wallas marin

wallas 1800/2400

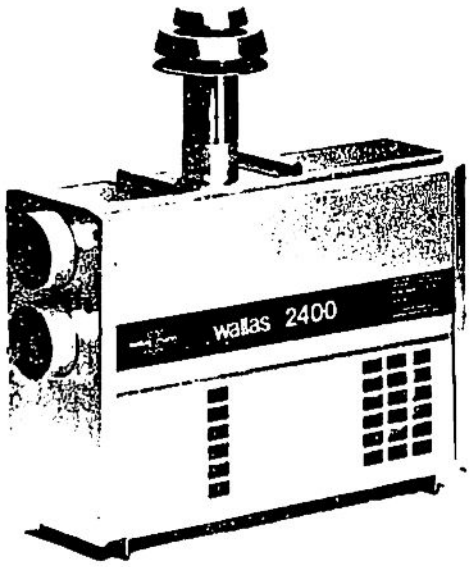
BOAT HEATERS

May 1985

OPERATION AND INSTALLATION INSTRUCTIONS

Official Approval by Swedish Marine Authority (Sjöfartsverket)
1800 - Nr 31.820.12-9364/84
2400 - Nr 31.820.12-9364 1/2 84

SPECIFICATIONS	TYPE	1800	2400
Heat output	Full	max abt. 1700 W	max abt. 2200 W
	Half	900 W	1100 W
Fuel: Paraffine (Esso Blue)		max abt.	max abt.
Fuel consumption	Full	0.18 l/h	0.23 l/h
	Half	0.1 l/h	0.12 l/h
Supply voltage	12 V	(11 - 14.5 V)	
Current consumption	Full	0.5 A	1 A
	Half	0.35 A	0.6 A
	Start 2 min.	5 A	5 A
Dimensions		260x365x125 mm	
Weight	abt.	8 kg with exhaust head	

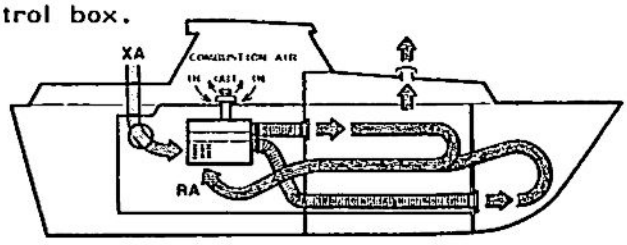


FUNCTION

- Wallas 1800 and 2400 are especially for boats developed forced warm air heaters for distribution of the warm air with Ø 60 mm ducts to several rooms in the boat.
- The closeable exhaust head is designed for balanced draught which makes the combustion wind insensitive for wind pressure changes. The combustion is closed and totally separated from the warm air circulation.
- The vaporizing type kerosene burner ignites automatically with a glow coil element when the heater is switched on. All functions are electronically controlled. The combustion air fan speed and the fuel pump rate are fully stabilized against battery voltage changes to ensure clean burning even with varying battery voltages. The built in self priming and dosing electromagnetic fuel pump developed by Wallas sucks up the fuel from separate fuel tank below the heater. The unburned excess fuel flows back to tank by gravity.
- A built-in overheating cut-out switches off the fuel pump in case of overheating and an aftercooling thermostat keeps the combustion fan running after switching off the heater, until the heater is cooled.
- The heat output can be switched on full or half effect or on reduced effect (half heat with full ventilation) or also on cold ventilation without heat from the remote control box.
- A cabin thermostat which switches the heat to full effect when cabin temperature sinks under set point and to half effect when set temperature is reached can be furnished and connected to the remote control box.

INSTALLATION

- The heater is intended to be mounted outside the cabin area in order to take fresh air (XA) for heating to keep the cabin air dry and fresh.



- By cold weather the heating effect can be however increased considerably by re-circulating the air for heating from cabins (RA) to the heater. An ideal arrangement is to install the heater in a conpartment, which has two air intake holes of equal size (abt. 100-150 cm²) one for intake of outside fresh air (XA) and the other for intake of re-circulation air (RA) from cabin. It is advantage if the cabin air return can be closed for summer use and the fresh air intake for use by cold weather.
- The heat losses can be very high, up to over 100 W/m, through long uninsulated warm air ducts. The heating effect can be much increased, often with 30-60% by insulating the warm air hose with the heat insulation hose no 2412.

BEFORE START CHECK

- that the heater and exhaust tube are securely mounted and so fixed that the exhaust can not come off from heater or deck exhaust pipe.
- That the fuel lines are correctly led and that the tank filter is placed at the suction tube end, - see next page.
- That you have right fuel, - lamp quality paraffin oil
- That the exhaust head is not closed. The exhaust head is closed by pushing down and turning right and opening by turning left.
- Observe the underligned instructions on pages 3,4,5 and 6.

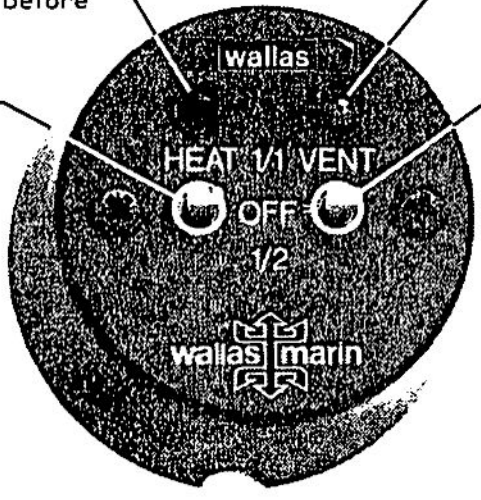
THE CONTROL BOX

(2) Red pilot lamp indicates the start of combustion. Should light up in abt. 5 minutes after switching on. If not, - switch off and wait abt. 5 minutes before re-starting.

