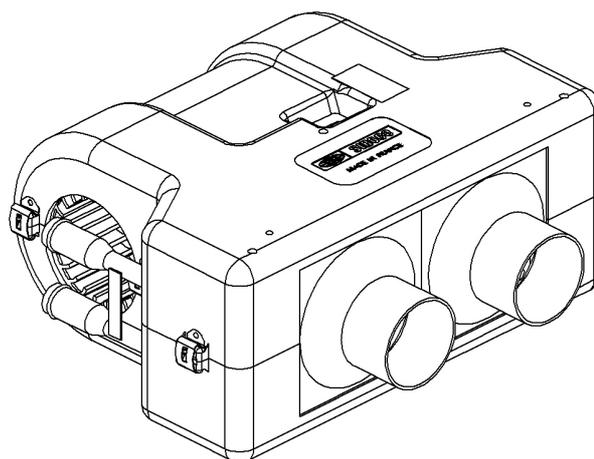




TENERE B-C-D-DF-F-FI-H-VI

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- 4 - Trouble shooting
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SIROCO S.A.S.
10 rue Jean Rostand - Z.I.
BP 315
69745 GENAS Cedex
Tel: +33 (0)4 78 90 96 96
Fax: +33 (0)4 78 90 15 98
www.siroco.fr



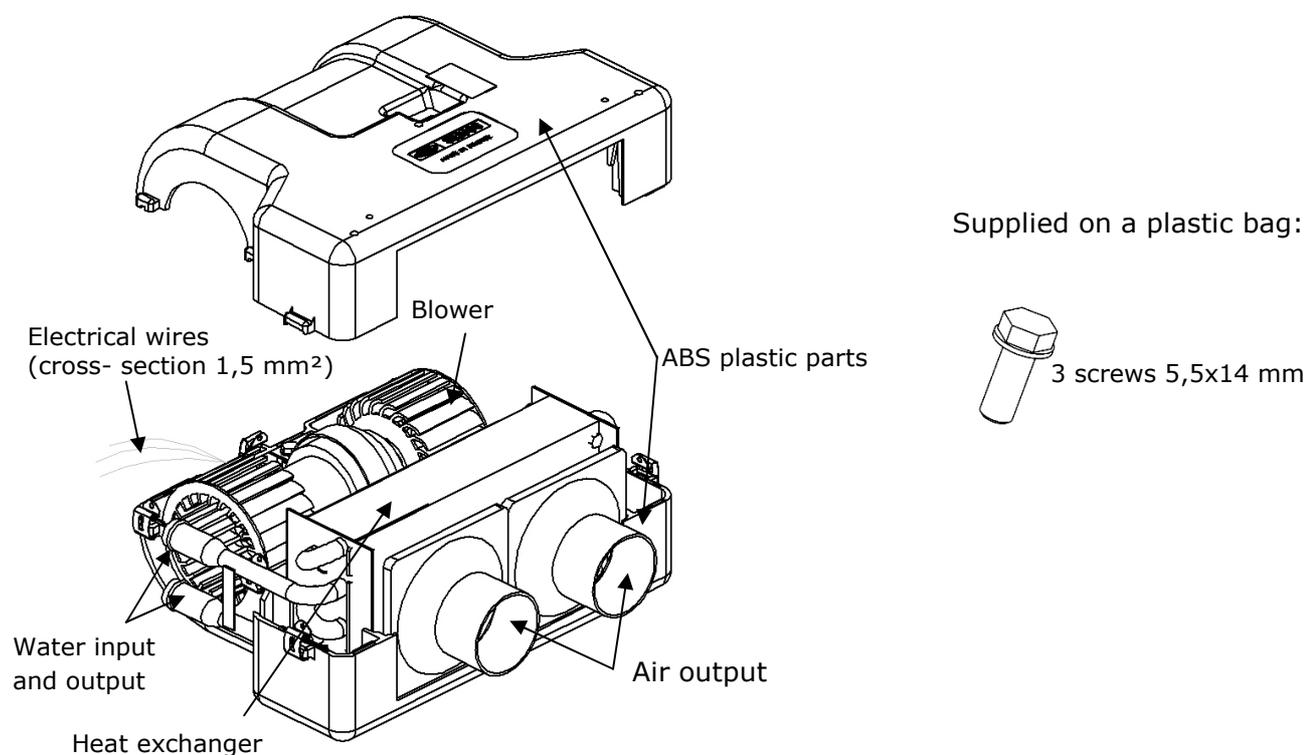
1 - Device description

TENERE heater consist of a blower, a coil and two plastic parts. Plastic parts are made from heat and impact resistant ABS. Heater can operate under two or three different speeds: three or four electrical wires have to be connected. There are input-output cooling water supply and input-output air supply.

