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Technical information

Fuel	Diesel oil, light furnace oil, HVO-fuel (syntetic bio fuel)
Operating voltage	12 V DC
Fuel consumption	0,16l/h - 0,46 l/h
Heating power	1,4 kW-4,5 kW
Power consumption	max 4,5A (9A at the start up, 8 min)
Dimensions (L x H x W)	165x424x307 mm
Weight	15kg
Maximum permitted length of exhaust pipe	2m coaxial (2448), 4m single (1028)
Maximum permitted length of fuel hose	8m
Maximum permitted length of outlet air duct	8m for upper and middle ones, 5m for lower outlet
Maximum permitted length of inlet air duct	2m for each
Minimum area of the replacement air opening	200 cm ²
Warm air connection	3x75mm (other connection plates available, consult local dealer / importer)
Fresh air connection	3x75mm (other connection plates available, consult local dealer / importer)
Connections	Solenoid valve Remote control
Suitable Exhaust gas lead-throughs	2467, 2460, 5400 when coaxial 1066, 5400, 2466 when single

Due to physical laws of thermodynamics, Wallas-Marin announces measured values with 10 % tolerance.

Operation description

The Viking Air / The Spartan Air heater is forced air diesel heater without an exposed flame. Viking and Spartan 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, while cooling the exhaust system.

For all these models, fresh makeup air is taken from desired areas with air intake ducting, e.g. from outside of the boat or inside the cabin. This enables good air circulation and/or cabin air replacement. Diesel engine compartment installations are supported by the separate makeup air intake ducts, quarantining the makeup air away from any smells or noxious engine fumes. The heating power can be adjusted freely between high and low output settings by manual control or by thermostat. 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 control panel flame indicator 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 Spartan and Viking Air heaters are built out of the finest corrosion resistant materials to withstand marine conditions.

Installation

Heater installation

Country specific regulations shall be followed in any installation. The warranty of boat products is valid only in installations that are done according to this manual. The device is meant for watercraft use. The warranty is not valid in installations to vehicles or other spaces, ask country specific regulations from local distributor.

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, floor 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 7/8") 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.

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

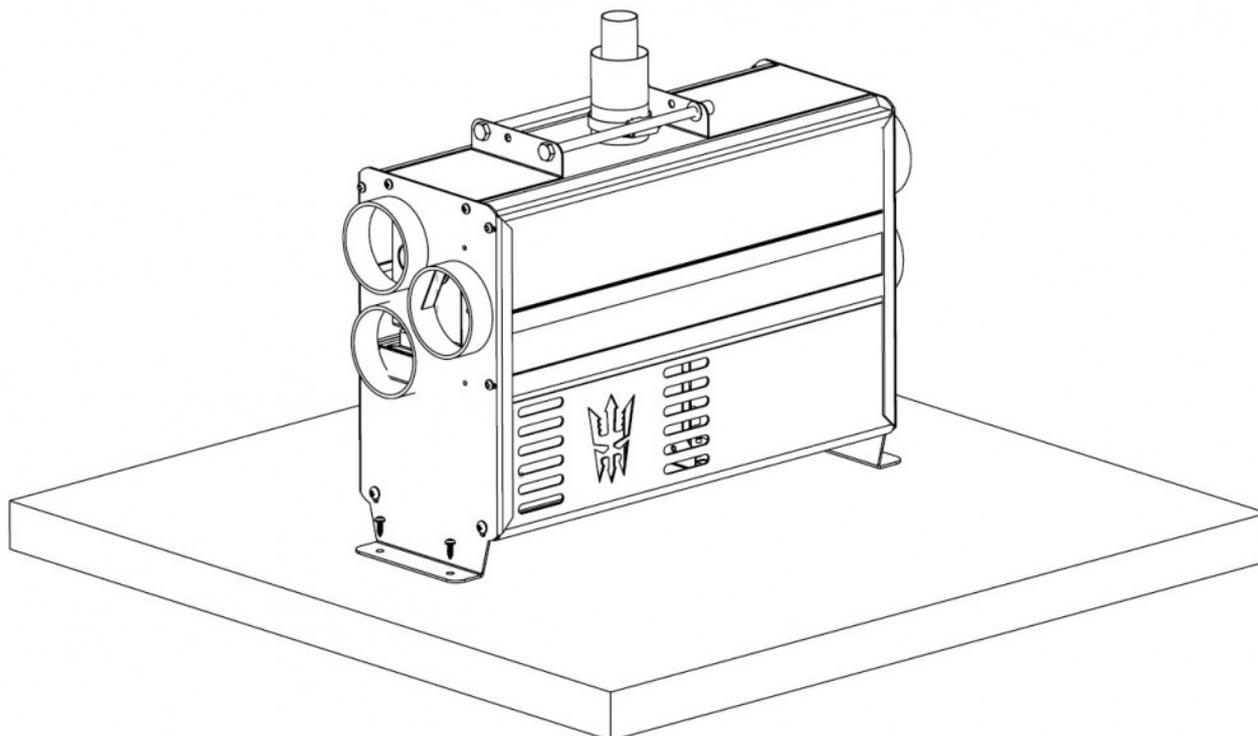
Installation space

The device can be installed within the heated space or outside of it. If located unheated area, heating performance can be improved by installing the an intake air tube to the heated space (warm return air). If located inside the heated area, air refreshing performance can be improved by installing the an intake air tube to the outside air (cold, dry fresh air to be heated).

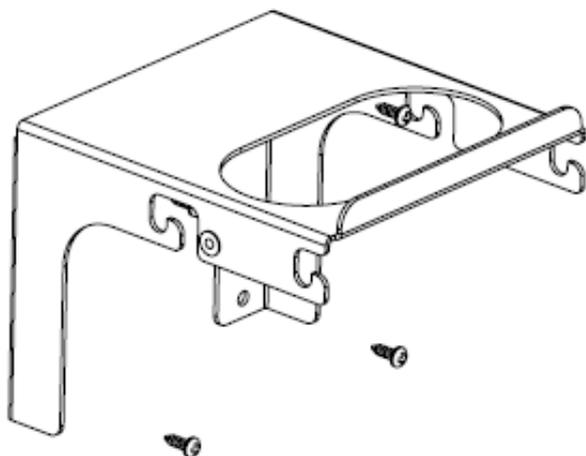
Fastening the device

Floor mounting the device

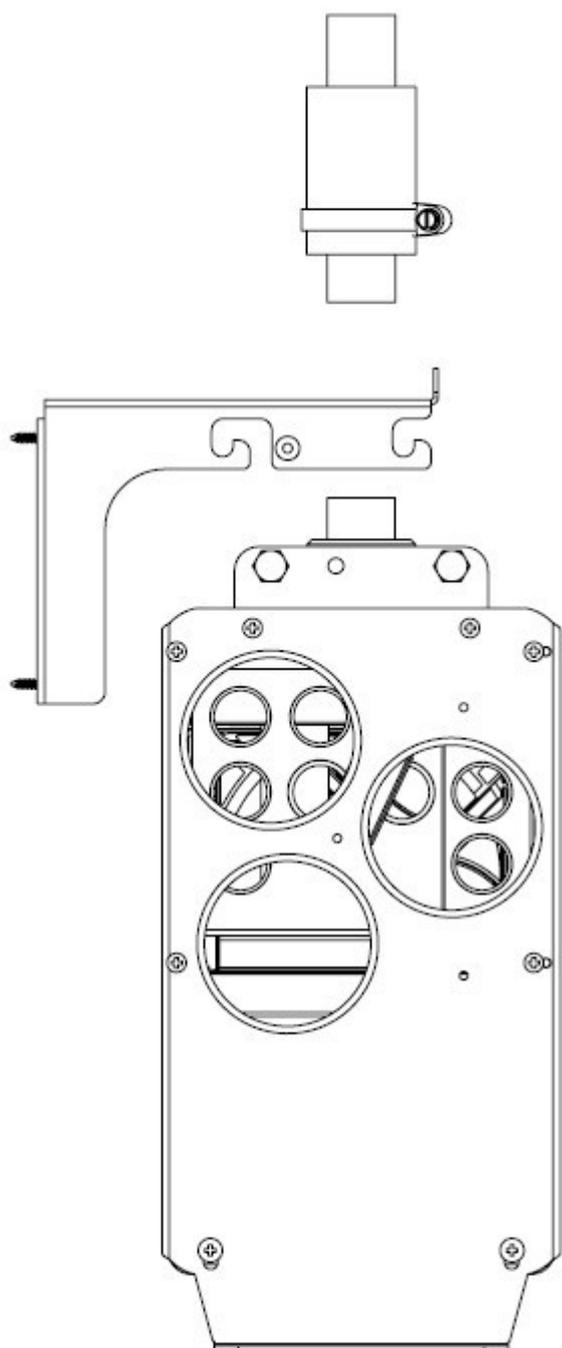
The heater has "legs" with the two screw holes in each leg. Screw the screws to the solid stable and plane and not over 5 degree angle from horizontal plane. The screws are in the accessory bag.