(1) Start For start turn the toggle switch up to HEAT 1/1-position.

(3) Do not switch off or to 1/2-effect before the red lamp has shown.

(4) After switching off the heater will not re-start before resting in off-state abt. 5 minutes and not before the red lamp has gone out.



(7) Indication lamp for ventilation

(6) VENTILATION

For cold ventilation without heat switch the right VENT-switch up to 1/1 pos. for ventilation on full speed and to 1/2-pos. for ventilation on 1/2-effect.

(5) By eventual thermostatic effect control the HEAT-switch shall be switched to 1/2-effect position. The thermostat then switches between 1/1 and 1/2-heat.

(10) Some trouble-shooting

If the fuel pump has gone dry after a long rest or run out of fuel and does not suck up fuel (see the transparent suction line) - lift up the tank to a level above the heater, make a re-start and keep the tank high until the combustion starts.

(8) Reduced heat

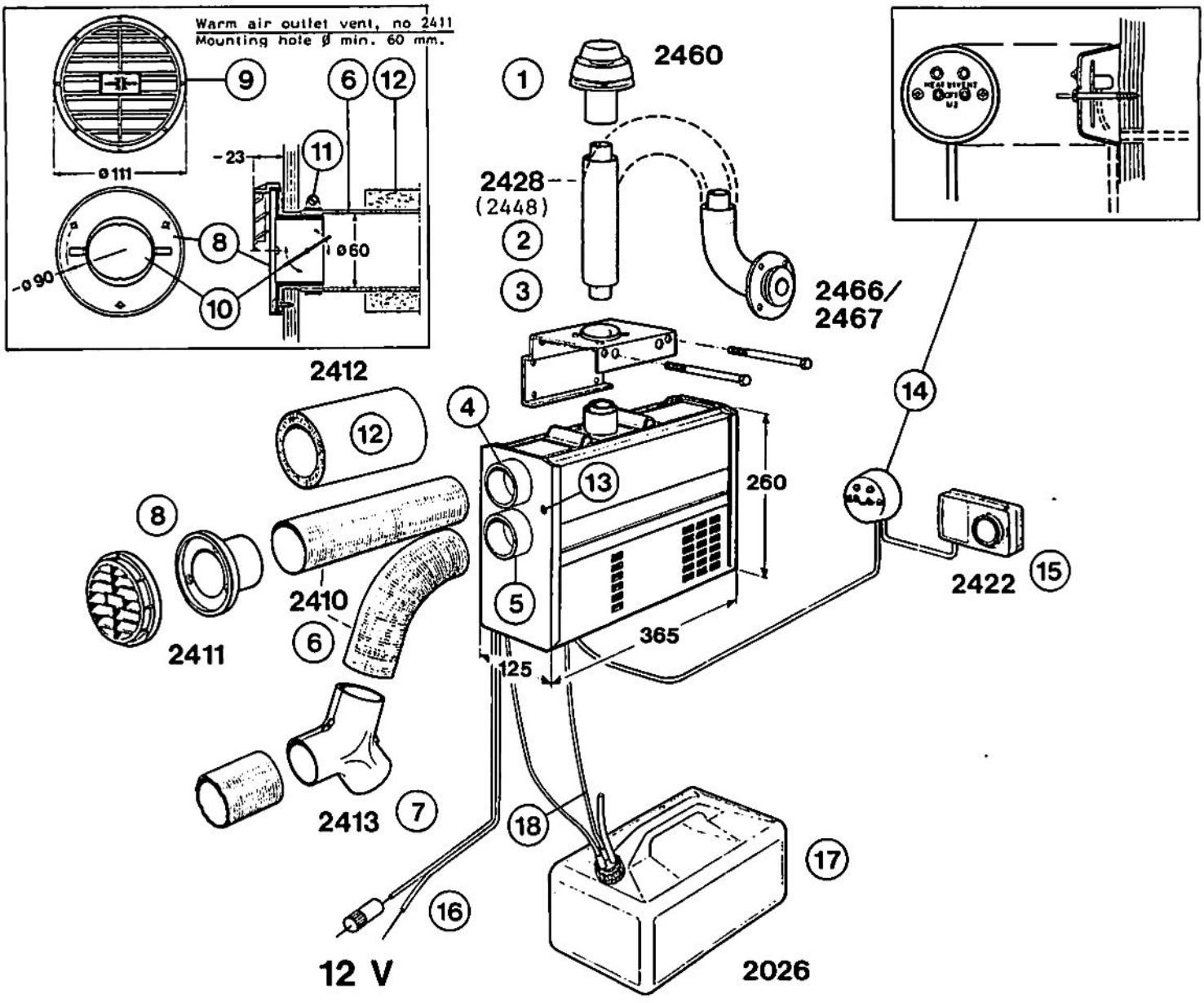
For reduced heating effect switch the ventilation on 1/1 full speed with heat switch on 1/2-effect. this combination gives only abt 1/3-heating effect due to the higher heat losses with full speed ventilation.

