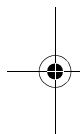
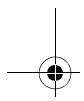




**Wasserheizgeräte
Water heaters
Verwarmingsapparaat
Chauffages à eau
Riscaldori ad acqua
Vattenwärmeaggregat**



02/2003



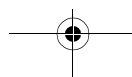
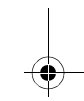
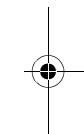
**Einbauanweisung
Installation instructions
Inbouw handleiding
Notice de montage
Istruzioni di montaggio
Monteringsanvisning**

Thermo Top Z

**Aufrüstung zur Standheizung
Upgrade to auxiliary heating system
Montageset voor parkeerverwarming
Kit d'extension pour chauffage auxiliaire
Montaggio integrativo per il riscaldamento
supplementare a vettura ferma
Eftermontering till kupévärmare**

Thermo Top C

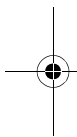
**Thermo Top C - D Diesel/diesel
Thermo Top C - B Benzin/Petrol/Benzine/Essence/Benzina/bensin
Thermo Top C PME (Biodiesel)/PME (biodiesel)/PME (estere bimetile
a base di olio vegetale) (biodiesel)**





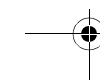
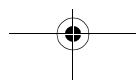
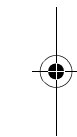
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Thermo Top Z / Thermo Top C

Regulations governing installation

1 Regulations governing installation

1.1. Statutory regulations governing installation

The Thermo Top Z and Thermo Top C heaters have been type-tested and approved in accordance with EC Directives 72/245/EEC (EMC) and 2001/56/EC (heater) with the following EC permit numbers:

e1* 72/245*95/54*1232*--
e1*2001/56*0002*--

Installation is governed above all by the provisions in Annex VII of Directive 2001/56/EC.

NOTE:

The provisions of these Directives are binding within the territory governed by EU Directive 70/156/EEC and should similarly be observed in countries without specific regulations.

(Extract from Directive 2001/56/EC Annex VII)

1.7.1. A clearly visible indicator within the user's field of vision must show when the heater is switched on or off.

2. Regulations for installation in the vehicle

2.1. Scope

2.1.1. Subject to the provisions of paragraph 2.1.2, internal combustion heaters must be installed in accordance with the requirements contained in this Annex.

2.1.2. In the case of class O vehicles of class O (*trailers*) with heaters for liquid fuel, it is presumed that these vehicles comply with the requirements in this Annex.

2.2. Position of the heater

2.2.1. Parts of the vehicle body and other components in the immediate vicinity of the heater must be protected against excessive heat and the danger of contamination by fuel or oil.

2.2.2. The internal combustion heater must not pose a fire hazard even when overheated. This requirement is deemed to have been met if care is taken during installation to ensure an adequate distance from all parts, as well as adequate ventilation and if fire-resistant materials or heat shields are used.

2.2.3. In class M2 and M3 vehicles the heater must not be installed in the passenger cabin. A device in a sealed cover, which also meets the requirements set out in paragraph 2.2.2, may be used, however.

2.2.4. The plate mentioned in paragraph 1.4 (*model plate*) or a duplicate thereof (*duplicate model plate*) must be fitted in such a way that it is still clearly legible when the heater has been installed in the vehicle.

2.2.5. When positioning the heater, all reasonable precautions must be taken to minimise the risk of personal injury or damage to items in the vehicle.

2.3. Fuel supply

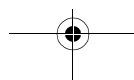
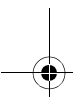
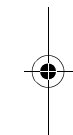
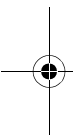
2.3.1. The fuel filler neck must not be located in the passenger compartment and must have a tightly fitting cap to prevent any fuel leaks.

2.3.2. The type of fuel and the fuel filler neck must be clearly identified on heaters for liquid fuel, for which the fuel supply is separate from the fuel supply for the vehicle.

2.3.3. A sign must be affixed to the fuel filler neck warning that the heater must be switched off before refuelling. An identical warning must also be included in the manufacturer's operating instructions.

2.4. Exhaust system

2.4.1. The exhaust outlet must be positioned in such a way that exhaust fumes cannot get into the interior of the vehicle through ventilation devices, hot-air inlets or open windows.





Regulations governing installation

Thermo Top Z / Thermo Top C

2.5. Combustion air inlet

2.5.1. The air for the combustion chamber of the heater must not be extracted from the passenger cabin of the vehicle.

2.5.2. The air inlet must be positioned in such a way that it cannot be obstructed by other objects.

2.6. Hot air inlet

2.6.1. The supply of heating air must consist of either fresh air or recirculated air and must be taken from a clean area which cannot be contaminated by exhaust fumes from the engine, the internal combustion heater or any other source in the vehicle.

2.6.2. The inlet line must be protected by a grating or other suitable means.

2.7. Hot air outlet

2.7.1. Hot air lines within the vehicle must be positioned or protected in such a way as to exclude all risk of injury or damage caused by direct contact.

2.7.2. The air outlet must be positioned or protected so that it cannot be obstructed by other objects.

2.8. Automatic control of the heating system

When the engine stops, the heating system must cut out automatically and the fuel supply must be stopped within 5 seconds.

The heating system may remain in operation if a manual unit has already been activated.

IMPORTANT

Failure to follow the installation instructions and the notes contained therein will lead to all liability being refused by Webasto. The same applies if repairs are carried out incorrectly or with the use of parts other than genuine spare parts. This will result in the invalidation of the type approval for the heater and therefore of its homologation / EC type licence.

NOTE:

Contrary to point 2.2.3 the heater must also not be installed in the passenger cabin of class M1 and N vehicles. A device in a sealed cover, which also meets the requirements set out in paragraph 2.2.2, may be used, however.

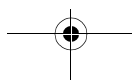
1.2. General regulations

1.2.1. Exhaust

Exhaust pipes must be positioned at an adequate distance (at least 20 mm) from heat-sensitive vehicle parts (underseal, plastics parts, etc.).

1.2.2. Fuel lines

The fuel line must be installed in cool areas to prevent the formation of bubbles due to heating.





Thermo Top Z / Thermo Top C

Use / version



2 Use / version

2.1. Use of the water heaters

The *Thermo Top C* water heater is designed for use as an auxiliary heating system in conjunction with the vehicle's own heating system

- to heat the passenger cabin
- to defrost the vehicle windows
- to preheat water-cooled engines and
- to compensate for the heat deficit in engines with optimised fuel consumption.

The *Thermo Top Z* water heater is designed for use as an additional heating system in conjunction with the vehicle's own heating system

- to compensate for the heat deficit in engines with optimised fuel consumption.

If the vehicle's engine is not running the water heater auxiliary heating system operates independently of the vehicle's engine.

If the vehicle's engine is running the water heater auxiliary heating system and the additional heater supply heat to specific areas.

The water heater is connected to the vehicle's cooling system, fuel system and electrical system.

2.2. Version

Type

Thermo Top Z

Water heater for "diesel" or "PME"

Type

Thermo Top Z

Water heater for "petrol"

Type

Thermo Top C

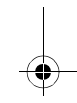
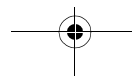
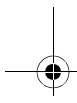
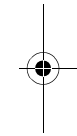
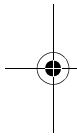
Water heater for "diesel" or "PME"

Type

Thermo Top C

Water heater for "petrol"

The Thermo Top Z / Thermo Top Z water heater is designed for 12V operation.





Installation location

Thermo Top Z / Thermo Top C

3 Installation location

The water heater must be installed outside the passenger cabin.

The heaters should ideally be installed in the engine compartment in a splash-proof area of the front wing or on the bulkhead.

The heaters must be installed in as low a position as possible to allow the heater and circulating pump to be bled automatically. This is particularly important as the circulating pump is not self-priming.

