Air Heater Hydronic D 3 W Z

Technical description
Installation instructions
Operating instructions

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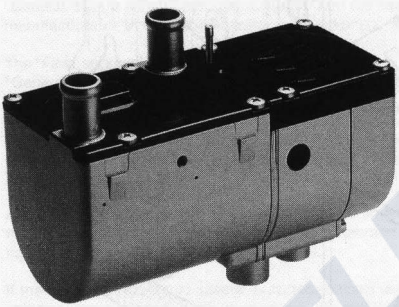
Add-Heater 12 V
for diesel fuel

Order-No.
25 1926 00 00 00



Specification ± 10%

Heating medium Water, coolant

Regulation of heating capacity		High	Low
Heating capacity (W)		3300	1600
Fuel consumption (l/h)		0.4	0.2
Electric power consumption (W), without heater blower	in operation	25	8
	on start-up		<100

Fuel Diesel (commercial grade) see also Fuel at low temperatures (p. 8)

Rated voltage 12 V

Operating range
Min. Voltage[1] 10 V
Max Voltage[2] 16 V

Max. allowable working pressure 2.5 bar

Min. water flow rate of heater 250 l/h

Radio interference suppression level
3 für VHF
4 für SW
5 für MW/LW

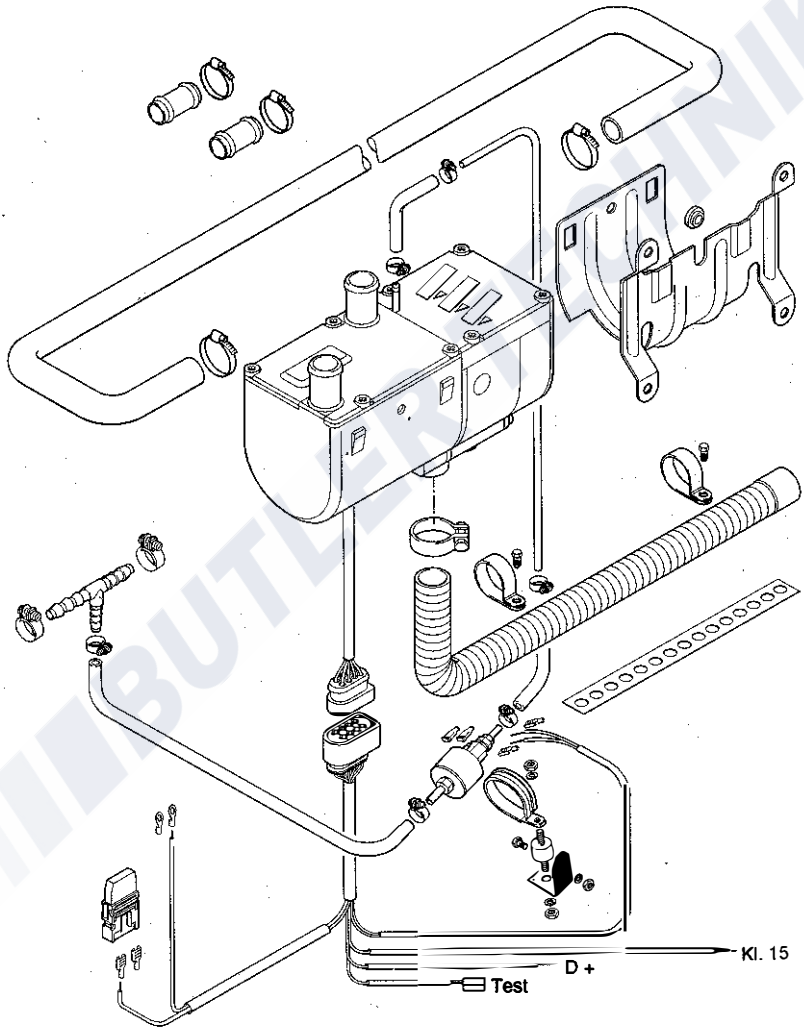
Max. available ambient temperature:
Operation: – 40 °C bis + 80 °C
Storage: – 40 °C bis + 125 °C

Weight approx. 2.0 kg

[1] An undervoltage protection device incorporated in the control unit cuts out at approx. 10 volts.

[2] An overvoltage protection device incorporated in the control unit cuts out at pprox. 16 volts.