(9) The overheat cut-out switch

(Red button at outlet end of heater) switches off the fuel pump in case of overheating. For reset, push in after the heater has cooled down.

A hot heater shall never be switched off with the battery master switch. After switching off the heater must get current for at least 10 min. until the aftercooling switch shuts off the fan motor.

See also pages 5/6/7



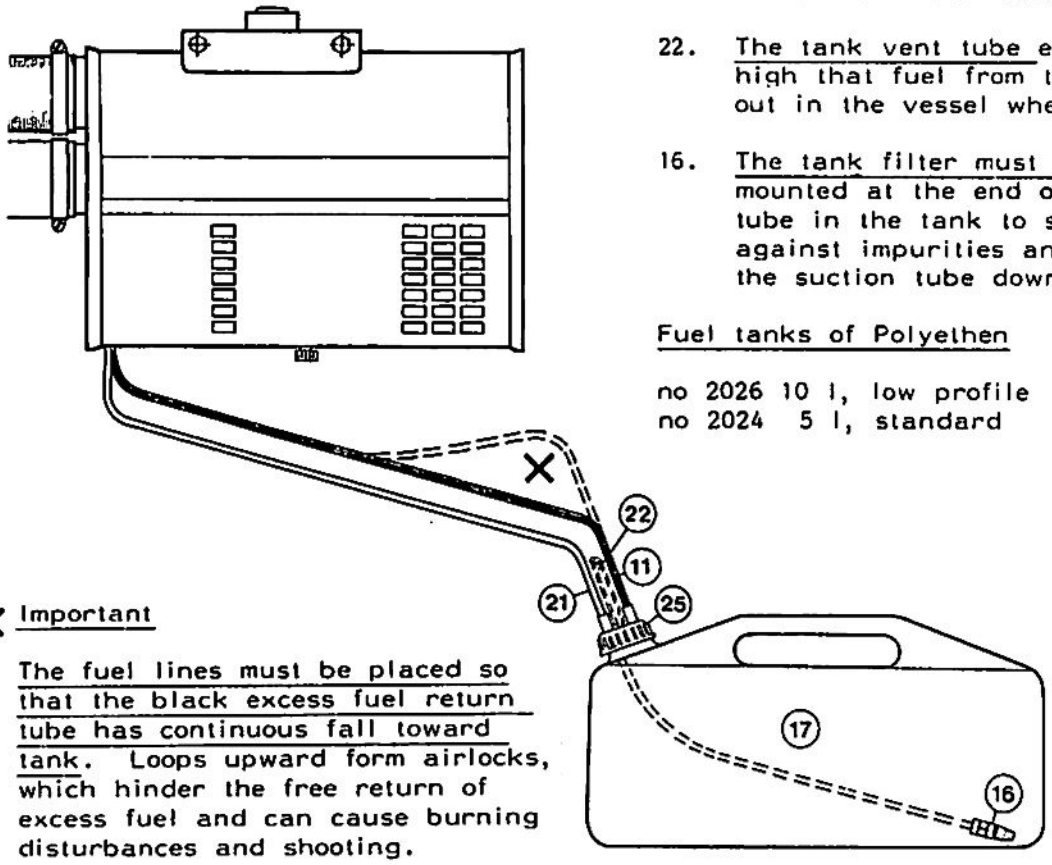
1. Exhaust head, no 2460 is standard and included in basic set.
   The exhaust through hull fitting nr 2467 (& 2466) is a special accessory - see page 7.
2. Exhaust tube, no 2428, Ø 28/45 mm, double, flexible, inner tube stainless, outer aluminium, extra accessory.
   Observe that with type 2467 (& 2466) through hull fittings also the outer Ø 45 mm tube must be of stainless quality (2448) as the inner tube.
3. Hinge plate, no 2403 & bolts is standard, included in basic set.
4. The upper warm air outlet
5. The lower warm air outlet
   Important: The lower outlet gives the most heat and must absolutely not be totally closed. The lower outlet should be connected to the room where the most heat is needed and shall not be closed more than the upper one.
6. Warm air hose, no 2410, Ø 60 mm, extra accessory
7. Warm air divider, no 2413, extra accessory
8. Warm air outlet vent, no 2411, extra accessory
9. Outlet vent grid, - the grid must be pulled off for mounting and adj. of damper plate for desired choking and heat distribution. The grid can be adjusted for different flow directions by turning the damper plate.
10. The damper plate for adjustment of warm air distribution.
11. All hose connections must be secured with hose clamps.
12. Soft heat insulation tube no 2412 for elimination of heat losses in ducting, which can go up to and exceed 100 W/m. Extra accessory supplied in 4 metres lengths. Easy to cut off.
13. Re-set button for overheating cut-out switch
14. Control box no. 2402, standard and incl. in basic set. The 4 m control cable is easiest to loose at the control box end. See page 8.
15. Room thermostat no. 2422, - special accessory - see page 8.
16. The battery supply cable
    Extension cable core area min 2.5 mm² (SWG 8). To avoid and supress radio interferences an own direct cable to battery is to be recommended.
    The red + lead must be taken through an own 8-10 Amp fuse and own master switch.
17. Fuel tank, - see page 4.
18. Fuel lines, - see page 4.

17. The fuel tank must be placed so that it always - also under heeling lies below the heater bottom level.

22. The tank vent tube end must be taken so high that fuel from tank is not spilled out in the vessel when it heals.

16. The tank filter must absolutely be mounted at the end of the fuel suction tube in the tank to shield the pump against impurities and water and to hold the suction tube down pressed.