Nine versions are available :

- B - C - D - DF - F - FI and H versions which front side is different.
- 2 speeds and 3 speeds BVI versions, including a valve on water circuit.

All 2 speeds versions are available in 12 V or 24 V with connections pipes diameters of 14 mm or 16 mm. 3 speeds BVI version is available in 24V with connections pipes diameters of 14mm.



2 speeds product part numbers:

Voltage	Pipes Ø (mm)	TENERE B	TENERE C	TENERE D Ø50	TENERE D Ø55	TENERE DF Ø55
		Part number	Part number	Part number	Part number	Part number
12 V	Ø 14	0160 5502	0160 5506	0160 5510	0160 5514	0160 5553
	Ø 16	0160 2202	0160 2209	0160 2215	0160 2218	0160 2313
24 V	Ø 14	0160 5504	0160 5507	0160 5512	0160 5512	0160 5555
	Ø 16	0160 2204	0160 2213	0160 2216	0160 2246	0160 2315

Voltage	Pipes Ø (mm)	TENERE F	TENERE FI	TENERE H	TENERE BVI
		Part number	Part number	Part number	Part number
12 V	Ø 14	0160 5600	0160 5607	0160 5620	0160 5630
	Ø 16	0160 2300	0160 2306	0160 2330	0160 2106
24 V	Ø 14	0160 5605	0160 5608	0160 5621	0160 5632*
	Ø 16	0160 2302	0160 2307	0160 2307	0160 2107

*3 speeds BVI version part number : 0160 5619



2 - Operation

Cooling water, beforehand heated by the vehicle, run on coil. In the same time, fan unit blows fresh air through the heat exchanger. Then, air temperature rise up. Finally, air output evacuate hot air.

Operating conditions:

Product must be on a ventilated place.

Operating temperature have to be between -30°C and +80°C.

Cooling fluid must be antifreeze and anticorrosive for copper and aluminum. Use a cooling fluid officially recognize by automotive manufacturers.

Technical data:

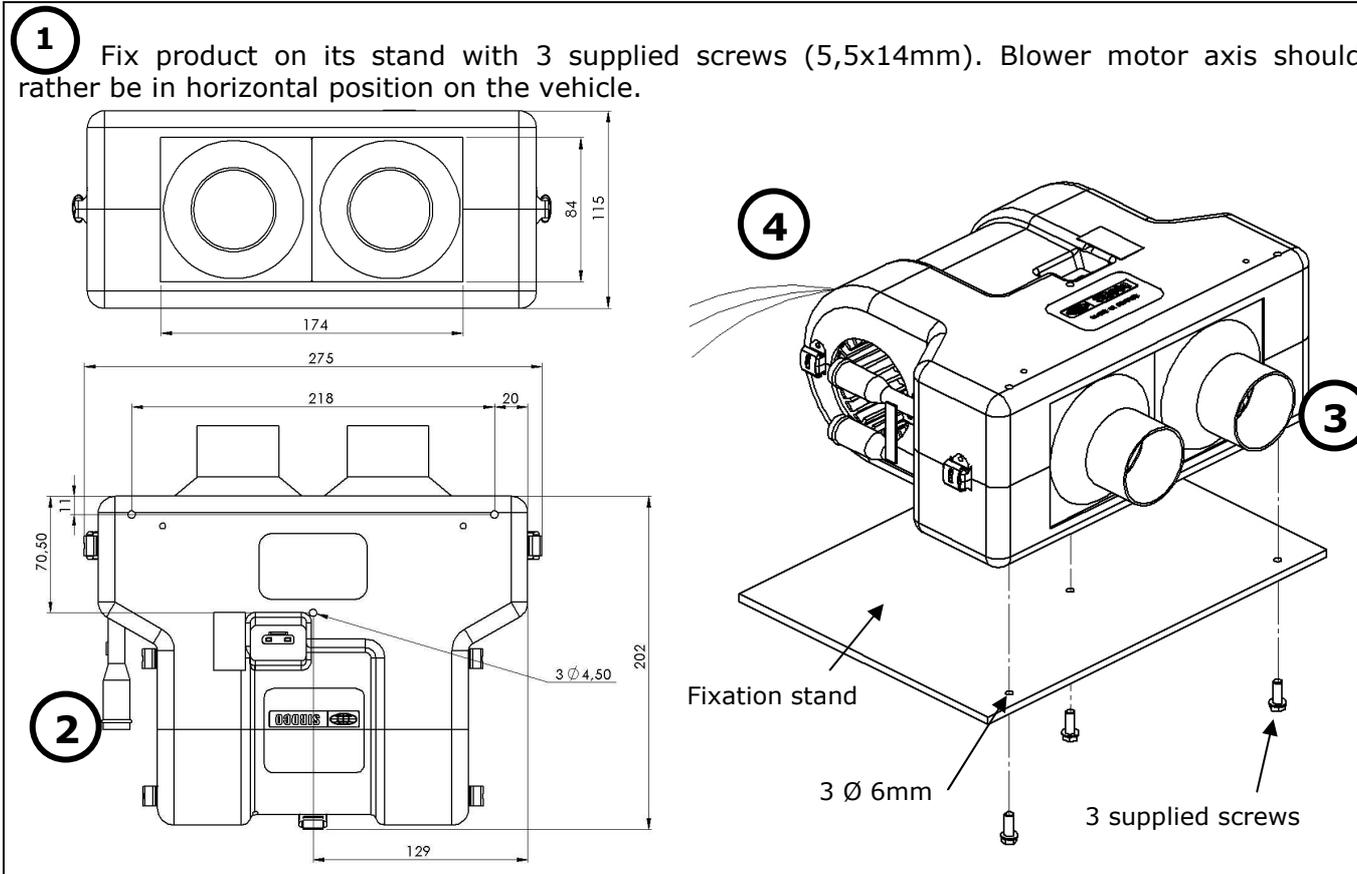
Voltage	Electrical power	Heating capacity
12/24 V	70 W	4,3 kW

