



# *HYDRONIC*<sup>\*</sup> 16/24/30/35

Installation instructions  
Operating Instructions

Eberspächer®

J. Eberspächer  
GmbH & Co.  
Eberspächerstr. 24  
D - 73730 Esslingen

Telephone (switchboard)  
+49 (0)711 939 - 00  
Fax  
+49 (0)711 939 - 0500

[www.eberspaecher.com](http://www.eberspaecher.com)

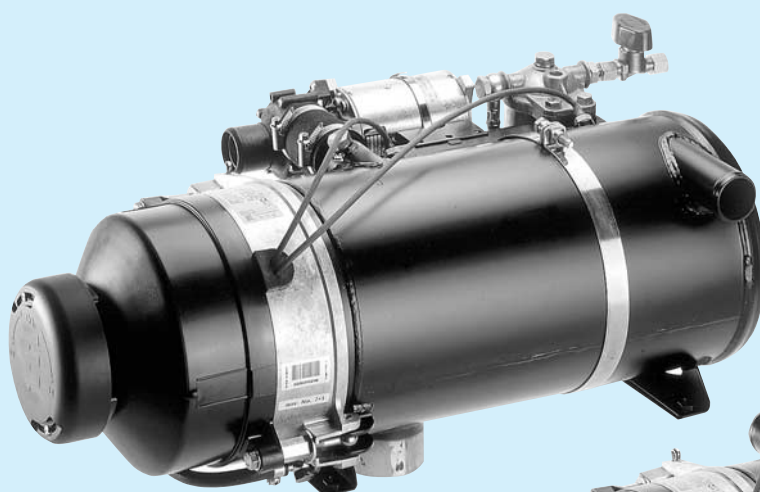
Engine-independent water heater for diesel

*HYDRONIC 16*

*HYDRONIC 24*

*HYDRONIC 30*

*HYDRONIC 35*



Compact Model



Standard Model

# 1 / Introduction

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## Special notation, pictures and pictograms


This document uses special notation and pictograms to give emphasis to different types of information. Their meaning and how you should respond to them are explained in the examples below.


### Special notation and pictures


A bullet symbol (•) is used to indicate a list which is introduced by a heading.  
If an indented dash (-) occurs after a bullet point, then this list is subordinate to the main bullet list.

### Pictograms

 **Regulation**  
This pictogram, accompanied by the caption “Regulation”, indicates a statutory requirement.  
Failure to comply with this regulation will cause the General Type Approval for the *HYDRONIC* to lapse and invalidate the warranty and any liability on the part of J. Eberspächer GmbH & Co.

 **Danger!**  
This pictogram, accompanied by the caption “Danger”, draws your attention to an imminent danger to life and limb. Failure to observe this instruction could result in serious injury.

 **Important!**  
This pictogram, accompanied by the caption “Important!”, draws your attention to a situation which is potentially dangerous to a person and / or the product.  
Failure to observe this instruction could result in physical injury and / or damage to the equipment.

 **Please note!**  
This instruction provides recommendations for use and helpful tips regarding the installation and / or repair of the *HYDRONIC*.



# 1 / Introduction

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## Important information prior to commencing work

### Applications in which the *HYDRONIC* may be used

The engine-independent “*HYDRONIC* 16 / 24 / 30 / 35” water heaters are intended for installation in the following vehicles (in each case, the heater output should be appropriate to the application):

- motor vehicles, especially buses
- building machinery
- trailers
- ships and yachts



### **Important!**

- The heater may only be used and operated for the applications specified by the manufacturer and in compliance with the enclosed “Operating Instructions” for the heater concerned.
- Installation of the *HYDRONIC* in vehicles that are used to transport dangerous goods within the provisions of GGVS / TRS 003, ADR / ADR99 is not permitted.

### Intended use of the *HYDRONIC*

- preheating, de-icing of windows
- heating and maintaining the heated temperature of:
  - drivers' cabs and work cubicles
  - cargo areas
  - ships' cabins
  - travel compartments for passengers and crew
  - vehicle engines and assemblies

On the basis of its functional specifications, the *HYDRONIC* is not approved for use in the following applications:

- long-term sustained operations, e.g. to pre-heat and heat
  - living rooms
  - garages
  - work enclosures, weekend homes and hunting lodges
  - houseboats and similar.

### Initial operation of the *HYDRONIC* and functional testing following a repair

- Following installation or repair of the *HYDRONIC*, it is necessary to carefully bleed the coolant circuit and the entire fuel supply system. When doing so, the instructions issued by the vehicle manufacturer must be observed.
- Prior to test running, open all heating circuits (set the temperature controller to “HOT”).
- During test running of the *HYDRONIC*, check all water and fuel connections to ensure that they are leakproof and securely in position.
- If during operation the *HYDRONIC* should develop a fault, then identify the cause of the fault using a diagnostic facility and rectify.

## Liability claims / warranty

Adherence to the official regulations and the safety instructions is essential if any liability claims are to be accepted. Failure to observe the official regulations and the safety instructions will result in exemption of the heater manufacturer from liability.





## Accident prevention

The general Accident Prevention Regulations and the corresponding plant and operational protective instructions must be observed.

# 1 / Introduction

## Statutory requirements

To install the heater in a vehicle subject to the German regulations governing the registration of motor vehicles (StVZO), a "General Type Approval" has to be issued by the Federal Motor Vehicle Office (Kraftfahrtbundesamt) and the appropriate official test symbol must be indicated on the heater rating plate.

HYDRONIC 16	S		329
HYDRONIC 24	S		297
HYDRONIC 30	S		295
HYDRONIC 35	S		296

The statutory requirements are binding for applications which fall within the scope of the StVZO (regulations governing the registration of motor vehicles) and should also be adhered to in countries in which there are no specific regulations. Where heaters are installed in vehicles that are not subject to the StVZO (e.g. ships) the directions and installation instructions which apply specifically to those cases must be observed.

### Directions regarding installation and repair

- Installation of heaters must comply with the Installation Instructions. In the following cases,
  - a) vehicle type test under §20 StVZO
  - b) individual test under §21 StVZO or
  - c) examination under §19 StVZO,the heater must be checked by an officially certified expert or tester of motor vehicles, a motor vehicle expert or employee in accordance with Section 7.4 a of the Annex to the StVZO, and in case c) this must be certified with details of the vehicle manufacturer, vehicle type and vehicle identification number on the Final Approval Certificate contained in the copy of the General Type Approval. The validity of the Type Approval depends on this. The Final Approval Certificate must be kept in the vehicle.
- Where the heater is installed in a special-purpose vehicle (e.g. a vehicle for transporting hazardous goods), the installation must comply with the regulations applicable to such vehicles.
- Installation in the driver's cab or passenger compartment of buses containing more than eight seats in addition to the driver's seat is not permitted.
- The instruction sticker, "**Switch off heater before filling up**" contained in the Scope of Supply for the heater, must be displayed in a prominent position in the vehicle (near to the fuel filler connection).