Fuel tanks of Polyethen	length	height	width
no 2026 10 l, low profile	380	195	210 mm
no 2024 5 l, standard	220	275	120 mm



✕ Important

The fuel lines must be placed so that the black excess fuel return tube has continuous fall toward tank. Loops upward form airlocks, which hinder the free return of excess fuel and can cause burning disturbances and shooting.

25. The tank connector
The black return tube (11) and transparent suction tube (21) are taken through the connector pipes and secured with rubber sleeves (24). The tubes are thereafter cut to suitable length, the suction tube straight off. The suction filter (16) is mounted at the suction tube end with nut (18), rubber ring (19) and plastic shield washer (20).

11. Excess fuel return tube, ø 5/3 mm, Polyamid, black

21. Fuel suction tube, ø 5/2 mm, Polyamid, transparent

22. Tank vent tube, ø 7/5 mm, PVC

24. Rubber sleeves securing the fuel tubes

25. Tank connector-take through plate

26. Tank connector screw collar holder

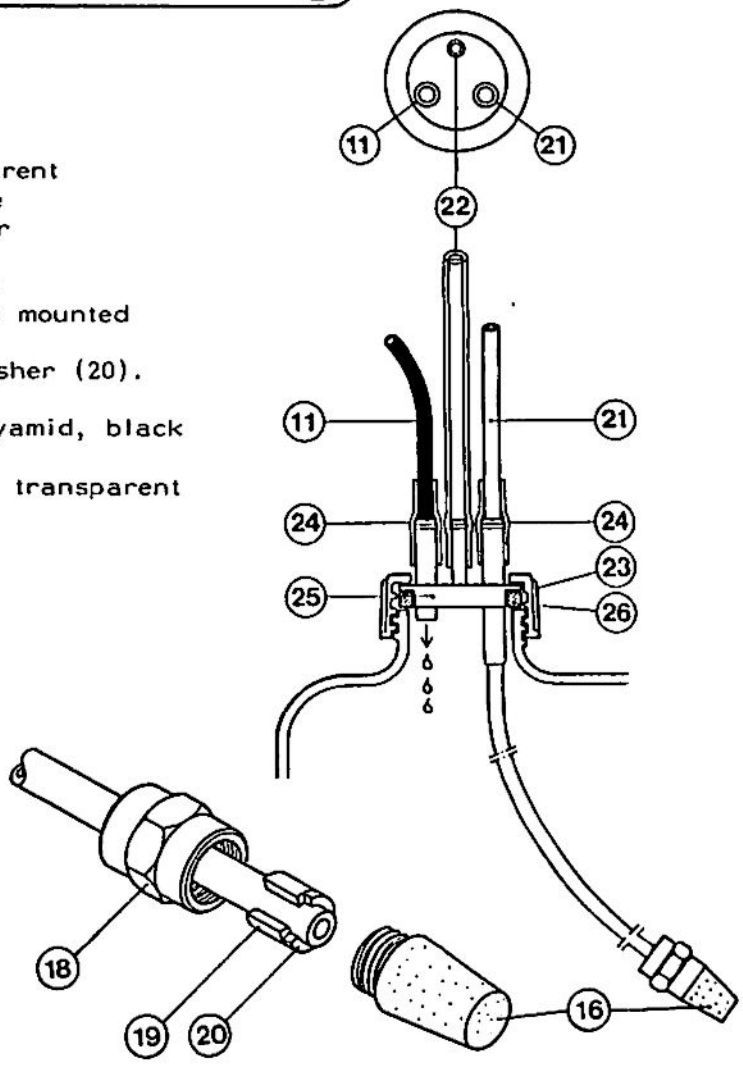
23. Rubber gasket ring

16. Tank filter

18. Filter holder nut

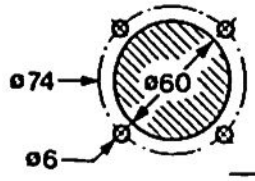
19. Filter holder nut rubber ring