IMPORTANT

The openings in the water ports must not point downwards in any installation location.

IMPORTANT

The heaters must not be installed:

- in the immediate vicinity of or above hot parts,
- in areas directly exposed to splashing water from the wheels,
- below the water clearance level line of the vehicle.

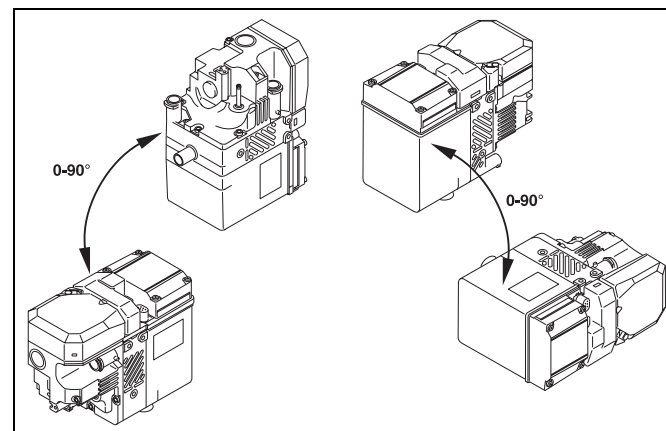
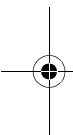
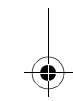
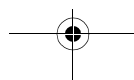
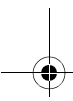
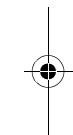


Fig. 1: Installation positions



Thermo Top Z / Thermo Top C

Installation location

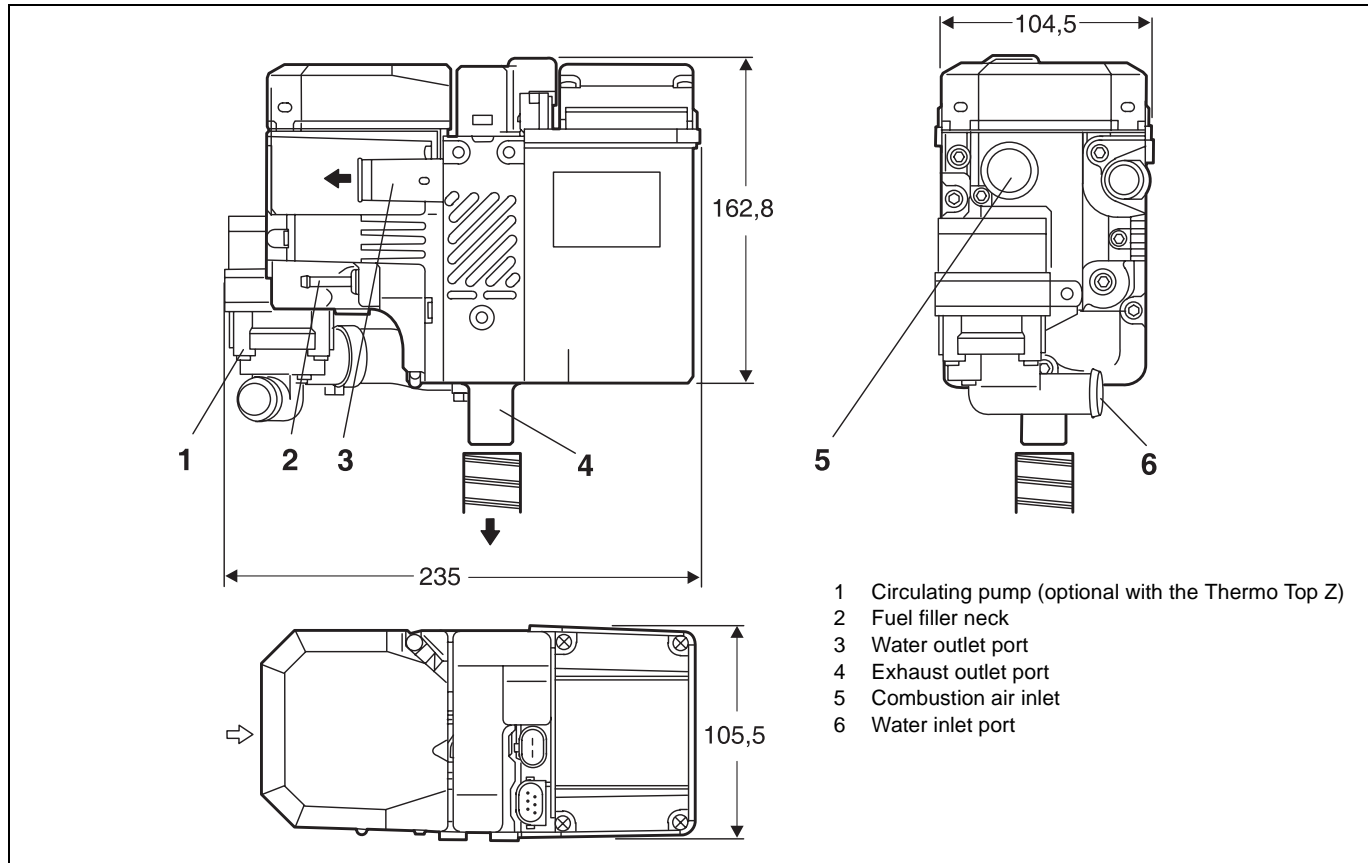


Fig. 2: Thermo Top Z / Thermo Top C installation drawing



Model plate (additional heater only)

Thermo Top Z / Thermo Top C



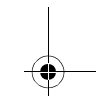
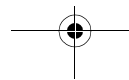
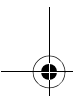
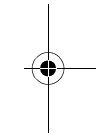
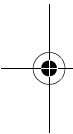
4 Model plate (additional heater only)

The model plate must be positioned so that it cannot be damaged and must be clearly legible when the heater is installed (otherwise a duplicate model plate must be used).

Inapplicable years must be erased from the model plate.

Webasto		e1	e1	CE
Feel the drive		00 0002	02 1232	
Heizgerät Typ	Thermo Top C			
Spannung/EI. Leistung	24 V/ 50 W			
Wärmestrom max.	5 kW			
Brennstoff	Diesel			
zul. Betriebsüberdruck	2,5 bar			
Made in	Germany			
Artikel Nr. %%%%%%%%%%	Ausf.YYY	Fabr.Nr.		
Inbetriebnahmejahr 20		02	03	04

Fig. 3: Model plate





Thermo Top Z / Thermo Top C

Bracket (additional heater only)

5 Bracket (additional heater only)

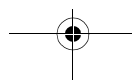
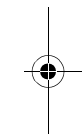
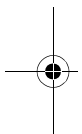
The bracket must be secured to the car body or an intermediate bracket with at least four M6 screws.

Washers and spring rings must be used.

Washers with a minimum diameter of 22 mm must be used if the body surfaces are flat.

The bracket must not be secured to the car body with self-tapping screws.

The holder must be correctly machined in compliance with the minimum bending radii and in accordance with general technical regulations.