Optimum heating capacity is reached with air inlet temperature of 0°C, nominal air flow of 0,5 m³/h, free ethylene glycol water and water inlet temperature of 100°C.

Version	TENERE B and C	TENERE D, DF, F, FI and H	TENERE BVI
Weight	1,6 kg	1,7 kg	1,8 kg
Nominal air flow	240 m ³ /h	185 m ³ /h	240 m ³ /h

3 - Mounting information

1 Fix product on its stand with 3 supplied screws (5,5x14mm). Blower motor axis should rather be in horizontal position on the vehicle.



2 (Front view of heater)

3 (Screws for mounting)

4 (Blower motor axis)

Fixation stand

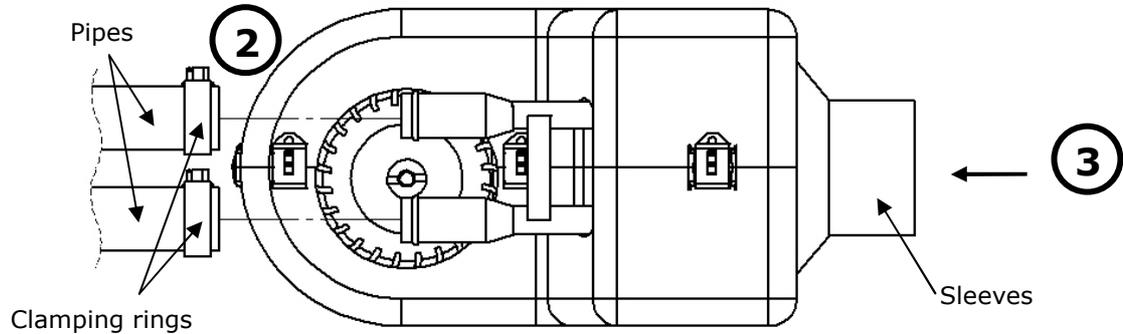
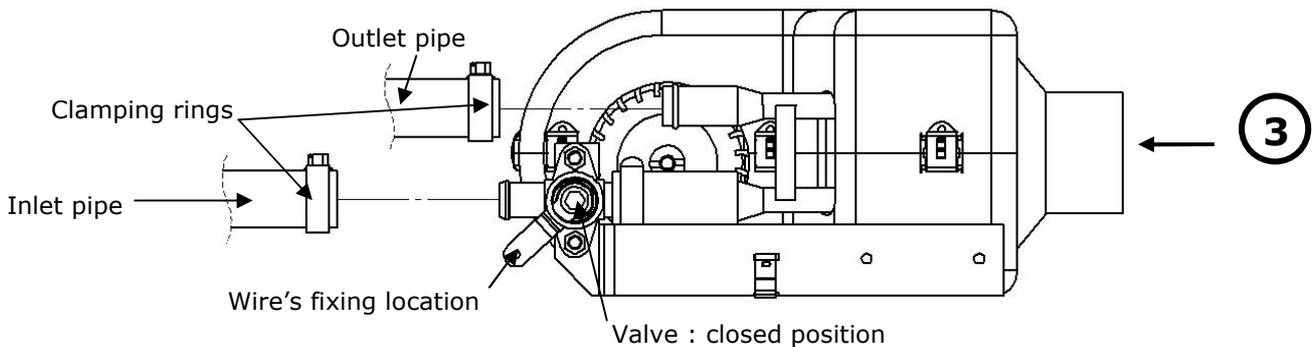
3 Ø 6mm