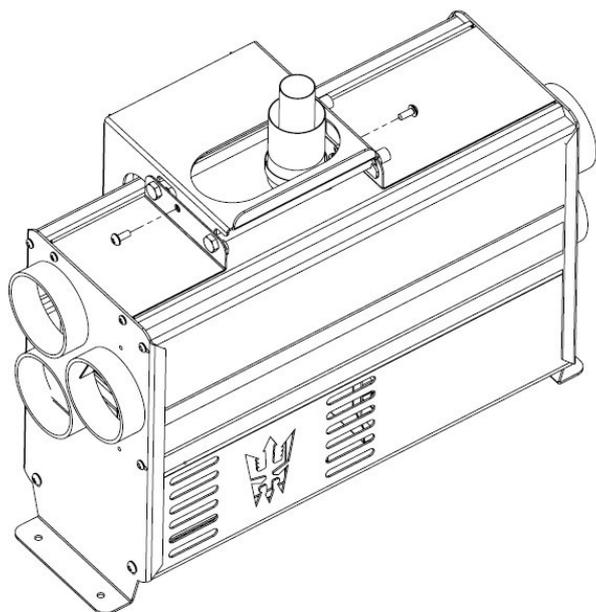
Wall mounting the device



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

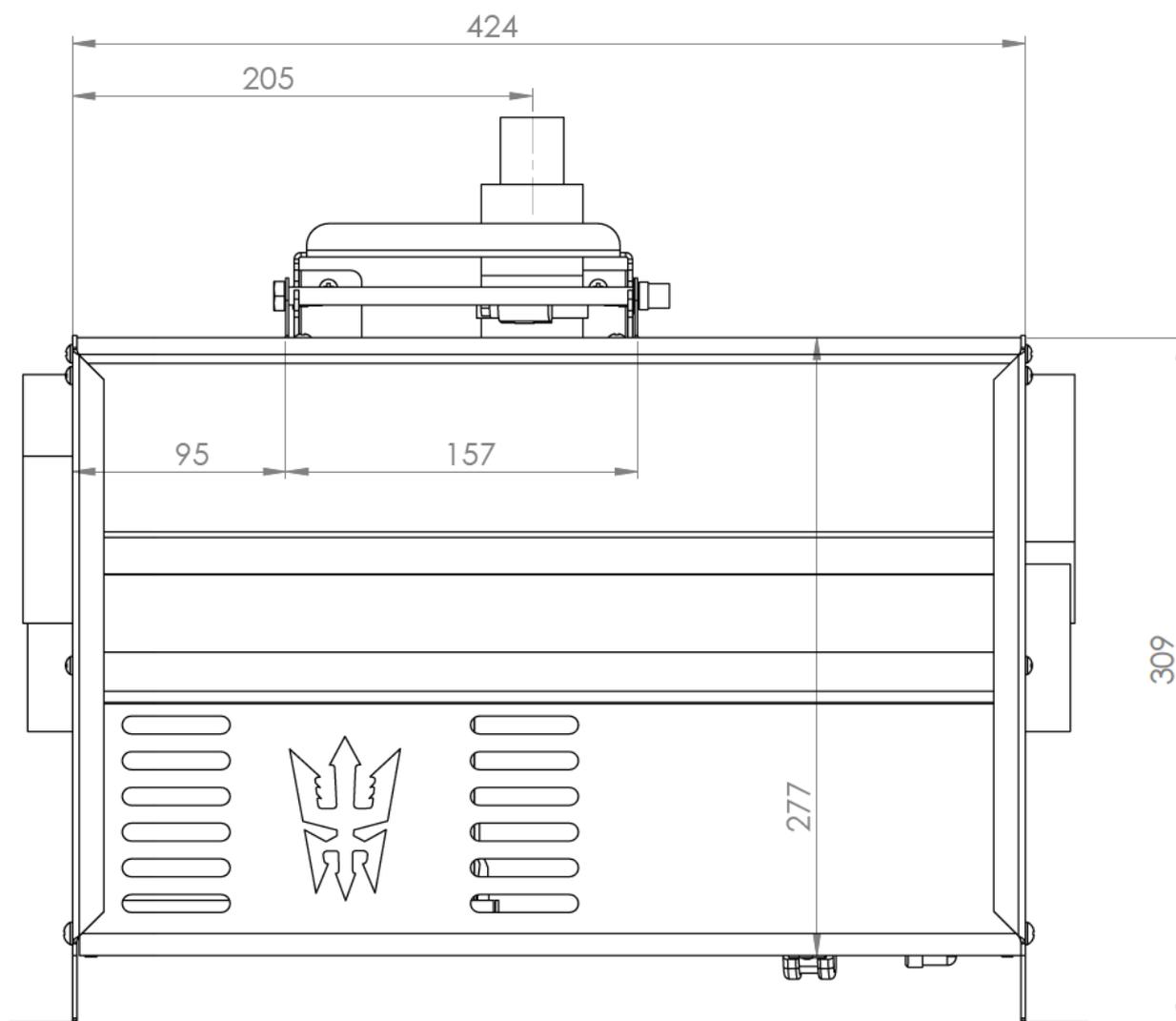


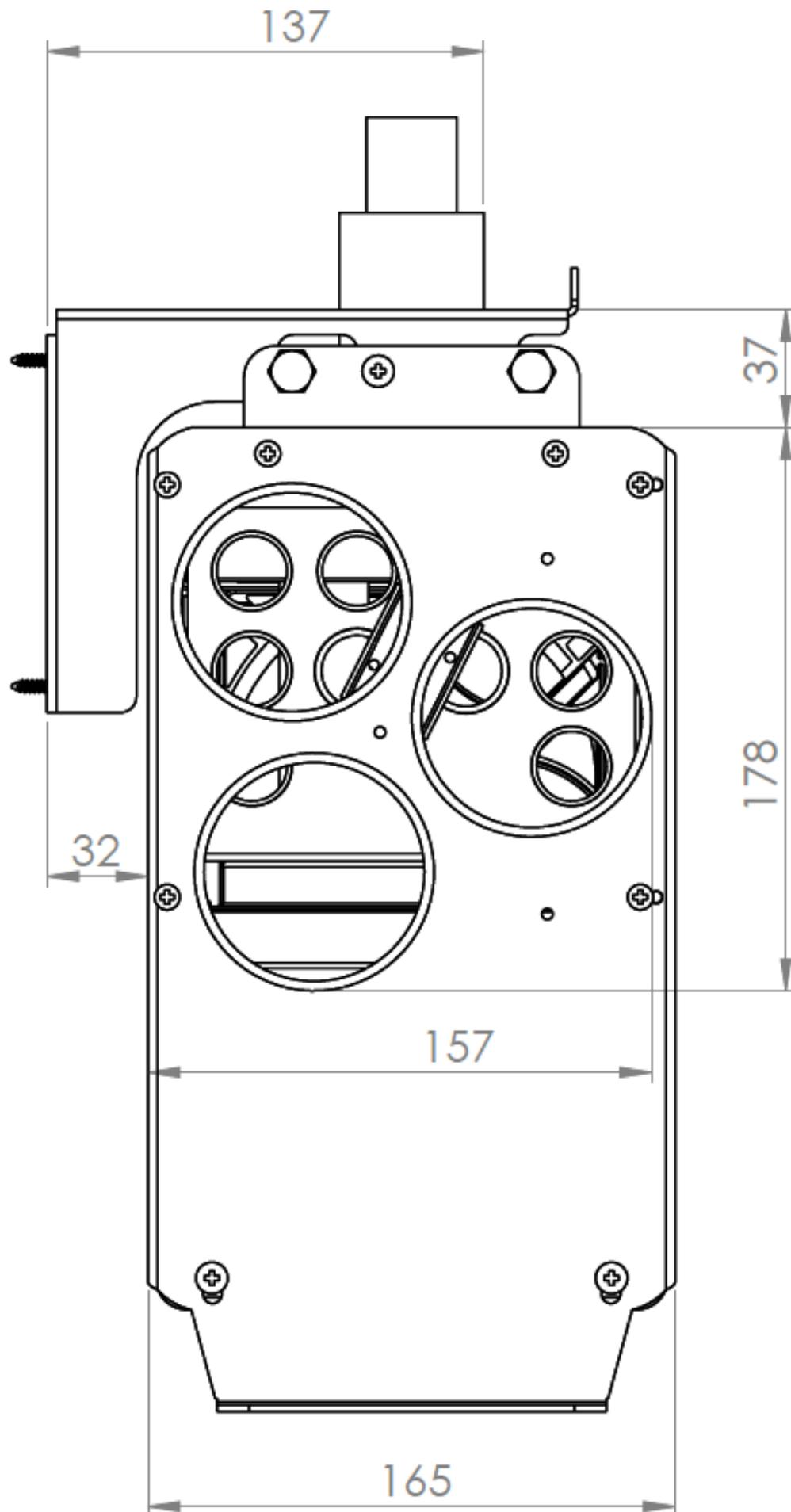
Lift the heater into the installation plate



And Lock the device with the mounting bolts.

Measures:





Electrical connections

Heater has to be connected up electrically according to the EMC-directives.

Safety instructions for wiring the heater:

- Make sure that electrical cables are not damaged. Avoid: chafing, kinking, jamming or exposure to heat.
- Electrical connections and ground connections must be free of corrosion and firmly connected.
- In waterproof connectors seal any connector chambers not in use with filler plugs to ensure they are waterproof

Things to note about the connections

All connections must be arranged in the craft so that they can function perfectly under normal operating conditions. Insulate unused cable ends.

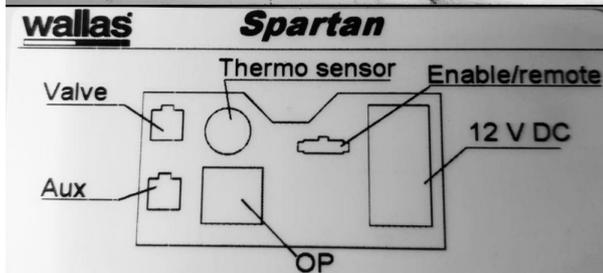
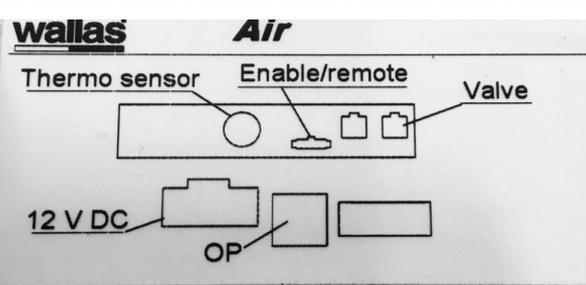
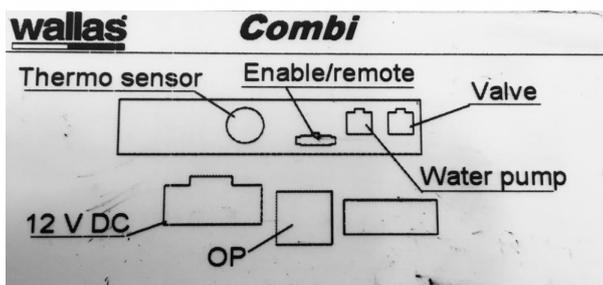
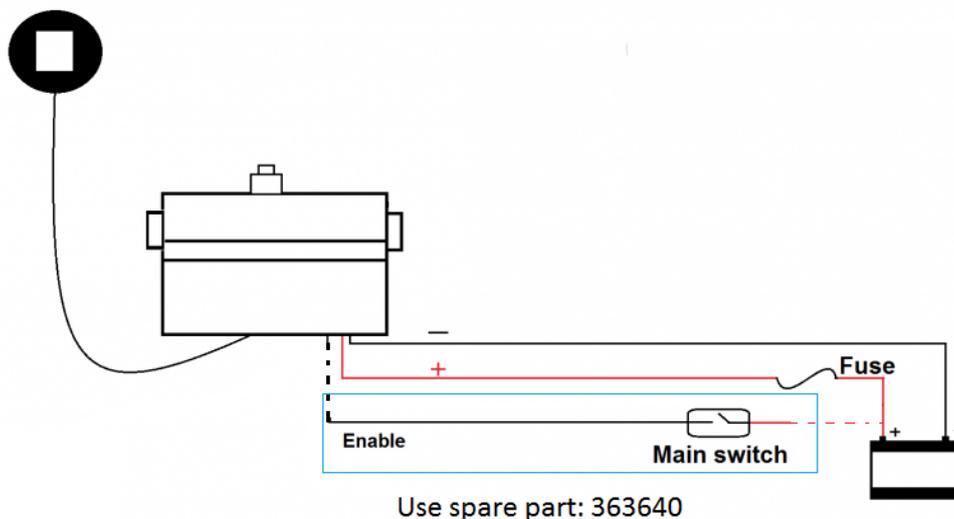
The device uses 12 V (nominal) direct current voltage. To minimize current losses, make the power cable as short as possible and avoid joining. The cross-sectional area of the cable is dependent on the length of the power cord. The cross-sectional area of the cable must be consistent all the way from the stove to the battery. The maximum length of the power cord is 10 m, based on 6 AWG cable.

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 (12 or 11 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.

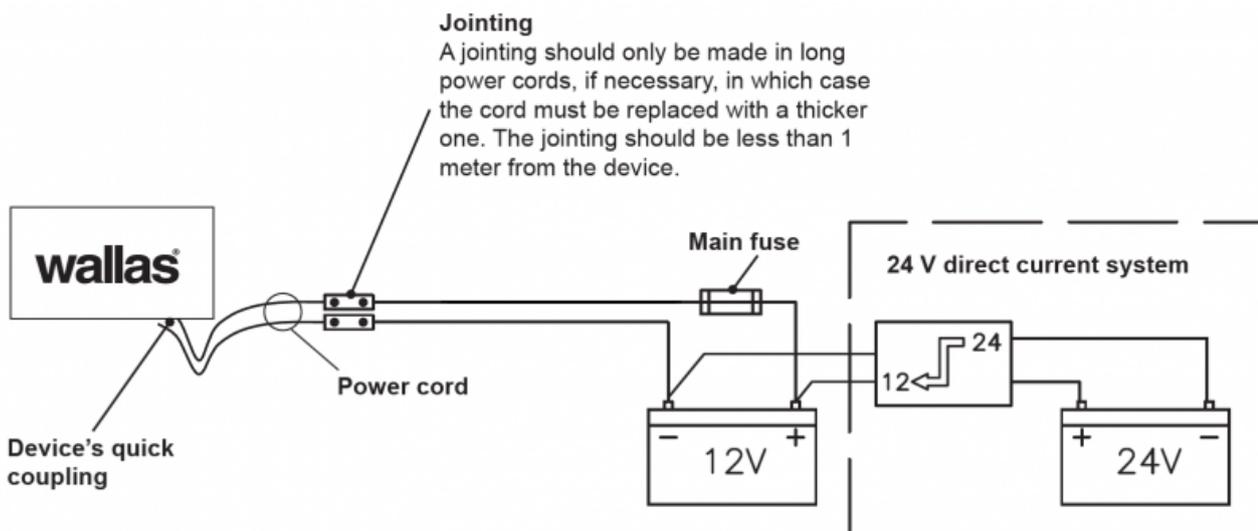
Electrical connections of the device B



Remote wire 363640 (Sold separately)



If the heater is needed to be shut down from the boat's main switch, use the spare part **363640** to the heater, and connect the another end of the wire to the main switch. The heat will not start without turning the switch **ON**, and it will perform a controlled shut down when the switch has been turned **OFF**.



