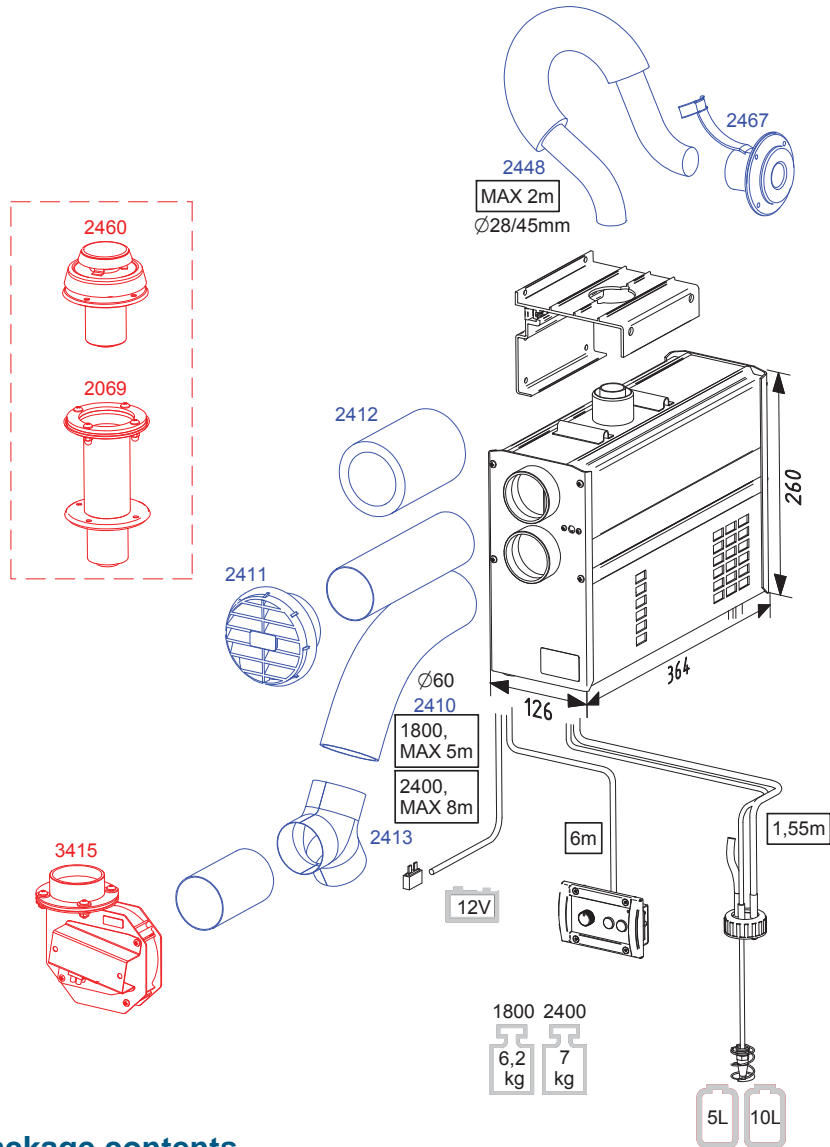


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**Package contents**

1800 t / 2400 t	
1 pcs	Heater (fuel hose and control panel cable installed)
1 pcs	① Mounting plate
1 pcs	Accessory bag <b>17662B</b>
2 pcs	② Mounting bolt M8 x 120 mm DIN 931 / ISO 4014
2 pcs	③ Corrugated base plate M8 DIN 137 A
6 pcs	④ Fastening screw 4,8 x 16 mm DIN 7981 / ISO 7049
1 pcs	⑤ Hose binder 32 - 50 mm
2 pcs	⑥ Hose binder 50 - 70 mm
1 pcs	⑦ Fuse box
1 pcs	⑧ Fuse 15 A (blue)
2 pcs	⑨ Push on contact 6.3 x 0.8 (yellow)
1 pcs	Control panel package <b>361066</b>
1 pcs	⑩ Control panel
1 pcs	⑪ Extension collar
4 pcs	⑫ Control panel fastening screws 3,5 x 20 mm (black) TX10
4 pcs	⑬ Control panel fastening screws 3,5 x 40 mm (black) TX10
1 pcs	Installation, operation and maintenance instructions

### Technical information

	1800 t	2400 t
Fuel	Paraffin	
Operating voltage	12 V DC	
Fuel consumption	0,10 - 0,18 l/h	0,12 - 0,23 l/h
Heating power, max	1700 W	2200 W
Heating power, min	900 W	1100 W
Power consumption	0,35 - 0,5 A	0,6 - 1,0 A (when ignited ca. 2 min. 5 A)
Dimensions (L x H x W)	364 x 260 x 126 mm 14 <sup>3</sup> / <sub>8</sub> " x 10 <sup>1</sup> / <sub>4</sub> " x 5"	
Weight	6,2 kg 13,7 lbs	7 kg 15,4 lbs
Maximum permitted length of exhaust pipe	2 m (ø 28/45 mm) 6,5' (ø 28/45 mm)	
Maximum permitted length of fuel hose	8 m 26'	
Maximum permitted length of warm air duct	5 + 5 m 16' + 16'	8 + 8 m 26' + 26'
Minimum area of the replacement air opening	100 cm <sup>2</sup> 16 square inches	
Warm air connection	2 x ø 60 mm	
Connections	Remote control Timer	
Suitable Exhaust gas lead-throughs	2467 and 2460	

### Operation description

The **1800 t** and **2400 t** heaters are forced air Paraffin heaters without an exposed flame.

The **1800 t** and **2400 t** models take combustion air from outside the boat through the outer coaxial exhaust gas pipe and blow their exhaust out through the inner coaxial pipe. The coaxial pipe connects to a common through hull fitting that allows both inlet air and exhaust to pass separately. This process improves efficiency, wind resistance and lowers the minimum power level.

The heat generated by forced air fuel combustion, is transferred to the circulation air by a heat exchanger. The heating power can be adjusted freely between high and low output settings by manual rheostat control or by thermostat.

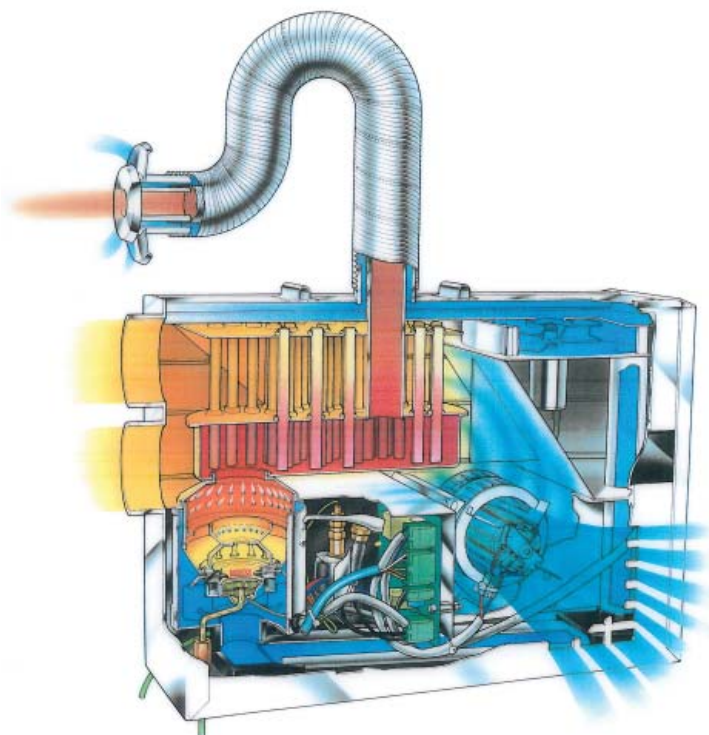
The heated air is circulated through the cabin through the warm air ducting.

In hot and/or humid conditions, these heating units can be used for simple fresh air ventilation and circulation.

When starting the device, the glow plug ignites the pumped fuel in the burner bowl. The glow/start and shut down sequences are factory programmed, so - starts and stops are automatically controlled.

The fuel pump inside the heater case regulates the fuel feed and the system electronics control both the fuel and air mixture to maintain the ideal clean burning process. The temperature sensor inside the burner feels the ignition and lights up the red signal light (1) to indicate a successful start. When stopping the device, an automatic after cooling process takes place. This process cleans the burner, purging any unburned fuel.

The heaters are completely made out of corrosion resistant materials.



### Heater installation

Country specific regulations shall be followed in any installation.

The warranty of boat products is valid only in boat installations.

The warranty is not valid in installations to vehicles or other spaces.

The device is meant for marine pleasure craft use. The device is not designed for continuous use for example in live aboard boats or commercial settings. In such use the device will require more frequent servicing not covered by warranty.

### Things to note when selecting the installation location

The device shall be installed into a dry space in a protected location.

The device must be mounted to a solid, stable bulkhead or wall.

When installing, please note that the device needs to be removable for servicing. Connections and location should be made so that the device can be easily disconnected for removal. For maintenance, it is useful to leave 200 mm (7 <sup>7</sup>/<sub>8</sub>”) empty space below the heater for the removal of the bottom cover of the heater.

The heater should be installed vertically level when the boat is on an even keel. The static inclination must not exceed 5°. While the device will tolerate being temporarily tilted to a steep angle (even for some hours), the burner will not yield optimal performance if it is constantly inclined.

#### Please note specially the following things:

- Avoid installing the control panel in the immediate vicinity of a water outlet.
- If possible, install the control panel on a vertical surface.
- Select the place of installation to allow a minimum amount of bending in the warm air ducting.

We recommend that the device be installed by an authorized Wallas service shop or installer.

### Things to note when installing pipes, hoses and cables

Power cables, warm-air ducting and fuel hoses must be protected in locations where they are susceptible to mechanical damage due to sharp edges or heat.

All cables and hoses should have a fluid precluding “drip loop” to prevent water or other fluids from following wires or hoses to the heater.

### Installation space

The device can be installed within the heated space or outside of it.



**The heater cannot be installed into a space which may include gasoline fumes (danger for explosion).**

The necessary installation tools



ø 2 mm  
ø 5 / ø 6 mm

PZ 2  
PH 2  
TX 10

13 mm

ø 35 / ø 50 mm  
ø 60 mm  
ø 67 mm



In a metal-hulled boat, you must ensure that the device, the exhaust gas lead-through, the fuel connection, the control panel, and all other parts are insulated from the boat's hull. This must be done to

- prevent electrochemical corrosion
- prevent voltage from being transmitted from the hull to the device or vice versa during electrical faults.



