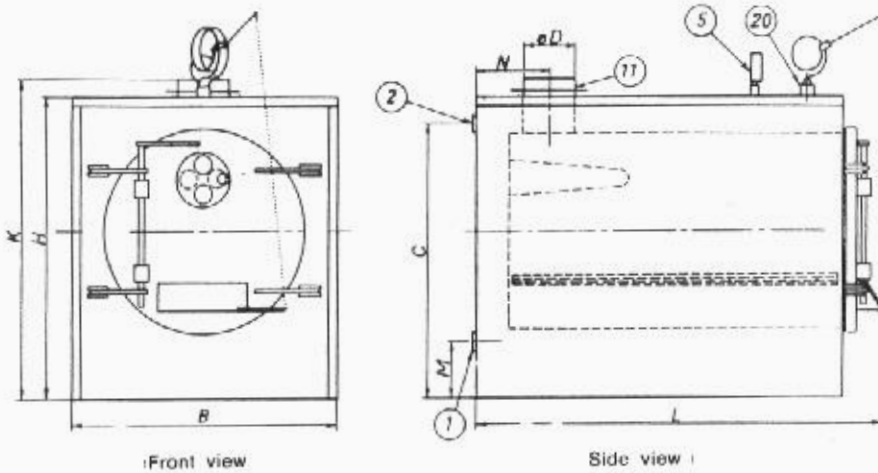
The pages marked "i" concerns the installer

The pages marked "c" concerns the consumer

The pages marked "i" and "c" concerns the installer and the consumer.

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Technical dates



Technical specification	A 16	A 35
Capacity-max.....Btu/ r	80.000	160.000
Opening of firing - door	Ø mm 550	900
Length of Combustion Chamber	mm 1100	1225
Width	B mm 706	1056
Length	L mm 1310	1445
Height	H mm 851	1159
Height	K mm 906	1224
Distance	C mm 801	1110
Distance	M mm 188	145
Distance	N mm 193	210
Contents of water	liter 120	200
Weight	kg 290	550
Test - pressure	ato. 4	4
1. Return and extra topping	inches 1 1/4	1 1/4
2. Flow and expansion	inches 1 1/4	1 1/4
11. Flue - outlet	Ø mm 155	215
20. Branch for draught - regulator	inches 1	1
5. Branch for combined pressure - and watergauge	inches 3/4	3/4

(i) Mounting of jacket

On the below mentioned drawing you can see, how the plates for the jacket are mounted.

When mounting - please follow the numbers stated on the drawing.

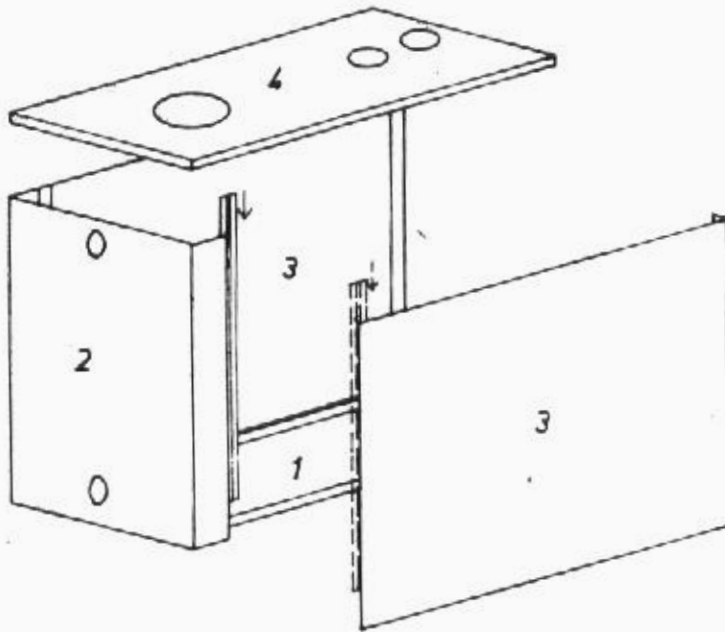


Fig. 3,1

Draft regulator, water and pressuregauge and pipes can now be mounted.

(i) Pipe connection - choice of materials

For the central heating plant you can use a mixture of material - copper - steel or G.B. (For domestic water you should avoid this, because of corrosion).

(i,c) Frost protection

The central heating plant can be protected against frost with a frost fluid. You should, however, remember that a possible mounted hot-water-cylinder is not protected against frost. The hot-water-cylinder should, therefore, be emptied in case of frost (without running).