Scope of delivery



Approval, official regulations, general

1. For vehicles registered in West Germany (subject to the road traffic regulations StVZO), the heaters are approved by the Federal MotorVehicle Office and receive an official test symbol (WS 274 indicated on the name plate. The year of first operation is a requirement of German approval not representing a model number

- The heater must be retrofitted according to these installation instructions. The installation is to be checked in accordance with §19 StVZO (Federal Motor Vehicle Safety Standards) by an officially certified expert or tester of motor vehicles, a motor vehicle expert or employee in accordance with Section 7.4a of Enclosure VII to the StVZO following submis sion of the "Final approval certificate" and this certified on the final approval certificate with details of the vehicle manufacturer, vehicle type and vehicle identification number

  The form "Final approval certificate" and a copy of the "General design certification" are available from the heater manufacturer or through their contractual workshop.

  The "Final approval certificate" and the copy of the "General design certification" are to be kept in the vehicle. The validity of the design certification depends on this.

  An entry in the vehicle's registration papers – which had been obligatory up to December 1993 – is then no longer necessary

  Alternatively, the installation of the heater can be entered in the vehicle's registration papers – which was common prac tice up to December 1993. (§ 19 section 4)

2. If the heater is installed in special-purpose vehicles (e.g. vehicles transporting dangerous cargoes), the regulations applicable to such vehicles must be observed.

3 The heater must always be switched off when the petrol tank is to be filled.

4. The heaters must be installed by a workshop approved by the manufacturer and in compliance with the installation instructions.

5. The heaters may only be used for the purpose specified by the manufacturer and in compliance with the operating instructions supplied with every heater
   Operating the heater is not permitted where inflammable vapours or dust can build up (e. g. near fuel, coal or saw dust stores, grain silos etc.).

6. Differences from the installation instructions, particularly with regard to the water supply connection, wiring (wiring diagrams, fuel supply, combustion air and exhaust ducts, and use of operating and control elements not supplied by the manufacturer, are only permissible with the written approval of the manufacturer
   Since water heaters are incorporated into the cooling system of the vehicle engine, they form an integral part of the cooling system.

   The following points must therefore be borne in mind:

   6.1 The heater must always be mounteli helnw the cooling water level of the radiator or vehicle heat exchanger in such a way that it operates in the flow direction of the enaine circuit.

   6.2 The entire cooling system including the heater must be bled to free it of bubbles following installation and in accordance with the engine manufacturer's specificati ons. All water connections (clips) must be tightened sufficiently to prevent all leaks and then retightened after 2 hours of operation or 100 km diriving.

   6.3 All water ducts must be protected against chafing and excessive temperatures (radiated heat from exhaust pipes).

   6.4 Following any work on the cooling water system (repairs, cooling water change), the system must be bled as set forth in 6.2.

   6.5 The coolant should contain at least 10%o antifreeze all year round as corrosion protection.
   In cold weather the coolant must contain antifreeze in sufficient quantity Operating the heater with frozen coolant is not permitted.

   If the above instructions are not complied with, the manu facturer's warranty for the entire heater system is null and void, and possibly the general operating permit for the vehicle

7 Every combustion process generates exhaust gas, which has toxic constituents. Because of this and the high tem peratures generated, the exhaust duct must comply without fail with the installation instructions. Failure to comply with the instructions or operation of the heater in closed rooms (garages) harbors the risk of poisoning.

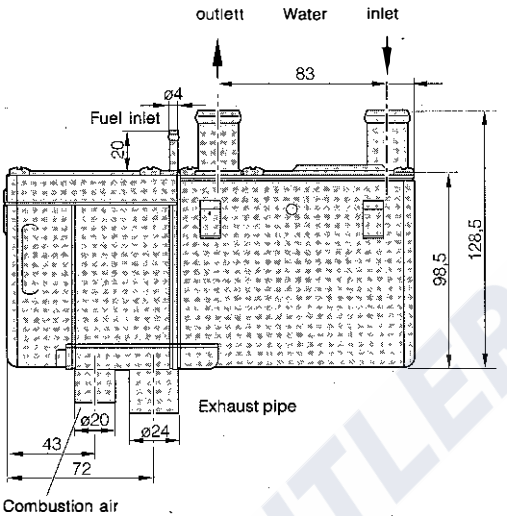
8 When the heater or the heating system is damaged, an authorized workshop must be called in to repair the damage in an expert manner and using genuine spare parts. Makeshift repairs (on one's own initiative) or the use of nongenuine spare parts are dangerous, and therefore not permitted. When carried out in cars, they invalidate the general design approval of the heater and conse quently the general permit of the vehicle.