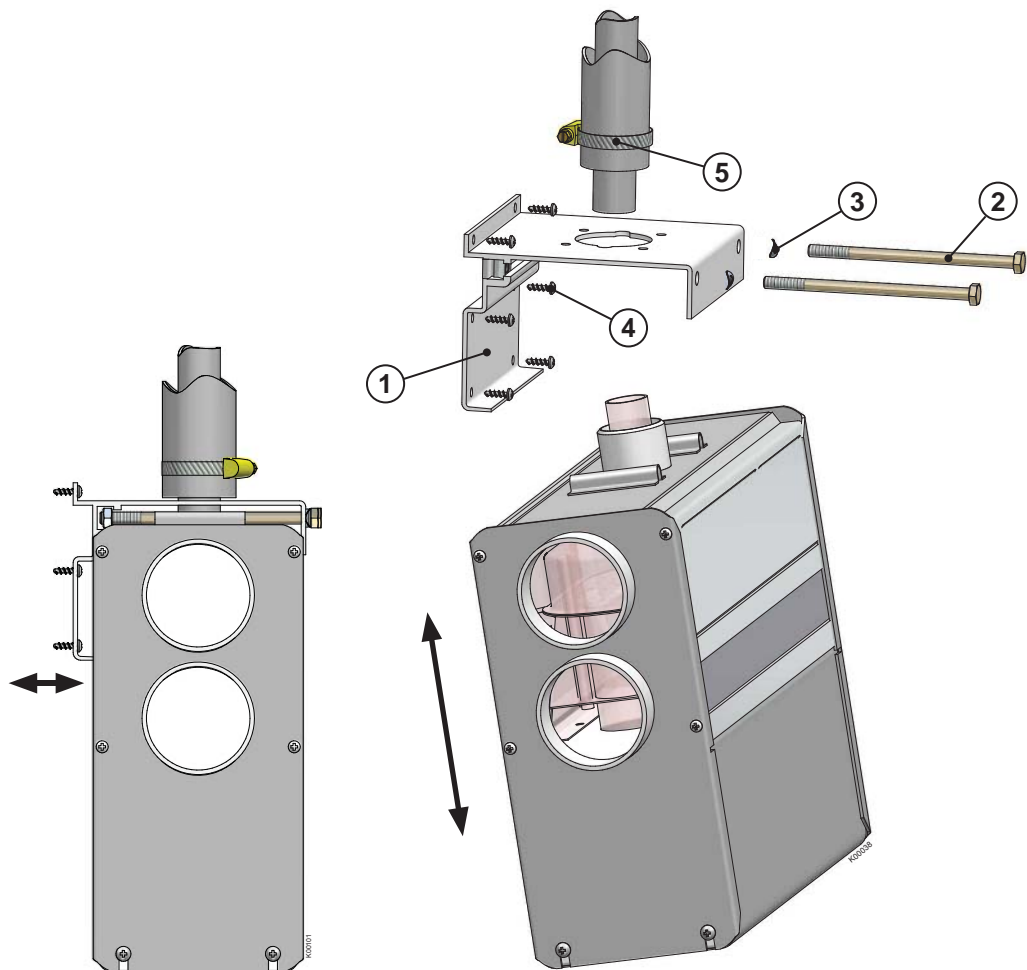
Always use original Wallas accessories and parts with Wallas equipment.

**Fastening the device**

Fix the mounting plate (1) with screws (4) to a suitable place and check that the bottom of the heater is in horizontal position.

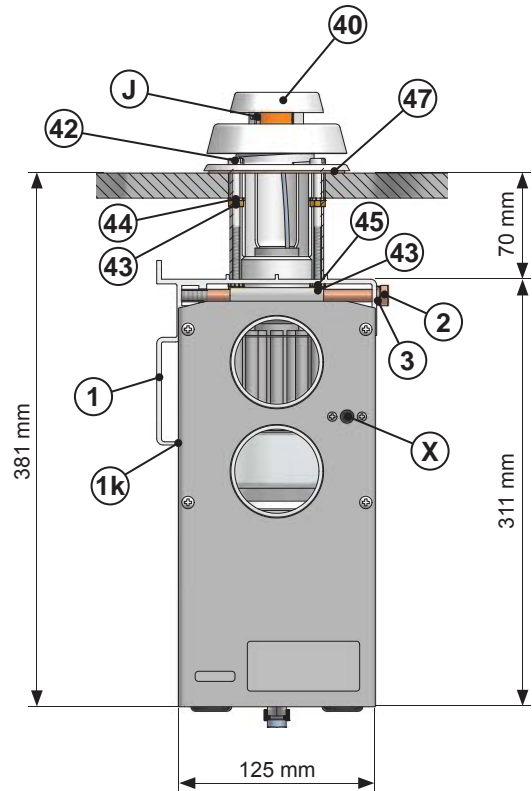
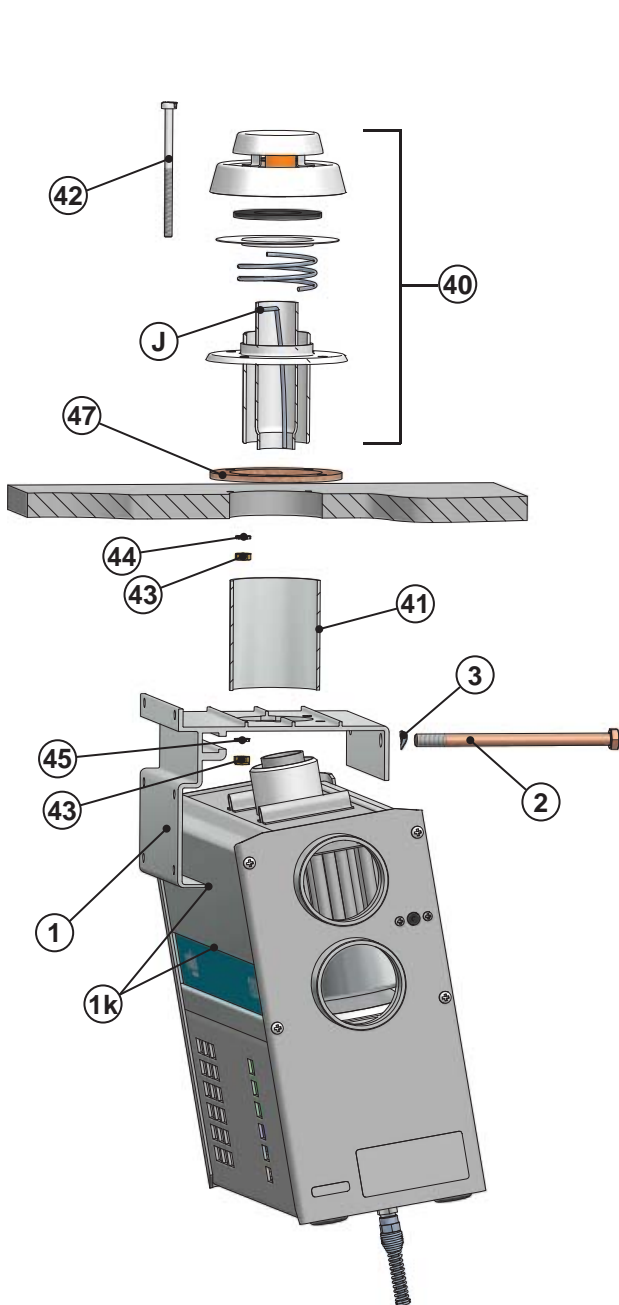
Lift the heater into the installation plate and lock the device with the mounting bolts (2). There has to be a corrugated base plate (3) under the head of the screw. Be sure that the edge of the mounting plate will lock to the slot in the side profile of the heater.

Connect the exhaust gas pipe with a hose clamp (5).



**Direct attachment to exhaust on deck**

- Exhaust head 2460 closes by pressing down and turning clockwise, opens by turning counterclockwise.
- Exhaust head is opened for mounting by pressing in the pin (J) with screwdriver etc. from outside.
- Gasket (47). Important that the gasket surfaces and the take through hole are carefully sealed with silicone seal.



- The exhaust head is mounted on deck with bolts (42) M5 x 85 and nuts (43) with lock washer (44) under. Tight the nuts, but not so hard the base plate deforms.
- Place the spacing tube (41) and mounting plate (1) on bolts (42) and fasten with nuts (43) with lock washer (44) under. Tight the nuts, but not so hard the exhaust base plate deforms.
- Check and retight the nuts (43).
- Place the heater on mounting plate (1). The cant (1k) helps to hold up the heater. Check that the heater exhaust pipe goes well in the exhaust head middle pipe.
- Fasten the heater on mounting plate (1) with bolts (2) M8 x 120 mm and tight them..



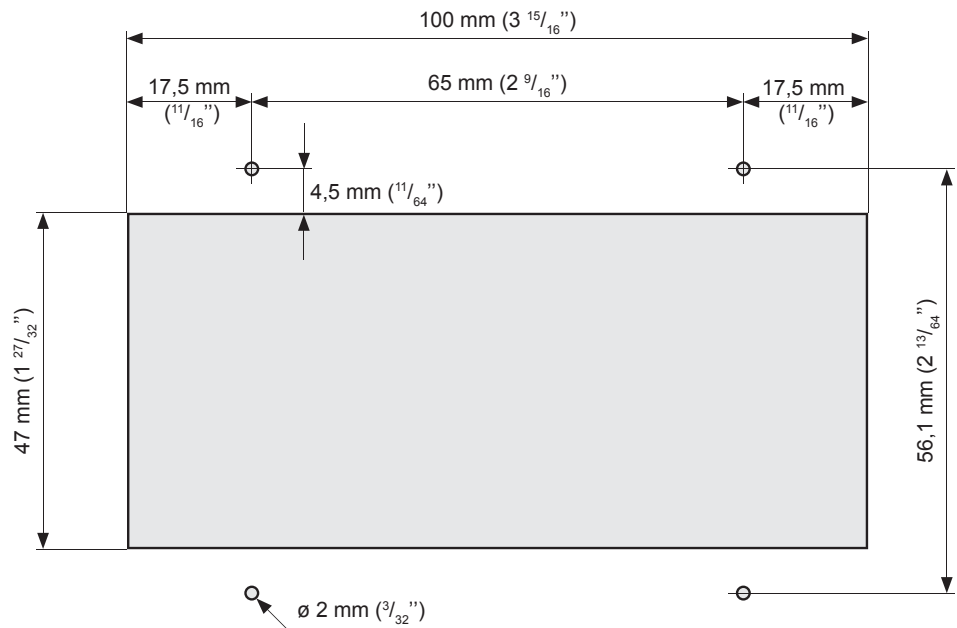
**Check that the heater is mounted so that the overheating cut-out reset button (X) is accessible for hand.**

**Control panel installation**

Cut a suitable installation hole for the control panel in the selected location. Try to install the panel in a vertical surface in a location that will remain dry.



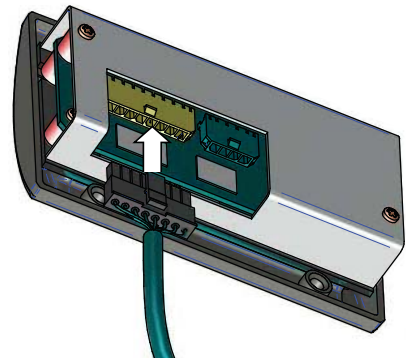
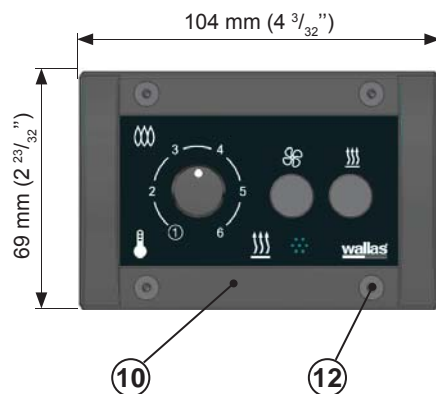
The thermostat sensor is in the panel face, so select the location with thermostatic operation/regulation in mind. Do not install close to heat source or close to a window or door. Avoid locations that might be contacted by direct sunlight. The length of the control panel cable is 6 m.