### Directions for operation

- The heater must be switched off during refuelling.
- Operation of the heater in an enclosed space is not permitted, e.g.
  - garages
  - underground car parks
  - multi-storey car parks

#### Please note!

- All other installation requirements related to the General Type Approval are printed in the relevant sections of these installation Instructions.
- The Final Approval Certificate is contained in the Operating Instructions.

## Safety instructions for installation of the *HYDRONIC*



### Danger of injury, fire and poisoning!

- Disconnect the vehicle battery prior to starting work.
- Prior to starting any repair work, switch off the *HYDRONIC* and allow all hot components to cool down.



### Important!

- The heater may only be installed or, in the case of repair or work under guarantee, repaired by an Eberspächer service partner authorised by the manufacturer and in accordance with the directions contained in this documentation or any special installation suggestions.
- Repairs by non-authorised third parties and / or using non-genuine spare parts are dangerous and are therefore not permitted. They will result, moreover, in lapse of the General Type Approval of the heater and, in the case of motor vehicles, possibly of the General Operating Permit for the vehicle as well.
- The following measures are not permitted:
  - modification of heater-relevant components,
  - use of non-original parts which have not been approved by the Eberspächer company,
  - departures from legal, safety and / or function-relevant directions contained in the Installation Instructions and the Operating Instructions, either in the installation or operation of the heater.

This applies in particular to the electrical wiring (wiring diagrams), the fuel supply, the combustion air and exhaust gas piping.

- Only original accessories and spare parts may be used during installation or repair.
- The *HYDRONIC* may only be operated using control elements approved by the Eberspächer company. Use of other control elements can lead to malfunctioning of the heater / heating operation.
- Prior to reinstalling a heater in a different vehicle, the water-carrying parts of the heater must be rinsed with clear water.

## Safety instructions for operation







### Important!

- Operation of the heater is not permitted where flammable vapours or dust could build up, for example in the vicinity of
  - fuel depots
  - coal stores
  - timber stores
  - stores of grain and similar.
- The delayed shutoff of the *HYDRONIC* must not be terminated prematurely, e.g. through activation of the battery isolating switch, except in case of emergency cutout.



## 2 / Product-Information

Technical Data	HYDRONIC 16	HYDRONIC 24	HYDRONIC 30	HYDRONIC 35
Test symbol	S  329	S  297	S  295	S  296
Heating medium	Mixture of water and refrigerant (Max 50% proportion of refrigerant)			
Heating capacity (at ambient temperature of 20°C)	16,000 W	24,000 W	30,000 W	35,000 W
Temperature control values - at water inlet	ON 73 °C / OFF 78 °C			
Temperature control values - at water outlet	ON 85 °C / OFF 118 °C			
Fuel	Commercial grade diesel - DIN 51601 or fuel oil EL - DIN 51603			
Fuel consumption (at ambient temperature of -10°C)	2.0 l/h	2.9 l/h	3,65 l/h	4,2 l/h
Rated voltage	24 V			
Lower voltage limit The control unit is protected against undervoltage so that when the voltage drops to the predefined limit, the <i>HYDRONIC</i> is switched off.	19 V			
Upper voltage limit The control unit is protected against overvoltage so that when the voltage limit is exceeded, the <i>HYDRONIC</i> is switched off .	30 V			
Electric power consumption (during combustion / without circulating pump)	60 W	80 W	105 W	120 W
Water content of heat exchanger	Approx. 2 l			
Water content of water circulation system	Min. 10 l			
Minimum throughput of heating medium (± 200 l/h)	1,400 l/h	2,000 l/h	2,600 l/h	3,000 l/h
Permissible ambient temperature	In operation: -40°C to +85°C During transportation / in storage: -40°C to + 100°C For combustion air: <60°C Supply medium: -40°C to +90°C / for a short time up to +120°C			
Operating pressure (water circulation system)	< 2,5 bar			
CO <sub>2</sub> - value	9 -11 vol. %	9 -11 vol. %	9 -11 vol. %	9.5 -11.5 vol. %
CO in exhaust gas	< 0,04 vol. %			
Smoke spot number (Bacharach scale)	< 4			
Weight	Approx. 18 kg			
Radio interference suppression level	UKW 4 / KW 3 / MW 5 / LW 3			
Type of protection	IP 64			
Technical Data - Water Pump	Water pump standard		Bus 2000 water pump	
Voltage (±20%)	24 V			
Power consumption	110 W		250 W	
Capacity / at delivery pressure	5,000 l/h - 200 mbar		6000 l/h - 500 mbar	



### Important!

The specified technical data must be adhered to, otherwise it is possible for the *HYDRONIC* to malfunction.

All technical data ±10 %; where deviation applies, the deviation values are specified.

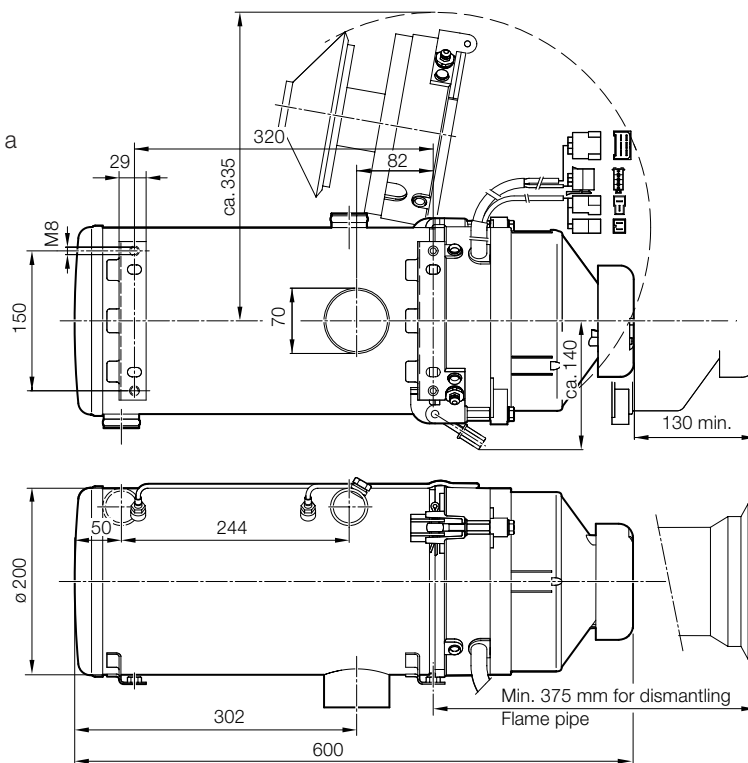
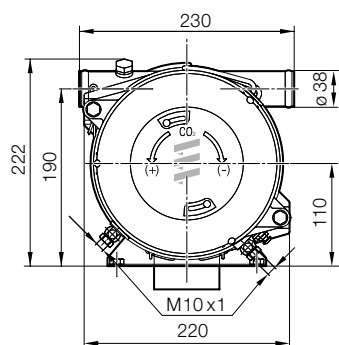
## 2 / Product Information