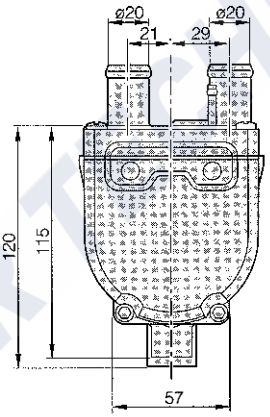
9. The warranty conditions are set forth in the heater book let given to you by the after-sales service workshop when the heater is installed.
   Only our warranty conditions shall apply

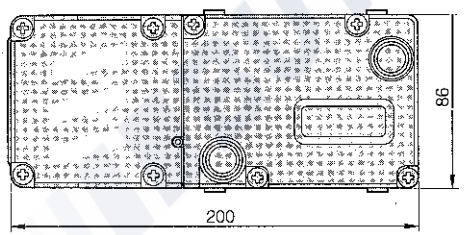
Installation instructions:

The add-heater serves – especially in combination with modern consumption-optimized engines - to increase the heat capacity of the in-vehicle heater to a comfortable level. An upgrade kit (Cat. No. 24 0110 00 00 00) can be ordered to retrofit the add-heater as an auxiliary heater (see separate installation instructions). The cabin can then also be preheated.

Principal dimensions





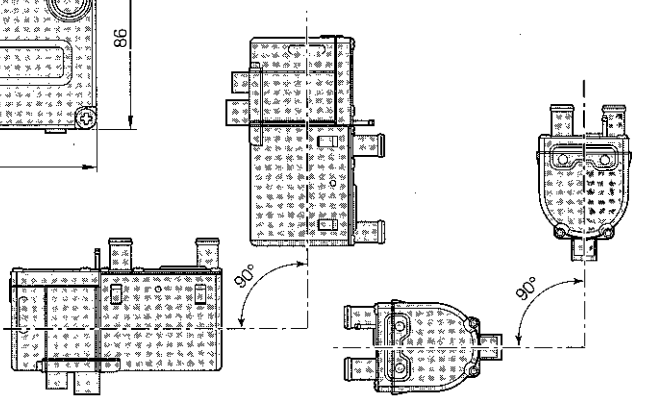


Installing the add-heater

The add-heater is installed in the engine compartment Install the heater as deeply as possible to allow automatic venting of the heat exchanger and water pump. Be sure to observe the permissible mounting positions, operating and storage temperatures.

The factory nameplate must be clearly visible with the heater in place. If necessary, a duplicate of the original nameplate can be placed at a position on the heater which is clearly visible after installation or on a cover positioned on the front of the heater. A second nameplate is not required if the original nameplate can be viewed by removing a cover without the aid of tools.

Permissible mounting positions
All combinations of intermediate positions are also permissible



Running the combustion air piping and exhaust piping

Running the combustion air piping

The combustion air must be sucked in from the outside (not from the passenger compartment or trunk).

The heater is installed in the engine compartment as shown in these installation instructions. If the intake is located in a place where the temperature of the combustion air cannot exceed 25°C, then the combustion air line is already suitable for suction.
If this is not the case, connect flexible tubing with an inner diameter of 20 mm and up to 1.5 m in length for extracting the combustion air from an area which meets this prerequisite.
In this case, do not install the inlet of the combustion air line facing the vehicle's airstream. In addition, lay it in such a manner that it cannot be clogged by dirt and snow and that any water that does enter can flow out. Attach an end sleeve. This prevents insertion of a 16 mm dia. ball (as specified in „Technical Requirements for Heaters").

Running the exhaust piping

The scope of delivery includes flexible exhaust tubing with an inner diameter of 24 mm and 1 m in length.

The exhaust pipe can be shortened or extended up to max. 2 m as required
Exhaust pipes must not project beyond the sides of the vehicle. The exhaust pipe must be laid with a slight downward slope or have approx. 5 mm drain holes for condensate at the lowest points.