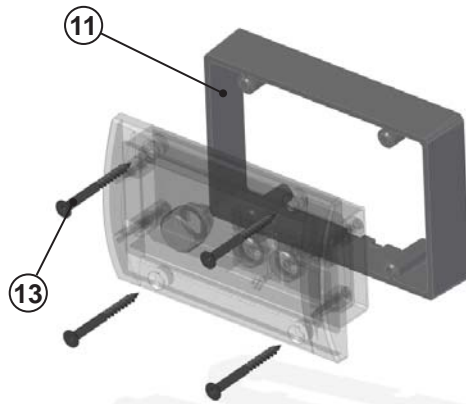
Measurements of the control panel installation cut-out. If necessary, predrill holes for the Ø 2 mm (3/32") screws.



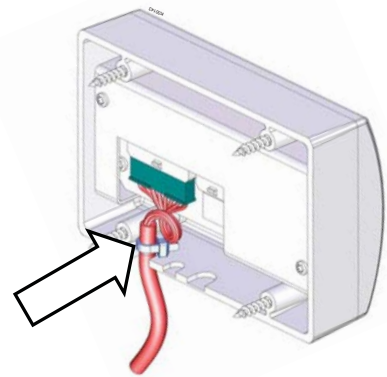
You can utilize the sample of the box when drawing the lines of the installation hole.



Connect the control panel cable from the device to the control panel (10). Use the fastening screws to install the control panel to the installation cut-out (12).



An extension collar (11) is used when control panel is surface mounted.  
The box of the panel includes 4 pcs screws 3,5 x 40mm (black) TX10 (13).

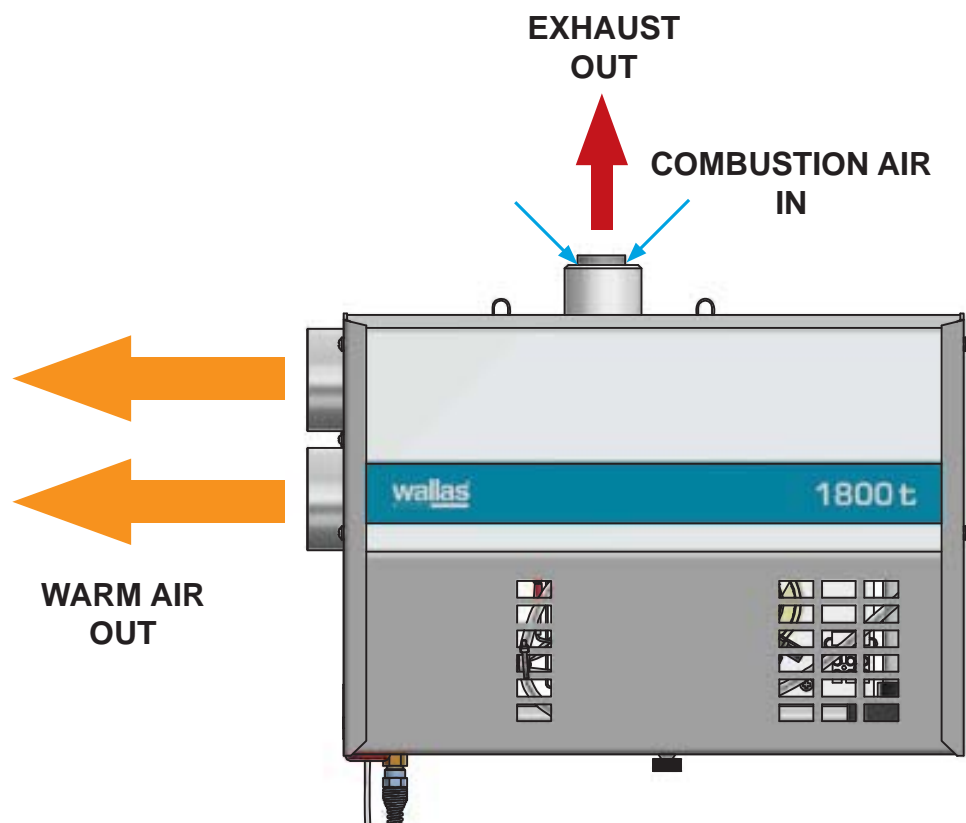


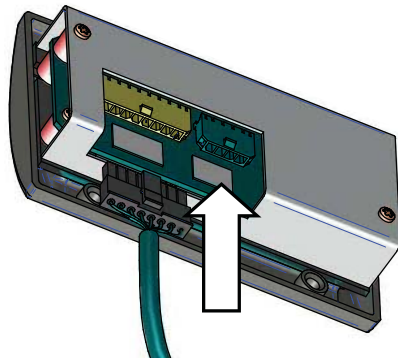
When installing the control panel surface mounted (using the collar), a loop to the control panel cable must be done. A cable tie must be attached to cable in order to avoid the cable detach from the connector.

## Connections of the device

### Things to note about the connections

In installation, to make the mounting and demounting for service easier, it is recommended to leave some extra length of loose cables and fuel line by creating a coil.





Remote control (accessory)  
Timer (accessory)

*Accessories are connected to the control panel, the image shows the place. Take care of the strain relief.*

## Electrical connections

### Things to note about the connections

The device uses 12V (nominal) direct current voltage. To minimize current losses, make the power cable as short as possible and avoid joining. The cross-sectional area of the cable is dependent on the length of the power cord. The cross-sectional area of the cable must be consistent all the way from the stove to the battery. The maximum length of the power cord is 10 m.

### The cross-sectional area of the cable

Total length of the power cord (m)	Cross-sectional area of the cable in square mm (US Gauge)
0 - 4	4 (11 or 10 AWG)
4 - 6	6 (9 or 8 AWG)
6 - 10	10 (7 or 6 AWG)

If a thicker cable is required, make a separate joint in the power cord. See picture on the next page.

### Main switch

A main switch (accessory) must be installed on the device's "positive (Red)" cord. Always cut the power at the main switch (after cooling has completed), if the device is going to be left unused for a long period of time.



**Never use the main switch to cut the power before the cooling phase, which starts after the device is turned off, is completed.**

**Electrical connections of the device**

12V direct current system

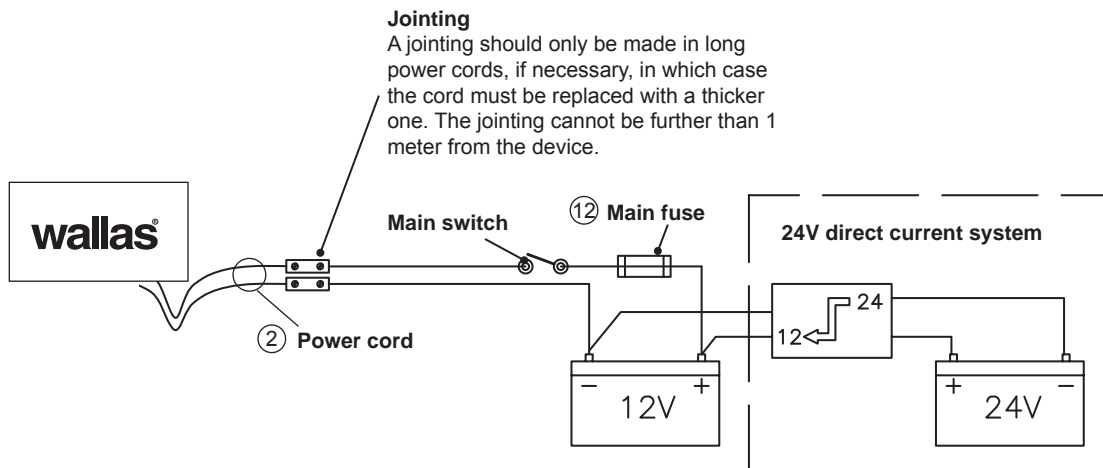
Connect the red wire of the power cord to the plus terminal of the battery and the black or blue wire to the minus terminal. A 15 A main fuse (12) must be installed near the battery on the red plus wire of the power cord. See picture.

24V direct current system

If the device is to receive power from a 24V system, always connect a charging voltage reducer and a 12V battery before connecting the device. Without the battery the voltage reducer will not be enough on its own as it cannot generate the large amount of current the glow plug requires. After the 12V battery, the connection is the same as in a 12 V system.



The device has to be connected to the house battery of the boat.



**Checking the connection**

The device consumes most power when it is started up (glowing). At this point voltage losses are also at their highest. During the glowing phase, the voltage must be at least 11,5 V measured at the quick coupling. See picture. If the voltage is lower than this, the device may not start.

## Fuel connections

### Things to note about the connections

The standard length of the fuel hose is 2 m (max 8 m) 6,5' (max 26'). Cut the fuel hose to a length suitable for installation.

The lift height of the pump should be less than 2 m (7'); preferably 0.5 – 1 m.

The fuel pipe must always have a Wallas filter.

### Country-specific requirements

The standard fuel hose is plastic. Please observe country-specific requirements with regard to the material of the fuel hose/pipe and the fuel filter. The inner diameter of a new replacement hose should be equal to the inner diameter of the plastic hose.

Copper pipe and metal filters are available as accessories.

### Fuel feed

If the lift height exceeds 2 m, the fuel feed must be checked and, if necessary, adjusted. The fuel feed must also always be checked, if parts of the fuel system, such as the pump or the electronics card, have been replaced.

Fuel system adjustments are device specific. These adjustments should only be carried out by an authorized service shop.

### Connection to a separate tank

Cap run-throughs and sintered filters are used on plastic tanks.

The fuel tank should be mounted securely.

The fuel tank should be placed close to the keel line.