Electrical connections of the device

12 V 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 must be installed near the battery on the red plus wire of the power cord. See picture.

Enable wire needs to be connected through boats main switch, when switch is connected the unit wakes up and can be turned on. Enable wire connection protects the unit in case when unit is on and main switch is disconnected, then unit knows that it should turn off but does this controlled and cools the burner before shutting down.

Note that unit doesn't work without 12V voltage to the "remote" pin, so its necessary to connect enable wire to the main switch, or do a enable jumper instructed in section "24V system"

24 V direct current system

If the device is to receive power from a 24 V system, always connect a charging voltage reducer and a 12 V 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 12 V battery, the connection is the same as in a 12 V system. Note, if using remote wire, the remote wire also needs 12V, not 24V.

Only approved DC DC converter is Victron Orion 2412 - 25A, which can supply enough current without the voltage drop.

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 9,6 V measured at the quick coupling. See picture. If the voltage is lower than this, the device may not start.

All wires needs to be mounted with smooth bending and equipped with strain relief.

Things to note about the connections

While installing, to make mounting and dismounting for service easier, it is recommended to leave some extra length of loose cables and fuel line by creating a coil. If the installation location is cramped, it is recommend to connect the cables and the fuel line to the device before mounting the unit to bracket. This will help the installation of device.

Warm air ducting

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.

Outlet ducting

Heated air is distributed through the boat with 3410 \varnothing 75mm duct. Multiple outlets can be installed by adding 3413 \varnothing 75mm "Y" fittings leading to various locations. All duct to "Y" and duct to register connections should be clamped.

The 3411 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 longruns and/or runs in areas that do not require heating can be insulated using 3412 insulation. Insulation nearer the heater will be more effective than insulation at the far ends of duct runs.

Inlet ducting and makeup air

The heater can take air for heating (makeup air) from either the heated area (return air) or from outside the boat (fresh air). In most cases, a mixture of both is the best choice. The upper of the 2 x \varnothing 75 mm intake air ducts should be installed to take fresh air from outside and the lower return air from inside of the boat. Intake air grills 4411 should be installed into the head of the inlet ducts to preclude foreign objects from entering the heater. Protect the outside grill from splash water, spray etc. If the makeup air will be taken from the same space where the heater is installed, there is no need for the inlet air ducts, but protective grills should be present. There has to be minimum 100 cm² (16 square inches) ventilation hole in the space where the heater is installed.

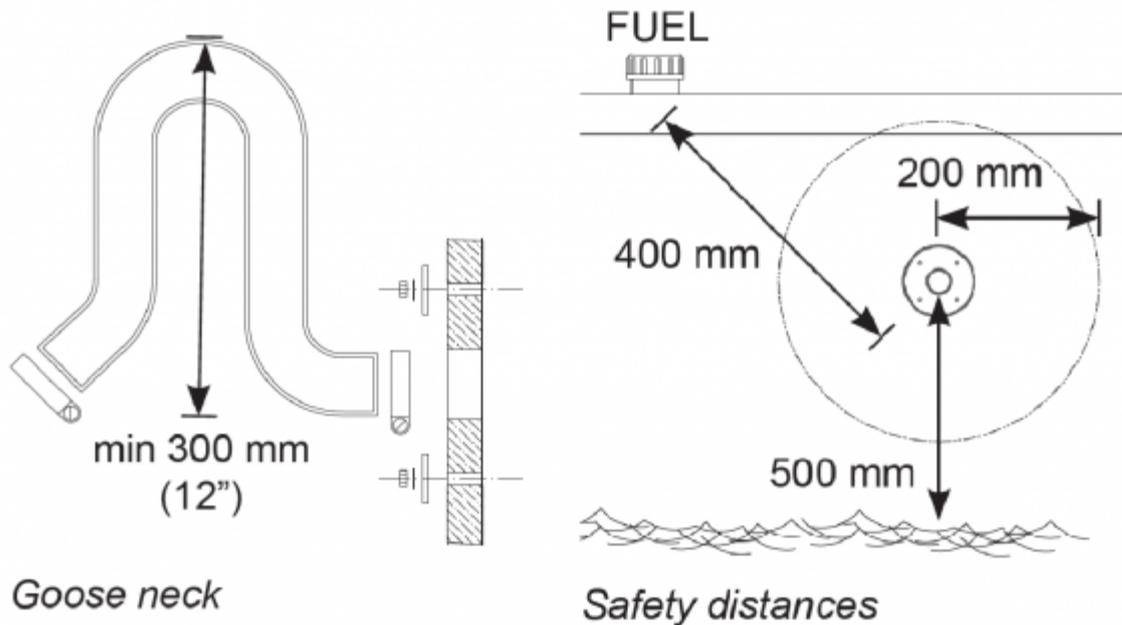
Silencers

There are available silencers 3416(75mm) and 4421(90mm) for the air hoses. Especially if the inlet hose is taking air from inside from the sleeping space, and/or warm air outlet is blowing the air to the sleeping space the silencer is recommended to use to maximize the comfort.

Silencers reduce the sound level 50-75%.



Exhaust gas connections coaxial



Exhaust gas lead-throughs

Exhaust gas lead-throughs **2467**, **5400** and the closable model **2460** are suitable for Wallas unit. The \varnothing 28/45 mm lead-throughs fit the exhaust gas hose **2448**, providing maximum wind tolerance.

Optionally, the Wallas unit can be run using singular exhaust hose **1028** with **1030** insulation sock and the **1066** exhaust lead-through.

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 tanks filler hole is 400 mm (16").

The minimum distance of the side lead-through from the surface of the water is 500 mm (20"). Especially in sailboats it should be noted that the lead-through must never be submerged for more than 5 seconds.

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

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. Seal the installation cut-out with silicone in addition to the leadthrough seal. Note! Do not use silicone on a wooden boat. The side lead-through must always be equipped with a "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 for more than 5 seconds.

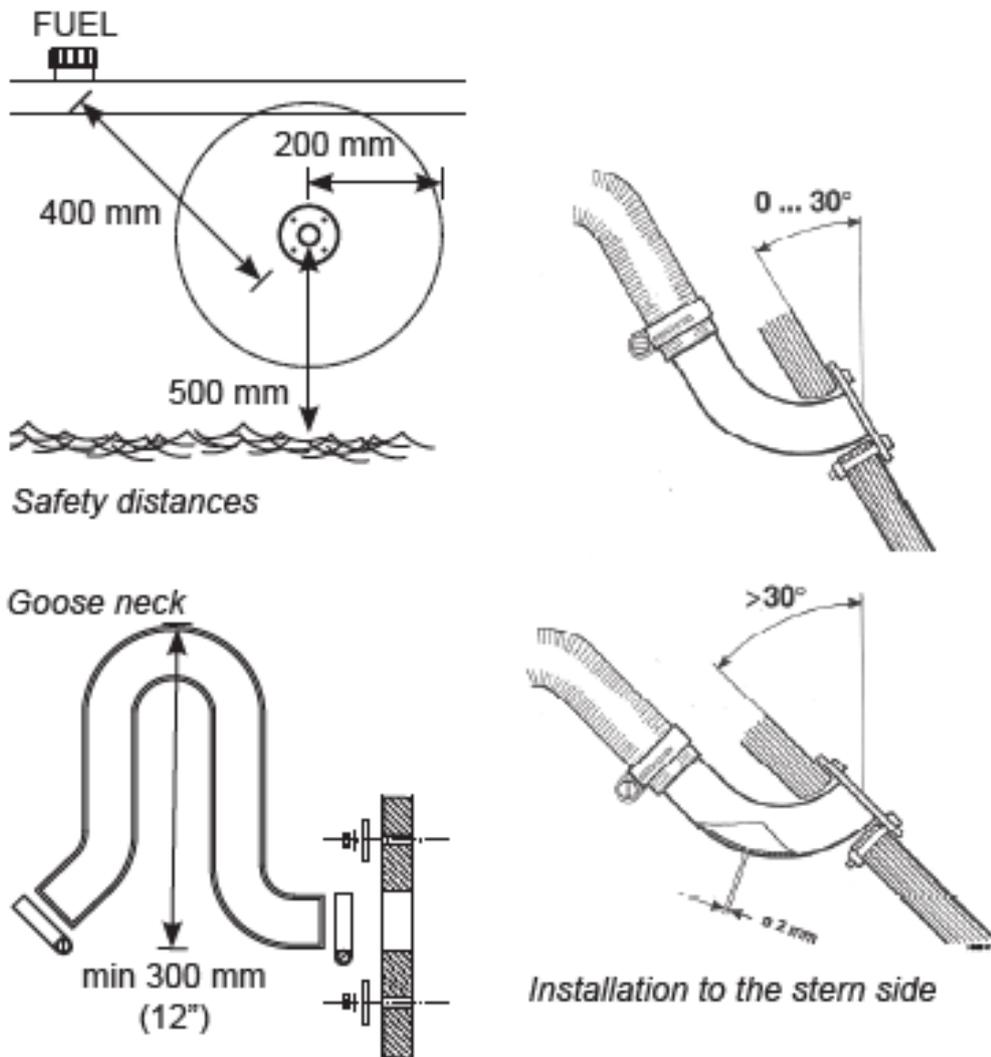
OTHER THINGS TO NOTE

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-through's 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.

Singular exhaust hose 1028 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. With coaxial exhaust hose 2045 drill app. 2 mm (3/32") hole to the lead-through or to the exhaust pipe to get the water out.

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.

Singular exhaust lead through



Exhaust gas lead-throughs

Exhaust gas lead-throughs **1066** for side installation, **5400** for stern installation and the closable model **2466** is suitable for singular exhaust.

Ø 28 mm lead-throughs fit the exhaust gas pipe **1028**.

All exhaust gas lead-throughs are stainless steel.

The exhaust gas tube reaches a high temperature!

Be sure that the tube does not touch flammable materials and doublecheck the connections.

Insulation sock **1030** is available as an accessory.

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 (16").

The minimum distance of the side lead-through from the surface of the water is 500 mm (20"). 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.

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 through's 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.