Installation example in a car

Thermo Top Z / Thermo Top C

6 Installation example in a car

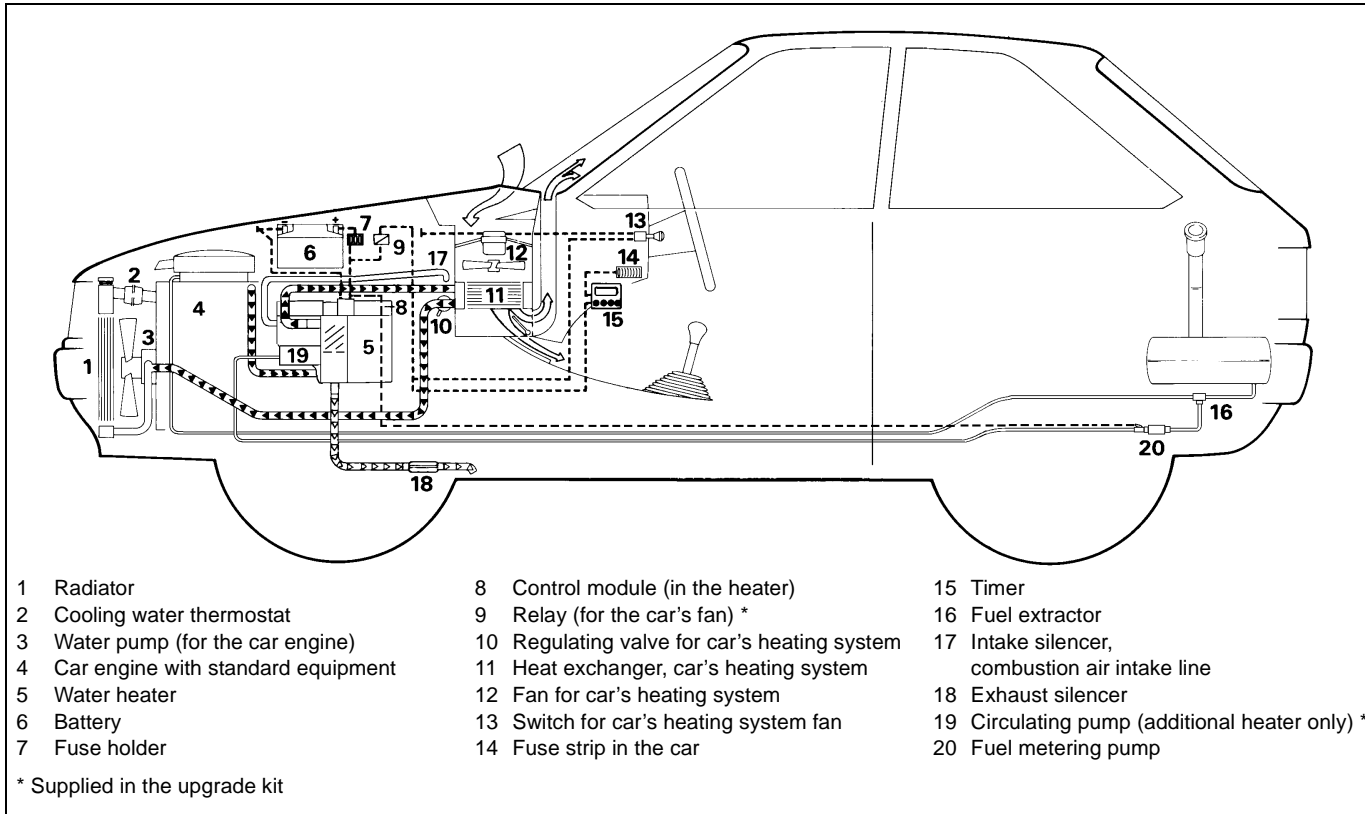


Fig. 4: Installation example for a *Thermo Top Z / Thermo Top C* heater in a car

Thermo Top Z / Thermo Top C

Connection to the vehicle cooling system

7 Connection to the vehicle cooling system

The heaters are connected to the vehicle cooling system as shown in Figures 4, 5 and 6. The system must contain at least 4 litres of coolant.

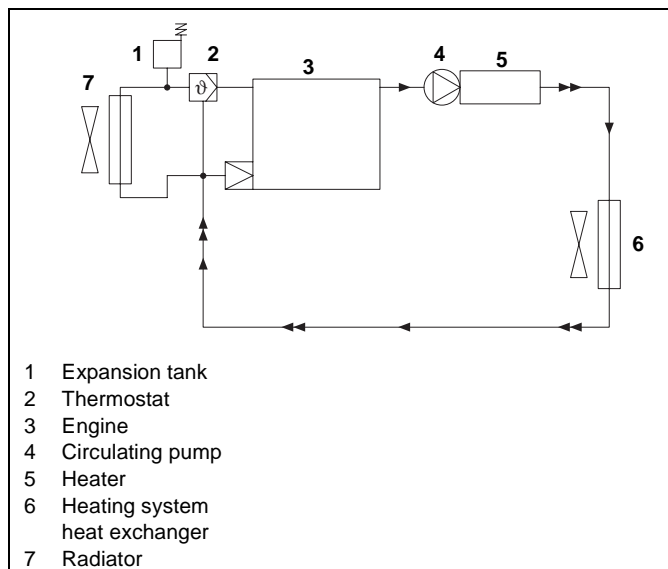


Fig. 5: Installation in engine's water system "inline integration"

The heater must be integrated into the cooling system in the feed line to the vehicle's heat exchanger.

NOTE:

Leaking cooling water must be collected in a suitable container.

The water hoses supplied by Webasto must always be used. If you do not use these hoses, the hoses that you do use must comply with DIN 73411. The hoses must be installed without kinks and (to ensure perfect bleeding) rising if possible. Hose connections must be supported by hose clips to prevent them slipping.

NOTE:

The hose clips on the heater must be fitted between the flared neck and the heater.

The hose clips must be tightened with a torque of $2.0 + 0.5$ Nm.

The cooling system must be bled carefully before using the heater for the first time or after replacing the coolant. The heater and lines should be installed in such a way as to ensure static bleeding.

Poor bleeding may cause malfunctions due to overheating whilst the heater is operating.



Connection to the vehicle cooling system

Thermo Top Z / Thermo Top C

7.1. To retrofit the circulating pump (retrofitting only)

Make the electrical connection as shown on the circuit diagram. The circulating pump may be installed either on the space available for it on the heater or in the water system away from the heater.

Ensure that that water passes through the heater correctly (water outlet at the top / water inlet at the bottom) (otherwise it will malfunction).

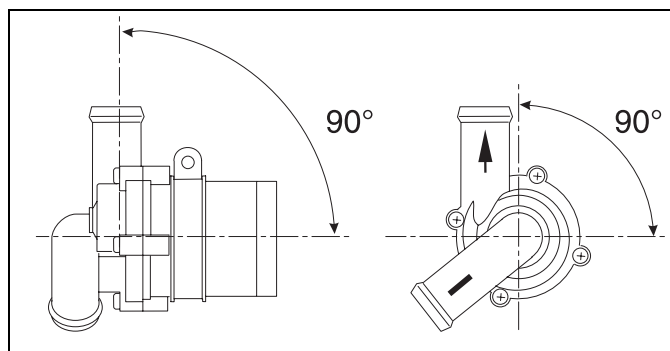
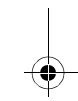
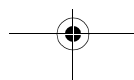
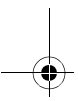
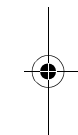
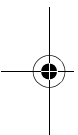


Fig. 6: Circulating pump U4847
Installation positions



Thermo Top Z / Thermo Top C

Fuel system integration (additional heater only)

8 Fuel system integration (additional heater only)

8.1. Fuel supply

The values for the maximum pressure at the fuel extraction point are shown in the table below.

Maximum fuel feed height H (m)	At max. pressure (bar) in fuel line l_1
0,00	0,2
1,00	0,11
Maximum fuel intake height S (m)	At max. negative pressure (bar) in the fuel tank
0,00	-0,10
0,50	-0,06
1,00	-0,02

NOTE

A fuel feed line can normally be identified by the fact that a fuel filter is installed in it.

Fuel may only be taken from the return line using the special Webasto fuel extractor (see Figure 8).

The fuel extractor must be fitted in such a way that any air or gas bubbles are automatically discharged towards the tank (see Figure 8).

Air or gas bubbles may be produced in the vehicle's fuel line if there are leaks in the carburettor or vehicle fuel pump or if the ambient temperature is higher than the evaporation temperature of the fuel.

