

USER GUIDE ENGLISH

**TOPSTART (BIO)DIESEL & OIL
Ref. TSDP**



The TopStart (Bio)Diesel & Oil (TSDP) is a compact electric heater with circulating pump dedicated to the heating of (Bio)diesel and motor oil.

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The present user’s guide contains instructions to be fulfilled during the mounting and the starting stage. Please read carefully for a correct installation and a proper use of the heater. Keep these instructions after installation.

1. IMPORTANT SAFETY INSTRUCTIONS

Qualified personnel

The mounting should be carried out by a qualified technician only.

Danger in case of non-compliance with the present guidelines

The non-compliance with present guidelines could have serious consequences for the safety of people and could damage the equipment, thus making the warranty void. The strictest rigor is required for the electrical and mechanical aspects of the mounting.

Safety measures meant for the user

Avoid any risks linked to the mains by strictly observing local safety instructions in force.

Check or have checked by an authorized technician that your electrical installation is protected by a differential current system and that the earthing is in compliance with the local safety prescriptions.

Modifications to the heater and use of unauthorized parts

Any modification to the heater will be made only in agreement with the manufacturer. The use of official spare parts and accessories guarantees your safety. The manufacturer disclaims any liability in case non-original parts are used.

Inappropriate use of the equipment

The equipment supplied with the present user guide is exclusively meant for the applications described in this user guide.

The TSDP is a compact electric heater with circulating pump dedicated to the heating of (Bio)diesel and motor oil.


The TSDP is not made to be installed in an explosive environment.

2. SPECIFICATIONS

Technical Characteristics

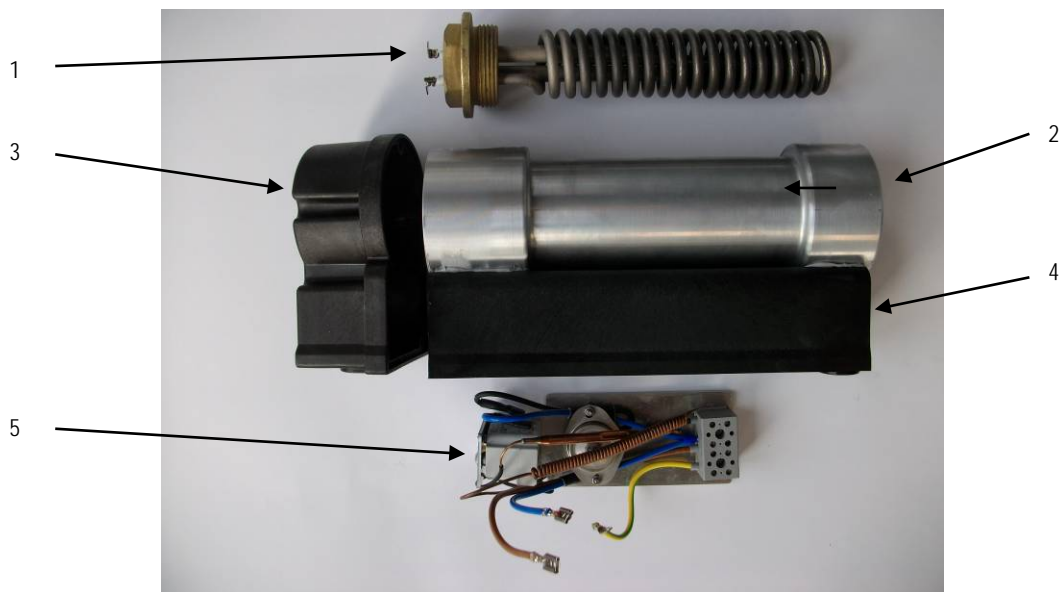
The TSDP is a universal and compact electric heater with circulating pump dedicated to the heating of (Bio)diesel & oil. High-quality components and materials are used to guarantee the reliability of the heater. Its compactness makes it easy to install. The heater is made of a heating body, a heating element, an adjustable regulating thermostat, an overheat thermostat with manual reset and a circulating pump.

As soon as the heater is plugged in, the (Bio)diesel or oil of the engine / tank is sucked into the heating body and then expelled by the pump back into the engine / tank. The pump allows a progressive and uniform warming of the engine / tank. The regulating thermostat controls the heating element (and the pump on model TSDP 5023011000 M). The safety thermostat protects the heating element and the pump in case of overheating.