(i) Expansion tank and safety-pipe

About expansion tank and Safety-pipe you have to follow the rules in your country.

(i) Mounting in connection with oilfired boiler

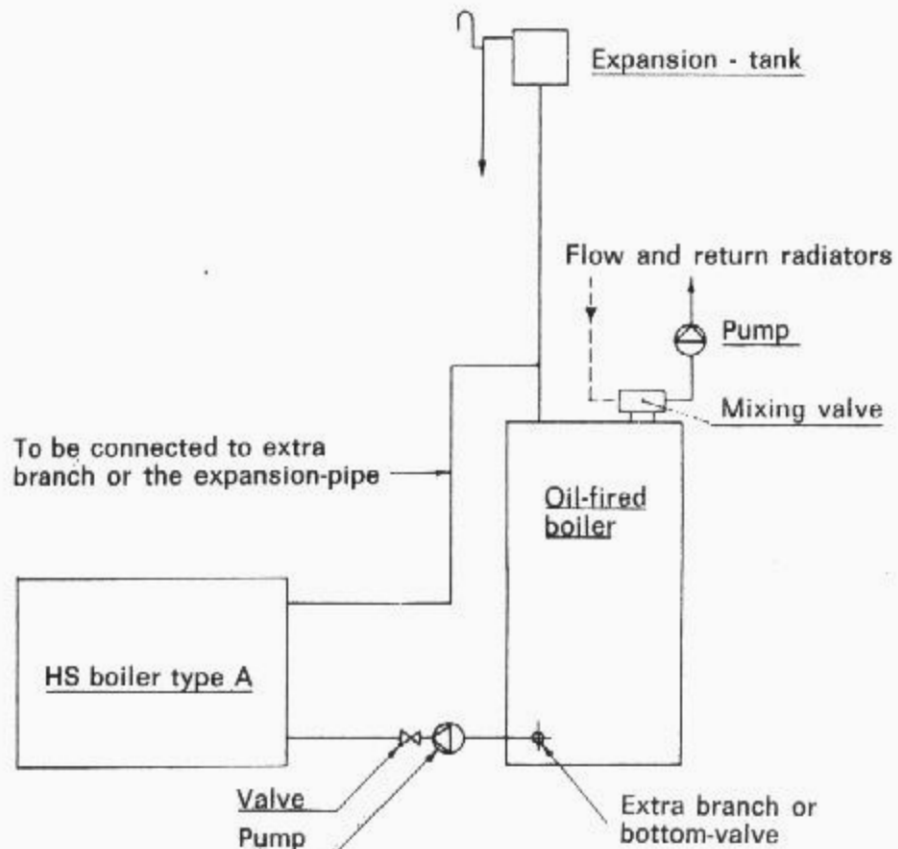
Often the type A is mounted in connection with an oilfired boiler plant.

Below mentioned drawing shows this installation.

Return branch at type A is connected to the oilfired boilers bottom valve or to a possible extra branch for return. The pump is mounted in this pipe close to the oilfired boiler. The branch for flow on type A is connected to the oilfired boilers expansion pipe or to a possible extra branch for flow.

The connection shown, insures correct and safe running of both the two boilers as well as the mixing valve of the oilfired boiler and the built in hot water aggregate.

Fig. 4,1



(i) Chimney

To fire with wood requires more draft than firing with modern oilfired boilers.

The chimneys should be bigger than for oil and possibly higher to secure the necessary draft.

You should reckon with about 0,5 mm watercolumn draft per meter hight of chimney above the flue outlet provided the opening of the chimney is big enough.

(i) Draft in chimney

You should have 1,5 2,0 mm watercolumn or more draft in the chimney measured in the flue pipe from the boiler when you are burning wood.

The draft should be there to give good combustion.

(i) Size of chimney

The inside diameter should be appr. 200 mm (8 in).

(i) Connection to chimney

The most ordinary way to connect to a brick chimney is with an elbow pipe and then a straight pipe. Use an elbow pipe with cleaning opening. This way you can clean the straight pipe. If possible you should let this straight pipe rise a little bit to the chimney.

(i,c) Installation of oil-burner on type A

It is possible to mount an oilburner on type A.

The oilburner is mounted in the middle of the door, and you mount a stainless steel firebox into which the oilburner is firing (see B at fig. 6,1).

In this way you obtain a protection of the oilburner so that burning of solid fuel is still possible while the oilburner is mounted on.