### Wallas fuel tanks

Volume	length x height x width	Order code	
5 l	200 x 300 x 130 mm	<b>2024</b>	(accessory)
10 l	380 x 195 x 210 mm	<b>2027</b>	(accessory)
30 l	590 x 200 x 300 mm	<b>4030</b>	(accessory)
130 l	800 x 400 x 600 mm	<b>4130</b>	(accessory)

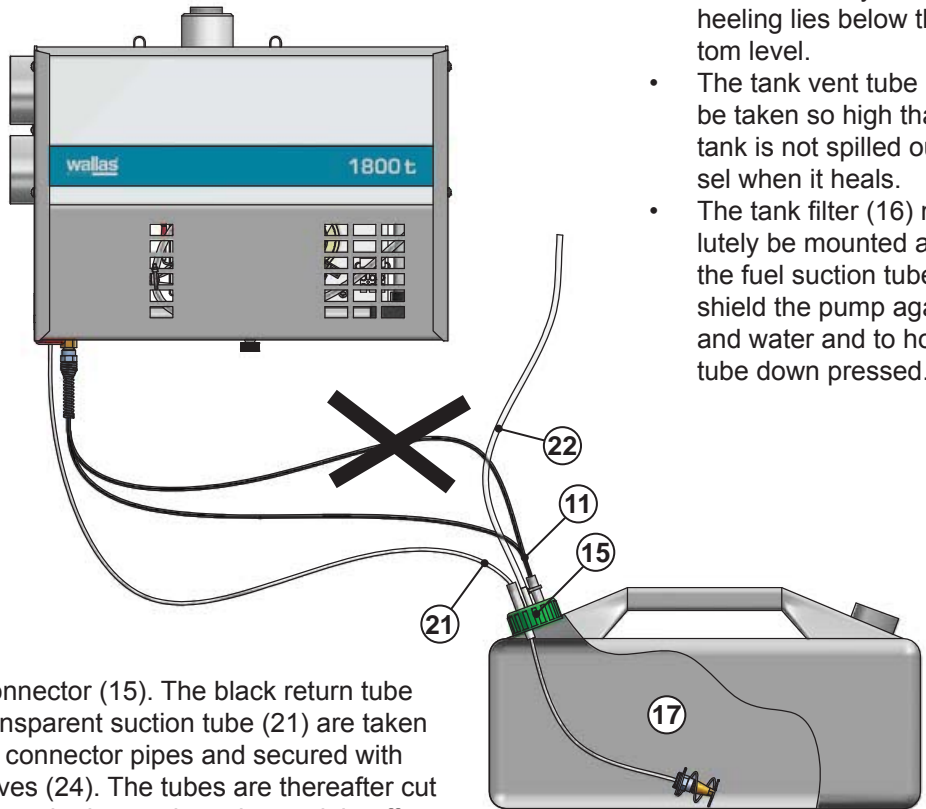


The fuel connections must be tightened firmly so that the air cannot leak into the hose. Always check the cleanliness of the connection surfaces before tightening. Air leaks in the fuel system will cause the device to malfunction.

Fuel lines & tank connection

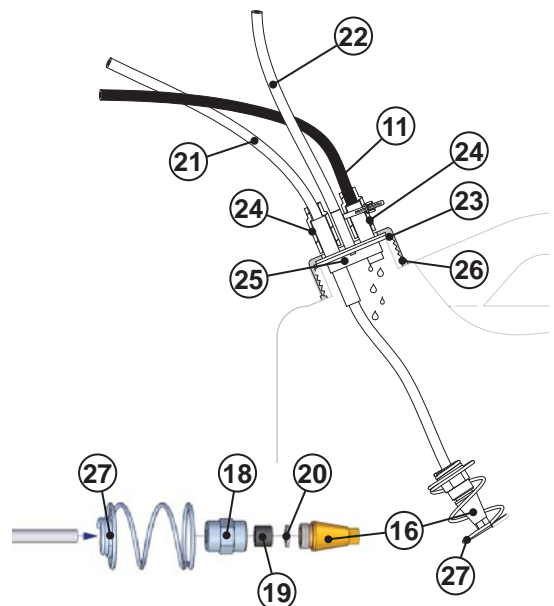


The fuel lines must be placed so that the black excess fuel return tube has continuous fall toward tank. Loops upward from airlocks, which hinder the free return of excess fuel and can cause burning disturbances and shooting.



- The fuel tank (17) must be placed so that it always - also under heeling lies below the heater bottom level.
- The tank vent tube (22) end must be taken so high that fuel from tank is not spilled out in the vessel when it heels.
- The tank filter (16) 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.

- The tank connector (15). 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).
- Excess fuel return tube (11), Ø 5/3 mm, polyamid, black.
- Fuel suction tube (21), Ø 5/2 mm, polyamid, transparent.
- Tank vent tube (22), Ø 7/5 mm, PVC.
- Rubber sleeves (24) securing the fuel tubes.
- Tank connector-take through plate (25).
- Tank connector screw collar holder (26).
- Rubber gasket ring (23).
- Tank filter (16).
- Filter holder nut (18).
- Filter holder nut rubber ring (19).
- Filter shield washer ring (20).
- Shield spiral (27) hinders water intake by holding the suction end free from tankbottom.

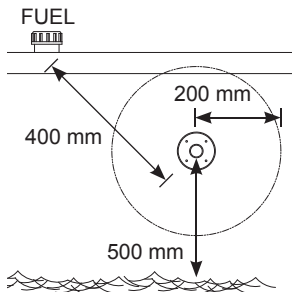


## Exhaust gas connections

### Exhaust gas lead-throughs

Exhaust gas lead-throughs **2467** and the closable model **2460** are suitable for device **1800 t** and **2400 t**.

The  $\varnothing$  28/45 mm lead-throughs fit the exhaust gas pipe **2448**.



Safety distances

All exhaust gas lead-throughs are stainless steel.

### General instructions for exhaust gas connections

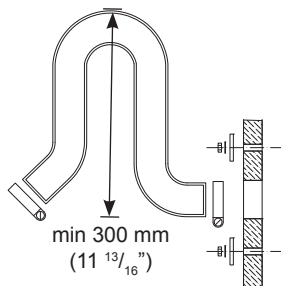
#### LOCATION

Air must always flow freely past the lead-through. Install the lead-through on a flat surface. Avoid corners or recessions where wind pressure can disturb the functioning of the device.

The minimum distance of the lead-through from the fuel tank's filler hole is 400 mm ( $15 \frac{3}{4}$ ").

The minimum distance of the side lead-through from the surface of the water is 500 mm ( $19 \frac{11}{16}$ "). Especially in sail boats it should be noted that the lead-through must never be submerged.

It is recommended to place the lead-through in the side as far back as possible or directly in the transom.



Goose neck

#### INSTALLATION

When preparing the installation cut-out for the lead-through, it is a good idea to use the lead-through as a model for the cut-out; especially if the lead-through is circular. If necessary, seal the installation cut-out with silicone in addition to the lead-through seal. Note! Do not use silicone on a wooden boat.

The side lead-through must always be equipped with a so-called goose neck section.

The goose neck will effectively prevent splash water from getting to the device.

The highest point of the goose neck must always be above the surface of the water.

The device will go out, if the exhaust gas lead through is submerged.

#### OTHER THINGS TO NOTE

Exhaust gas is hot. Always ensure that there is nothing that is susceptible to heat damage within 200 mm (8") of the effective area of the exhaust gases (e.g. ropes, fenders or the side of another boat).

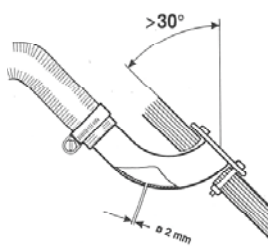
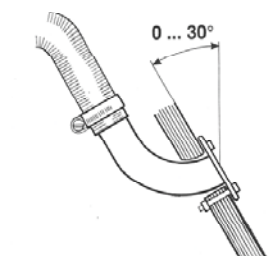
All lead-throughs raise the temperature of their surroundings. A wooden deck, in particular, may dry due to the heat. Remember that the surface of the lead-through is hot during use.

A exhaust gas tube with a length of more than 2 meters (7') has to be equipped with a drainage lock **602293** (condense water) located to the lowest point of the tube.

The Exhaust gas pipe must be made of stainless steel.

If necessary, seal the connections between the exhaust gas pipe and the lead-through with heat-resistant silicone.

When installing the lead-through to the stern side or to otherwise leaning position, be sure that the water do not stuck the exhaust. Drill app. 2 mm ( $\frac{3}{32}$ " ) hole to the lead-through or to the exhaust pipe.



Installation to the stern side

## Insulation kits

### Insulation kit for a metal-hulled boat

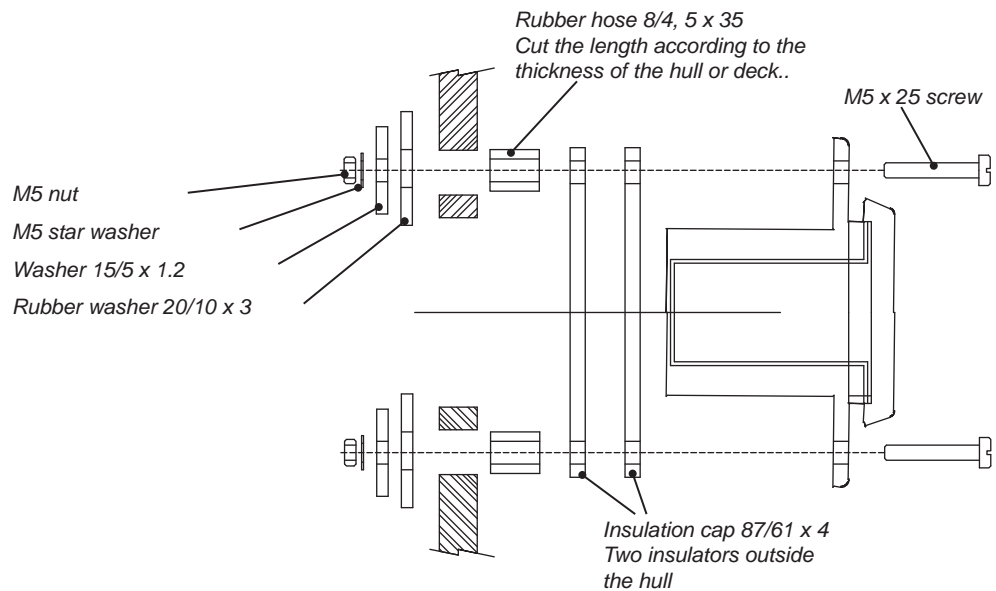
An insulation kit must be used to insulate the lead-through from the boat's metal hull.

The insulation kit insulates the exhaust gas lead-through and the device from each other.

In fault situations the electric circuit runs between the metal hull and the device.

This can result in the oxidation or malfunctioning of the device's circuit board, and, in the worst case scenario, the circuit board may be damaged.

### Insulation kit 2461 for circular coaxial lead-throughs (2467 and 2460)

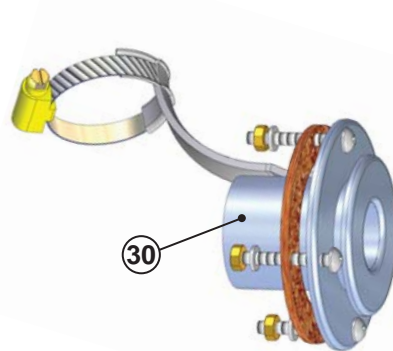


Specific instructions for individual lead-throughs

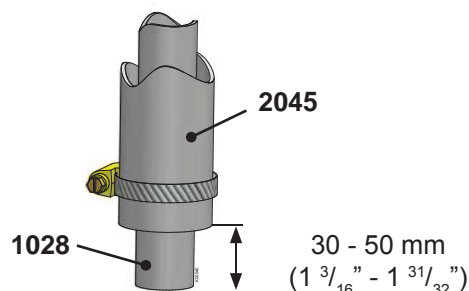
Side lead-through 2467

A side lead-through is installed in the side of the boat or in the transom. In sail boats it is recommended to install it in the transom. The installation always requires a so-called goose neck piece.