20. Filter shield washer ring



Hole Ø for take through hole = 60 mm

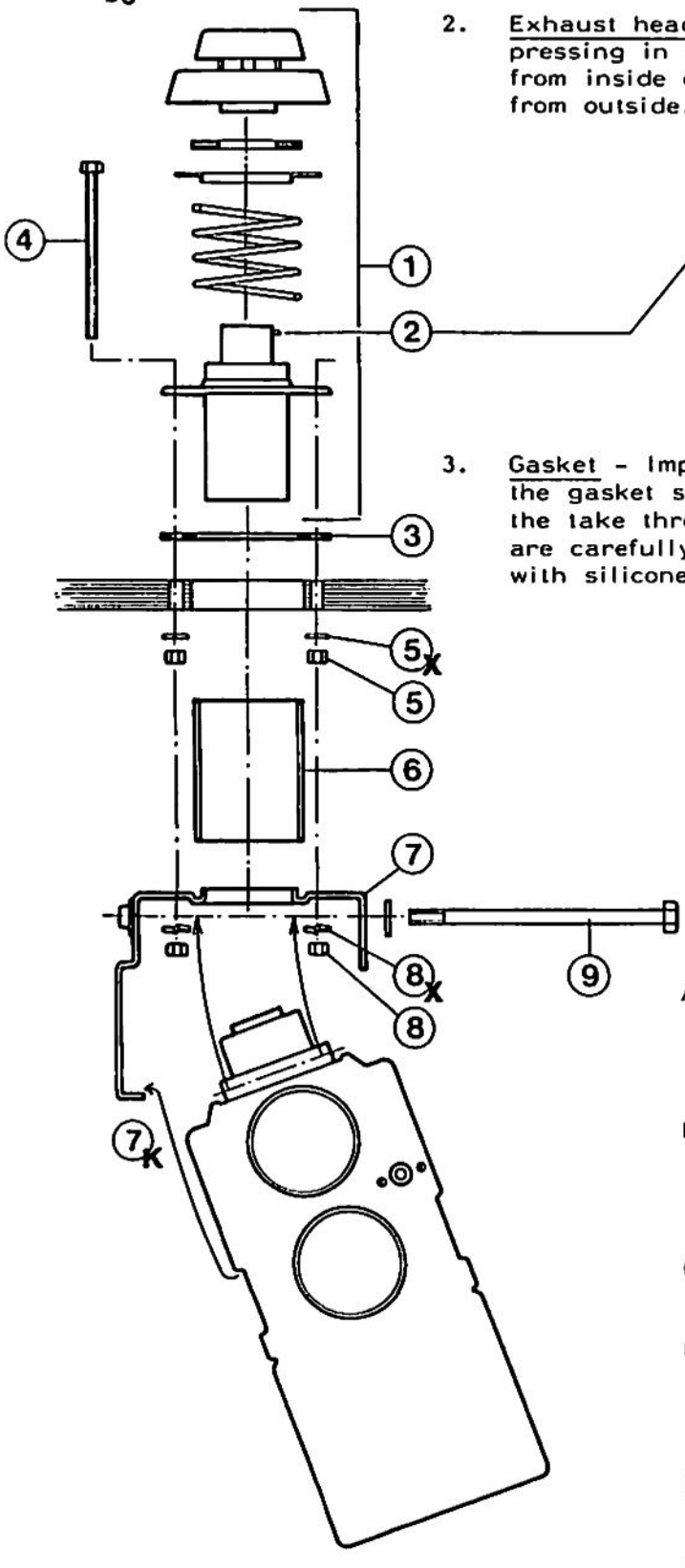
Use the exhaust head base plate as bore template.

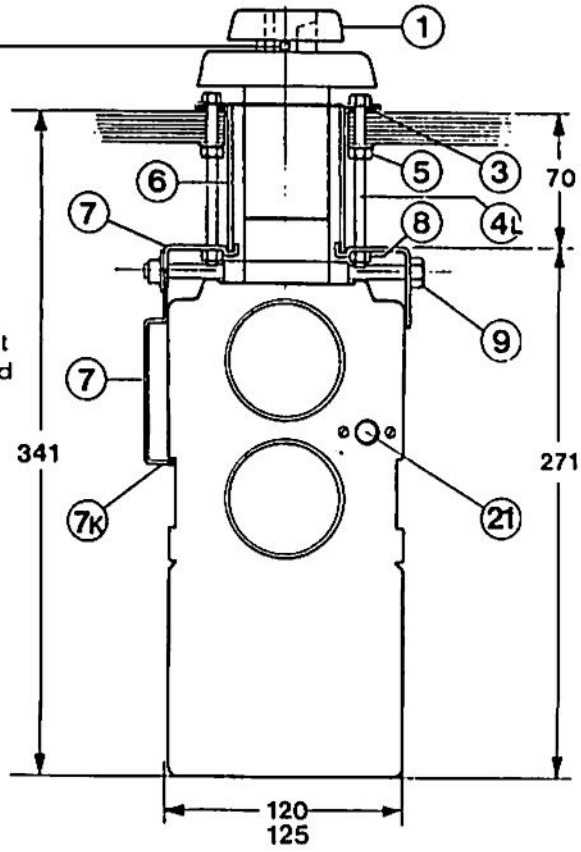


1. Exhaust head 2460 closes by pressing down and turning clockwise, opens by turning anti-clockwise.

2. Exhaust head is opened for mounting by pressing in the pin (2) with forefinger from inside or with screw-driver etc. from outside.

3. Gasket - Important that the gasket surfaces and the take through hole are carefully sealed with silicone seal.





A. The exhaust head is mounted on deck with bolts (4) and nuts (5) with lock washer (5X) under. Tight the nuts, but not so hard the base plate deforms.

B. Place the spacing tube (6) and mounting plate (7) on bolts and fasten with nuts (8) with lock washers (8X) under. Tight the nuts, but not so hard the exhaust base plate deforms.

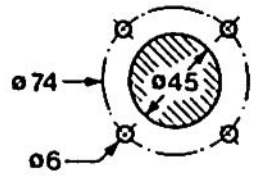
C. Check and retight the nuts (5) and again the nuts (8).

D. Place the heater on mounting plate (7). The cant (7K) helps to hold up the heater. Check that the heater exhaust pipe goes well in the exhaust head middle pipe.