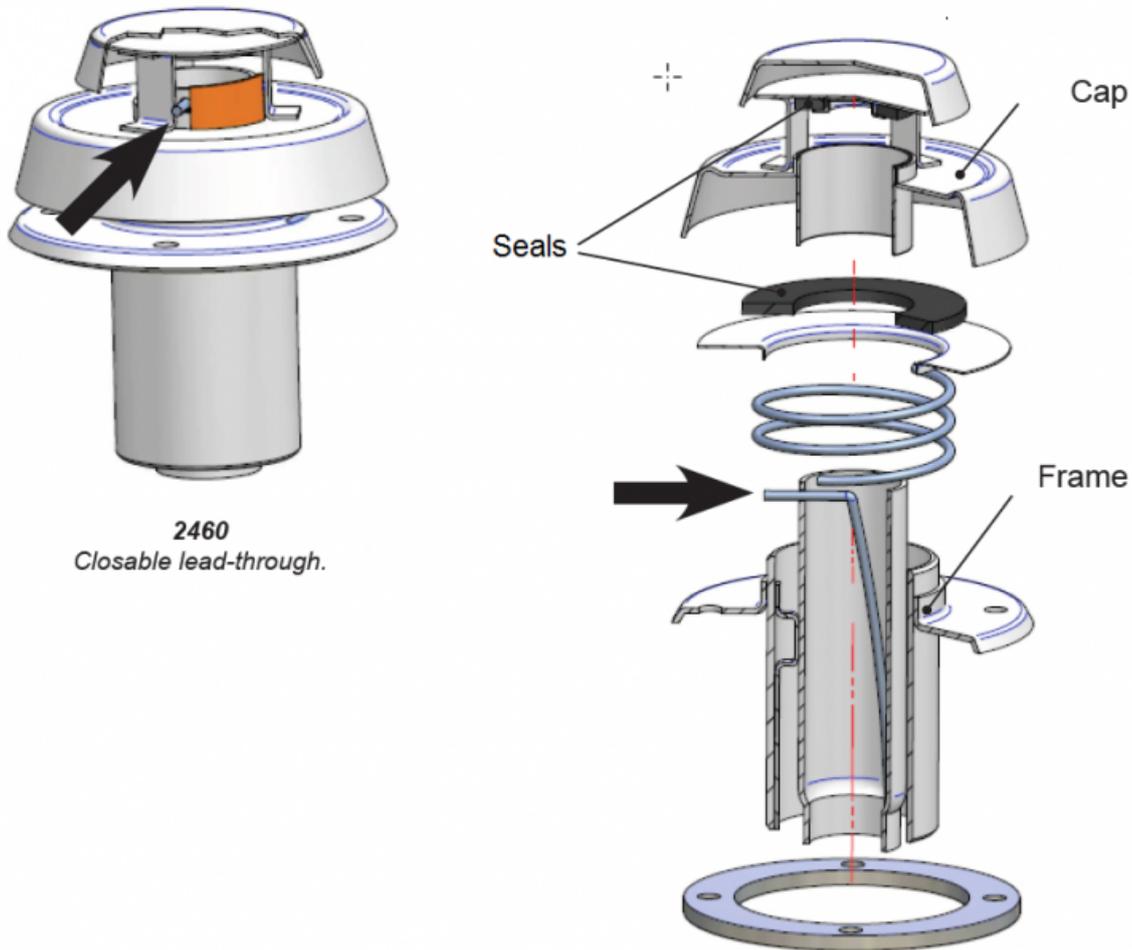
When installing the lead-through to the stern side or to otherwise leaning position, be sure that the water do not stuck the exhaust. Drill app. 2 mm (3/32") hole to the lead-through or to the exhaust pipe.

Stern lead-through 5400



Exhaust lead through for negative transom. Designed especially for sail boat's stern.

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.

Maintenance

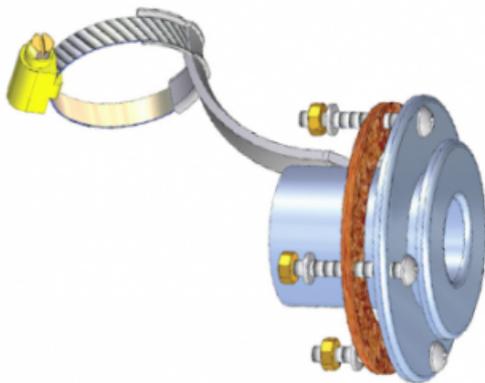
To keep the seals from hardening, lubricate them yearly with a heat-resistant petroleum jelly.

Check that closeable fitting is open before starting the device.

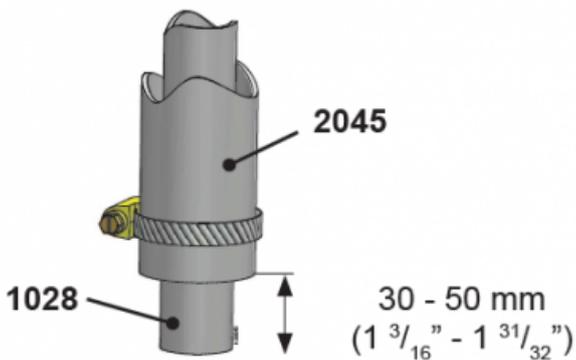
2460		
1 pcs	Closable lead-through	

1 pcs	Accessory bag 17676	
	4 pcs	Fastening screw M5 x 85 mm
	8 pcs	Nut M5
	4 pcs	Washer 5,3 x 15 mm
	4 pcs	Washer 5,3 x 10 mm
	1 pcs	Hose binder 32 - 50 mm
	1 pcs	Gasket

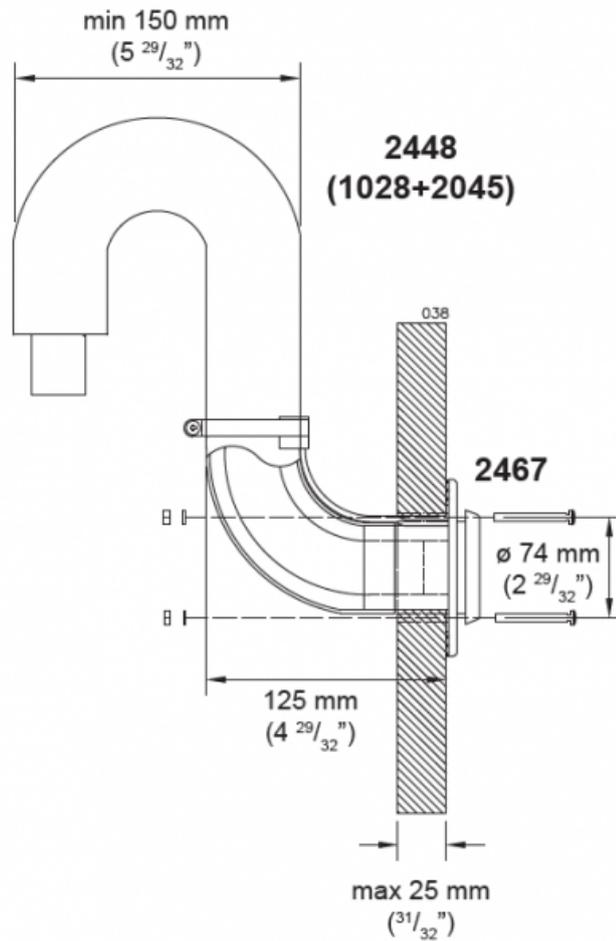
Side lead-through 2467



2467 Side lead-through



Length difference of the pipes



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

A side lead-through is installed in the side of the boat or in the transom. In sailboats 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.

The 1028 exhaust gas pipe must be 30-50 mm (1 3/16" - 1 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.

Package contents

2467		
1 pcs	Side lead-through	

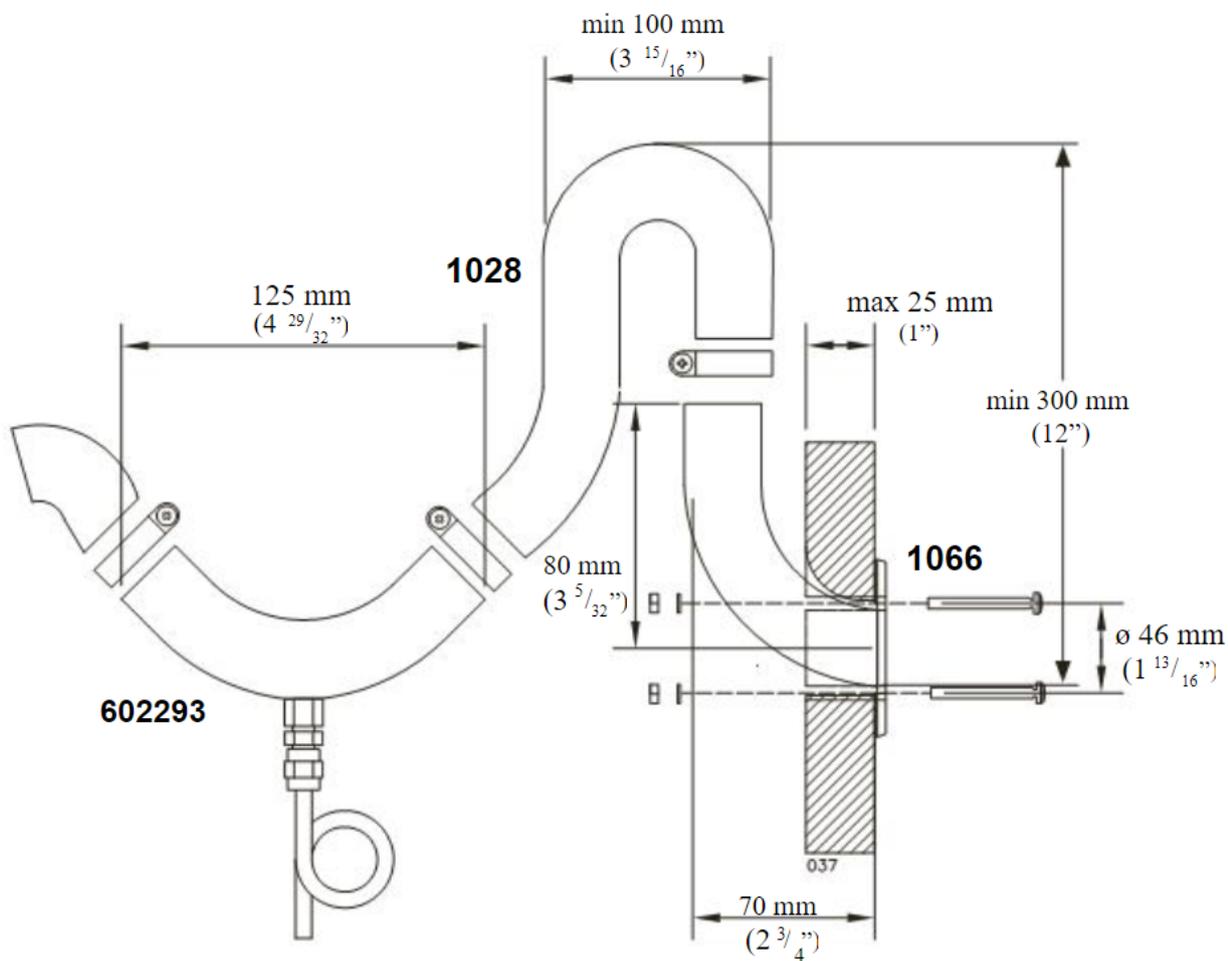
1 pcs	Accessory bag 17679	
	4 pcs	Fastening screw M5 x 40 mm
	4 pcs	Nut M5
	4 pcs	Washer 5,3 x 10 mm
	1 pcs	Hose clamp 32 - 50 mm
	1 pcs	Gasket