The oilburner will then start at the temperature, which the thermostat is set to, when the solid fuel has been burned.

The oilburner will also be able to put fire to solid fuel which might not be easy to set fire to.

If you are mounting an oilburner at type A you should mount a microswitch (see M at fig. 6,1) so that the burner cannot start while the door is open.

You should use long flexible hoses on the oilburner and electrical wiring should also be long and not be in the way for firing.

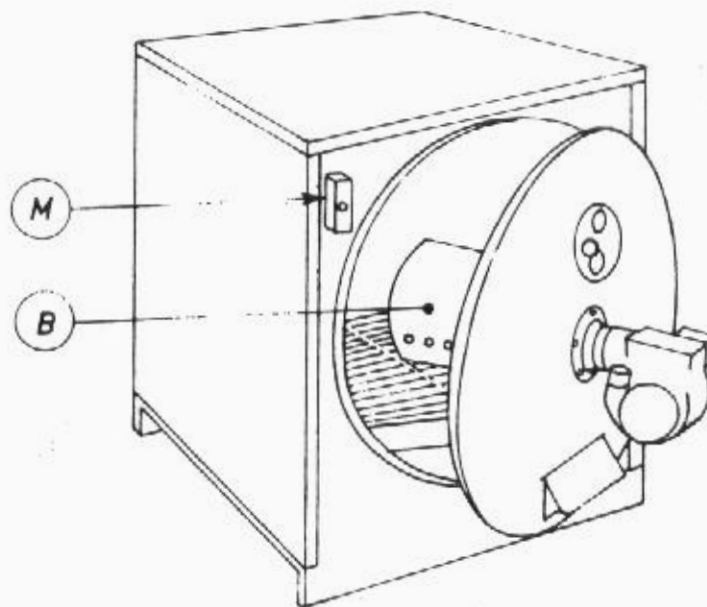


Fig. 6,1

(i,c) Size of nozzle for the oilburner for type A

Use the type of nozzle which the oilburner supplier or manufacturer recommend.

Do not use bigger nozzles then the heatdemand requires. However, be carefull not to use too small nozzles as such will give too low smoke temperature, possible in connection with a bad isolated and big chimney and thus give soot.

HS boiler type	Size of nozzle US-gal
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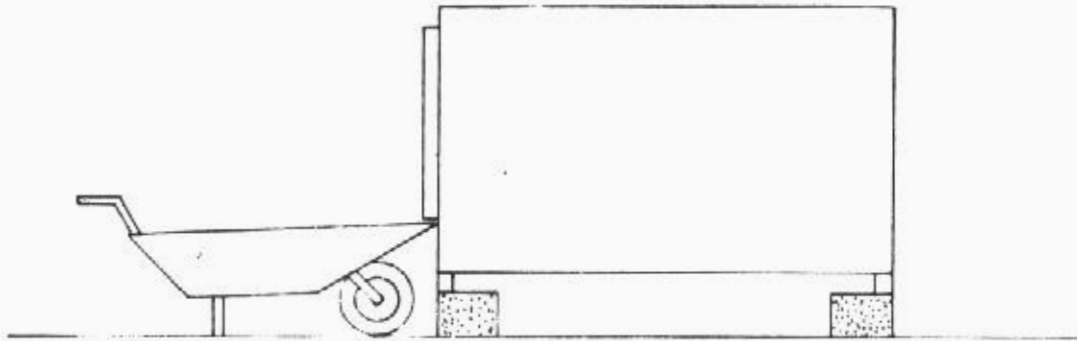
(f,c) Where to install type A

Usually the type A is installed in a separate house (not in the house where you are living), as there will be some smoke coming out of the door when you are firing.

In case you want to install a type A in the house, where you are living, and you do not wish to fire with straw (only with wood and similar things) the door can be provided with a smaller firing door so that smoke in conveniences by firing mainly can be avoided.

(i,c) Installation of type A

Fig. 7,1



For convenience it is advisable to mount the boiler on a plinth of say concrete blocks approx height 18 inches, there is no need to cement these blocks, however its a good idea to leave a space in front of the boiler for a wheel of a wheel barrow to allow the pan of the barrow to come close to the door of the boiler see sketch.

(i,c) Installation room

If the installation is in a seperate boiler house, no unnecessary fire precautions are necessary, however if you decide to install in a barn or stable or any position where inflammable materials are being stored it is important to build a proper fire proof room (in accordance with insurance regulations and local Bye-Laws). The boiler room or house should be well ventilated as the boiler need fresh air for combustion.