E. Fasten the heater on mounting plate (7) with bolts (9) and tight them.

21. Check that the heater is mounted so that the overheating cut-out reset button (21) is accessible for hand.

Hole Ø for take through hole = 45 mm



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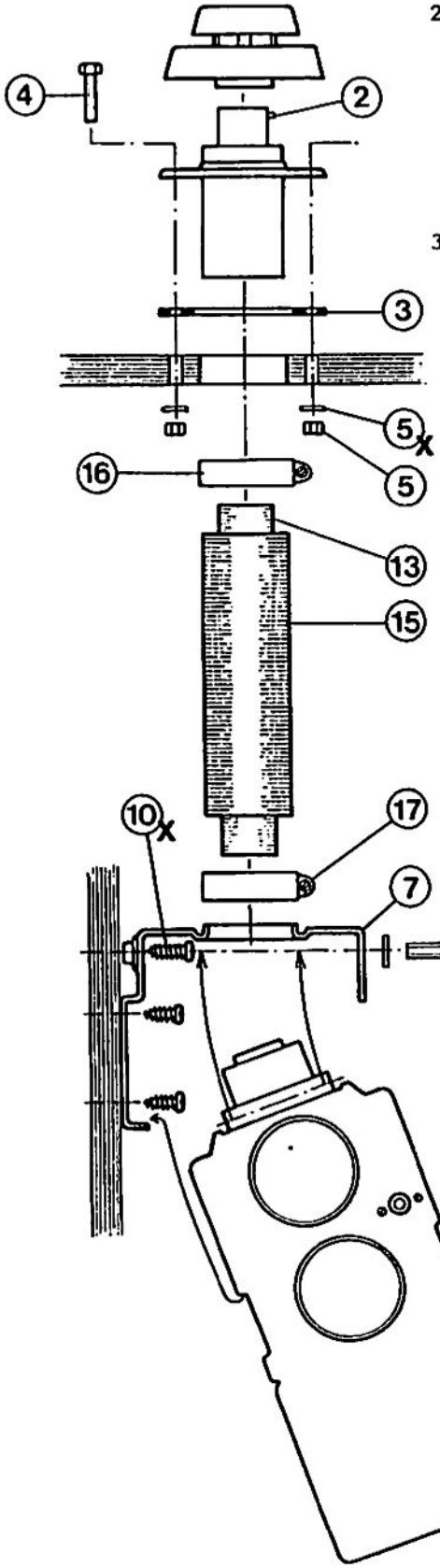
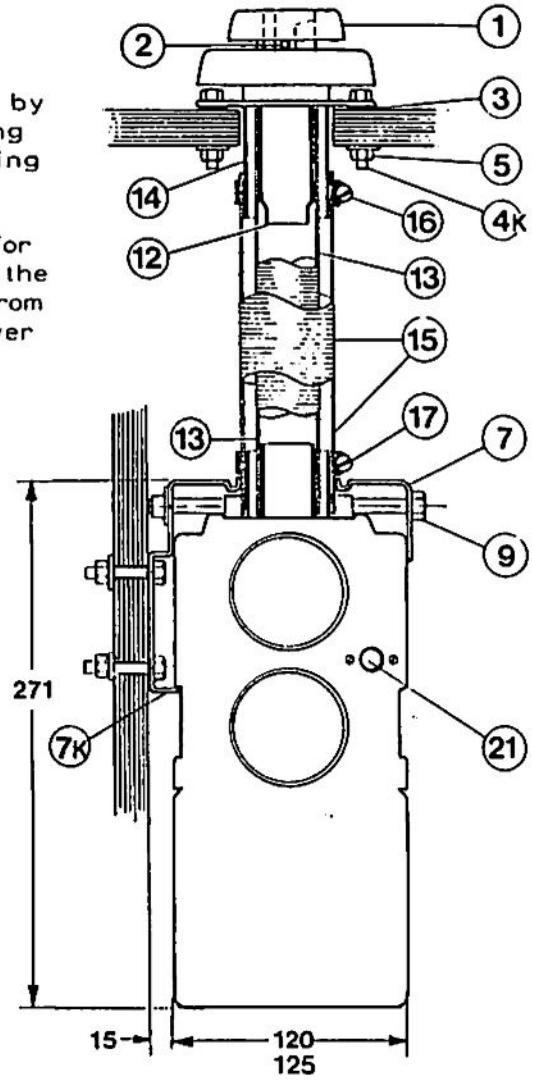
3. Gasket - Important that the gasket surfaces and the take through hole are carefully sealed with silicone seal.





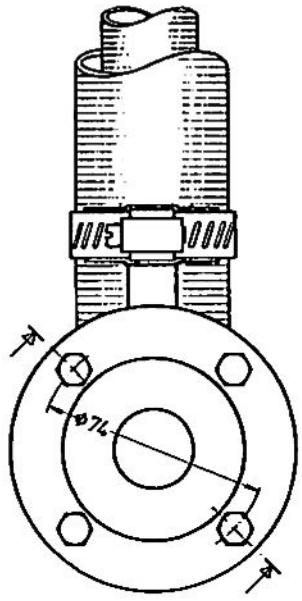
A. The exhaust head is mounted on deck with bolts (4) and nuts (5) with lock washer (5X) under. Tight the nuts, but not so hard the base plate deforms.