Side and deck lead-through 1066, 2466

Installation of the exhaust gas connections

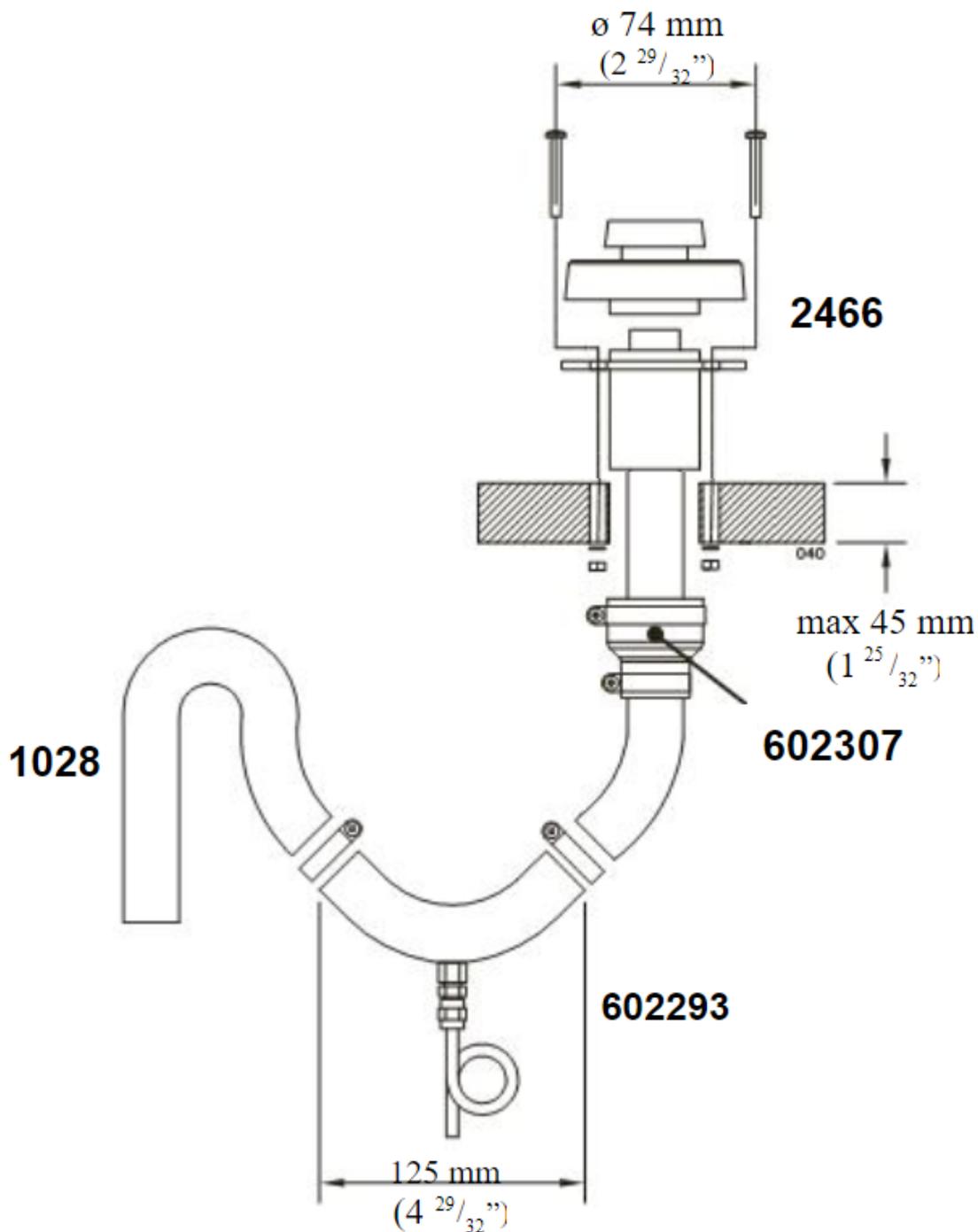
In single exhaust gas hose installations \varnothing 28 mm (1028). The coaxial hose is not needed.

1. Side installation (1066).
2. Deck installation (2466).

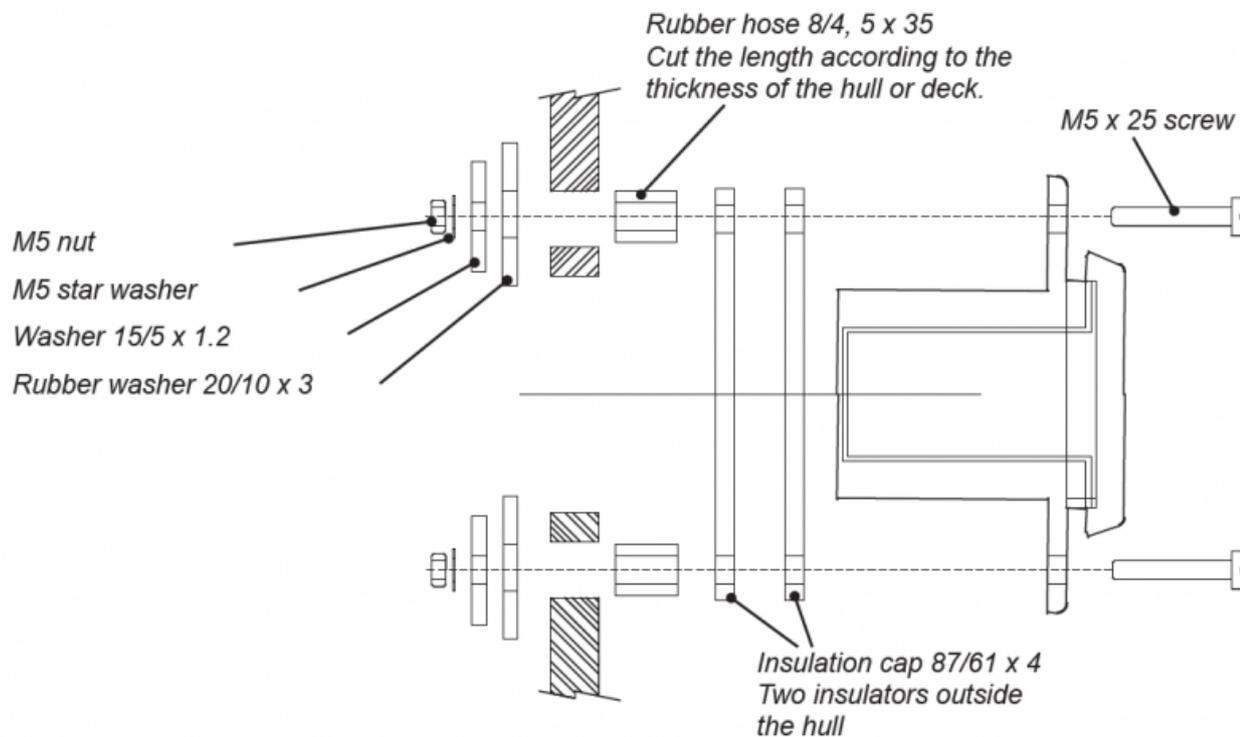


The exhaust gas tube reaches a high temperature! Be sure that the tube does not touch flammable materials and double check the connections. Insulation sock 1030 is available as an accessory.

2. 2466 deck lead-through installation with singular exhaust hose.



Insulation kit



Insulation kit for a metal-hulled boat

An insulation kit must be used to insulate the lead-through from the boats 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 devices circuit board, the circuit board may be damaged.

Insulation kit 2461 for circular coaxial lead-throughs.

Fuel connections

Things to note about the connections

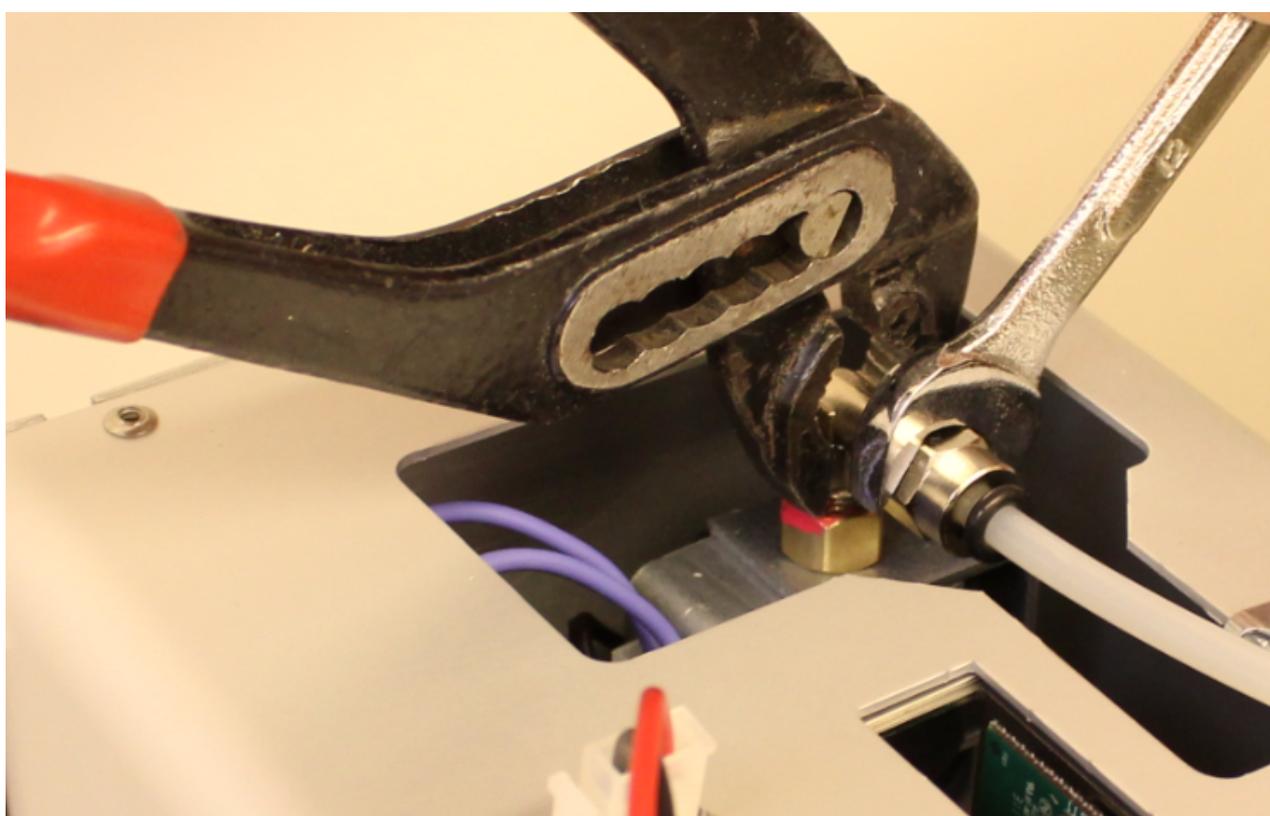
The standard length of the fuel hose is 4 m (max 8 m). Cut the fuel hose to a length suitable for installation.

The lift height of the pump should be less than 2 m; preferably 0.5-1 m. The fuel pipe must always have a Wallas filter.

The fuel filter can be installed either near the device, near the tank, or in another location where it can be easily checked and replaced, when necessary.

Diesel engine fuel filters and/or separators are not approved for use. All soft connections should be made with rubber or silicone hose which is resistant to fuel.

Connection to a heater



Use pliers to hold the pump inlet elbow steady, while you tighten the 12 mm fuel line nut. The joint has to be very tight to prevent air leaks.

Tightening torque is 19Nm.

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 **300692** and metal filters **30016** are available as accessories. Ask local requirements from your distributor.

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 fixed tank

The device must have a dedicated connection with a fuel filter outside the tank.