(c) Before firing

Before firing you should check that there is water enough on the boiler plant and that the valves are open and the pump is started (see fig. 4,1)

You should also check that the door is closing tight. The packing should also be in order and the packing surface at the boiler should be kept clean.

If the door is not tight the boiler can start boiling because of too

(c) Firing with straw

Type A can be used for firing with straw with or without grates in the boiler.

Air for firing should come through lower damper (primary air) and through upper damper (secondary air). You will find out yourself how to adjust the two dampers.

(c) Firing with wood and burnerable waste

Normally you would prefer to fire with grates in the boiler. In case you are firing with wood you should use cast iron grates. The grates have a limited lasting period when firing with wood especially if you are firing "hard". Avoid to throw big pieces of wood into a very hot grate.

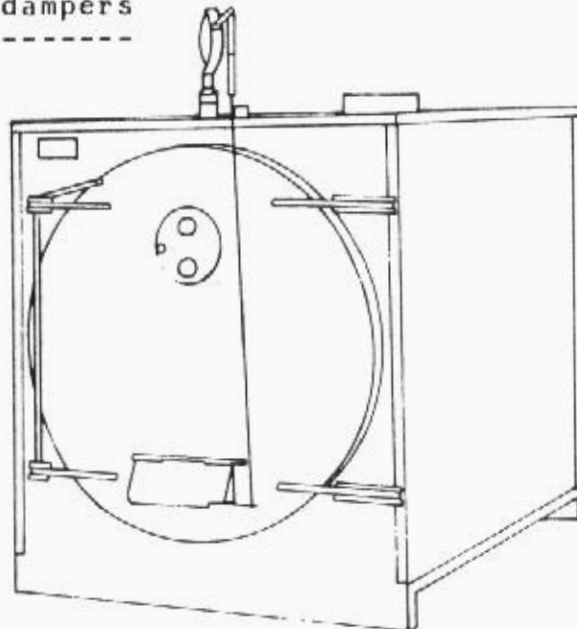
(c) The draftregulator and the dampers
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Fig. 8,1

Adjust the draftregulator (the chain) so that the lower damper is closed at for instance 70°C (150°F). On A 35 you also put a chain at the upper damper. On A 16 the upper damper is adjusted by hand. It is important that you also have air coming through upper damper (to secure the best combustion).

Be carefull that the damper on A 16 is not open too much so that the combustion continues although the lower damper is closed.

(c) EMERGENCY STOP

Sometimes it will happen where an installation has an electric circulating pump that a power failure will result in over heating then close the dampers (BOTH) open the mixing valve completely, run off as much hot water as possible. The fire will die from lack of air and the boiler will start to cool down, the alternative is for the user to rake the fire into a barrow. A good installer will have supplied a safety blow-off valve, as well as connecting to the expansion tank so there will be no danger. It is dangerous to put cold water on an overheated boiler.

(c) Instruction in firing (plants, where you also have mounted a oil-fired boiler)

Running the boiler on solid fuel requires a little effort by the user, i.e. stoking, lighting, and cleaning. Some people like to have the standby convenience of oil, now the user has the best of both.

(c) When one should fire with solid fuel:

You should fire with solid fuel at times of the year where you really need heat.

(c) Why not during summer

During the summer months or during prolonged periods of warm weather you can run the boiler on oil, the saving against solid fuel is very little (This applies where the user is buying solid fuel) so it is more convenient to run the oil for short periods. Where solid fuel is very cheap (as on farms) light a small fire.

(c) How should the wood be:

The wood should be well stacked and dry otherwise you are putting too much soot in the boiler.

(c) How should the straw be:

The straw should be kept dry. Humid straw does not provide much heat and gives more smoke and it also gives more soot in the boiler.

(c) General about firing

Smoke causes soot, so when you are firing see to it that the lower damper is open when heat is required, a little opening is enough to allow flames to produce heat, when there is demand for heat the damper will automatically open.

(c) Burning of waste

Burning of waste, paper and similar in smaller amounts can usually take place the whole year round without raising the boiler temperature too much. Be carefull if there is no heating demand (for instance in summertime) as "hard" firing will make the temperature raise.

(c) Cleaning

To utilize the solid fuel probably it is most important that the boiler is cleaned regularly. The soot is insulating so that the boiler cannot absorb sufficient heat from the solid fuel when the soot is too thick. Even one mm of soot is making the economy very bad. When cleaning you should use the scraper and the brush (even though that

(c) Water on the plant (CONTINTAL OPEN PLANT)

On the combined water/pressure gauge you can read the water column on the plant (fig. 10,1).