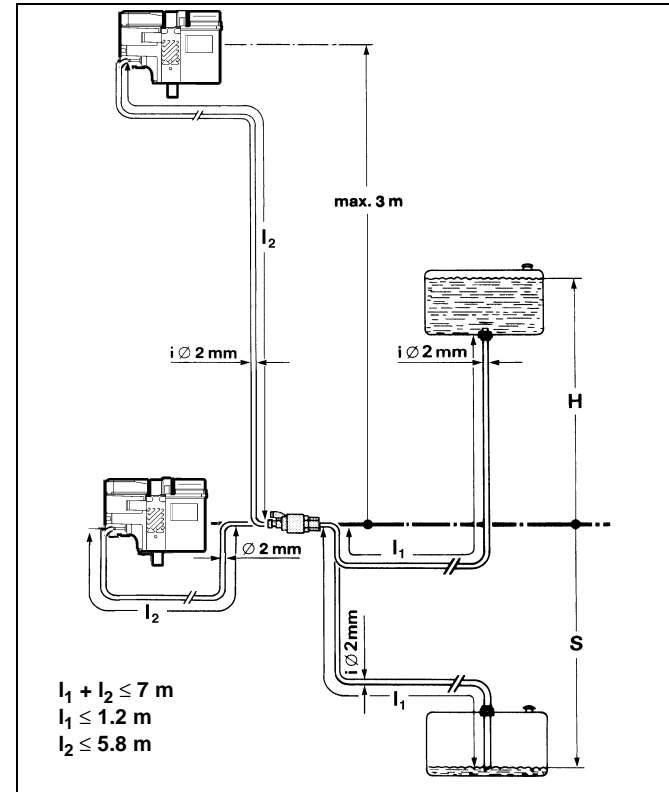


Fig. 7: Fuel supply

Fuel system integration (additional heater only)

Thermo Top Z / Thermo Top C

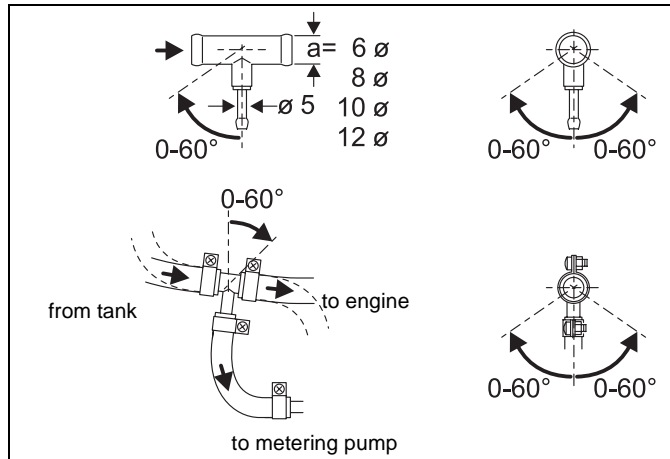


Fig. 8: Webasto fuel extractor

The fuel extractor should not be located near the engine, as gas bubbles may form in the lines on account of heat radiated from the engine. This may cause problems during combustion.

When installing the heater in a vehicle with fuel injection system, it is therefore important to establish whether the fuel pump is located inside or outside the tank.

If the fuel pump is located inside the tank, fuel can only be extracted from the return line. In this case it must be ensured that the return line continues almost to the bottom of the tank. If this is not the case the return line may be extended.

8.2. Fuel lines

NOTE:

The hose clips must be tightened with a torque of $1.0 + 0.4$ Nm. Leaked fuel must be removed before the engine or heater is started.

Only steel, copper and plastic lines of plasticised, light and temperature-stabilized PA 11 or PA 12 (e.g. Mecanyl RWTL) pursuant to DIN 73378 may be used for the fuel lines.

Since the lines normally cannot be routed with a constant rising gradient, the internal diameter must not be allowed to exceed a certain size. Air or gas bubbles will accumulate in lines with an internal diameter of more than 4 mm and these will cause malfunctions if the lines sag or are routed downwards. The diameters specified in Figure 7 will ensure that bubbles do not form.

The lines should not be routed downwards from the metering pump to the heater.

Unsupported fuel lines must be secured to prevent them sagging. They must be installed in such a way that they cannot be damaged by flying road chippings and **high temperatures** (exhaust line).

Thermo Top Z / Thermo Top C

Fuel system integration (additional heater only)

8.3. Connecting two pipes with a hose

The correct procedure for connecting fuel lines with hosing is shown in Figure 9.

Ensure that there are no leaks.

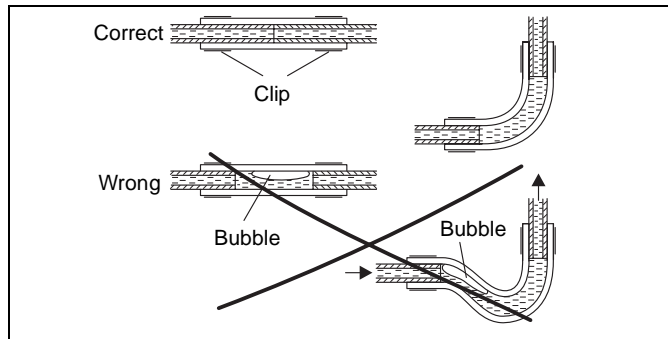


Fig. 9: Pipe / hose connection

8.4. Metering pump

The metering pump is a combined delivery, metering and shut-off system and is subject to certain installation criteria (see Figures 7, 10 and 11).

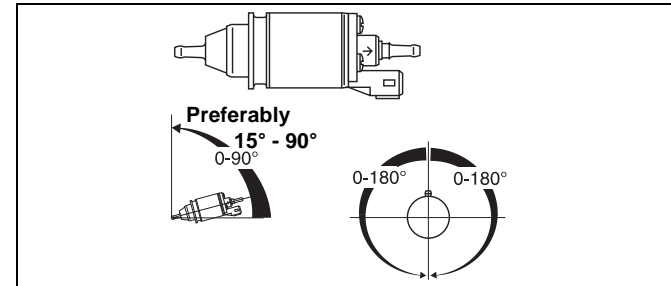


Fig. 10: Metering pump DP 2

Installation position and attachment

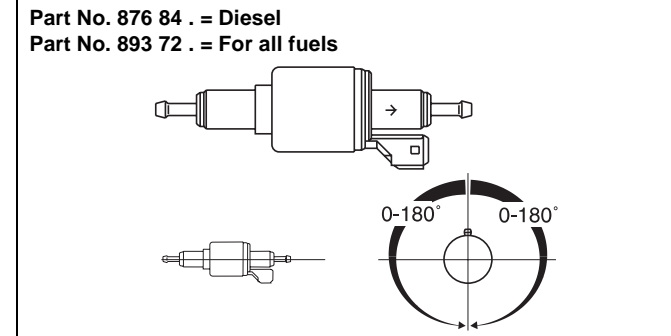


Fig. 11: Metering pump DP 30

Installation position



Fuel system integration (additional heater only)

Thermo Top Z / Thermo Top C



8.4.1. Installation location

Before installing the metering pump ensure that the maximum pressure at the extraction point is less than the maximum value shown in the table on page 39.

It is advisable to install the metering pump in a cool place. The maximum ambient temperature must not exceed +20 °C at any time during operation.

The metering pump and fuel lines must not be installed within range of the radiated heat from hot vehicle parts. A heat shield must be used if necessary.

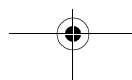
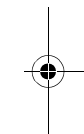
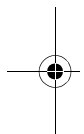
The pump should ideally be installed near the tank.

8.4.2. Installation and attachment

The metering pump must be secured with a vibration-damping mounting. Its installation position is limited as shown in Figures 10 and 11 in order to ensure effective automatic bleeding.