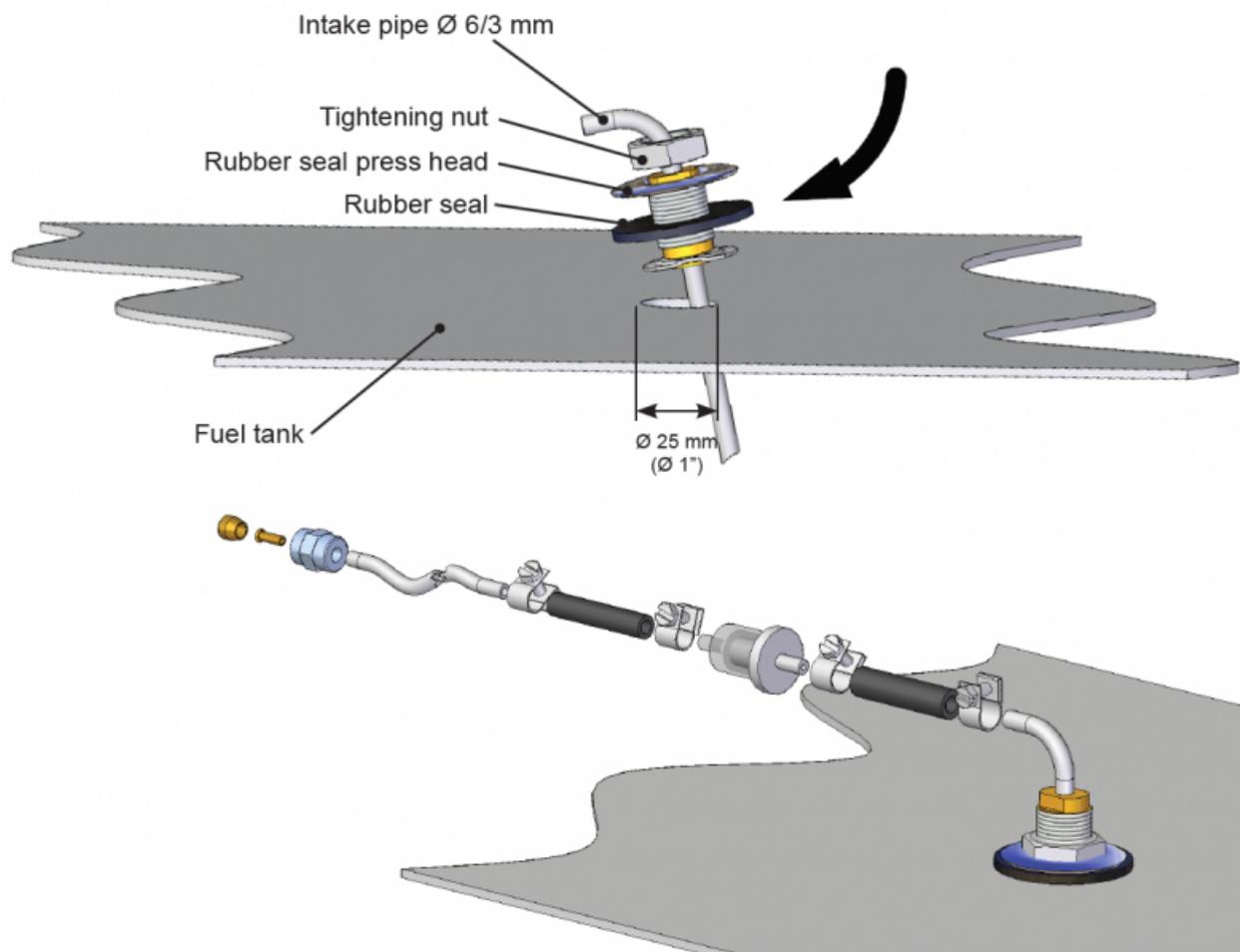
Connection to a separate tank

Cap run-throughs and sintered filters are used on plastic tanks. The fuel tank should be mounted securely.

Wallas fuel tanks

Volume	Lenght x height x width	Order code	
5l	200 x 300 x 130 mm	2024	(accessory)
10l	380 x 195 x 210 mm	2027	(accessory)
33 l	500 x 235 x 355 mm	4030	(accessory)
130 l	800 x 400 x 600 mm	4130	(accessory)

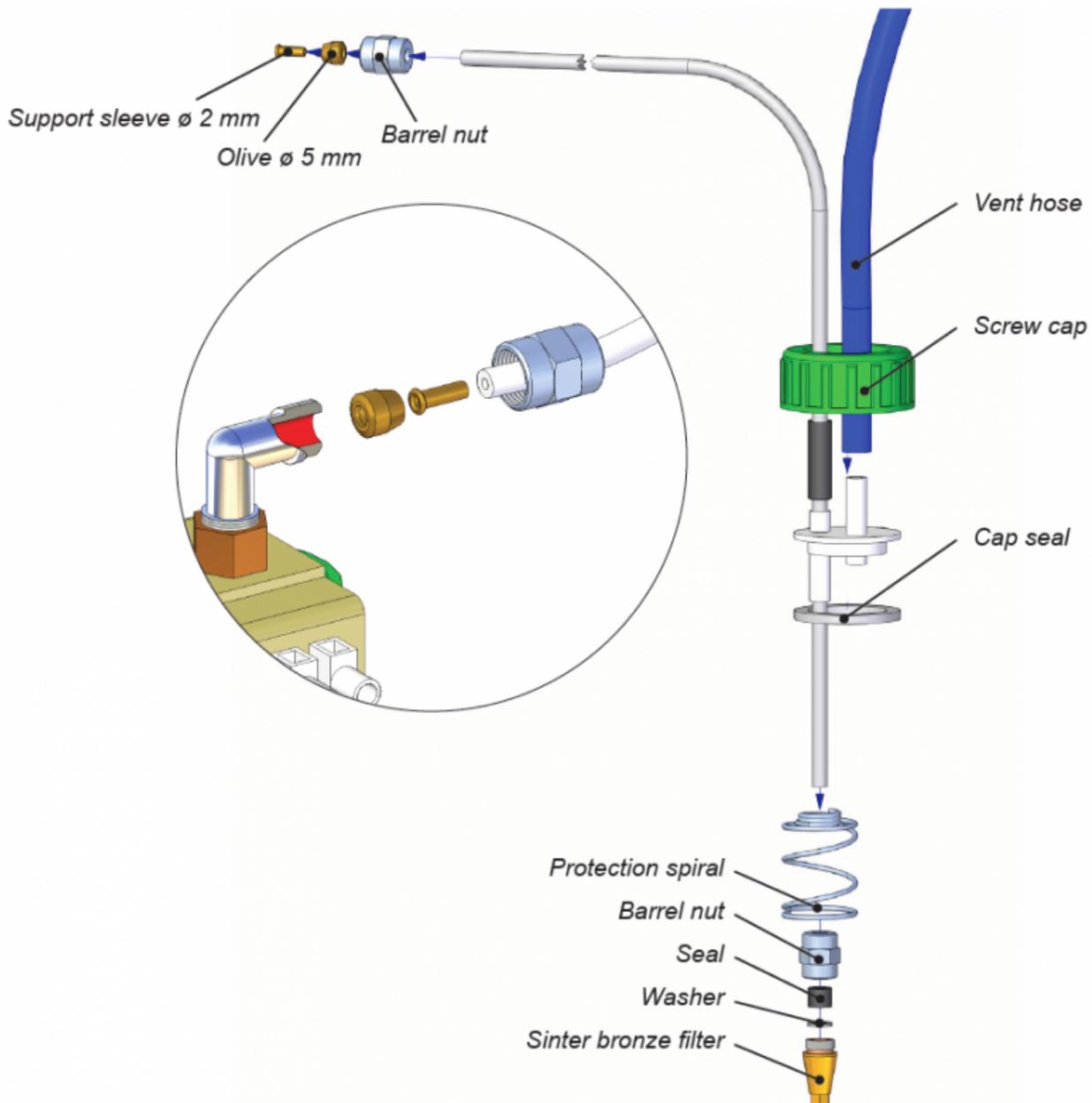
Fixed tank connection 30011



Installation instructions for Tank connection 30011

- You will need to make a Ø 25 mm (1") hole in the upper surface of the fuel tank. Choose the location of the hole so that when the fuel tank tilts the end of the intake pipe will stay in the fuel even if the tank is not full. If the end of the intake pipe does not reach the fuel, the device will quickly choke on the air in the fuel system.
- Cut the fuel intake pipe (Ø 3.17/0.8 mm) to the appropriate length. The end of the pipe must not touch the bottom of the tank in order to keep water and sediment from the system. It is recommended to cut the pipe short enough to leave the engine intake pipe at a lower level. This way the device cannot empty the tank.
- Install the pipe straight end first and angle the two "ears" below the threaded barrel inside the hole and then align the threaded barrel vertically so the ears are hooked on the underside of the tank top. Carefully slip the rubber washer over the bent pipe end and over the threaded barrel, followed by the metal washer and the nut. Thread the nut to the threaded barrel and tighten, sealing the fitting to the top surface of the tank.

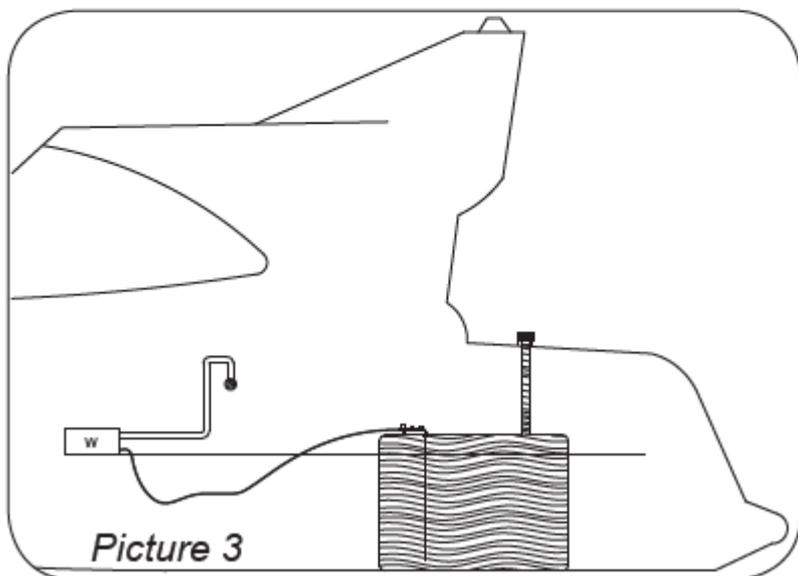
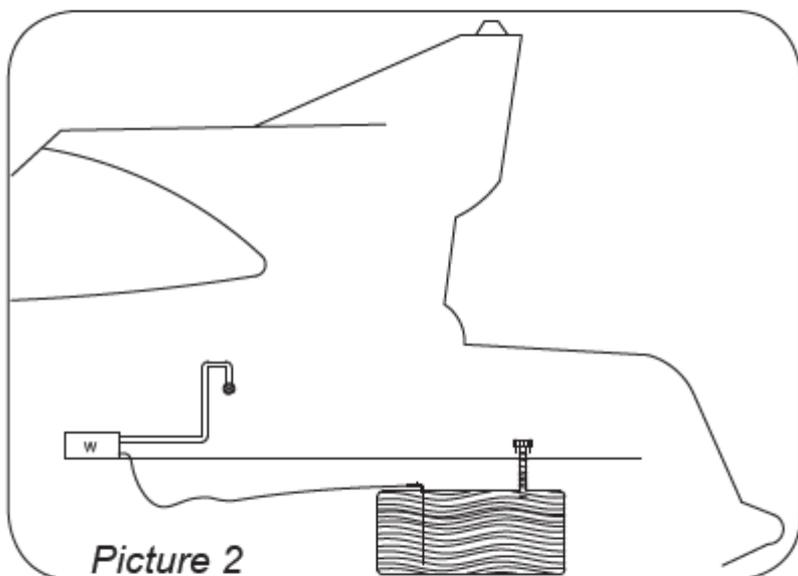
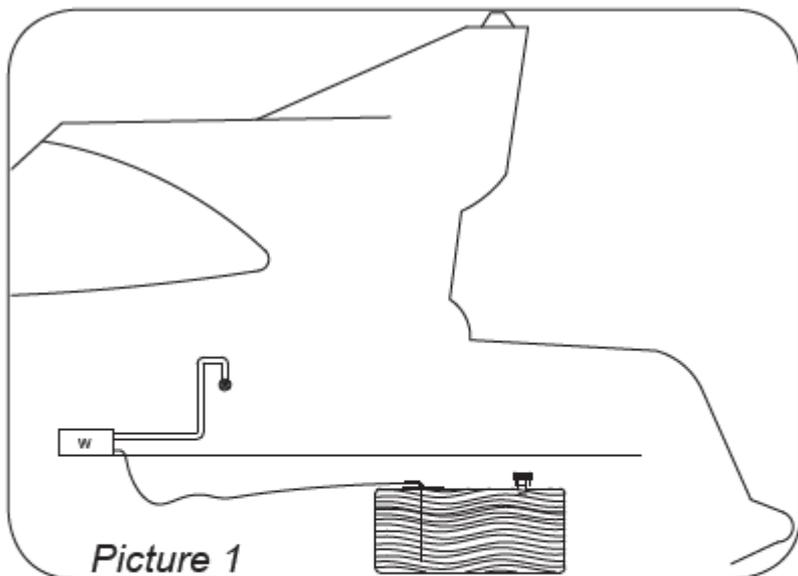
Installation instructions for separate tank connection



If the fuel will be taken from a separate Wallas day tank, you must install a tank connection 367215 (4 m) / 367216 (6 m).