### Principal dimensions

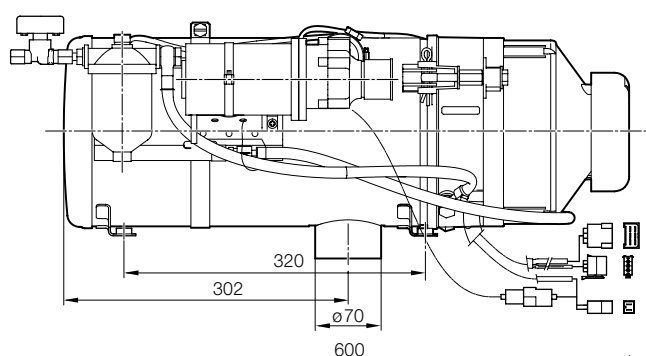
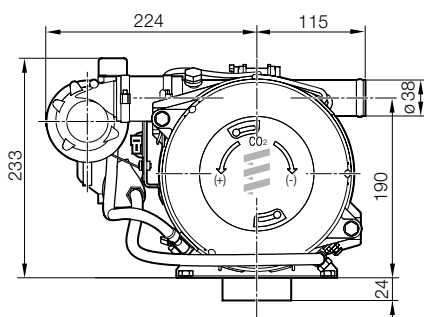
#### HYDRONIC - standard model

##### Please note!

- If there is enough space, the burner can be swung out for routine checks - see drawing.
- The principal dimensions are the same when a hood with hose connection is mounted.

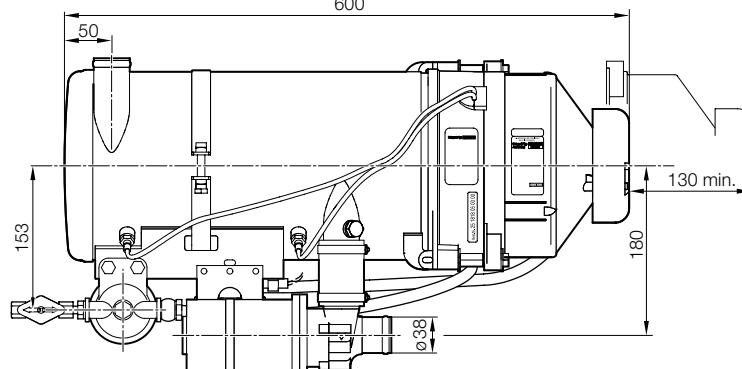


#### HYDRONIC - compact model



##### Please note!

- The principal dimensions are the same when a hood with hose connection is mounted.



### 3 / Installation



#### Permissible installation positions and attachment of the *HYDRONIC*

The *HYDRONIC* should if possible be installed in the normal position.

To do this, transfer the 4 fastening holes and the through-hole for the exhaust outlet - as shown in the diagram - to the mounting surface and drill.

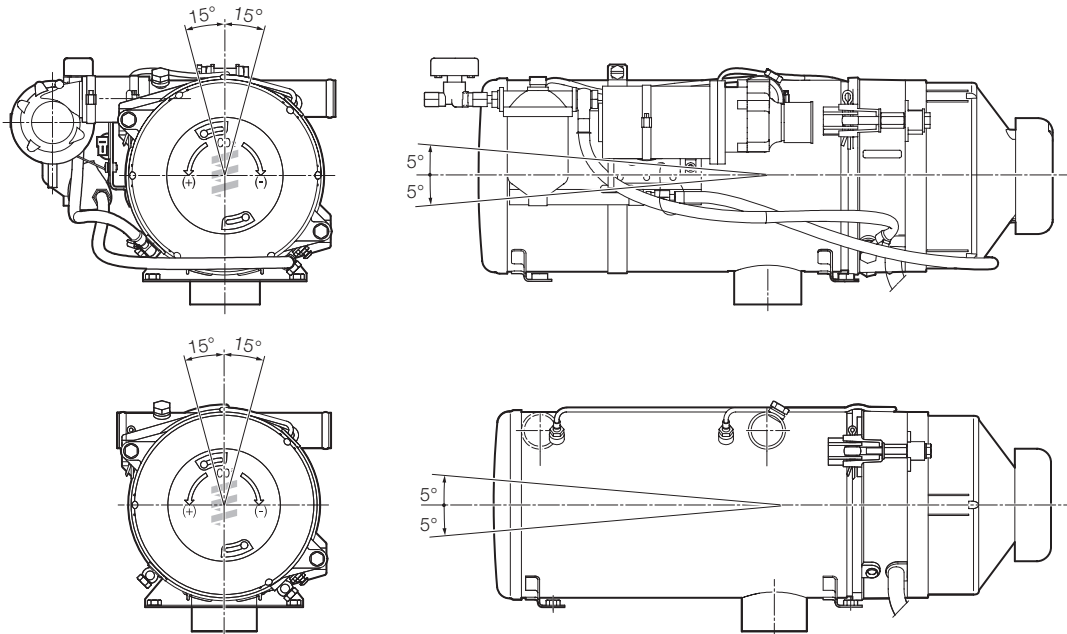
Fasten the *HYDRONIC* to the vehicle with the two mounting supports.

#### Please note!

- The support surface for the two mounting supports of the *HYDRONIC* must be flat.
- Depending on the installation conditions, the *HYDRONIC* can be inclined, as shown in the diagrams.  
During operation of the heater a deviation from the normal position - caused by the incline of the vehicle - of up to  $+15^\circ$  in all directions is possible.

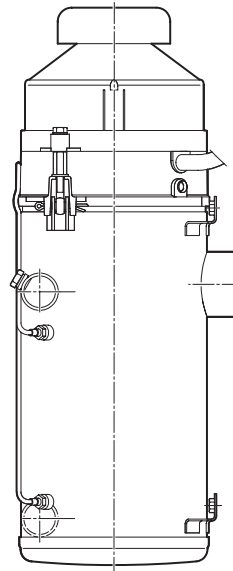
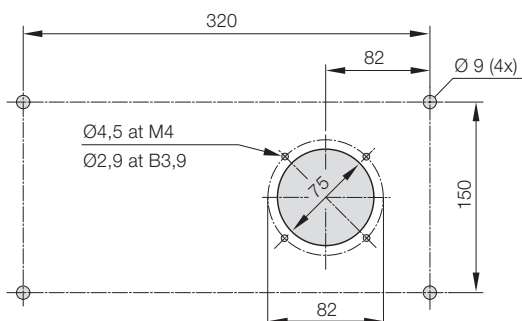
#### Permissible installation positions and template for holes for the *HYDRONIC* - standard model and compact model

**Compact model** - must be installed in level position with the deviations shown in the diagram.



**Standard model** - level, with the deviations shown in the diagram, and upright installation positions permitted

#### Hole template for the *HYDRONIC* - standard model and compact model





## 3 / Installation

### Installation position

The heater should be installed as low down as possible in the vehicle, e.g. in the engine compartment or in a stowage area.