8.5. Sticker

The sticker "Switch off heater before refuelling" must be affixed at a suitable point.



Thermo Top Z / Thermo Top C

Combustion air supply (additional heater only)

9 Combustion air supply (additional heater only)

The intake opening for combustion air must be located so that it cannot become clogged with dirt. It must not point towards the front of the car.

A combustion air intake line is required.

The extraction point for the combustion air must be located in a cool (temperature $\leq 20\text{ }^{\circ}\text{C}$) place where it is protected from splashing water and above the vehicle's water clearance level.

Under no circumstances may the combustion air be taken from areas occupied by people. A ventilation opening measuring at least 3 cm^2 is required if the heater is installed in an enclosed box.

If the heater is installed in a general installation space near the vehicle's fuel tank, the combustion air must be taken in from the outside and the exhaust fumes discharged into the atmosphere. The openings must be splash-proof.

9.1. Air intake silencer

The air intake silencer must be installed in a position between 0° and 90° pointing downwards.

Installation instructions

Connect the slotted side (approx. 18 mm) of the combustion air intake line, max. 400 mm long, to the air intake port on the heater and secure it with the hose clip supplied.

Turn the air intake silencer as far as possible into the unslotted end of the air intake line (it does not need any additional fastening with a hose clip).

IMPORTANT

Ensure that it is an adequate distance from the exhaust system.

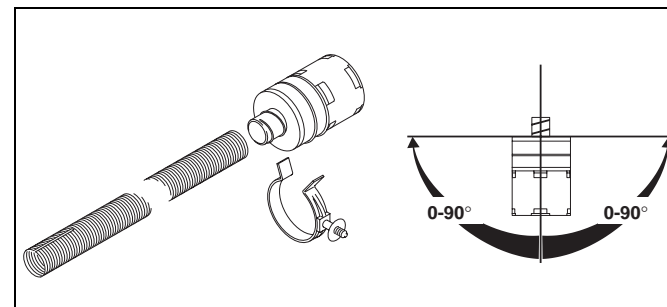


Fig. 12: Air intake silencer
Installation position

Depending on the installation situation, the air intake silencer must be secured at a suitable point with the enclosed mounting clip or cable ties.

9.1.1. To secure the air intake silencer with the mounting clip

- Drill a hole with a diameter of 6.5 mm at a suitable point.
- Press the mounting clip into the hole.
- Fit the air intake silencer in the mounting clip.

Exhaust pipe (additional heater only)

Thermo Top Z / Thermo Top C

10 Exhaust pipe (additional heater only)

The exhaust pipe (internal diameter 22 mm) can be installed with several bends (270° altogether, minimum bending radius 50 mm).

The total length of the exhaust pipe must be not less than 500 mm. The maximum length is 1000 mm.

The exhaust silencer should ideally be installed near the heater, but at least 200 mm away from it.

The exhaust silencer must not be installed near the combustion air intake opening.

The exhaust silencer and exhaust pipe must not be secured to heat-sensitive parts of the vehicle and must be kept at an adequate distance of at least 20 mm from it.

The opening of the exhaust pipe must move freely and must not be directed towards any part of the vehicle. The exhaust pipe opening must remain at an adequate distance (≥ 0.2 m) from the ground.

The Thermo Top Z/C heater must not be operated without the silencer.

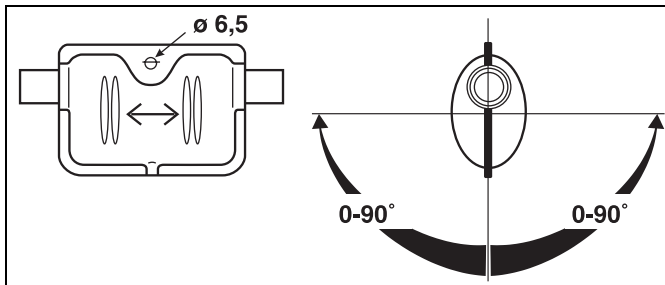


Fig. 13: Exhaust silencer
Arbitrary flow direction

The opening of the exhaust pipe must not point towards the front of the vehicle (see Figure 14).

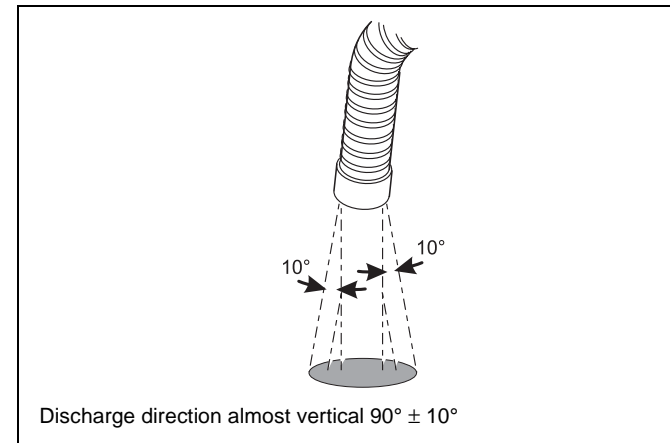


Fig. 14: Exhaust pipe opening
Installation position

Only rigid pipes made of unalloyed steel with a minimum wall thickness of 1.0 mm or flexible piping made of alloyed steel may be used for the exhaust pipe.

NOTE:

Condensate accumulations in the exhaust pipe must be discharged immediately. A condensate drain hole may be drilled if necessary.

Thermo Top Z / Thermo Top C

Electrical connections (additional heater)

11 Electrical connections (additional heater)

11.1. Control module / heater connection

Make the electrical connections to the heater as shown in Figure 16.

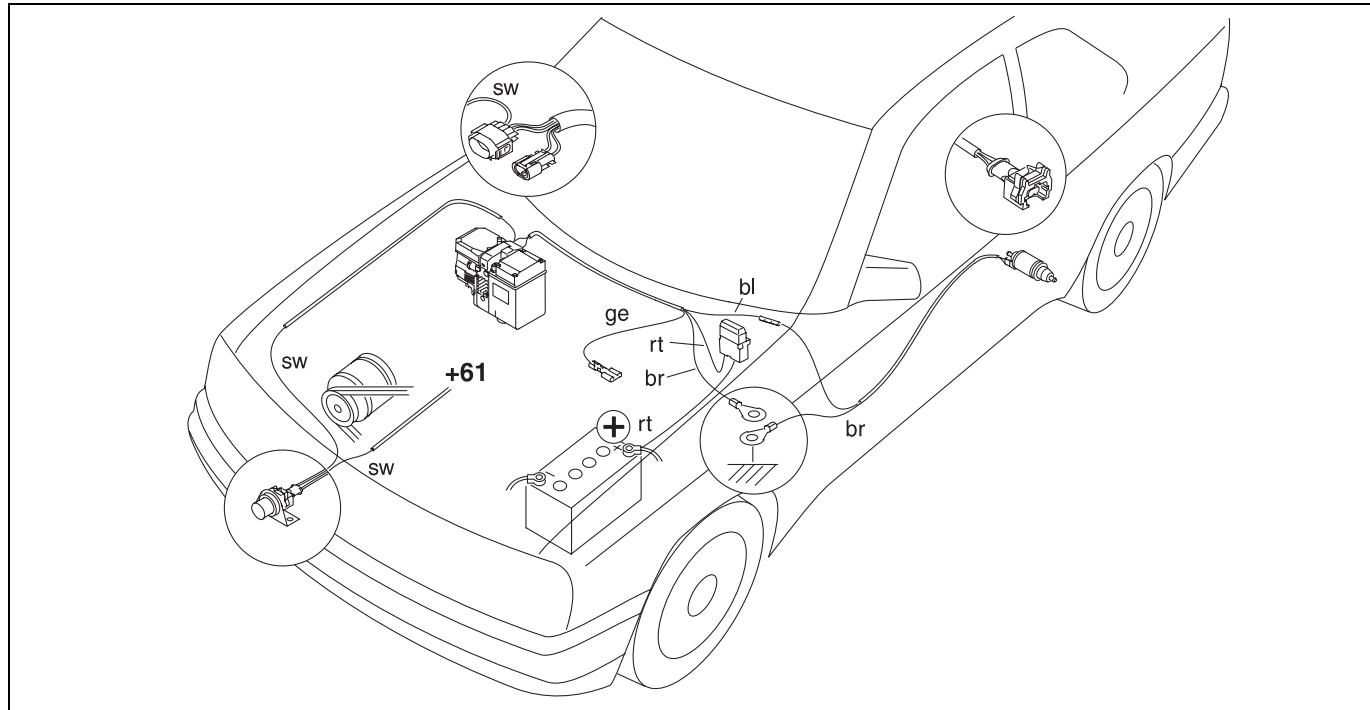


Fig. 15: Electrical connections for the *Thermo Top Z* additional heater



Circuit diagrams (additional heater)