MODEL	TSDP
Description	TopStart (Bio)diesel & Oil
Picture	
Components characteristics	
Heating body	Machined Aluminum
Heating element	INCOLOY 800® stainless steel protection sheath – wattage density 2,5W/cm²
Circulation pump	Viscomat 70M
Temperature control and measurement	Adjustable capillary thermostat 0°-40°C (32°F to 104°F).
Safety thermostat	Capillary thermostat with a limit at 65°C (159°F) and manual reset

Electrical characteristics	
Rated voltage and frequency	230V-50/60 Hz
Ingress protection level	IP55
Heating element power	1000W
Pump power	1200W
Amperage	9 Amps
Working specifications	
Maximum working temperature	60°C (140°F)
Temperature range	Adjustable from 0 to 40°C (32°F to 104°F).
Pump main characteristics	
Maximum counterpressure	6 bars (85psi)
Maximum viscosity	500 cSt
Other pump characteristics	See pump user guide
General characteristics	
Weight in kg	17 kg
Dimensions in mm (L * B * H)	345 * 270 * 265

Exploded view TSDP



1. **Heating element**
Voltage: 230 VAC, single-phase.
Power: 1000 Watts.
Heating element formed in spiral with ultra low wattage density (2,5 W/cm²) and Incoloy 800® stainless steel protection
2. **Heating body in machined aluminum**
3. **Protection cap in polyamide**
4. **Support base in Polyamide**
5. **Thermostatic plate with regulation thermostat and safety thermostat**
Safety thermostat with manual reset, temperature limit at 65°C (149°F) and 25 Amps cutting capacity.
The regulation thermostat with 25A cutting capacity controls the heating element (and the pump on ref. TSDP 5023011000 M). The temperature range is between 0 and 40°C (32°F and 104°F). We set the thermostat at the factory on 0°C (32°F).

3. MOUNTING INSTRUCTIONS

Precautions

The installation has to be made by an authorized technician in strict compliance with the instructions of the manufacturer. Do not connect to the mains before having followed the present instructions. Do not connect the heater to the mains if you are not sure that it is filled with (Bio)diesel or oil.

Installation instructions

- ✓ The heater should ideally be below the lowest level of the engine / tank. The inlet of the heater should be below the point of removal of the (Bio)diesel or oil that has to be warmed up.
- ✓ Fix the TSDP to the chassis or any other suitable place. In case you are using another fixing support, it should be rigid enough. If the heater is mounted on the engine chassis, it is necessary to use silent-blocks in order to reduce vibrations to the heater.
- ✓ Be careful not to mount the heater, the hoses or the power cord close to the engine exhaust.

Connecting the circuit

Drain off completely the circuit.

Before placing the heater, it is imperative to drain the circuit. Unscrew the drain plug or disconnect the lower hose in order to completely drain off the circuit.

Connecting the heater inlet.

The heater inlet is meant for 3/4" hoses (not supplied). If the heater is connected to a rigid pipe, use a piece of flexible radiator hose that is long enough to prevent engine vibrations being transmitted to the heater.

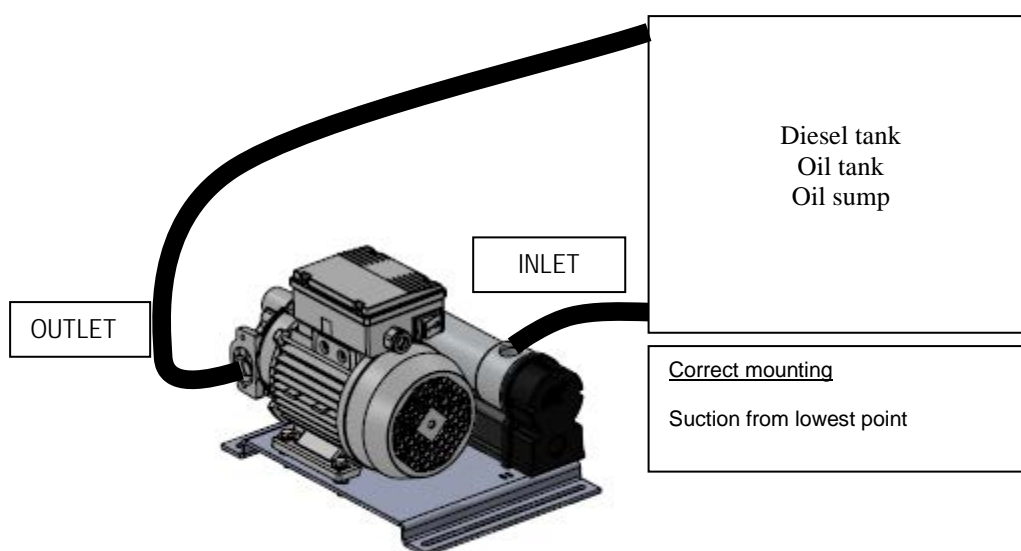
Connecting the heater outlet.