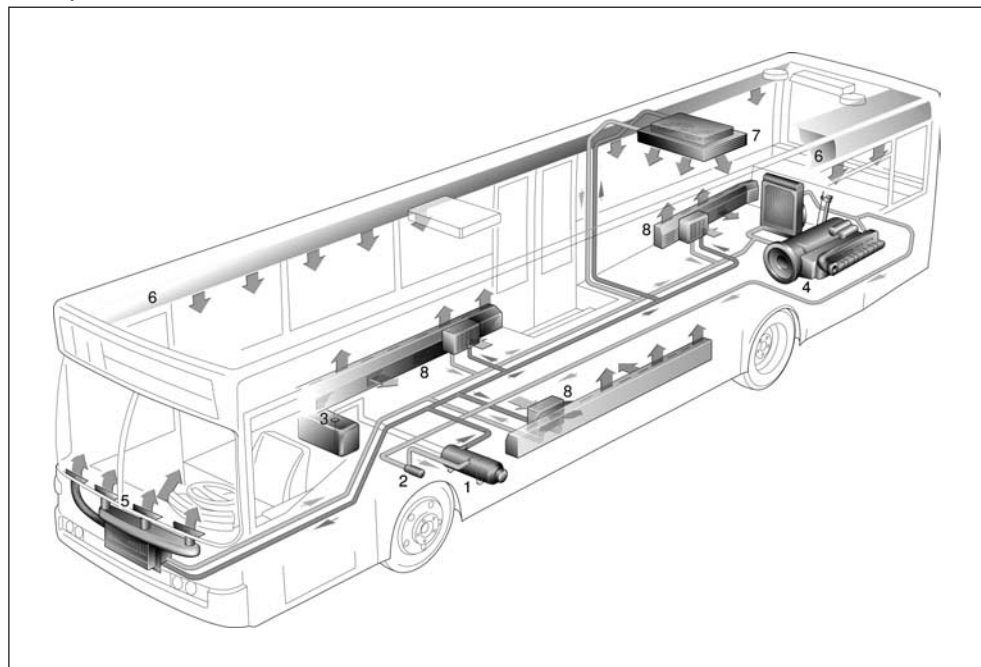
This will ensure that the heater and water pump are automatically ventilated.

Other installation positions are also permitted as long as they comply with the installation requirements stated in these Installation Instructions.

When choosing where to install the heater, care must be taken to ensure that there is sufficient space to disassemble the hood (130 mm) and the flame pipe (375 mm).

All openings towards the outside must be splash-proof.

### Example of a *HYDRONIC* installation in a bus



### Installation of the *HYDRONIC* in a case

If installation in the engine compartment or stowage compartment of the vehicle is not possible, then the *HYDRONIC* can also be installed in a case.

The case containing the installed *HYDRONIC* is then affixed to the vehicle at a suitable location, e.g. to the longitudinal chassis frame.

It is recommended that a hood with a hose connection is mounted for the combustion air intake. The combustion air is then drawn in outside of the case via a flexible hose.

In this way it is possible for the combustion air to be drawn from an area where the temperature is within the permitted range and protection is provided against dirt accumulation. Place a protective grille on the flexible hose.

### § Regulation

- Installation in the driver's cab or passenger compartment of buses containing more than eight seats in addition to the driver's seat is not permitted.

#### Please note!

- Mount the *HYDRONIC* below the minimum cooling water level (expansion tank, radiator, vehicle heat exchanger).
- Further information on installation (e.g. for boats and ships) is available from the manufacturer on request.

#### Please note!

- The case must be sufficiently ventilated from outside that the permitted ambient temperature is not exceeded.
- Air vents must be arranged on the case in such a way that they cannot become clogged up with dirt or snow.
- Any water which penetrates the case must be able to flow out.





## 3 / Installation

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### Exhaust gas piping

#### Regulation!

- The outlet must be implemented in such a way that insertion of a 16 mm dia. ball is not possible.
- Exhaust pipes must be laid in such a way that there is no likelihood of any exhaust gases entering the vehicle interior.
- The functioning of parts of the vehicle which are important for its operation must not be impaired.
- It must not be possible for condensate or water to collect in the exhaust gas line.  
Drain holes are permitted. These must convey the fluid through the interior in sealed pipes to the outside.
- The exhaust pipe opening should face upwards or to the side or, if the exhaust piping is laid below the floorpan of the vehicle, it should extend to near the side or rear of the driver's cab or vehicle.

#### Danger of combustion and poisoning!

- Whenever combustion occurs high temperatures and exhaust gases with toxic elements are generated.
  - Do not perform any work on the exhaust gas piping while the heater is on.
  - If any work needs to be done to the exhaust gas piping, switch off the *HYDRONIC*, wait until all components have completely cooled and, if necessary, wear protective gloves.
  - Do not breathe in any exhaust gases.

#### Important!

- The entire exhaust gas piping is very hot both during and immediately after operation of the heater.
  - Mount exhaust pipe with sufficient separation away from parts which are sensitive to the heat.
  - In particular, look out for fuel lines (plastic or metal), electric lines and brake hoses.
  - Exhaust pipes must be securely fastened (with a recommended standard distance 50 cm) in order to avoid damage through vibration.
  - Lay the exhaust gas piping so that the exhaust gases are not drawn in directly as combustion air.
  - When installing the *HYDRONIC* in a case and with a short exhaust pipe, the exhaust gas piping must run to the outside through the bottom of the case.
  - The functioning of parts of the vehicle which are important for its operation must not be impaired (take care to allow sufficient separation).
  - The opening of the exhaust gas pipe must not be allowed to become clogged up with dirt or snow.
  - The opening of the exhaust gas pipe must not be pointing in the direction of travel.

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### Combustion air piping

#### Regulation

- The necessary combustion air must be drawn from the outside.
- The combustion air inlet must be implemented in such a way that insertion of a 16 mm dia. ball is not possible.