- Tighten the barrel nut tightly to the fuel pump connector at the device end of the fuel system. Keep the parts and the hose clean and ensure that the connection is tight, because an air leak in the connector will stop the device from functioning.
- Install the tank connection in the tank.
- The joint has to be very tight to prevent air leaks. Tightening torque is 19Nm.

Solenoid valve



The solenoid valve 30012 prevents the tank from emptying in case the fuel line breaks. The fuel filter should be installed before the solenoid valve.

Our recommendations in the following installation scenarios:

1. Fuel level is below the heater/stove. Picture 1.

- Recommended installation scenario
- No special accessories required

2. Fuel level may temporarily rise above the heater/stove (e.g. in the fuel tank filler pipe or when the boat tilts). Picture 2.

- No special accessories required

3. Fuel level is above the heater/stove. Picture 3.

- Non-recommended installation scenario
- Possible siphon problem
- Solenoid valve 30012 must be installed in the fuel hose near the tank.

Selecting the fuel

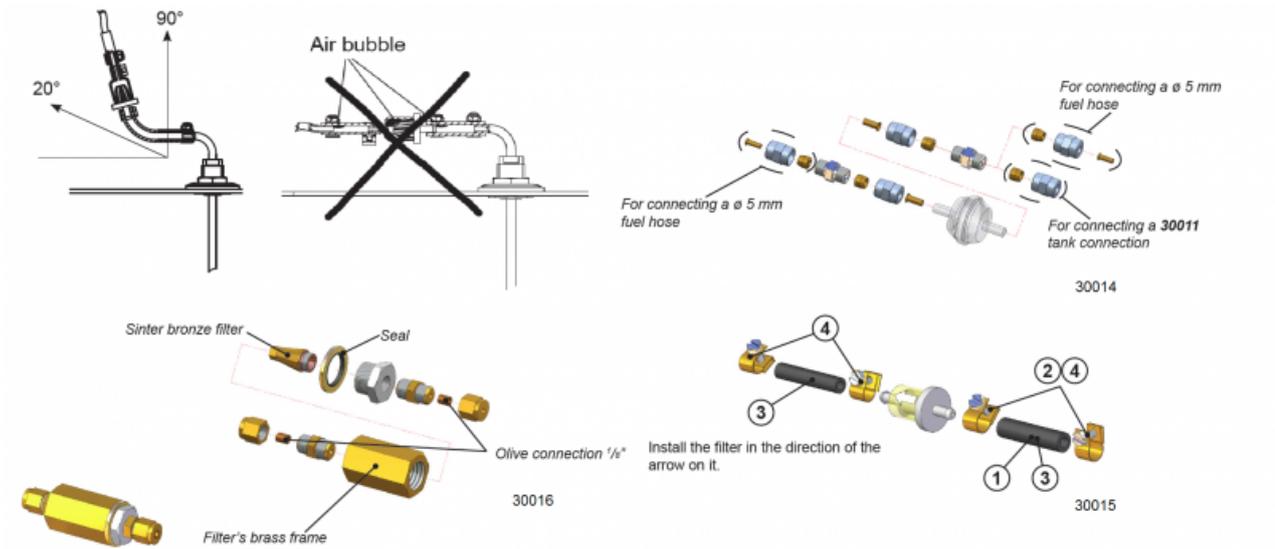
When selecting the fuel type, take note of the temperature limits of each particular fuel. The limit values provided here are to be treated as guidelines. Confirm the actual temperature limits from the fuel supplier.

- HVO-Diesel, Diesel, summer grade, temperature must not fall below -5 °C.
- HVO-Diesel, Diesel, winter grade, temperature must not fall below -24 °C.
- Diesel, arctic winter grade, temperature must not fall below -40 °C.

If the temperature drops lower than the minimum level, paraffin may form in the fuel. This may result in the fuel filter and pump being clogged. The clog will dissolve only if the fuel temperature rises clearly over 0 °C. The less aromatic substances the fuel contains, the less deposits will be formed.

Normal furnace oils contain 35-40 % of aromatic substances. In city diesels and green furnace oils (green diesel heating oil) the concentration is 20 %.

Tank external filters



Filters can be installed in a $\varnothing 5$ or $\varnothing 6$ mm plastic tubing or 1/8" metal pipe. Ensure that the fuel pipes are clean before installing the filter. There must be no debris or impurities between the pump and the filter as they will clog the pump. The filter type must be selected according to the operating conditions and country-specific requirements.

Fuel filter 30015

The filter can be installed directly in the 30011 tank connection by using a $\varnothing 6$ mm rubber hose (1) and 10 mm hose binders (2). Alternatively, the filter can be installed between two $\varnothing 5$ mm fuel hoses with $\varnothing 5$ mm rubber hose (3) and $\varnothing 8$ mm hose binders (4).

Fuel filter 30014

This filter is intended for cold conditions.

The filter can be installed directly in the 30011 tank connection by using a $\varnothing 6$ mm barrel nut and 6 mm olive. Alternatively, the filter can be installed between two $\varnothing 5$ mm fuel hoses with $\varnothing 5$ mm barrel nut, $\varnothing 5$ mm olive and $\varnothing 2$ mm support sleeve.

Fuel filter 30016

Used in countries where a metallic fuel transfer system is required. A 1/8" metal pipe is used for the installation.

Steps



Step 1: Install cable into Wall assembly plate.

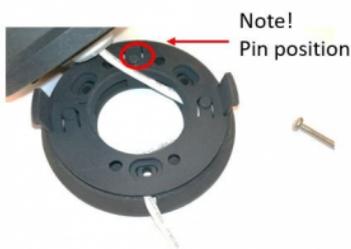


Note!
Pin position

Step 3: Install screws 3 pcs
Pull carefully extra cable out .



Step 5: Connect cable into heater.
Start using :- rotate wheel
-select by pressing top of panel



Note!
Pin position

Step 2: Install assembly plate



Step 4: Snap Control panel

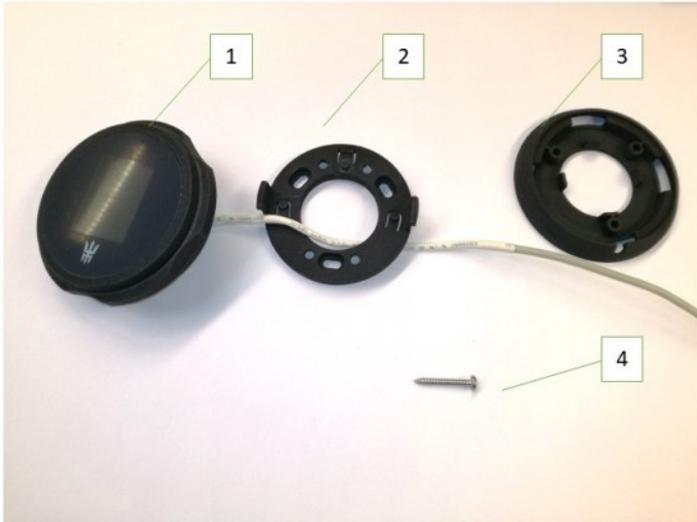
Hole assembly.
Note you may assembly without
Wall assembly plate if you drill
opening for
Cable. Min 24 mm to allow free
movement
for cable rubber.

20.12.2018

Control Panel installation

Parts

Installation



- 1. Control panel
- 2. Assembly plate
- 3. Wall assembly
- 4. 3pcs

29.6.2018

Control Panel installation

Controlling the device

Operation panel is controlled with rotary switch and selection button. Rotary switch can be used turning frame right or left. Button is integrated to panel and is used by pressing upper face of panel.

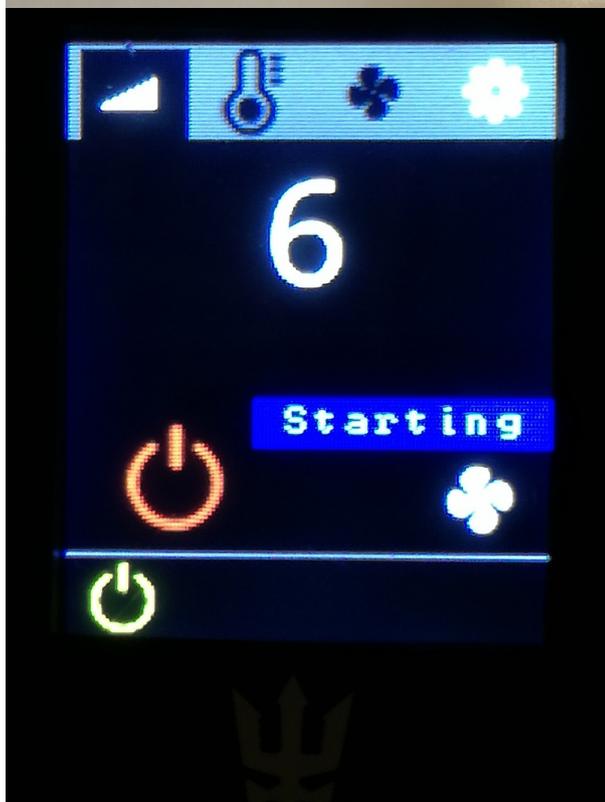
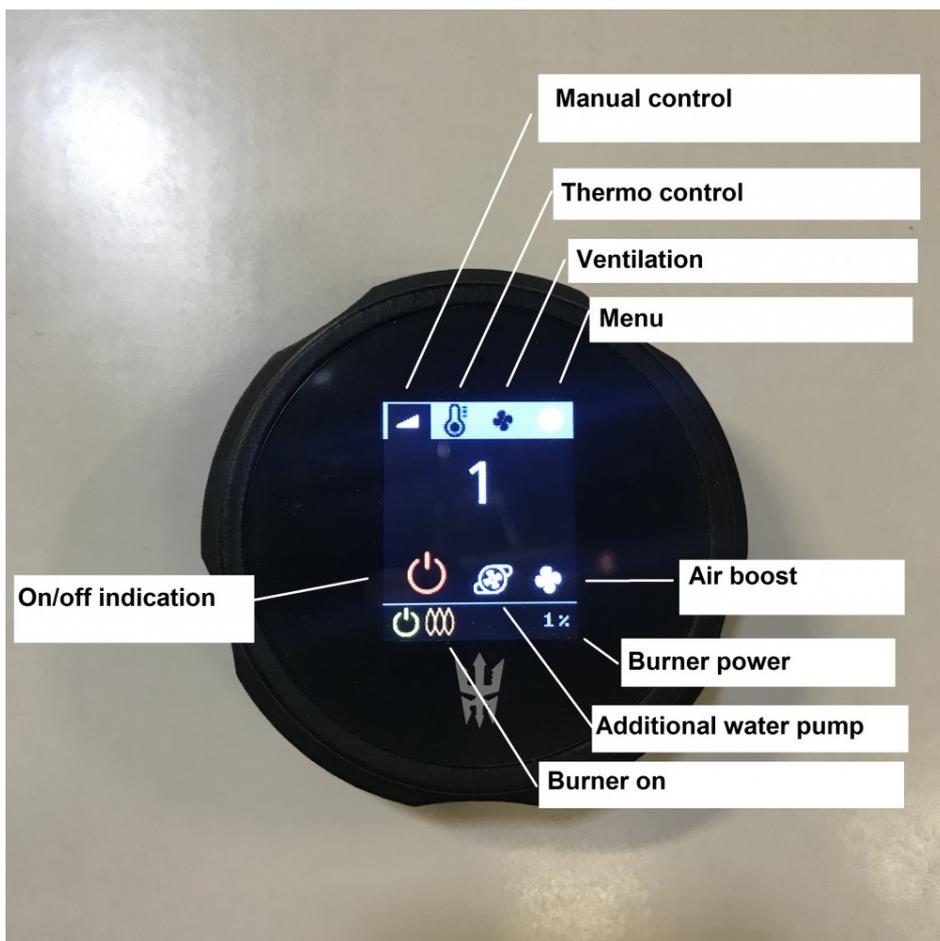
First time start up