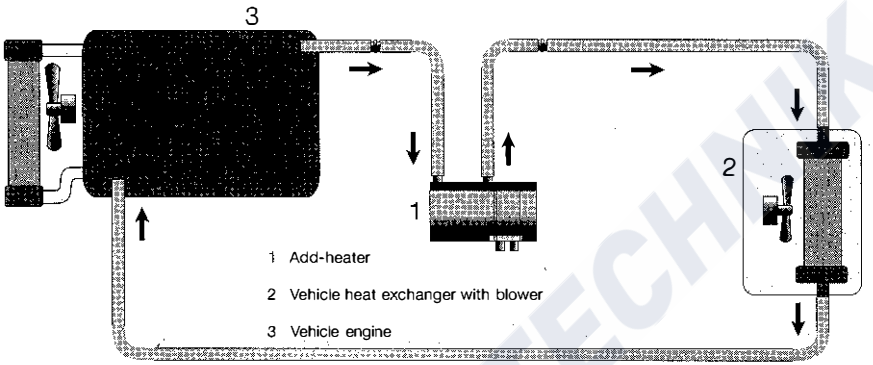
Arrange the exhaust pipe outlet and combustion air inlet so that exhaust gas cannot be directly drawn in again.

The outlet of the exhaust pipe must extend to the outside. Exhaust pipes must be laid in such a manner that exhaust gases cannot be expected to enter the vehicle or sucked in through the vehicle blower and that the functioning of parts of the vehicle important for its operation cannot be impaired (maintain adequate clearance). Lay the outlet of the exhaust pipe in such a manner that it cannot be clogged by dirt and snow and that any water that does enter can flow out. Do not install it facing the vehicle's airstream.

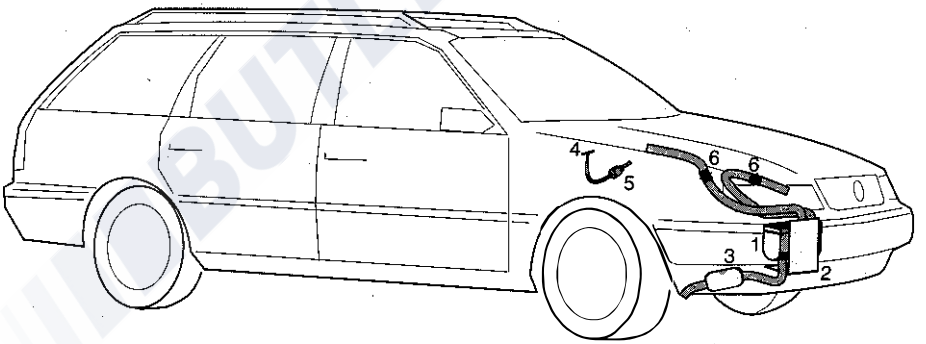
This requirement can be considered fulfilled if the mouth of the exhaust pipe is facing upwards, to the side or, if the exhaust piping is laid below the floorpan of the vehicle, extends to near the side or rear of the driver's cabin or vehicle.

Connecting the heater to the cooling water supply:
The pressure in the water circuit must be limited to 2.5 bar by means of a pressure relief valve (e.g. radiator filler cap)

Cut open the cooling water hose running from the engine to the heat exchanger of the vehicle and insert the heater



Example of installed add-heater



1 Add-heater
2 Bracke
3 Exhaust pipe with exhaust muffler (accessory)
4 T-piece for fuel
5 Metering pump
6 Water inlet pipe (installed in vehicle)

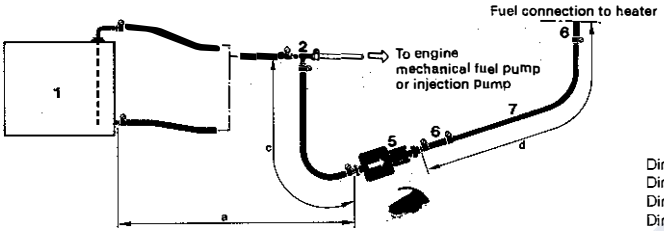
Fuel supply

Divergences from the instructions set forth here are not permitted, as they can lead to malfunctions.

1. For cars with diesel engines.

Fuel tapped from the fuel supply line to the engine.

Precondition: The fuel line from the fuel tank to the engine must be leak-free, so that there is no break in the fuel column when the engine is not running.