#### Please note!

- When laying the combustion air piping the following should be noted:
  - The combustion air inlet must always be uncovered.
  - Lay the combustion air inlet so that exhaust gases are not drawn in directly as combustion air.
  - Do not position the combustion air inlet so that it faces the vehicle's air stream.
  - Combustion air inlet must not be allowed to become clogged up with dirt or snow.
  - Any water that has penetrated must be able to drain off.

#### Combustion air intake when the *HYDRONIC* is installed in a case

When installing the *HYDRONIC* in a case, it is recommended that a hood with hose connection is mounted to draw in the combustion air.

The combustion air is then drawn in outside of the case via a flexible hose.

In this way it is possible for the combustion air to be drawn from an area where the temperature is within the permitted range and protection is provided against dirt accumulation. Place a protective grille on the flexible hose. If the hood with hose connection is not used, the combustion air must be drawn in through an air vent with an effective minimum cross-section corresponding to a pipe of 60 mm dia.

#### Please note!

- The air vent for the combustion air must be positioned on the case in such a way that
  - it cannot become clogged up with dirt or snow
  - exhaust gases cannot be drawn in.

## 3 / Installation

### Coolant circuit



**Warning: contact with hot parts could cause burning.**

- The coolant and the coolant circuit components can get very hot.
  - Lay and attach water-carrying parts in such a way that there is no danger of burning to humans, animals or any temperature-sensitive material from either heat radiation or direct contact.
  - Prior to working on the coolant circuit, switch off the *HYDRONIC* and wait until all components have cooled down completely, if necessary wearing gloves.

#### Please note!

- When installing the *HYDRONIC*, note carefully the direction of flow of the coolant circuit.
- The water hoses must be laid in such a way that they are buckle-free and if possible are sloping upwards.
- When laying the water hoses, make sure you leave a sufficient gap between hoses and any hot parts of the vehicle.
- All water pipes must be protected against chafing and excessively high temperatures.

- Secure all hose connections with hose clips (fastening torque 1.5 Nm).
- Re-tighten the hose clips after the vehicle has been in operation for 2 hours or 100 km have been driven.
- The minimum water through-flow is only guaranteed if the difference in temperature between the heating medium inlet and outlet does not exceed 10 K during combustion.
- There must be at least 10 litres of coolant in the coolant circuit.
- Only relief pressure valves with an opening pressure of min. 0.4 - max. 2 bar may be used in the coolant circuit.
- Before using the heater for the first time or after changing the coolant, the entire coolant circuit must be bled so that it is bubble-free in accordance with the manufacturer's specification and, if necessary, it must then be topped up with coolant approved by the vehicle manufacturer.

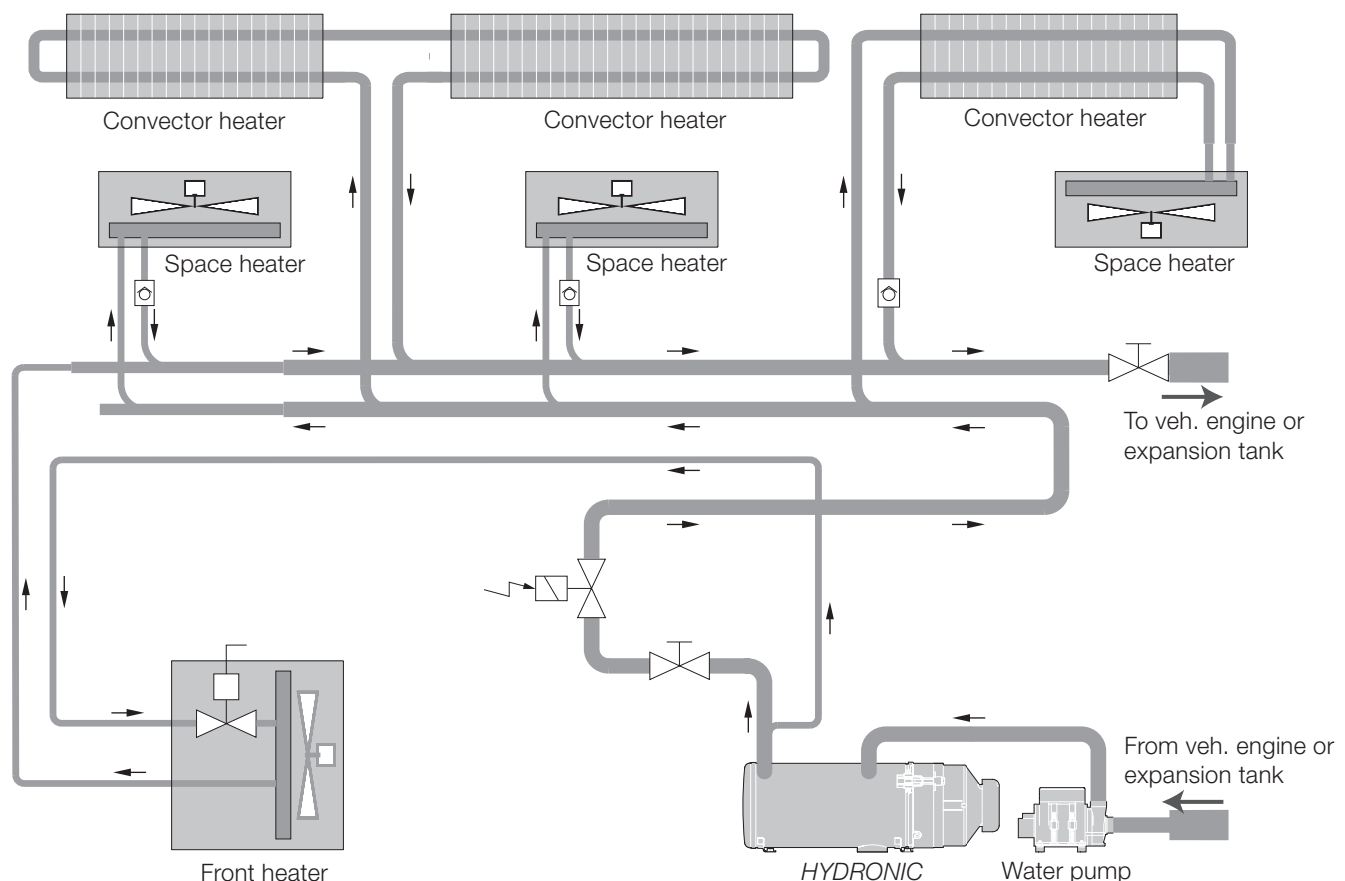
### Installation example

The *HYDRONIC* is installed into the coolant circuit of the vehicle.

Another installation variant is to install a separate coolant circuit for the *HYDRONIC* with an expansion tank.

### Water circulation system

The diagram shows the *HYDRONIC* integrated into the coolant circuit of a bus.