3 supplied screws

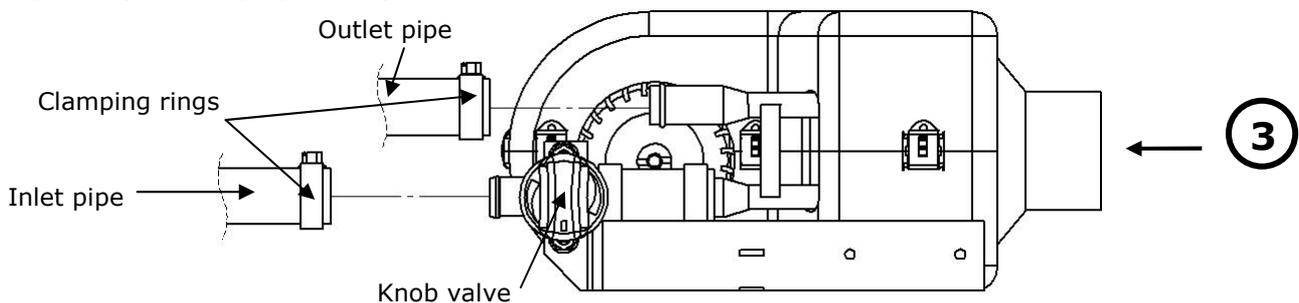
! Do not drill heater's body so as not to damage heat exchanger!



2 **3** Connect water input and output using cooling pipes with corresponding diameter (cf. product part number §1). Using suitable clamping rings. There is no preferential cooling water direction for free valve water circuit.

**VI version :****2 speeds (cable operated) :**

Connect cable valve using suitable pipe and clamping ring. Fix clamping rings. Fix cable on valve lever: stroke have to be above than 47mm to ensure lever rotation.

3 speeds (manually operated) :

Connect knob valve using suitable pipe and clamping ring.

Check for leaks in water.

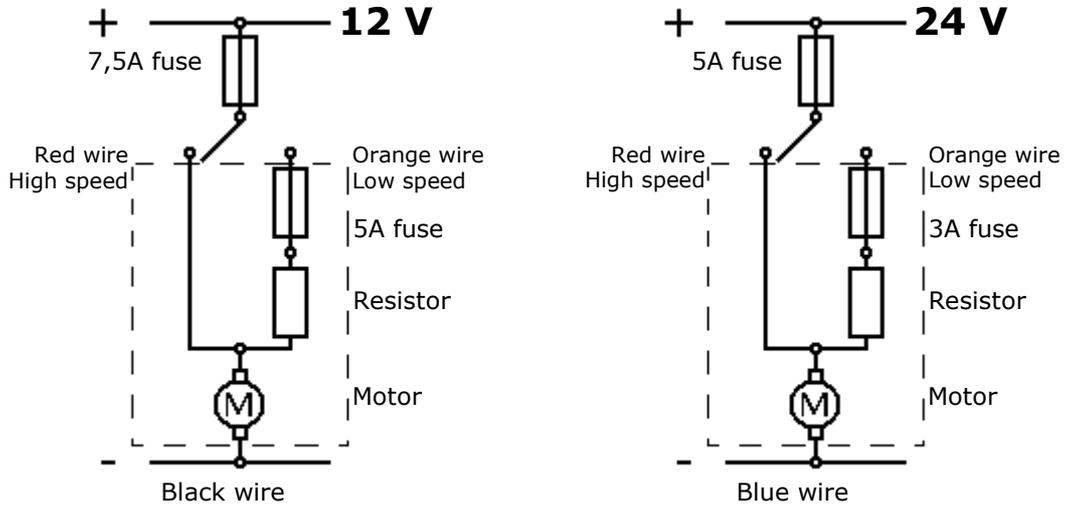
3 About D, DF, FI and H versions, put sheaths on sleeves. Make sure the system is airtight by using clamping rings.