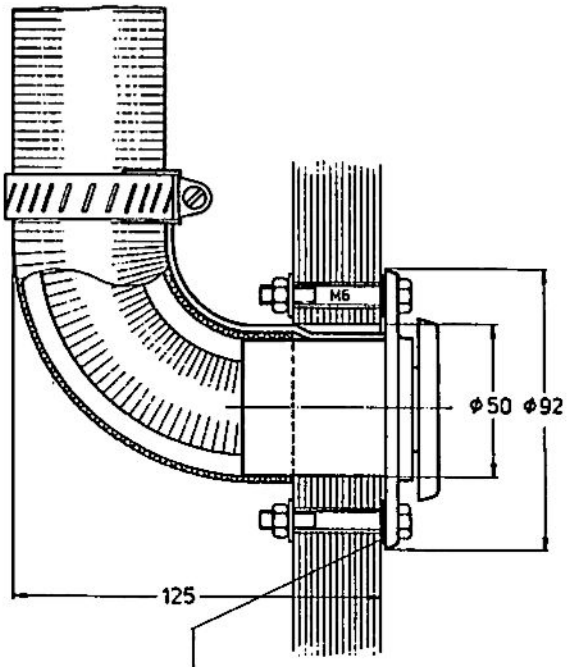
B. The mounting plate (7) is fastened on bulkhead or wall with bolts with lock washer
10x. under bolt nut. If screws are used the mounting must be secured with screws (10X) in the upper holes of the mounting plate (7).

C. Place the heater on mounting plate (7). The cant (7K) helps to hold up the heater. Check that the heater exhaust pipe goes well in the exhaust head middle pipe.

D. Cut the exhaust tubes to suitable length Important - The inner smoke tube (13) must be cut 10 cm longer than the outer tube (15). The inner tube must be pushed well into the bottom of both heater and exhaust head pipe (12). The outer tube (15) has to be secured at both ends with hose clamps (17).

21. Check that the heater is mounted so that the overheating cut-out reset button (21) is accessible for hand.





Rubber/cork gasket

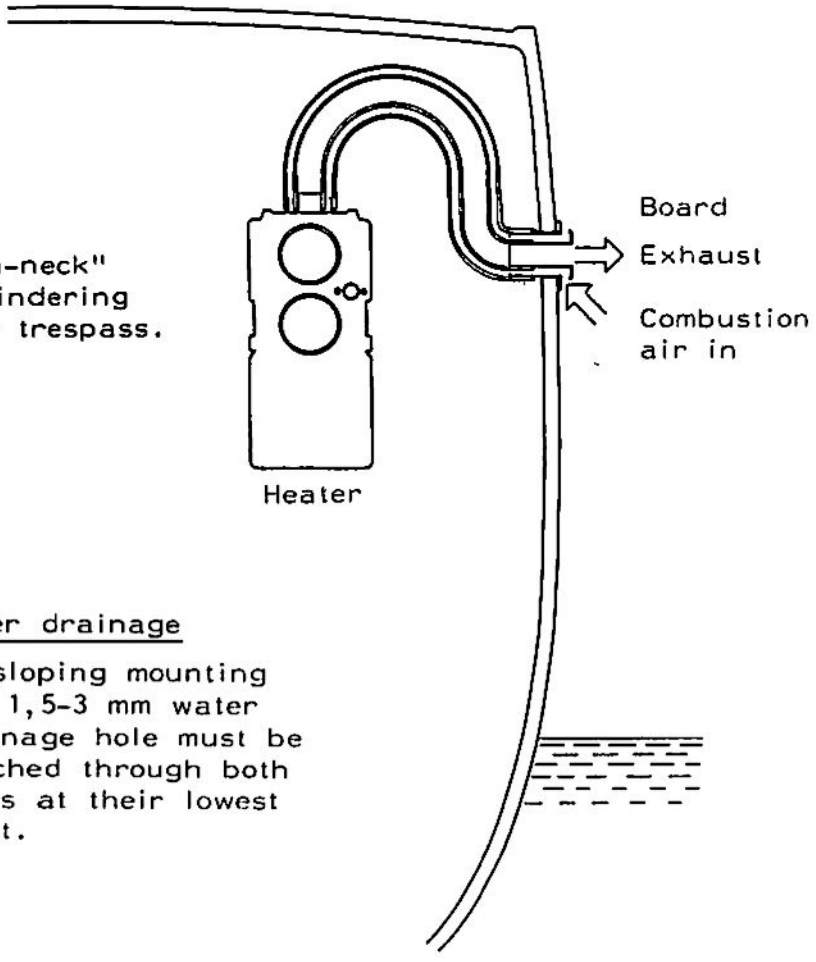
Important With the 2467 (2466) through hull fitting must also the outer Ø 45 mm combustion tube be of stainless quality as the inner exhaust tube and not aluminium as normal with standard exhaust head 2460.

INOX 45 Ø 45 mm flexible, stainless tube = Nr. 2448

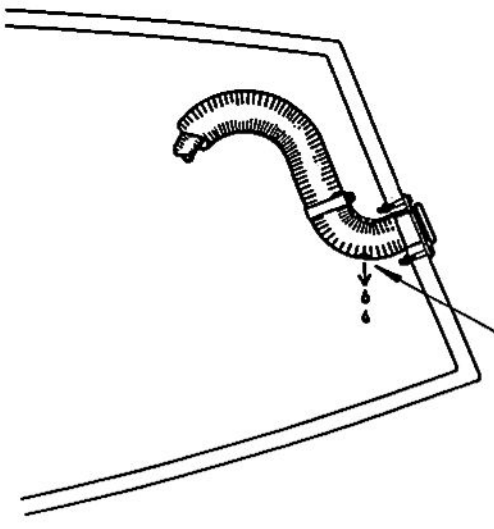
INOX 28 Ø 28 mm flexible, stainless tube

The inner smoke tube must be cut 10 cm* longer than the outer tube to secure the fastening. The outer tube must be secured at both ends with hose clamps.