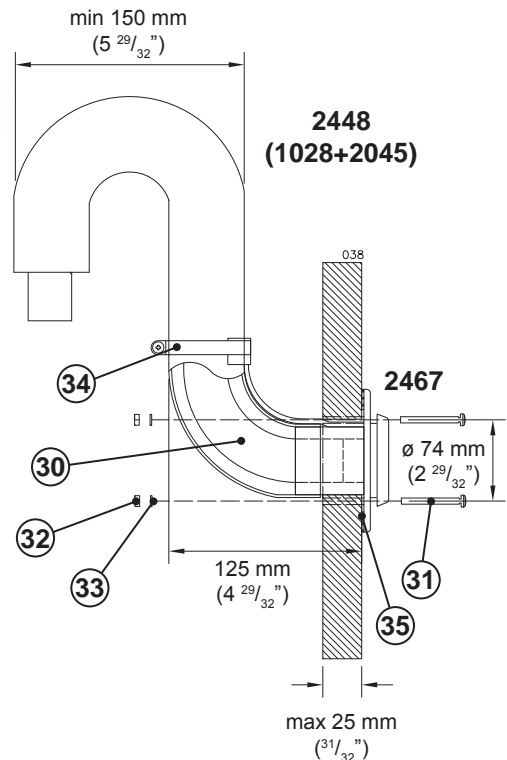
Make the necessary installation cut-outs and spread a suitable sealing agent on both sides of the seal and on the screw holes. This will ensure that the connection is waterproof.



2467 Side lead-through



Length difference of the pipes



Side lead-through 2467 installed.  
The installation cut-out is  $\varnothing$  50 mm ( $1 \frac{31}{32}$  inches) and the screw holes are 4 x  $\varnothing$  6 mm.



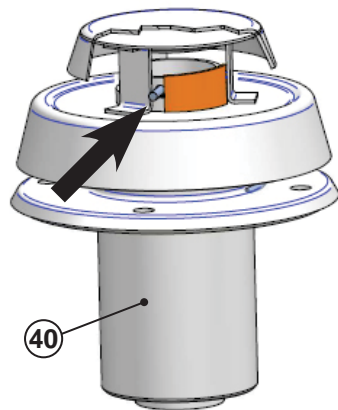
The 1028 exhaust gas pipe must be 30–50 mm ( $1 \frac{3}{16}$  inches -  $1 \frac{31}{32}$  inches) longer than the 2045 inlet pipe. This way the exhaust gas pipe will stay in place in the lead-through more firmly. The measurement depends on the overall length of the piping.

Package contents

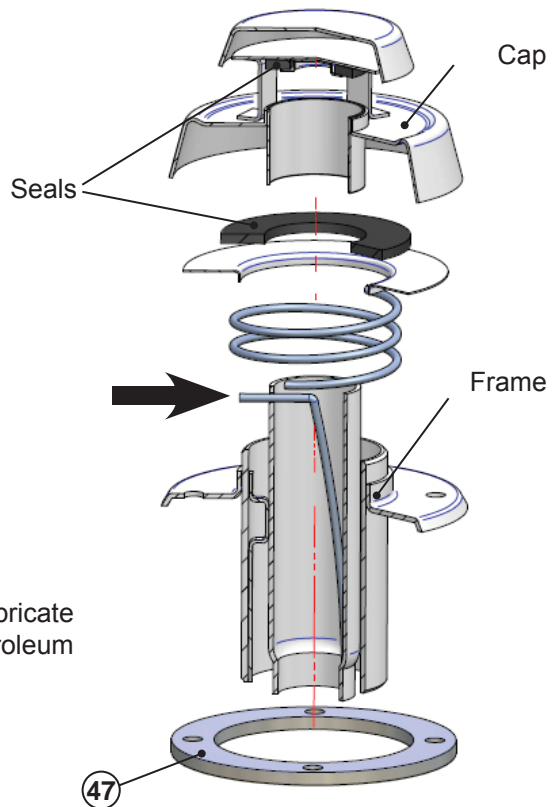
2467		
1 pcs	③①	Side lead-through
1 pcs		Accessory bag 17679
4 pcs	③①	Fastening screw M5 x 40 mm
4 pcs	③②	Nut M5
4 pcs	③③	Washer 5,3 x 10 mm
1 pcs	③④	Hose clamp 32 - 50 mm
1 pcs	③⑤	Gasket

**Closable lead-through 2460**

The cap of the closable lead-through must be detached for installation and seal maintenance by pressing the spring indicated by the arrow in with, for instance, a screwdriver. Take care not to let the screwdriver slip as the spring is very stiff. Hold the cap with your other hand when pressing in the spring. When the spring is down, pull the cap gently out of the frame. When assembling the lead-through, ensure that the order of the parts is correct. Also make sure that the spring goes in the correct hole in the cap. Otherwise, the lead-through cannot be closed.



2460  
Closable lead-through.



**Maintenance**

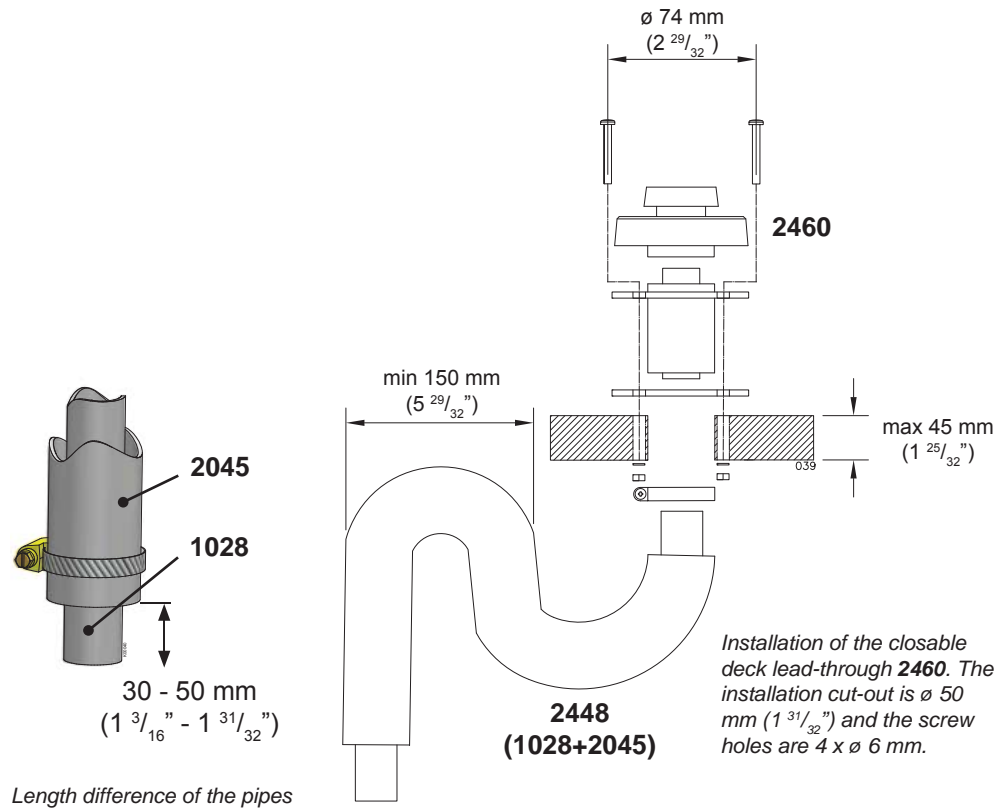
To keep the seals from hardening, lubricate them yearly with a heat-resistant petroleum jelly.



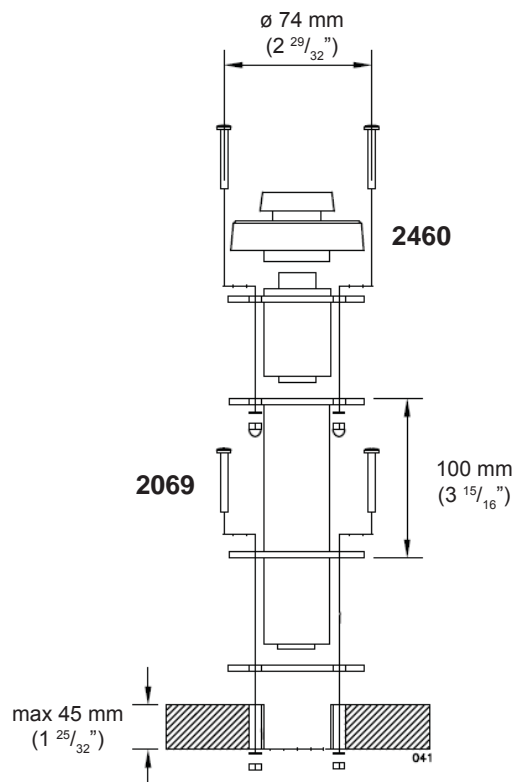
Check that closeable fitting is open before starting the device.

**Package contents**

<b>2460</b>			
1 pcs	40	Closable lead-through	
1 pcs	41	Spacing tube	
1 pcs	Accessory bag 17676		
4 pcs	42	Fastening screw M5 x 85 mm	
8 pcs	43	Nut M5	
4 pcs	44	Washer 5,3 x 15 mm	
4 pcs	45	Washer 5,3 x 10 mm	
1 pcs	46	Hose binder 32 - 50 mm	
1 pcs	47	Gasket	