Thermo Top Z / Thermo Top C

12 Circuit diagrams (additional heater)

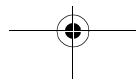
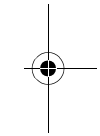
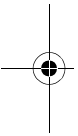
12.1. Legend for circuit diagrams

- ① Diagnostic
- ② External temperature
- ③ Cooling water
- ④ Vehicle fan fuse fitted in the vehicle

Cable cross-sections		
	< 7.5 m	7.5 - 15 m
	0.5 mm ²	0.75 mm ²
	0.75 mm ²	1.5 mm ²
	1.0 mm ²	1.5 mm ²
	1.5 mm ²	2.5 mm ²
	2.5 mm ²	4.0 mm ²
	4.0 mm ²	6.0 mm ²

Cable colours	
bl	blue
br	brown
ge	yellow
gn	green
gr	grey
or	orange
rt	red
sw	black
vi	violet
ws	white

Item	Designation	Comment
A1	Heater	Thermo Top Z/C
A2	Control module	
A3	Connection box	
B2	Temperature sensor	
E	Glow plug / Flame monitor	
F1	20 A fuse	Blade-type fuse DIN 72581 Part 3
F2	5 A fuse	Blade-type fuse DIN 72581 Part 3
F3	25 A fuse	Blade-type fuse DIN 72581 Part 3
H1	LED (in item P)	Switch-on indicator
K3	Relay (in item A3)	Vehicle fan
M1	Motor	Combustion air fan
M2	Motor	Circulating pump
M3	Motor	Vehicle fan
P	Timer, digital	For programmed operation
S1	Switch for vehicle fan	S1 or S2 depending on vehicle
S2	Switch for vehicle fan	S1 or S2 depending on vehicle
S6	Switch	ON/OFF
X9	Plug connector, 4-pin	
X11	Plug connector, 2-pin	
X13	Plug connector, 2-pin	
X14	Plug connector, 6-pin	Water-repellent
X15	Plug connector, 2-pin	Water-repellent
X16	Plug connector, 2-pin	Water-repellent
X17	Plug connector, 2-pin	Water-repellent
X18	Plug connector, 2-pin	Water-repellent
X19	Plug connector, 2-pin	Water-repellent
Y1	Metering pump	



Thermo Top Z / Thermo Top C

Circuit diagrams (additional heater)

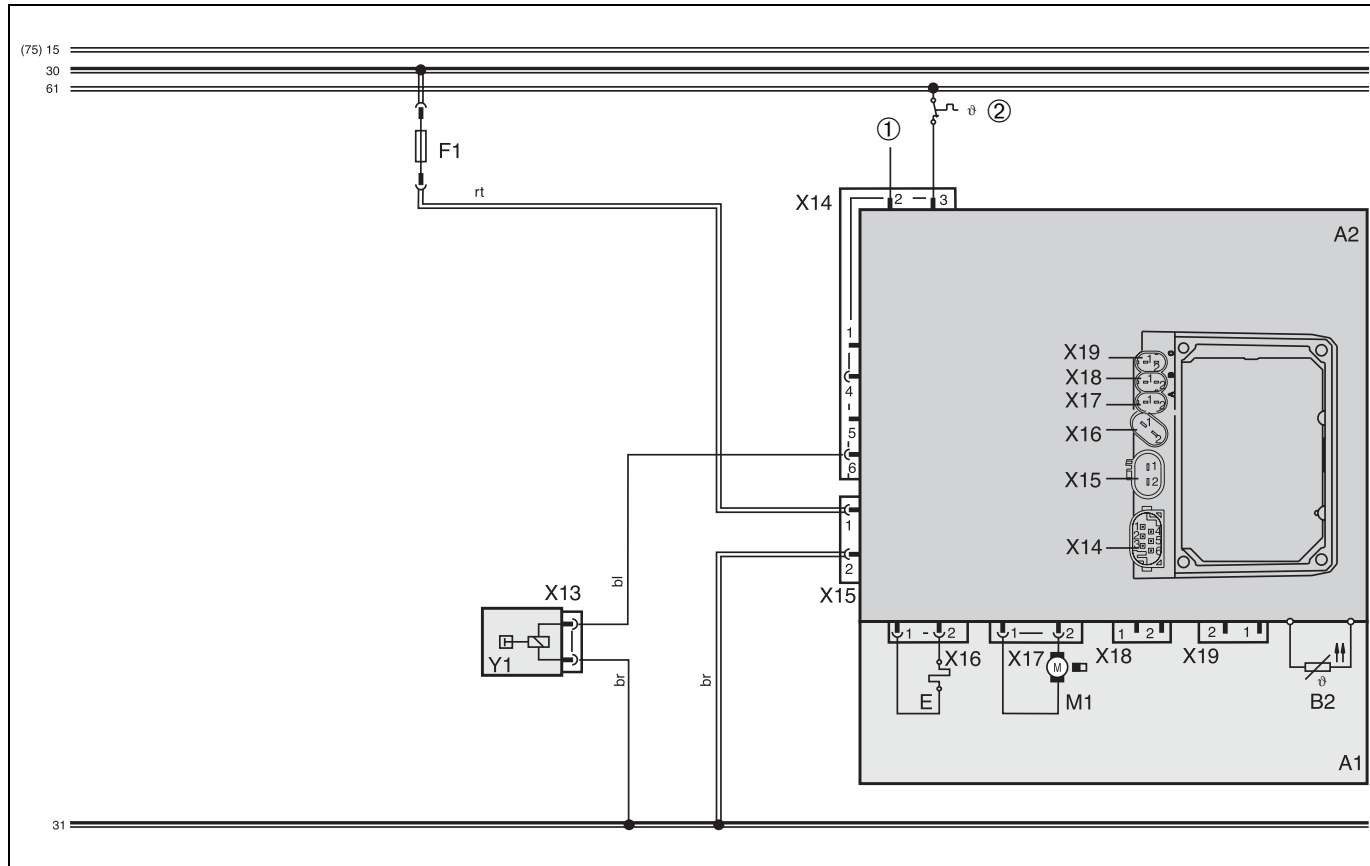


Fig. 16: Automatic circuit for Thermo Top Z additional heater, 12 V (see page 46 for legend)

Electrical connections (retrofit)

Thermo Top Z / Thermo Top C

13 Electrical connections (retrofit)

13.1. Control module / heater connection

Make the electrical connections to the heater as shown in Figure 19.

13.2. Installation and connection of the timer

Install the timer as shown in Figure 17. A drilling template is supplied.

Connect the timer as shown in the circuit diagram in Figure 19.