## 3 / Installation

### Fuel supply

#### Regulation

- When laying fuel lines and installing an additional fuel tank, §§45 and 46 StVZO (regulations governing the registration of motor vehicles) must be adhered to.  
Excerpt from §§45 and 46 StVZO:
  - Fuel tanks may not be contained in passenger compartments or driver's cabs of buses.  
They must be positioned in such a way that in the event of a fire the exits are not directly endangered.
  - Fuel lines may not be contained in compartments or driver's cabs of buses.

#### Danger of fire, explosions and poisoning!

- When working on the fuel supply, shut down the vehicle engine and the *HYDRONIC*.
- Avoid naked flames while handling fuel.
- Do not smoke. This applies also where fuel can be detected only by its characteristic smell.
- Do not breathe in fuel vapour.

#### Important!

- Secure all connections on fuel hoses with clips.
- Use connecting hoses (approx. 50 mm long) when connecting up fuel pipes and secure with clips.
- Cut fuel hoses and pipes to length only using a sharp knife. Cuts must not be pressed in or have any burr.
- Exhaust pipes must be securely held in position (with a recommended standard distance 50 cm) in order to avoid damage and / or noise during vibration.
- Lay the fuel lines in such a way that twisting movements of the vehicle and movements of the engine and similar cannot have any adverse effect on durability.
- Fuel lines must be protected against mechanical damage.
- Fuel carrying parts must be protected against heat arising due to malfunctions.
- Fuel lines must never be laid or fastened directly next to exhaust piping for the *HYDRONIC* or the vehicle engine. Where lines cross, make sure there is always sufficient space separating the hot parts, and if necessary apply heat protection sheets.
- Dripping or vaporizing fuel must not be allowed to collect or ignite on hot parts or on electric fixtures.

### Connection of intake and return pipes to the heater

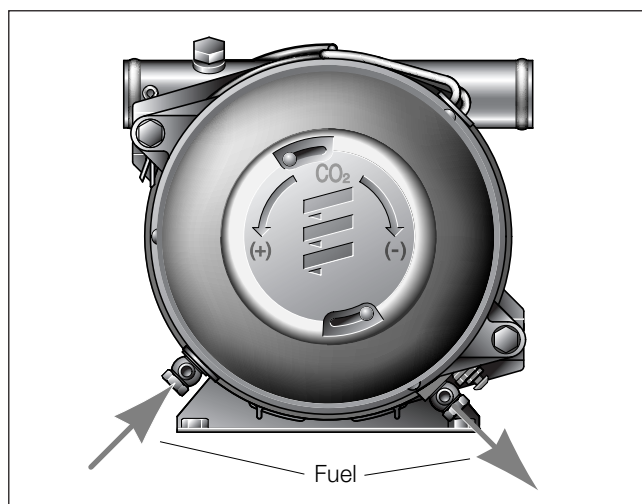
The fuel is taken from the vehicle fuel tank or from a separate fuel reservoir.

Any of the normal fuel hoses or pipes used in vehicle manufacturing, e.g. steel, copper or plastic pipes, can be used as fuel lines.

Fuel hoses and fuel pipes are available as additional equipment - see pages 8 and 9 or the Additional Equipment Catalogue.

#### Please note!

- When operating with one-line systems ---> please consult the manufacturer.



### Fuel quality

All commercial grade diesel which complies with DIN 51 601 may be used as fuel. Any heating oils which comply with class EL, DIN 51 603 can also be used.

#### Please note!

- Admixing waste oil is prohibited.
- It must be possible to filter the fuel under all conditions of use (as specified in DIN EN 116).
- The *HYDRONIC* is not approved for use with PME (biodiesel according to DIN V 51606).

# 3 / Installation

## Electrical system

### § Regulation

- Electrical leads, switches and control units for heaters must be arranged in the vehicle so that their operation under normal operating conditions is not impaired in any way. All lines leading from heaters to the outside must be laid so that they are splash-proof at the opening.
- It must be easy for the user to determine the operating state (as a minimum, whether switched on or off).

### Electrical connection of the *HYDRONIC*

The detailed electrical connection of the *HYDRONIC* has to be carried out as shown in the wiring diagrams.

#### Please note!

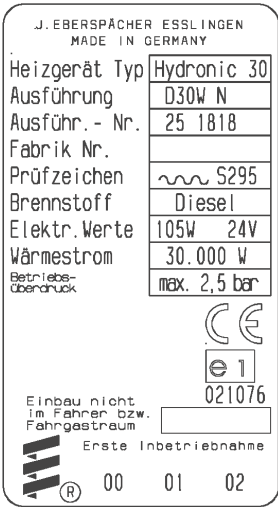
- The wire sizes specified in the wiring diagram must be noted and adhered to.
- Run “positive-negative” cable section from the *HYDRONIC* directly to the battery and connect up.
- When laying the electrical lines care must be taken to ensure that their insulation cannot be damaged as a result of wear, bending, becoming caught or the effects of heat.

## Rating plate

### § Regulation

- The year in which the heater was first commissioned must be shown permanently on the rating plate. For this purpose 3 year numbers are printed on the appropriate area of the rating plate. The applicable year must be indicated by removing the years which are not applicable.
- The *HYDRONIC* rating plate is attached to the burner and must also be in easy view in the installed condition. If this is not the case, a duplicate containing the same information as the original rating plate can be attached. The duplicate must be attached in a prominent position on the *HYDRONIC* or on a cover in front of the *HYDRONIC*.

The duplicate is affixed to the hood in a manner which enables it to be taken off.



Heater type  
Model  
Model no.  
Factory no.  
Test symbol  
Fuel  
Electrical rating  
Heating capacity  
Operating gauge pressure

Not to be installed in driver's cab or passenger compartment  
Data first used

### Switch on *HYDRONIC* with a universal switch or a time switch

The *HYDRONIC* can be switched on with a universal switch or a time switch.

The operating instructions are enclosed with the control elements.

For other control elements, see Technical Description.

If switches or timers other than those which are standard in automotive engineering are used, the load rating on switches must be at least 10 A and on timers it must be at least 2 A.