When connecting power first time, the panel opens a tutorial for operations. Options are start heating, start ventilation or menu. To move in menu use rotary switch, select function by long press of button.



Adjust wanted temperature by rotary switch and accept that with button

When temperature is selected and accepted, panel goes to operation screen.





When burner ignites, the flame indicator light is turned on.



When starting protocol is completed mode indicator "starting" turns off. Selected function is highlighted. When something needs adjustment, select wanted function by turning rotary switch, push button and do wanted changes by rotary switch. Accept changes pushing the button.





Turning on the additional water pump. This function controls the relay left on the units circuit board, and is designed to be used for additional water pump for circulating water through heated seats, mats or other possible water circulations.



Air boost

The air boost is meant to be used when you need higher air volume, for example to remove moisture.



Manual control

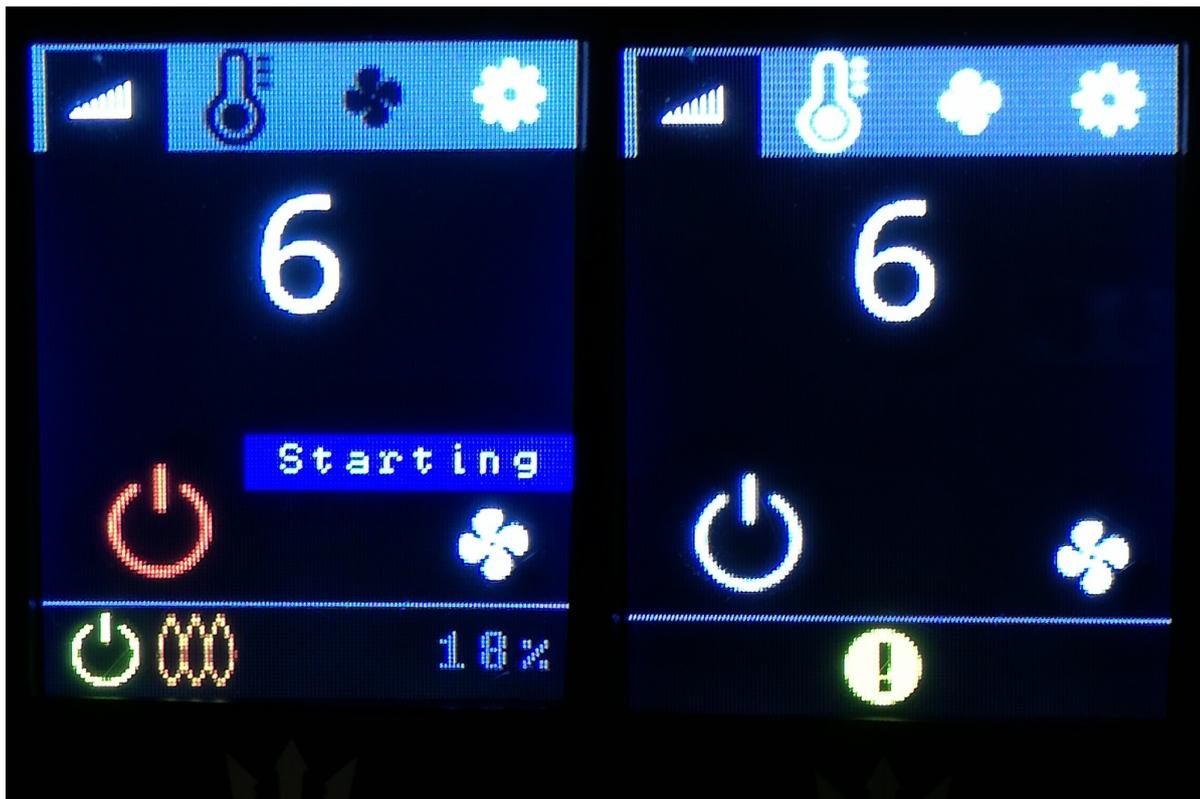
On manual control the heating power can be adjusted between 1-6.

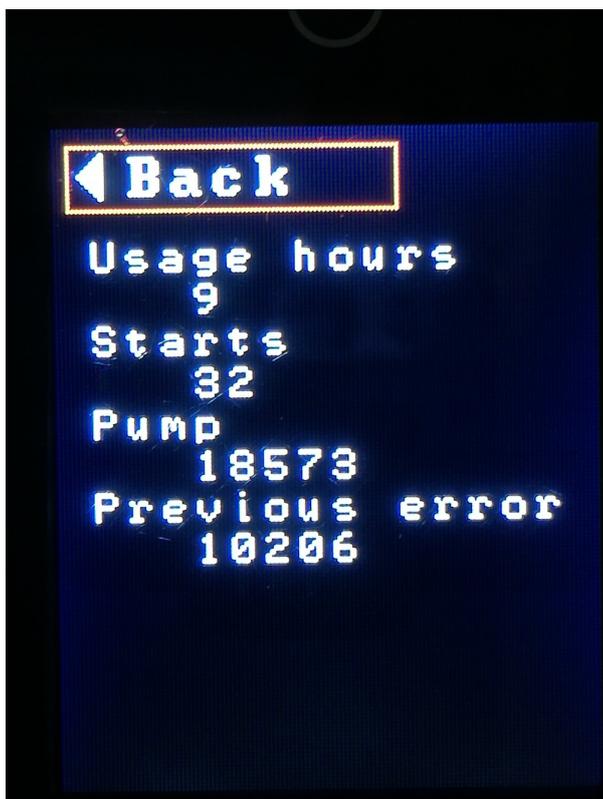


Heater is turned off by selecting power indicator and long press of button.











Maintenance recommendations

Maintenance procedure	Maintenance interval	Carried out by
First inspection of basic functions	Inspection after first 500 hours of use or the first season of use	Authorised Wallas service shop
Cleaning the burner	The service shop recommends a suitable maintenance interval after performing the inspection of basic functions.	Authorised Wallas service shop

Special recommendations

Occasional (monthly) use of the device will increase reliability by purging old fuel.

If the device uses the same tank as the engine:

Observe the engine manufacturers recommendation with regard to the fuel type and moisture removal.

If the device has a separate tank:

When selecting the fuel type, take note of the temperature limits of each particular fuel.

Winter storage

If the device uses the same tank as the engine:

- Change the fuel filter.
- Perform measures recommended by the boat/engine manufacturer to be performed before winter storage.

If the device has a separate tank:

- Drain the fuel tank in the autumn.
- Clean the tank and change the fuel filter.
- Fill the fuel tank with fresh and clean fuel in the spring.

For the device itself, you do not need to do anything.

Spare parts

Spare parts list, www.wallas.com

An anti-freezing agent for diesel vehicles may increase the forming of scale at the bottom of the burner and therefore shorten the maintenance interval.

Warranty terms

Wallas-Marin Oy (the manufacturer) shall be liable for any defects in the raw material or manufacture of the products and items sold by the importer for 2,000 operating hours or 24 months from the date of sale (whichever comes first) under the conditions noted below. Calendar term of the Warranty can be extended by an additional 12 months by registering the product in the website of Wallas-Marin Oy (www.wallas.fi) within three (3) months of the unit being sold to the end customer.

1. In the event of a defect:

- Look at the check list on the website or installation / usage manual (www.wallas.fi) to make sure the defect in question is not related to use. A simple problem might not be covered by the warranty water in diesel or unit requires a service.
- Notification of the defect must be given in writing immediately, if possible, but no later than two (2) months after the appearance of the defect. After the warranty period ends, a referral back to a notification at the time of the warranty period is not valid unless the notification was made in writing. A valid receipt or another reliable official document of the time of purchase is required for proof of warranty eligibility.
- For repairs under warranty, the customer must take the product to the place of purchase (the seller is responsible for handling units with warranty issues), to an authorized repair shop or to Wallas-Marin Oy factory service. Warranty service must be done by authorized Wallas repair personnel. The warranty does not cover costs for the removal and reinstallation of the device or for any damage in transit of a device that has been sent for repair. Warranty does not include any transport costs. (Wallas is a return to base warranty).

The customer must provide the following information in writing for warranty service:

- description of the problem.
- a description of where and how the device was installed (photographs of the installation may help)
- product type and serial number, place and date of purchase

2. This warranty is not valid in the following cases when:

- failure occurs as a result of components, which are not approved by the manufacturer, have been added to the device, and/or, it's structure has been modified without the consent of the manufacturer.
- the instructions for installation, operation or maintenance have not been followed according to this manual.
- storage or transport has been inappropriate.
- a problem has resulted from an accident or damage, which Wallas has had no control over (force majeure).
- the product has suffered from improper handling, unsuitable fuel, low voltage, excess voltage, damage due to dirt, water penetrating in to the unit or corrosion
- the device has been opened without the explicit permission of the factory/importer
- components, other than original Wallas spare parts or components, have been used in the repair of the device.
- repair by unauthorized service company

3. Warranty does not cover consumable or wear parts, which include: glow coil/plug, bottom mat or wick, fuel filter, seals.

4. Repairs carried out during the warranty period do not renew or alter the original warranty period.

5. Indirect damages arising from a defective product are not covered by this warranty.

6. This warranty is only valid for boat products that have been installed in boats and for cottage products that have been installed in cottages. The warranty does not cover Wallas products installed in vehicles or other areas.

7. This warranty does not limit rights specified in consumer protection legislation.

When making a warranty claim, the customer must provide proof that the maintenance and safety instructions have been thoroughly followed. This warranty does not apply to defects which have arisen due to carelessness in following installation, operation and maintenance instructions.

Wallas-Marin Oy

Käärkatu 4

20780 Kaarina

Finland

<http://www.wallas.com/>

Oikeudet muutoksiin pidätetään.

Vi behåller rätten att göra ändringar.

We reserve the right to changes.

Änderungen vorbehalten.

Nous nous réservons le droit de faire des changements.

Wij behouden ons het recht voor deze te wijzigen.

Ci riserviamo il diritto di apportare modifiche.

Vi reserverer oss retten til endringer.