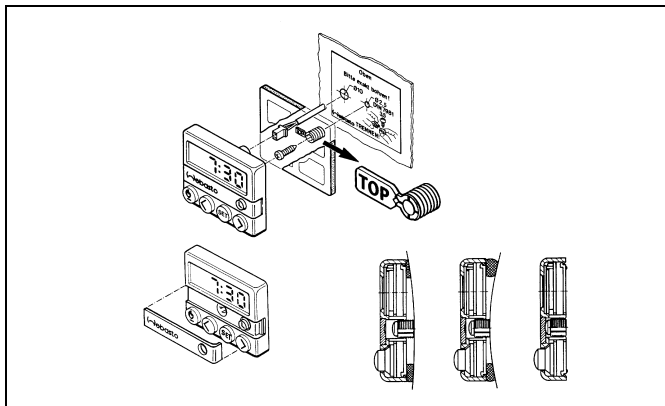


Fig. 17: Timer installation

NOTE:

Do not press on the display panel during installation.

13.3. Vehicle fan (auxiliary heater only)

The vehicle fan is controlled by the vehicle fan relay, see the circuit diagram in Figure 19.

NOTE:

The connection in the control module (heating system) is designed for one fan relay ($I_{max} = 0.5 A$).

13.4. To install Telestart (optional)

Install the Telestart as set out in its installation instructions.

Follow the operating and maintenance instructions to train the Telestart transmitter.

13.5. To install Thermo Call (optional)

Install the Thermo Call as set out in the Thermo Call installation instructions.

Thermo Top Z / Thermo Top C

Electrical connections (retrofit)

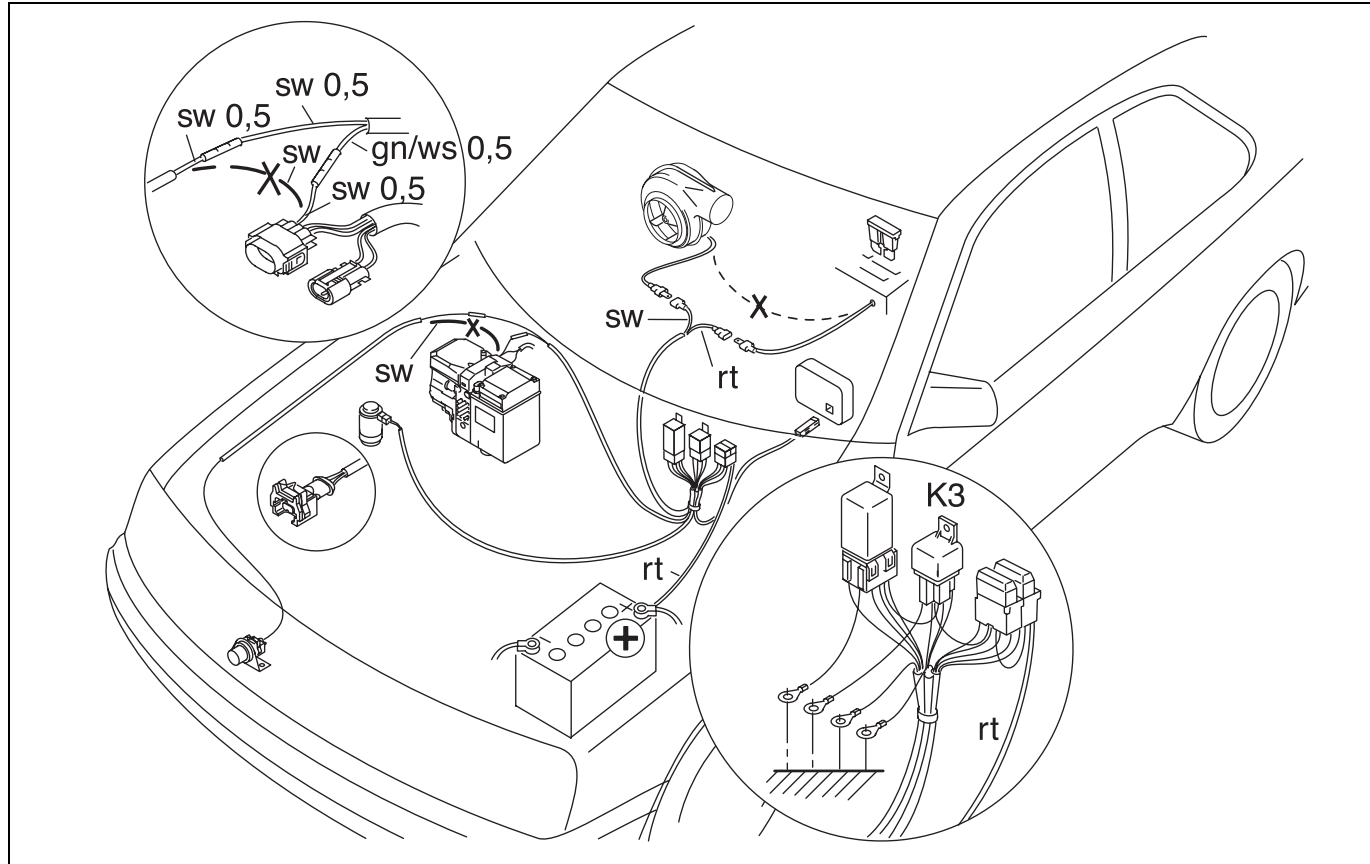


Fig. 18: To retrofit the *Thermo Top Z* to an auxiliary heater

Circuit diagrams (retrofit)

Thermo Top Z / Thermo Top C

14 Circuit diagrams (retrofit)

14.1. Legend for circuit diagrams

- ① Diagnostic
- ② External temperature
- ③ Cooling water
- ④ Vehicle fan fuse fitted in the vehicle

Cable cross-sections		
	< 7.5 m	7.5 - 15 m
	0.5 mm ²	0.75 mm ²
	0.75 mm ²	1.5 mm ²
	1.0 mm ²	1.5 mm ²
	1.5 mm ²	2.5 mm ²
	2.5 mm ²	4.0 mm ²
	4.0 mm ²	6.0 mm ²

Cable colours	
bl	blue
br	brown
ge	yellow
gn	green
gr	grey
or	orange
rt	red
sw	black
vi	violet
ws	white

Item	Designation	Comment
A1	Heater	Thermo Top Z/C
A2	Control module	
A3	Connection box	
B2	Temperature sensor	
E	Glow plug / Flame monitor	
F1	20 A fuse	Blade-type fuse DIN 72581 Part 3
F2	5 A fuse	Blade-type fuse DIN 72581 Part 3
F3	25 A fuse	Blade-type fuse DIN 72581 Part 3
H1	LED (in item P)	Switch-on indicator
K3	Relay (in item A3)	Vehicle fan
M1	Motor	Combustion air fan
M2	Motor	Circulating pump
M3	Motor	Vehicle fan
P	Timer, digital	For programmed operation
S1	Switch for vehicle fan	S1 or S2 depending on vehicle
S2	Switch for vehicle fan	S1 or S2 depending on vehicle
S6	Switch	ON/OFF
X9	Plug connector, 4-pin	
X11	Plug connector, 2-pin	
X13	Plug connector, 2-pin	
X14	Plug connector, 6-pin	Water-repellent
X15	Plug connector, 2-pin	Water-repellent
X16	Plug connector, 2-pin	Water-repellent
X17	Plug connector, 2-pin	Water-repellent
X18	Plug connector, 2-pin	Water-repellent
X19	Plug connector, 2-pin	Water-repellent
Y1	Metering pump	

Thermo Top Z / Thermo Top C

Circuit diagrams (retrofit)