Universal switch  
Cat. No. 25 1380 89 04 00  
electric bulb for the Universal switch  
Cat. No. 207 00 006



Mini-timer 12 / 24 V  
Cat. No. 22 1000 31 31 00



Modular timer -12 / 24 V  
Cat. No. 22 1000 30 34 00

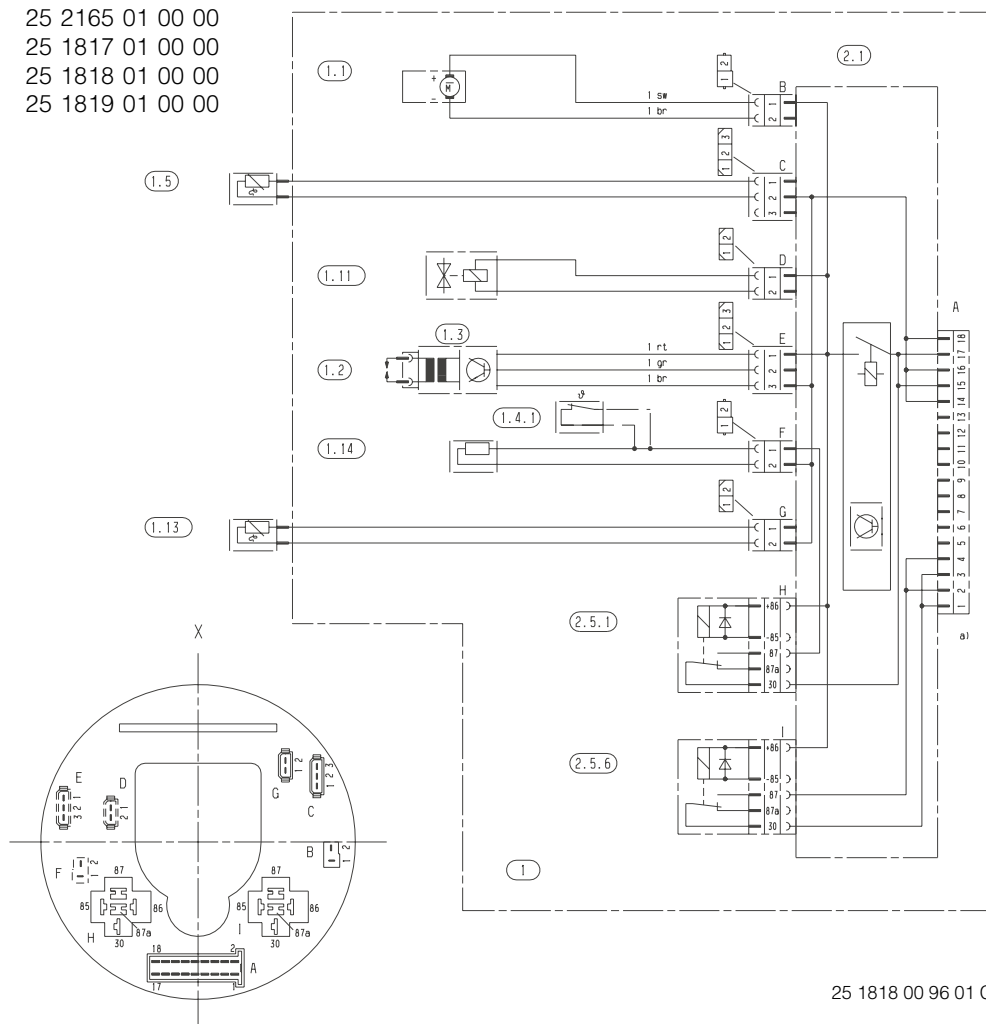
J. Eberspächer  
GmbH & Co.  
Eberspächerstr. 24  
D-73730 Esslingen

Telefon (zentral)  
(07 11) 9 39-00  
Telefax  
(07 11) 9 39-05 00

www.eberspaecher.com

**Schaltplan für die Grundgeräte-Ausführungen**

HYDRONIC 16 – 24 Volt	25 2165 01 00 00
HYDRONIC 24 – 24 Volt	25 1817 01 00 00
HYDRONIC 30 – 24 Volt	25 1818 01 00 00
HYDRONIC 35 – 24 Volt	25 1819 01 00 00


**Teilleiste**

- 1 HYDRONIC
- 1.1 Brennermotor
- 1.2 Zündelektrode
- 1.3 Zündfunkengeber
- 1.4.1 Temperaturschalter – nur bei HYDRONIC 16 / 24
- 1.5 Überhitzungsfühler
- 1.11 Brennstoffmagnetventil
- 1.13 Temperaturfühler

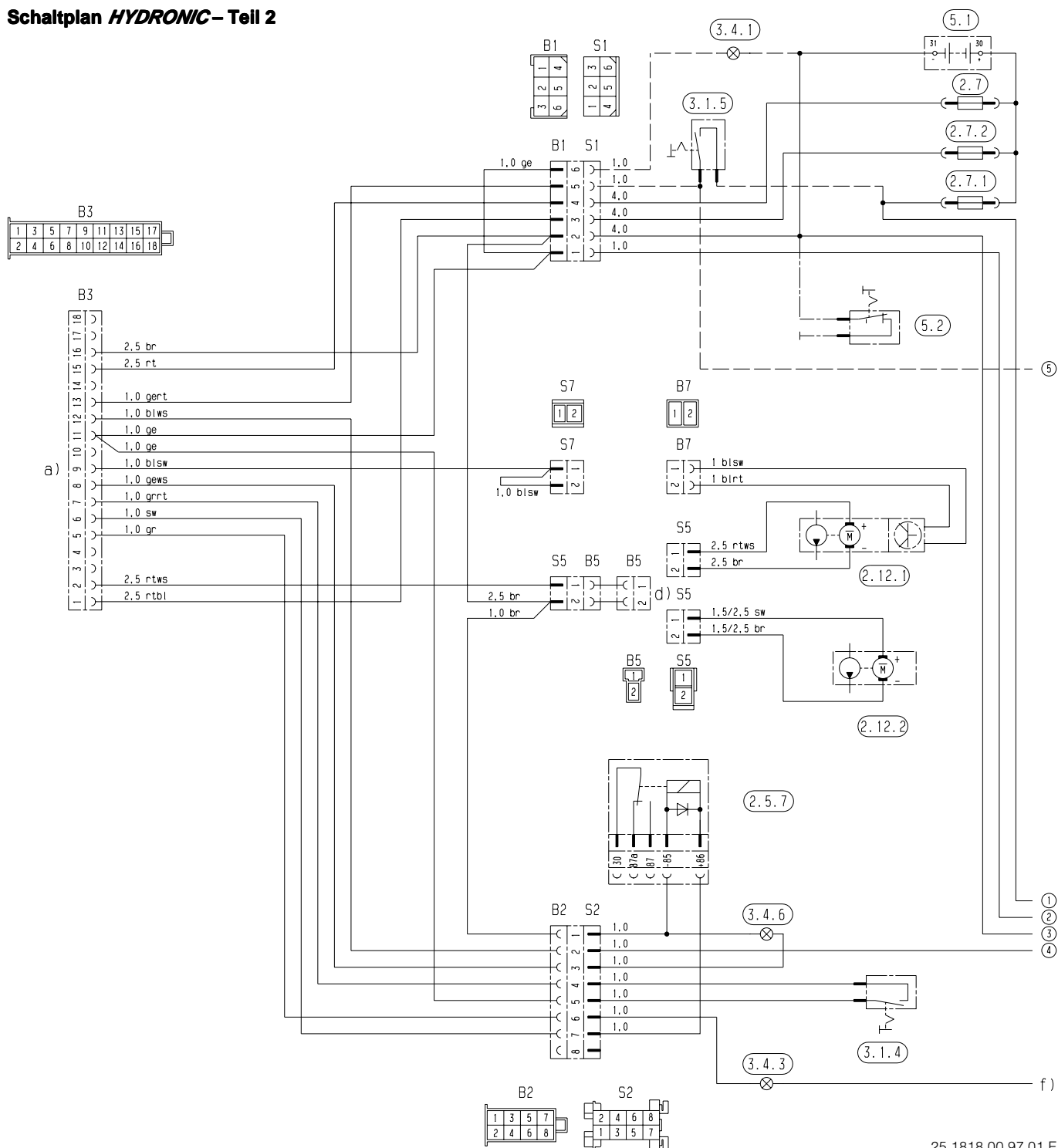
- 1.14 Heizpatrone für Düsenstockheizung
- 2.1 Steuergerät
- 2.5.1 Relais, Heizpatrone
- 2.5.6 Relais, Wasserpumpe