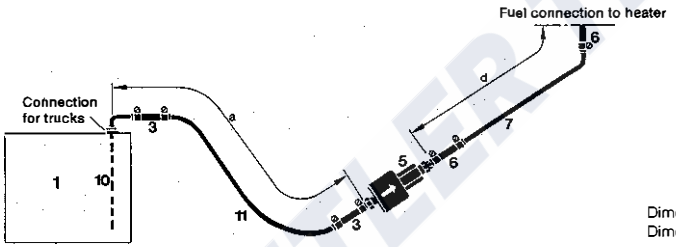


Dimension a = max. 5 m with diesel
Dimension b = 50 mm
Dimension c = max. 300 mm
Dimension d= max~ 6 m with diesel

2. For trucks with diesel engines.

The following possibilities are available:

2.1 Tapping fuel – where possible – using a separate riser pipe, fitted directly into the fuel tank in the case of trucks.



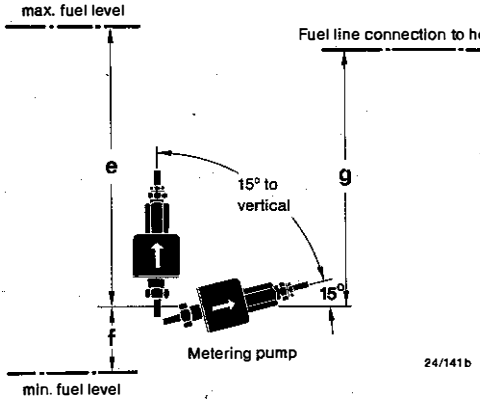
Dimension a = max. 5 m with diesel
Dimension d = max. 6 m with diesel

2.2 If it is not possible to fit a separate riser pipe in the case of trucks with diesel engines, the fuel supply line can be tapped (as shown under 1.).

1 Fuel tank (vehicle tank or separate tank)
2 Fuel branch
3 Fuel hose, internal dia. 5 mm
Cat. No. 360 75 350
4 Fuel pre-filter
(only necessary when contaminated fuel is used)
Cat. No. 251226 89 00 37
5 Fuel metering pump (15° to vertically upwards)
6 Fuel hose, internal dia. 3.5 mm
Cat. No. 360 75 300
7 Fuel pipe, plastic, internal dia. 1.5 mm
Cat. No. 090 31118
or internal dia. 2 mm
Cat No. 090 31117

10 Riser pipe, internal dia. 2 mm, Cat. No. 251226 89 50 00
external dia. 6 mm
11 Fuel pipe, internal dia. 2 mm
Cat. No. 090 31125

3. Permissible suction and pressure heads for installation per 1. and 2.; permissible positioning of metering pump



Supply pressure from tank to meterint pump:
e = max. 3000 mm suction head:
tank at zero pressure
f = max. 1000 mm with diesel oil

Check wheather tank ventilation works properly

intake from tank when underpressure occurs during operation (valve 0.03 bar in tank cap)
f = max. 400 mm with diesel oil

Pressure head metering pump to heater:
g = max. 2000 mm

Fuel line metering pump to heater should not have a slope if at all possible

4. Important

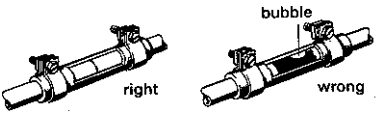
Protect fuel lines, filter and metering pump from overheating; do not install near silencers and exhaust pipes.

When installing the fuel line, fuel filter and fuel metering pump near the rear axle, be sure to takte the spring deflection of the rear axle into consideration.

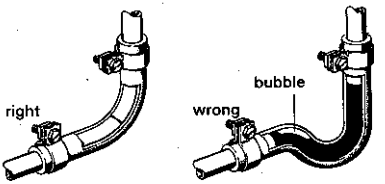
Cut fuel tubes and pipes to length only with a sharp knife. Cuts may not be indented and must be burr-free.

For connection of the fuel branches, always use rubber tubing, never plastic pipe.

Fuel pipes connected by means of a fuel tube
Fuel pipe sections must abut



Do not let fuel tube sag.