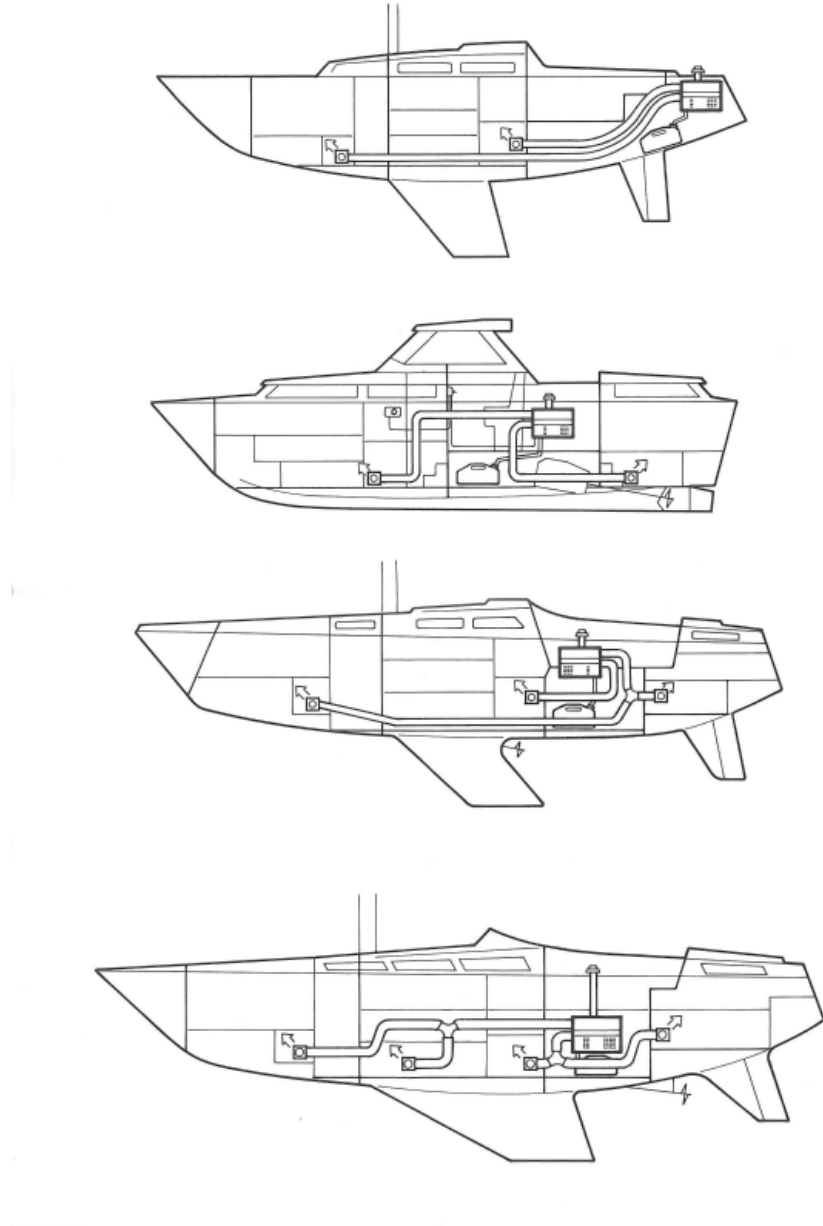


The 1028 exhaust gas pipe must be 30–50 mm ( $1 \frac{3}{16}$  " -  $1 \frac{31}{32}$  ") longer than the 2045 inlet pipe. This way the exhaust gas pipe will stay in place in the lead-through more firmly. The measurement depends on the overall length of the piping.



## Air ductings

### Description of installation



The lower duct is hotter.



To ensure a proper air flow in a long duct into a far front of the boat, it is useful to lead the hotter duct all the way to the front. The other duct can then be distributed according to the need.

### Warm air ducting of the heater

It is important to plan the proper routing of the duct and the locations of the air registers. It is good to locate the heater as near as possible to the area being heated. Avoid the use of sharp bends in the ducting and keep overall bends to a minimum.

Heated air is distributed through the boat with **2410**  $\varnothing$  60 mm duct. Multiple outlets can be installed by adding **2413**  $\varnothing$  60 mm "Y" fittings leading to various locations. All duct to "Y" and duct to register connections should be clamped.

The **2411** air registers are adjustable for direction and flow and located at each duct termination point. It is important that sufficient flow is allowed by the installed registers to maintain (limit) the heater temperature. To ensure this for some applications, the adjustment flap of the register in the bigger heated space, will be removed. Too much resistance in the ductwork (too many flaps closed) and the heater may overheat and shut down.

If the heater will be used mainly with thermostat control, the control panel should be located in the largest heated area. To minimize the loss of heat energy, any long runs and/or runs in areas that do not require heating can be insulated using **2412** insulation. Insulation nearer the heater will be more effective than insulation at the far ends of duct runs.

### Ducting runs

To enable low power consumption, the blower power is limited. It is important that diameters in ducting and air supply holes are as large as possible.

Long air ducting will weaken the total effect, as the flow will be reduced due to friction losses and loss of temperature through the walls of the ducts. The recommended maximum length of one duct is **1800 t** 5 meters (16,5') and **2400 t** 8 meters (26'). Temperature loss can be reduced with the insulation sock **2412**.

### Cabin ventilation

To optimize performance, some ventilation of the cabin is needed, so that fresh air being heated and driven into the cabin is not reduced by overpressure.



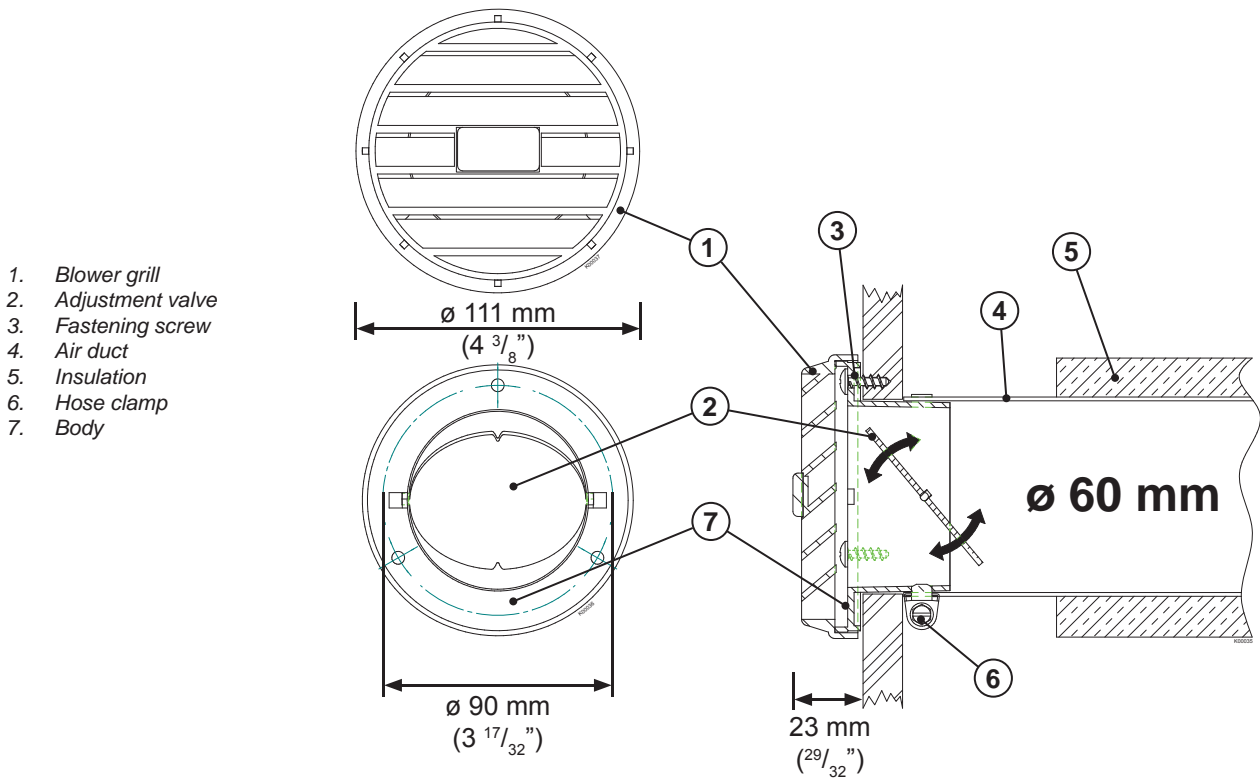
There has to be minimum 100 cm<sup>2</sup> (16 square inches) ventilation hole in the space where the heater is installed.

**Installation of the air registers**

When installing the warm air register 2411, remove the grill part (1) of the body (7) by pulling. The grill part can be turned 360° to be able to direct the air flow direction.

**2411**

Cut a  $\varnothing 67$  mm hole in the bulkhead or wall. Screw the body of the register (7) to the bulkhead with 3 screws. Connect the warm air duct to the register and reinstall the grill cover.



At least one of the two air outlets of the heater must be open at all times.

## Installation and initial start-up

### Installation

- Ensure sufficient air intake, minimum aperture of 100 cm<sup>2</sup>.
- Ensure that the boat is sufficiently ventilated.
- The exhaust pipe outlet must be at least 400 mm away from the opening for filling fuel or tank breather.
- We recommend installing the operating switch onto vertical surface where liquids are not able to leak into the switch and it is out of reach of children (cable length 6 m).

### Fuel system

- The hoses must be kept clean during installation.
- Use only Wallas fuel hoses.
- Cut the fuel hoses to the appropriate length when installing them.
- The return fuel tube must have continuous fall to fuel tank with no loops upward. All extra length is cut away below the tank adapter.

### Electrical installation

- The nominal voltage of the device is 12 VDC.
- Current for the device is taken directly from the battery terminals using cables that are as short as possible.
- Put the main fuse of ca. 15 A on the + cable close to the battery.

### Exhaust fumes

- When choosing the outlet location, note that exhaust fumes are hot.
- Use a swan-neck to prevent splash water entering the boat from splashing into the outlet.
- If your boat has a metal hull, the device and outlet must be insulated from the hull to prevent electrochemical corrosion.
- The exhaust pipe must not come into contact with fire hazardous materials. Insulate the exhaust fume hose, if necessary.

### Warm air duct

- It is recommend to isolate the warm air ducts.
- Take care of that warm air registers are not closed at the same time.

### Initial start-up

The device usually does not start the first time after it has been installed. It may take several starts for the fuel hoses to fill up enough for the fuel to reach the burner.

Watch the hoses as they fill up as you start the device.

Watch the hoses fill up with fuel while you start the device.

When the device starts, look for possible leaks in the exhaust and fuel connections.

Run the device for ca. ½ hour to allow possible installation and manufacturing greases to burn off. Make sure there is enough ventilation.



**Remember to carefully read the instructions for installing, operating and servicing each device before installation.**

### To be filled in by the installer

- Test-run performed

Serial number	
Company	
Installer	
Installation date	
Signed	

*Installer must check (x) the sections, then sign her/his signature.*

## Using the unit

### Ignition

The start-up process and heating is automatic.

The heater will ignite when the heating switch (3) is pressed continuously for more than 2 seconds. A yellow heating indicator will light, indicating that the heating is on.

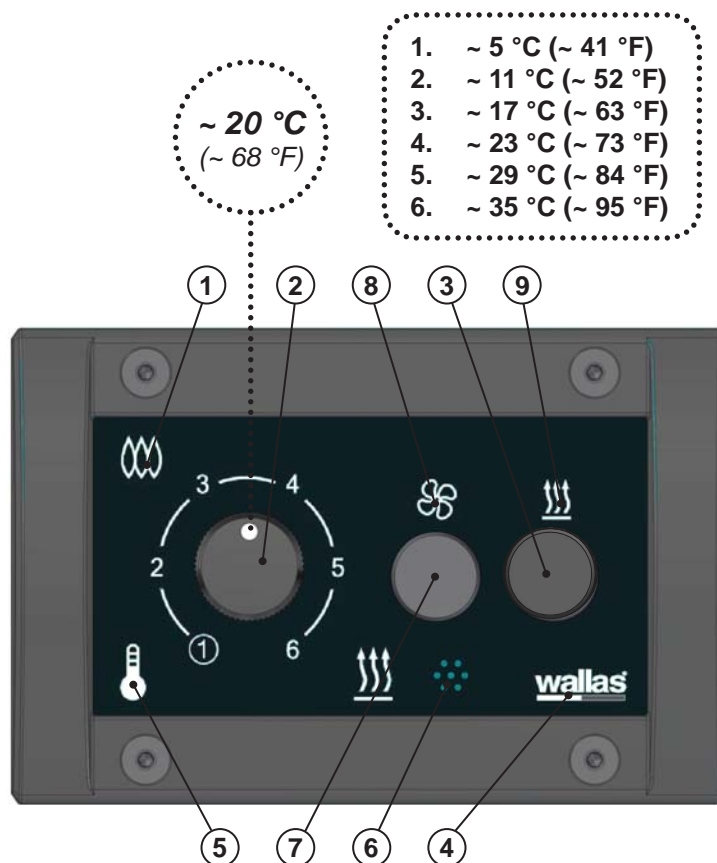
A red combustion indicator light (1) will be lit when the burner flame has been ignited and the combustion has stabilised after about five minutes after the ignition. The whole process takes about five minutes.