The outlet of the heater is meant for 1" connexions (not supplied). To guarantee an optimum heating of the (Bio)diesel / oil the return hose from the heater to the engine / tank should be placed at the highest possible point on the engine / tank and as far as possible from the suction port.

Checking and re-filling the circuit

Make sure that the hose clamp collars are properly tightened. Fill the circuit with the liquid ((Bio)diesel or oil). It should be of high quality and without impurities. It is necessary to check its quality frequently to ensure that the heater is not dirty, has no grimes and does not suffer from deterioration. The life and the proper functioning of the heater depend on it. If the heater is connected to an engine, in order to eliminate air pockets and obtain a good circulation, run the engine a few minutes. Then shut off the engine and check that the oil circuit is properly flushed. Check that all connections are watertight and that hose clamps are properly tightened. When the engine has cooled down, check the oil level again in the circuit and adjust if necessary.

Examples of Correct Mounting



Electrical connections

Fixing the power supply cord.

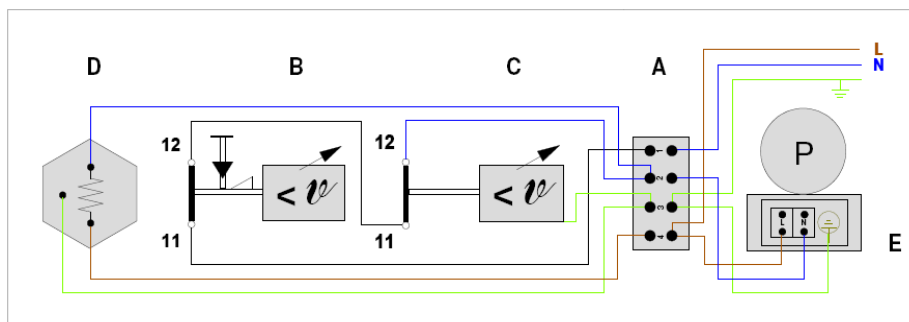
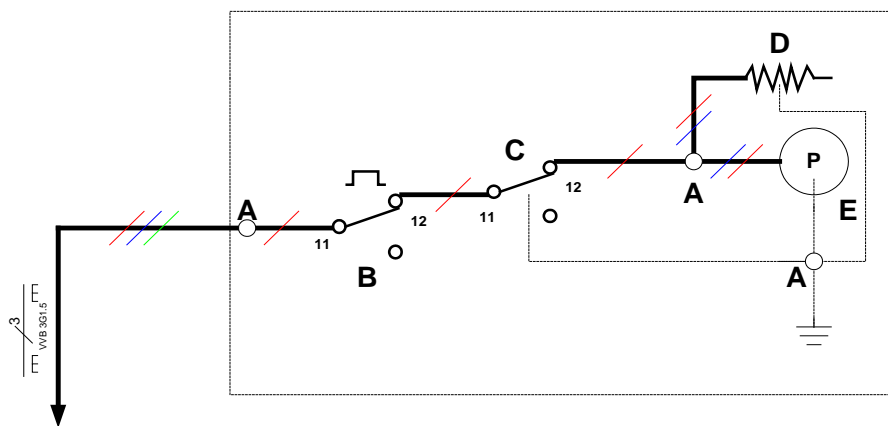
Fix the cord with clamp collars in order to avoid any contact with hot or moving parts. It is recommended to use a protection sheath for the cord.

Checking the installation before connecting the heater to electricity.

Check the information regarding voltage and power on the heater label before connecting the heater to electricity. Any improper connection to the mains could irretrievably damage your heater. Make sure that the voltage is correct and the earthing is in compliance with local rules.

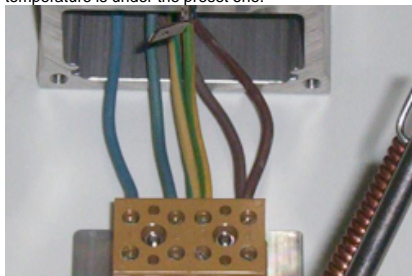
Electrical diagrams TSDP single-phase 230V 50 Hz reference M (ex: TSDP 5023011000M)

- A Bornier de connection / Terminal block
- B Thermostat de sécurité à réarmement manuel / Overheat thermostat with manual reset
- C Thermostat de régulation / Regulating thermostat
- D Élément chauffant / Heating element
- E Pompe de circulation / Circulating pump



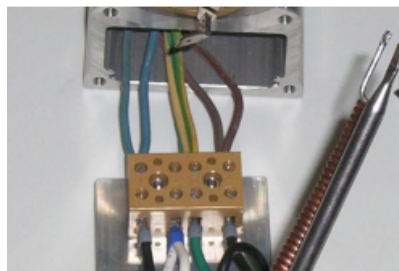
Reference M (ex : TSDP 5023011000 M)

As soon as the regulation thermostat has reached the wished temperature, it stops the pump (and consequently the heater). The pump and the heater will start again as soon as the temperature is under the preset one.