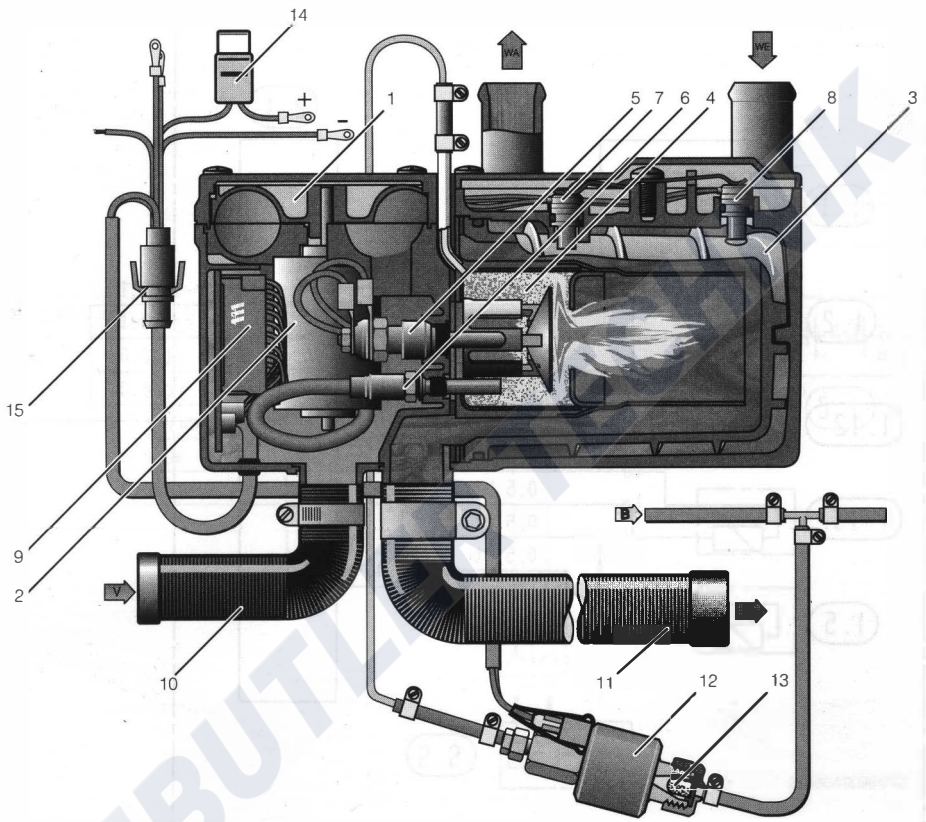


Fuel at low temperatures

The heater works well on the same commercial-grade fuel (Diesel) as your engine. Mixing winter diesel oil with waste oil is prohibited.

Adaptation to normal winter temperatures is automatically allowed for by the oil refineries (winter diesel). Difficulty could only arise in the event of an extreme drop in temperatures (as it would for the engine - see engine instructions).

Sectional view



1 Combustion air blower
2 Electric motor
3 Heat exchanger
4 Combustion chamber
5 Glow plug
6 Flame sensor
7 Temperature sensor
8 Overtemperature sensor
9 Control unit
10 Combustion air hose
11 Exhaust pipe
12 Metering pump
13 Barrel-type sieve installed in metering pump
14 Main fuse
15 Interface/8-pin connector