*(with stainless outer tube 5 cm.)



"Swan-neck" for hindering water trespass.



Water drainage

By sloping mounting a Ø 1,5-3 mm water drainage hole must be punched through both tubes at their lowest point.

Mounting at transom stern

THERMOSTAT FUNCTION

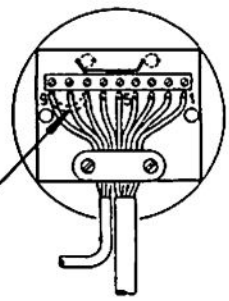
When cabin temp. rises above thermostat set point, - the heater is switched on half effect.

When cabin temp. sinks below thermostat set point, - the heater is switched on full effect.

The heat switch in heater control box must be switched on half effect, otherwise the thermostat control does not function.

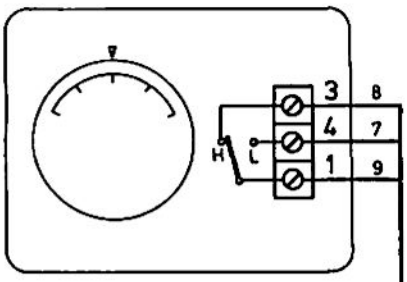
The thermostat does not start and switch off the heater, - it only switches between 1/1 and 1/2-effect.

For take through the control cable is easiest to make loose at the control box end. The control box terminal and cable leads have corresponding no markings.

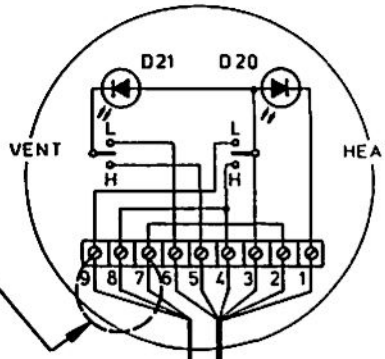


THE CONTROL BOX seen from rear

THERMOSTAT
Honeywell type T406/ T606
or type



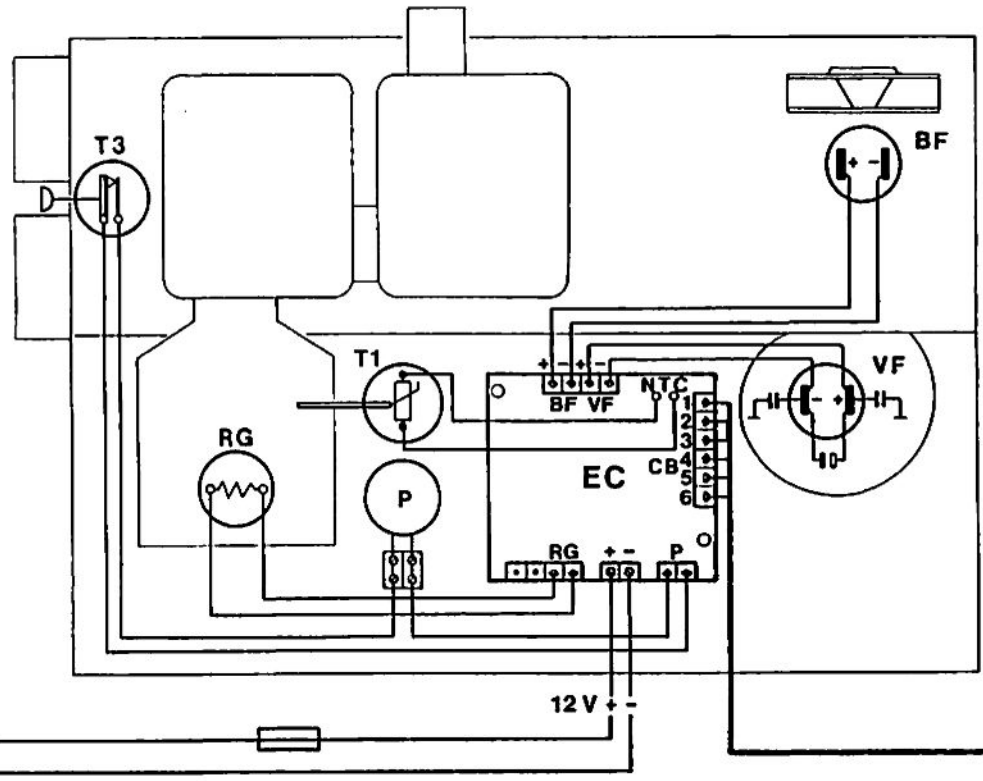
Remove this wire before connecting thermostat.



H = High, - connected when cabin temp. below set point.

L = Low, - connected when cabin temp. above set point.

Thermostat cable 3 x 0.5-1.5 mm.



Control cable length 4 metres.

Battery cable - min core area 2.5 mm² (SWG 8)

To reduce the radio interferences an own direct cable direct to the battery is recommended. The cable must be equipped with an own main switch and 8-10 A fuse in the positive line (read lead).

BF= Combustion blower motor
VF= Main blower motor with interference suppressor
P = Fuel pump
T1= Aftercooling & signal thermistor T1
Copper heat leader for T1
RG= Glow primer
T3= Overheating limit switch
CB= Control box connection
EC= Printed circuit board for central electronic control unit