(c) Water-filling

Water is filled on through the bottom valve (fig. 10.2) by a rubber-tubing connected to a water tap. The electricy is disconnected during water filling.

First open the bottom valve +, then open the water tap and fill up until the water runs out of the overflowingpipe from the expansion tank ++, then first close the water tap and then the bottom valve.

The black indicator will now stand over the red indicator +++.

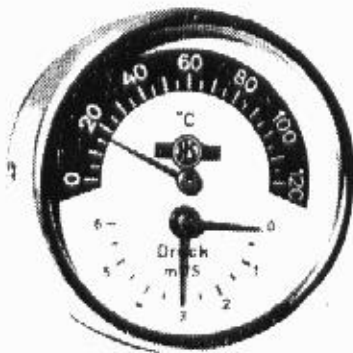
+However, on the plant itself there can be mounted a valve, which you may just open - if in doubt ask your heating engineer.

++The Expansiontank is the tank sitting on top of the central heating plant. It may be placed on the wall in the boiler-room or on the roof.

+++If this is not the case then place the red indicator above the black one - at some water gauges/thermometers the glass should be removed in order to adjust the red indicator.

(c) When to fill on water

If the black indicator has fallen somewhat from the red indicator - water should be filled (usually twice a year).



(b) Boiler temperature

The boiler temperature should be between $60-80^{\circ}\text{C}$ ($140-180^{\circ}\text{F}$). We consider 75°C (165°F) to be the suitable boiler temperature the year round. (Some central heating plants are, however, calculated so that the boiler temperature at the coldest periods should even be up to $85-90^{\circ}$ ($185-195^{\circ}\text{F}$)). The boiler temperature is adjusted on the draftregulator (fig. 11,1) or the thermostat (fig. 11,2).



Fig. 11,1

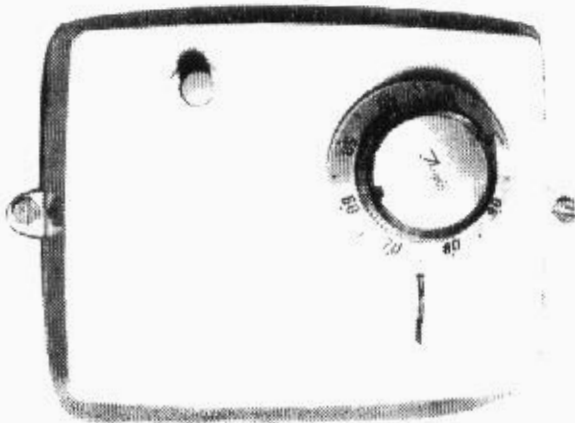


Fig. 11,2

(b) Connection between draftregulator and thermostat

Normally the thermostat is set somewhat lower than the draftregulator. For instance the thermostat is set on 65°C (150°F) and the draftregulator so that the damper is closed at 75°C (165°F).

The oilburner will then start when the solid fuel is burned down or is not giving heat enough to the plant and the temperature on the boiler is falling under 65°C (150°F) to which the thermostat is set.

(b) Firing only with oil

The chain on the draftregulator is loosened so that the lower damper is closed. Also close upper damper.

(c) Noise in radiators - pumps

If there is a noise in a radiator it might be because of air. Try to take out the air through the air screw. Normally you should not adjust the pump as the installer has seen that the pump is set at the correct capacity. If - after you have checked that there is no air in the radiator - you still have noise in the radiators you may, however, adjust pump. You can adjust the capacity of the pump by starting at maximum capacity (the biggest number) whereafter you slowly regulate until the noise has disappeared.

(c) Service

After your central heating plant has been installed it should be quite clear to you which help you would use in case the oilburner should get a stop. Like wise it should also be clear to you who should do the after sales service. Ask your installer whether you can subscribe on a service or you may ask him to recommand to you a company not far from where you are living where you can ask for help.

CONCLUSION. Keep this instruction book somewhere near the boiler for easy access. Make a list in the places provided of the Installer and service engineer, and any other parties involved with the boiler.

Installer Name.....Telephone No.....
Address.....Emergency No.....

Oil burner
Service engineer,Name.....Telephone No.....
Address.....Emergency No.....

Pump

Fuel supplier. Name.....Telephone No.....

DATE OF INSTALLATION.....