A = Exhaust gas

B = Fuel

V = Combustion air

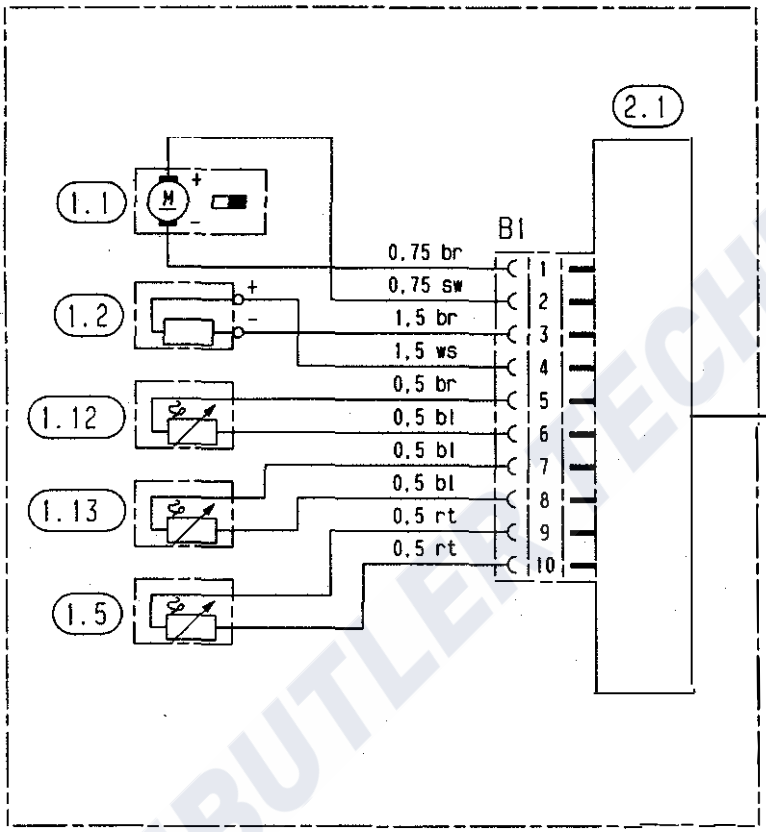
WA = Water outlet

WE = Water inlet

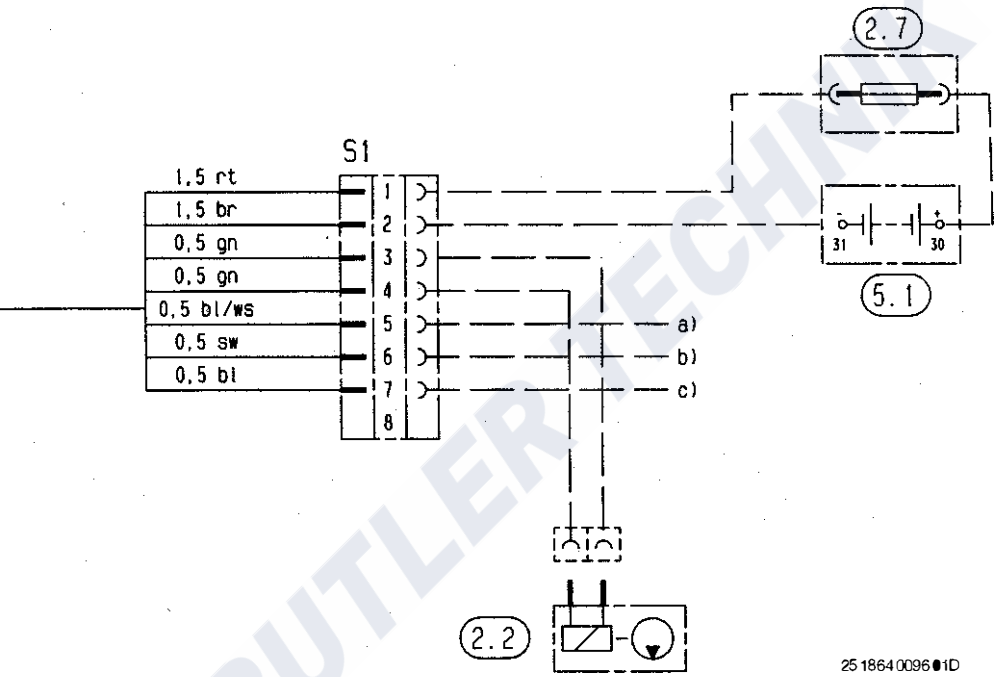
Functional description

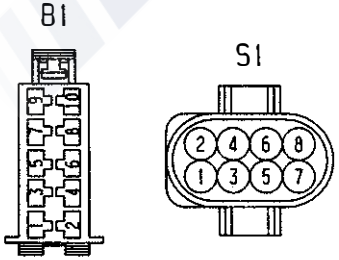
If the vehicle engine does not supply enough heat (in the warm-up phase, inner-city traffic, traffic jams, etc.), the add-heater cuts in automatically and backs up the in-vehicle heater. The add-heater has 2 settings: High and Low, with heating capacities of 3300 W and 1600 W respectively. All starting and control functions as well as the after-run function for cooling after shutdown run automatically. Safety devices monitor the functions of the add-heater. The flame sensor, overtemperature sensor, undervoltage and overvoltage protection devices and blower motor speed control, together with the electronic control unit, offer an extremely high standard of safety. The electric power supply is protected by a 25 A main fuse.

Wiring diagram



Plug housing and socket housing shown from the side where line enters





Parts list

1.1	Burner motor	
1.2	Glow plug	
1.5	Overtemperature sensor	
1.12	Flame sensor	
1.13	Temperature sensor	
2.1	Control unit	
2.2	Fuel metering pump	
2.7	25 A main fuse	
5.1	Battery	
a)	Diagnosis	
b)	+ 15 V or thermostat switch	
c)	D+ alternator	

rt = red
br = brown
gn = green
ws = white
sw = black
bl = blue
gr = grey