### First ignition

After the installation or maintenance the heater may not start at the first attempt, if the fuel line is empty.

Turn off the heater. The heater is shut down by pressing the heating switch (3) continuously for more than 2 seconds.

Switch the heater on again.



1. Combustion indicator
2. Temperature adjustment / Power control
3. Heating switch
4. Power indicator
5. Thermostat indicator

6. Thermostat sensor
7. Ventilation switch
8. Ventilation indicator
9. Heating indicator

### Adjusting the heat

Adjustment of temperature can be done by using thermostat (recommended use) or manually.

The desired mode is chosen by turning the regulation knob (2) min - max - min - max, by doing this the unit is switched to either to thermostat- or to manual mode. When thermostat mode is chosen the thermostat light (5) is on. In manual mode the thermostat light (5) is off. Note ! the heater will remember it's last mode ie. if it is shut down in thermostat mode next time when ignited it it will start in the same mode ie. thermostat mode.

### Thermostat mode

Temperature is controlled by the thermostat (recommended use)

The device starts when the heating switch (3) is pressed in continuously for at least 2 seconds, after which the yellow power indicator light (9) lights to indicate that the power is on.

The red combustion indicator light (1) will be lit, when the burner flame has been ignited and combustion has stabilised after ca. 2.5 - 4 min from when the heating was turned on.

The starting phase will take about 11 minutes. After this phase the heater will run according to set power or can be adjusted by turning the knob.

After the heater has passed the ignition phase, you can adjust the thermostat setting using the temperature control knob (2). Turn the knob to set the temperature to your desired setting.

The sun-switch shuts down the device automatically, if the temperature rises above the requested temperature, for example, due to sunlight. The temperature must rise by +3 °C above the set value for a half an hour. If the device has been shut down by the sun-switch, an indicator light (5) blinks on the thermostat. The sun-switch can be turned off temporarily, by turning the temperature control (2).

A heater that has been shut down can be restarted manually, if necessary.

Conservation temperature: the temperature control (2) is set to minimum (1), and the cabin is maintained at a temperature of +2 – +8 °C. The sun-switch is not enabled in this mode.

Temperature of cabin can be found out by turning the knob (2) until the brightness of the thermostat light (5) will change. The position of knob (2) inform about the cabin temperature.

### Manual use

The power is adjusted manually.

To enable this function, turn the power adjuster (2) to positions min - max - min - max.

The device signals that the function has been activated when the thermostat light (5) shuts down.

After the heater has been started up, the power can be adjusted step-less with the power adjustment knob (2). Avoid turning the adjustment knob back and forth rapidly, as this can cause the burner to become sooty.

when power control knob (2) is turned to position 1 or 2 , unit is running on minimum effect.

when power control knob (2) is turned to position 2 or 6 , unit is running on maximum effect.

From manual mode to thermostat mode you can go by turning the knob (2) min - max - min - max. As a confirmation of mode change the thermostat light (5) will go on.



### Air boost

The air boost is meant to be used when you need bigger air volume for example to remove moisture. This function forces the main blower run with maximum effect. When the heater is running, the air boost can be activated by pressing the ventilation switch (7) one time shortly (less than 2 seconds). The heating stays on adjusted value but ventilation is boosted to maximum effect. The air boost is indicated by the green ventilation light (8). When you press the switch second time shortly, the air volume goes to maximum. Third press restores the air volume and the green indication light (8) shuts off.

### Ventilation

Fresh air ventilation activates by pressing the ventilation switch (7) continuously at least 2 seconds. Ventilation is indicated with the green ventilation light (8). Ventilation is deactivated by pressing the ventilation switch (7) continuously at least 2 seconds. The green ventilation light (8) will shut off.

When pressing the ventilation switch (7) continuously at least 2 seconds, while heating is on, the heater will shut off and after the aftercooling mode, the heater goes to ventilation mode.

Ventilation is 2-positions (Min-Max). The thermostat control deactivates after adjusting the ventilation effect. When pressing the heating switch (3) at least 2 seconds while the ventilation is on, the heater will start and go to heating mode.

### Shutdown

You can shut down the heater by pressing the heating switch (3) in continuously for at least 2 seconds. The yellow heating indicator light (9) will go out immediately. The red combustion indicator light (1) will continue to blink for ca. 10 minutes, while the device is cooling down. You cannot restart the device until the combustion light has stopped blinking.

### Remote control

The heater can be controlled manually with an accessory, which can be purchased separately.

If the device is started using the remote control, the orange indicator light (5) on the control panel will blink at 10-second intervals.



















The sun-switch is not enabled in this mode.

The ventilation cannot be used with the remote controller.



The unit doesn't start before the after cooling phase is finished.

Signal lights

Colour		Blink interval	Function
Yellow			Heating on
Green			Ventilation on
Yellow Green			Air boost
Red			Combustion indicator when the combustion has begun normally
Red			Aftercooling
Orange			Thermostat control, the set temperature exceeds the set value > power is increasing
Orange			Thermostat control, the set temperature is lower than the set value > power is decreasing
Orange			Device in remote control mode
Orange			Sun switch has shut down the device

## Maintenance recommendations

### Basic maintenance

Maintenance procedure	Maintenance interval	Carried out by
Basic maintenance (change of glow elements, cleaning the burner, adjustment, check of functions)	5 years	Authorised Wallas service shop

### Special recommendations

Occasional use of unit will keep the unit functional.

### Removal of water from the tank

During the period of use, add isopropyl alcohol-based (not ethyl or methyl based) anti-freeze for petrol vehicles (carburettor spirit) to the fuel. The agent should be added after the tank has been emptied, and refilled, a few times, and always at the beginning and end of an operating season. The anti-freezing agent binds the water in the fuel and prevents the fuel from settling and spoiling during the summer season. For the dosage, observe the recommendations provided by the manufacturer of the agent.

### Winter storage

- the fuel tank is emptied in the autumn.
- the fuel tank is cleaned and the fuel tube filter is changed.
- in spring, the fuel tank is filled with new, clean fuel.

The unit doesn't need any actions.

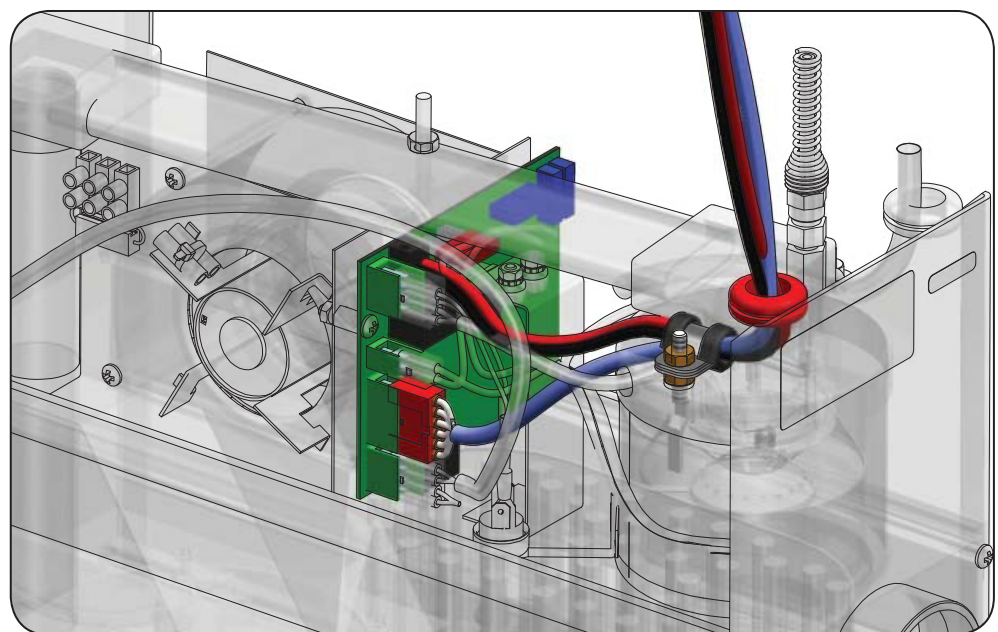
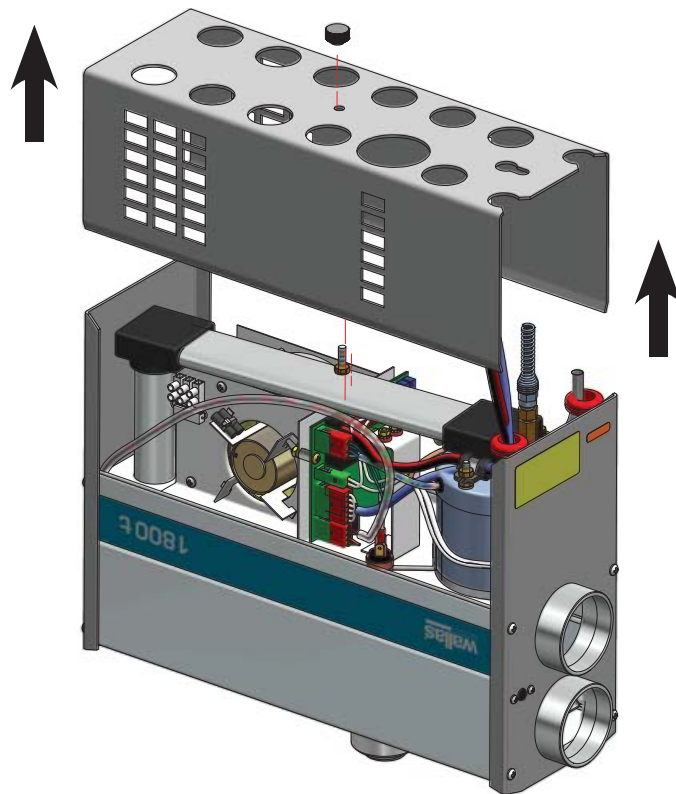
### Spare parts