Check for leaks in air.

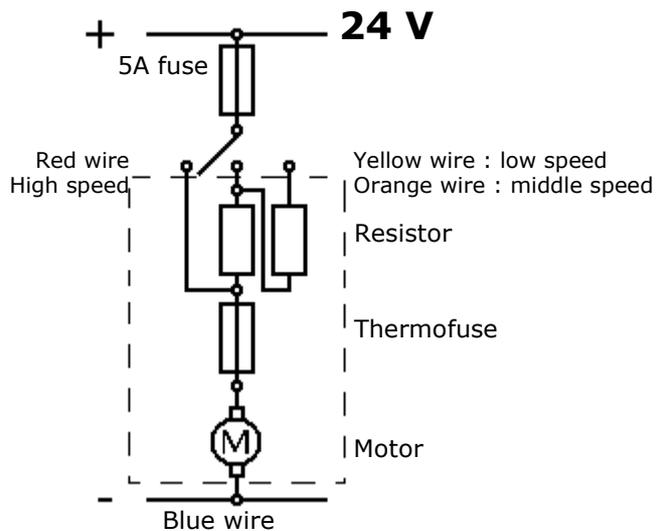


4 Connect electrical wires according to the following circuit diagram. Use at least 1,5 mm² cable cross-section.

2 speeds :



3 speeds :



Heater

**4 - Trouble shooting**

Fault found	Possible cause	Action to take
Blower not working	Fuse defective	Check fuse position and amperage. If necessary replace it. Before renew a fuse, always identify causes. Examine blowers for a blockage or another type of defect and rectify the cause.
	No vehicle power	Switch on ignition and/or main battery switch.
		Check battery connections.
		Check vehicle operating instructions for possible advice.
	Connecting cable damaged or torn out	Replace cable. Check for correct cable routing and connections according to the circuit diagram.
	Electrical connections reversed	Check connecting wires according to the circuit diagram and if necessary assemble correctly.
	Blower switch defective	Replace the switch with a new original component.
	Blockage in fan unit	Rectify cause of blockage, e.g. object in impeller. If necessary order new unit.
Blower motor defective	Replace plastic part + motor.	
Blower doesn't operate at all speeds	No blower power	Check connection on blower switch.
	Defective resistance	Replace plastic part + motor.
Blower only runs at low and middle speed	Fuse defective	Replace fuse.
Unit cannot be switched off	Short-circuit in cable	Rectify circuit diagram. If necessary, install new cable.
Blower only operate at reduced power	Rated voltage is wrong	Rated voltage of unit and on-board circuit must be the same. Order new unit.
	Air nozzles closed or covered	Open nozzles or free up inlet/outlet openings.
	Electrical wires are underdimensioned	Install recommended cable cross-section.
	Heat exchanger severely contaminated	Carefully clean avoiding damage which can lead to leaks. WARNING! Observe safety instructions.
Heating doesn't function	Vehicle engine is not running	Start engine.
	Cooling water still cold	Wait until the engine reaches operating temperature
	Water valve closed	Open valve. See the vehicle manufacturer's operating instructions.
	Water lines kinked or squashed	Eliminate fault by installing correctly.
	Water pump pressure insufficient	Heat exchanger does not have cooling water flowing through. Install additional pump or more powerful one.
Reduced heating performance	Volumetric air flow from blower is too low	See action to take under "Blower"
	Water flow rate through heat exchanger is too low	Open valve to the maximum.
		Water lines kinked or squashed. Relay hoses. Water pump pressure too low (see above for action).
	Air in heat exchanger	Flush-out water circuit.
		When the pumping pressure is sufficient the heater is self bleeding. Install additional or more powerful water pump.
	Unit is underdimensioned	Install a more powerful unit.
	Insufficient pumped water pressure	Install additional pump or a more powerful one.
Heat exchanger severely contaminated	Carefully clean avoiding damage which can lead to leaks.	



Products which have already been pulling appart are not covered by guaratee.



5 - Security advice

Consider the following advice for your own safety :

- Installation must only be done by well-formed and authorized specialists.
- Product must operate on a well-ventilated place.
- Products have to be used only according to the intended use. Products shall not be used in improper environment. Pay attention to guarantee.
- Before using products, ensure that regulations and laws are strictly adhered according to the country.
- For security reasons (fire hazards), fuses with required amperage must be used to protect electrical connections.
- Cut electrical connections before working on product.
- Do not get into contact with the heat exchanger and its connections.
- Do not grip into the unit and do not put objects inside.