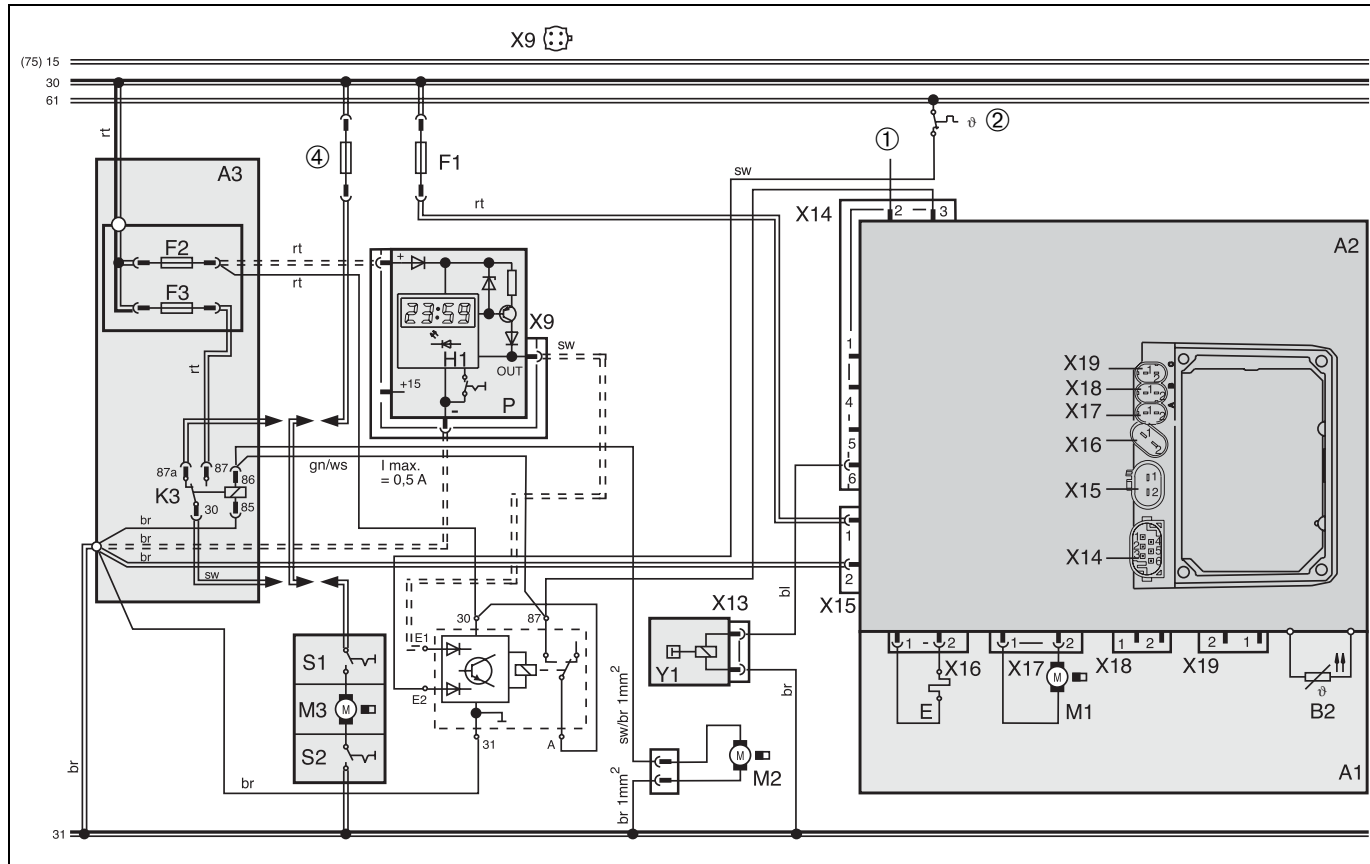
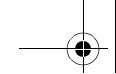


Fig. 19: Automatic circuit for *Thermo Top C* auxiliary heater, 12 V timer (see page 50 for legend)



Starting the heater for the first time

Thermo Top Z / Thermo Top C



15 Starting the heater for the first time

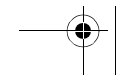
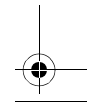
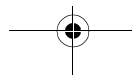
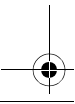
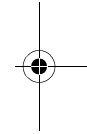
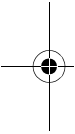
NOTE:

Refer to the safety instructions in the operating and maintenance instructions.

Read the operating and maintenance instructions before starting the heater.

After you have installed the heater, bleed the water system and the fuel supply system carefully. Follow the instructions supplied by the vehicle manufacturer for this purpose.

Conduct a trial of the heater to check all the water and fuel connections for leaks and to ensure that they are secure. If the heater suffers a fault during operation, the fault must be located and remedied.





Thermo Top Z / Thermo Top C

Troubleshooting



16 Troubleshooting

16.1. Fault lock-out due to faults in the heater

Fuel is supplied for max. 180 seconds if the flame does not start to burn.

Fuel is supplied for max. 85 seconds if the flame goes out during operation.

The fuel supply is shut off immediately if the system overheats (the temperature limiter is tripped).

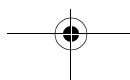
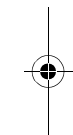
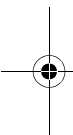
In all cases (except a fault in the combustion air fan), the heater continues to run for 120 seconds after a fault lock-out. The run-on time may vary depending on the software version in the control module.

IMPORTANT

A warning is not displayed following a fault lock-out caused by overheating.

16.2. To reset the heater after a fault lock-out

Reset the heater after a fault lock-out as described in the operating and maintenance instructions.





Technical data

Thermo Top Z / Thermo Top C



17 Technical data

17.1. Technical data

Except where limit values are specified, these technical data refer to the usual heater tolerances of $\pm 10\%$ at an ambient temperature of $+20\text{ }^\circ\text{C}$ and at the rated voltage.

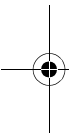
17.1.1. Fuel for *Thermo Top Z/C* (petrol):

The fuel specified by the manufacturer must be used.

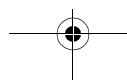
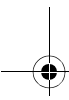
17.1.2. Fuel for *Thermo Top Z/C* (diesel):

The diesel fuel specified by the manufacturer must be used. If you change to low-temperature fuel, the heater must be operated for approx. 15 minutes so that the fuel line and fuel pump are filled with the new fuel.

We know of no negative influences due to additives.



Circulating pump	4847
Flow rate at 0.14 bar	500 l/h
Rated voltage	12V
Operating voltage range	10.5 ... 15V
Rated power consumption	14 W
Circulating pump dimensions	Length 95 mm Width 61 mm Height 61 mm
Weight	0.3 kg



**Thermo Top Z / Thermo Top C****Technical data**

Heater	Operation	<i>Thermo Top Z - B</i> <i>Thermo Top C - B</i>	<i>Thermo Top Z - D</i> <i>Thermo Top C - D</i>
EC licensing symbol		e1	
Model		Water heater with evaporator-type burner	
Heat output	Full load Part load	5.0 kW 2.5 kW	
Fuel		Petrol	Diesel
Fuel consumption	Full load Part load	0.70 l/h 0.34 l/h	0.61 l/h 0.30 l/h
Rated voltage		12V	
Operating voltage range		10,5 ... 15V	
Rated power consumption without circulating pump (without vehicle fan)	Full load Part load	32 W 18 W	
Max. ambient temperature: Heater: - Operation - Storage Metering pump: - Operation		-40° ... +60 °C -40° ... +120 °C -40° ... +20 °C	
Max. operating pressure (heat medium)		0.4 ... 2.5 bar	
Capacity of the heat exchanger		0.15 l	
Minimum capacity of the system		4.00 l	
Minimum flow rate for the heater		250 l/h	
CO ₂ in the exhaust fumes (normal function)		8 ... 12.0% by volume	
Heater dimensions (tolerance ± 3 mm)		Length 214 mm Width 106 mm Height 168 mm	
Weight		2.9 kg	