Reference MC (ex : TSDP 5023011000 MC)

The pump keeps on turning even if the wished temperature is reached. Only the heating element is shut down.



4. DIRECTIONS FOR USE

Putting the heater into service

BEWARE: DON'T START THE HEATER IF NOT FILLED AND NEVER RUN THE PUMP WITHOUT LIQUID

Follow the procedure described hereafter:

- Connect the plug.
- The regulating thermostat is adjusted on 0°C (32°F) at the factory.
- After checking that the circulation through the heating body and the engine is correct and the air has been properly purged, adjust the regulating thermostat on the required temperature.

Adjusting the Regulating Thermostat

The regulating thermostat temperature is set on 0°C (32°F) at the factory. It is possible to modify this temperature between 0 and 40°C (32°F and 104°F). To do this, unscrew the threaded cap on the side of the heater. Use a screwdriver to set the thermostat on the desired temperature. It is imperative to fix again the protection cap after adjusting the thermostat.



Resetting the overheat thermostat

In case of overheating (due for example to a lack of liquid in the circuit), the overheat thermostat cuts the electric supply to the pump and the heating element. After checking the heater, the thermostat has to be reset manually. To do this, unscrew the threaded cap under the support base of the heater and push the manual reset button.



5. TROUBLESHOOTING

Before contacting the technical service, please check the following table for causes and remedies:

- Air pocket caused by a curve in the hoses
- Engine / tank temperature higher than the thermostat set temperature.

Type of problem	Possible causes	Control and remedies
The pump doesn't work. The heating body of the heater and the engine / tank remain cold	The heater is not connected to the mains.	<ol style="list-style-type: none"> 1. Check that the supplying cable is connected to the mains. 2. Check that the supply to the mains is correct. 3. Check the fuses in the mains distribution box.
The pump works properly but the heating body of the heater and the engine / tank remain cold (only on model TSDP 5023011000 MC)	The overheat thermostat has been switched on. ⇒ Lack of water into the heater	<ol style="list-style-type: none"> 1. Disconnect the supplying cable from the mains. 2. Reset the overheat thermostat (see above) 3. Check the level of the circuit. 4. Adjust the level if necessary. 5. Turn the engine on for 10 minutes. 6. Reconnect the supplying cable to the mains
The pump works properly but the heating body of the heater and the engine / tank remain cold (only on model TSDP 5023011000 MC)	Failure of the heating element. Failure of the regulating thermostat.	<ol style="list-style-type: none"> 1. Put the heater out of service and call the technical service.
The connection to the mains is correct and the circuit is correctly purged. The heating body of the heater is hot but the engine remains cold.	Bad circulation. Pump blocked with impurities. The pump is not working.	<ol style="list-style-type: none"> 1. Put the heater out of service and call the technical service.
The fuse or the circuit breaker in the distribution box is engaged.	Electrical breakdown.	<ol style="list-style-type: none"> 1. Put the heater out of service and call the technical service.

6. INSTRUCTIONS FOR THE PROTECTION OF THE ENVIRONMENT

Recuperation of raw materials rather than elimination of waste. Machines, as well as their accessories and packaging, should be recycled in an appropriate way. Our spare parts can be recycled selectively depending on the type of material. Phillips and Temro Industries Europe SPRL commits itself to recycle the different components of the TopStart. Each TopStart will be either reconditioned or recycled selectively at the Customer's request.

7. TOTAL QUALITY

Each TSDP assembled by Phillips and Temro Industries Europe SPRL is controlled and tested before leaving the factory.

Phillips and Temro Industries Europe SPRL runs the following test on each TSDP:

- Test of electrical insulation
- Test of heating capacity.
- Test of the circulating pump
- Air pressure test of the heater
- Test of the regulating thermostat

You will find in the packaging a check list of all the tests undergone on your TopStart. Keep this list carefully.

8. WARRANTY

All our devices TSDP are guaranteed against all manufacturing errors over a 2 years period, starting at the invoice date and following general sales conditions. This warranty is voided in each of the following situations:

- The device was transformed or modified without permission of Phillips and Temro Industries Europe SPRL
- Installation and use are against the guidelines of TSDP
- The heater is damaged by impurities or grimes.

Our warranty covers exclusively the changing of the standard installation or replacement of the damaged parts. Are not taken under warranty: wrong installation or use, costs for assembling and disassembling the heater, costs for assembling or disassembling the installation, shipment costs.

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