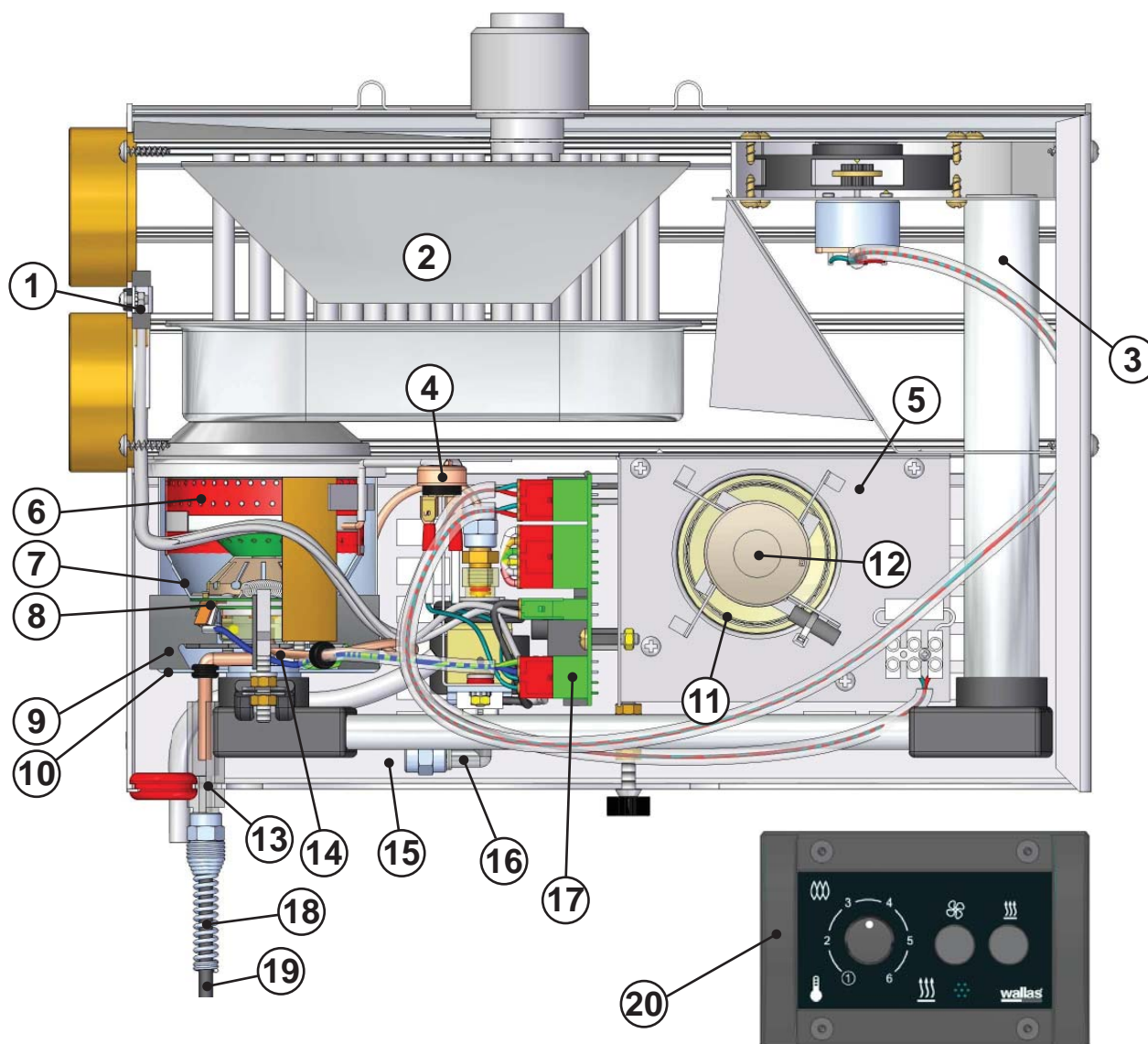
Spare part catalogue can be downloaded through [www.wallas.com](http://www.wallas.com)

**Opening the device**

In order to remove the bottom plate open the screw and pull the bottom plate out. When installing the bottom plate back be sure that none of the cords or the fuel line will not remain between the bottom plate and the frame. Check that the sleeve of return line fits to the return line located in the burner bottom. Tighten the nut by hand.

The power cables and control panel cable and fuel hose may need to be detached from the device during maintenance or installation.

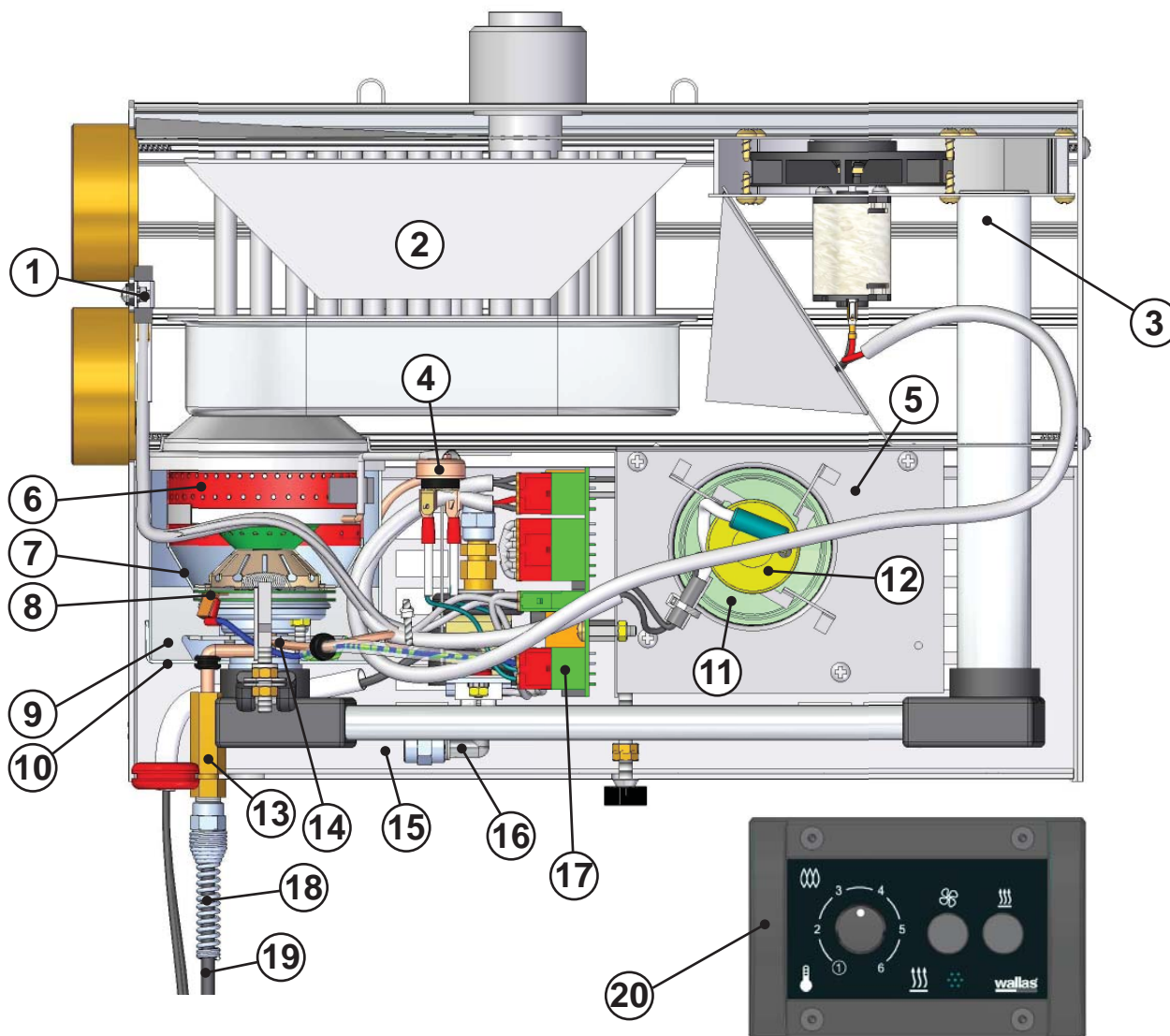




# 1800 t

		spare part no
①	T3 OVERHEATING CUT-OUT SWITCH (SN → 24080)	<b>362404</b>
	(SN 24081 →)	<b>362405</b>
③	COMBUSTION BLOWER MOTOR & ROTOR ON MOUNT. PLATE	<b>365304</b>
⑤	COMPLETE MAIN BLOWER	<b>365403</b>
⑦	BURNER BOTTOM	<b>369002</b>
⑨	BURNER BOTTOM HOLDER (PROPELLER)	<b>369001</b>
⑪	MAIN BLOWER ROTOR (SN 8019 →)	<b>365207</b>
⑬	FUEL RETURN & VENT. CUP CONNECTOR (SN 2273 →)	<b>367114</b>
⑮	FUEL SUCTION TUBE	<b>367211</b>
⑰	CONTROL UNIT (SN 617 →)	<b>361013</b>
⑲	FUEL RETURN TUBE, POLYAMID, BLACK	<b>367212</b>
○		

		spare part no
②	HEAT EXCHANGER	<b>368508</b>
④	T1 THERMOSTAT WITH HEAT CONDUCTOR	<b>362413</b>
⑥	BURNER CYLINDER (HOLE CYLINDER)	<b>369004</b>
⑧	GLOW PRIMER WITH GASKETS	<b>360100</b>
⑩	BOTTOM LOCK FOR OUTER CYLINDER	<b>369018</b>
⑫	MAIN BLOWER MOTOR (SN → 8018)	<b>365104</b>
	(SN 8019 →)	<b>365105</b>
⑭	WICKPOT (SN → 2272)	<b>367304</b>
	(SN 2273 →)	<b>367305</b>
⑯	FUEL PUMP, FC 4	<b>367504</b>
⑱	SHIELD SPIRAL	<b>367002</b>
⑳	CONTROL PANEL, 1800/2400 t	<b>361066</b>
○		



## 2400 t

		spare part no
①	T3 OVERHEATING CUT-OUT SWITCH (SN → 24866)	<b>362404</b>
	(SN 24867 →)	<b>362405</b>
③	COMBUSTION BLOWER MOTOR & ROTOR ON MOUNT. PLATE (SN → 3634)	<b>365304</b>
	(SN 3635 →)	<b>365305</b>
⑤	COMPLETE MAIN BLOWER	<b>365404</b>
⑦	BURNER BOTTOM	<b>369002</b>
⑨	BURNER BOTTOM HOLDER (PROPELLER)	<b>369001</b>
⑪	MAIN BLOWER ROTOR (SN 8123 →)	<b>365202</b>
⑬	FUEL RETURN & VENT. CUP CONNECTOR (SN 3634 →)	<b>367114</b>
⑮	FUEL SUCTION TUBE	<b>367211</b>
⑰	CONTROL UNIT (SN 3635 →)	<b>361012</b>
⑲	FUEL RETURN TUBE, POLYAMID, BLACK	<b>367212</b>
○		

		spare part no
②	HEAT EXCHANGER	<b>368508</b>
④	T1 THERMOSTAT WITH HEAT CONDUCTOR	<b>362413</b>
⑥	BURNER CYLINDER (HOLE CYLINDER)	<b>369004</b>
⑧	GLOW PRIMER WITH GASKETS	<b>360100</b>
⑩	BOTTOM LOCK FOR OUTER CYLINDER	<b>369018</b>
⑫	MAIN BLOWER ROTOR (SN 8123 →)	<b>365107</b>
⑭	WICKPOT (SN → 3633)	<b>367304</b>
	(SN 3634 →)	<b>367305</b>
⑯	FUEL PUMP, FC 4	<b>367504</b>
⑱	SHIELD SPIRAL	<b>367002</b>
⑳	CONTROL PANEL, 1800/2400 t	<b>361066</b>
○		