- a) Anschluss HYDRONIC
- X Bildliche Darstellung des Steuergerätes von der Gebläseradseite

Stecker und Buchsengehäuse sind von der Leitungseintrittseite dargestellt.

Schaltplan HYDRONIC – Teil 2 siehe Seite 2  
Schaltplan Bedienung siehe Seite 3

## Schaltplan *HYDRONIC*– Teil 2



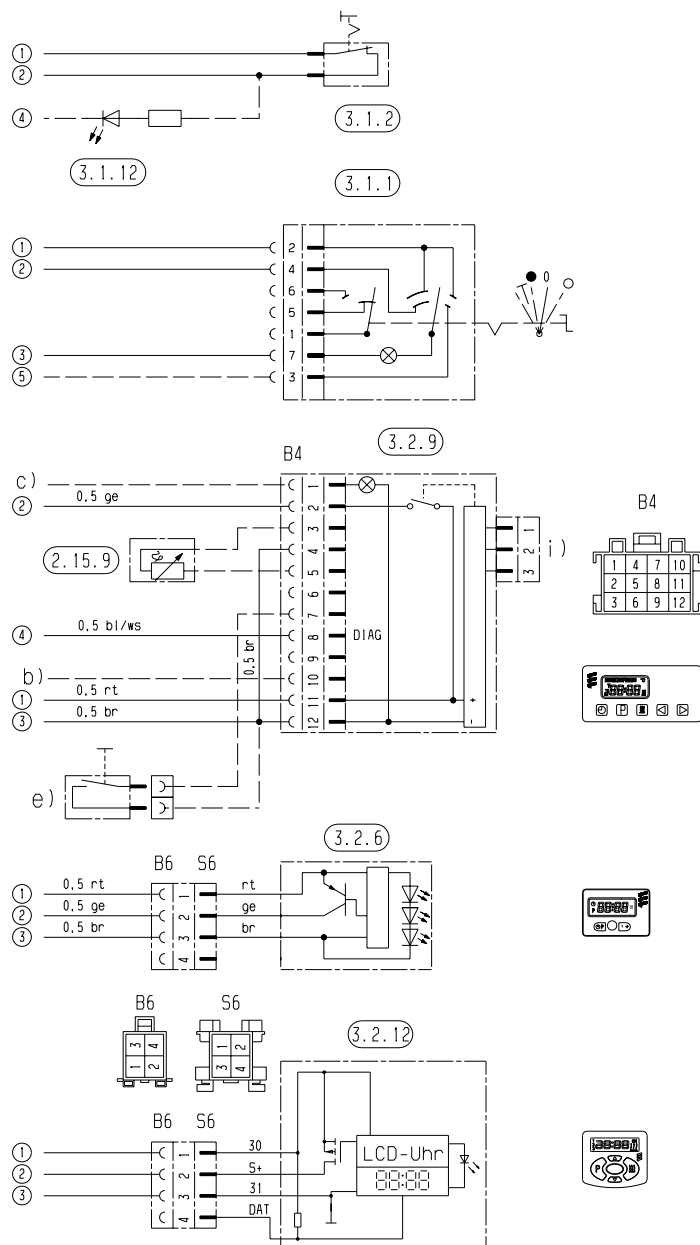
### Teilleiste

- 2.5.7 Relais für Ansteuerung  
z.B. Fahrzeuggebläse
- 2.7 Hauptsicherung 15 A
- 2.7.1 Sicherung, Betätigung 5 A
- 2.7.2 Sicherung, Wasserpumpe 15 A
- 2.12.1 Wasserpumpe Bus 2000
- 2.12.2 Wasserpumpe

- 3.1.4 Schalter, Temperaturabsenkung
- 3.1.5 Schalter, Wasserpumpe
- 3.4.1 Betriebsanzeige / Flammanzeige
- 3.4.3 Störcodeanzeige
- 3.4.6 Brennanzeigegeleuchte
- 5.1 Batterie
- 5.2 Batterietrennschalter

- a) Anschluss *HYDRONIC*
- d) Wahlweise 2.12.1 bzw. 2.12.2
- f) Bei Verwendung von 3.2.6  
wahlweise Kl.15 oder  
Kl. 30 – sonst Einschaltplus  
(Leitung 1<sup>2</sup> gelb)

## Schaltplan Bedienelemente



25 1818 00 97 01 E

## Teilleiste

2.15.9 Fühler, Außentemperatur

3.1.1 Universalschalter

3.1.2 Schalter, Heizen, Dauerbetrieb

3.1.12 Störcodeabfrage

3.2.6 Mini-Uhr

3.2.9 Moduluhr

3.2.12 Mini-Uhr (neu)

- b) an +15 anschließen
- c) Beleuchtung, Klemme 58
- e) externe Taste „EIN / AUS“ (Option)
- i) Anschluss Funkfernbedienung



**(GB)****Parts list to circuit diagrams on pages 1 to 3**

The circuit diagrams apply to the following equipment versions:

D 16 W N	25 2165 01 00 00
D 24 W N	25 1817 01 00 00
D 30 W N	25 1818 01 00 00
D 35 W N	25 1819 01 00 00

**Circuit diagram - Heater, page 1**

- 1 Heater
- 1.1 Burner motor
- 1.2 Ignition electrode
- 1.3 Ignition spark generator
- 1.4.1 Temperature switch - only for *HYDRONIC 16 / 24*
- 1.5 Overheating sensor
- 1.11 Fuel solenoid valve
- 1.13 Temperature sensor
- 1.14 Heating cartridge for nozzle holder preheater
- 2.1 Control unit
- 2.5.1 Relay, heating cartridge
- 2.5.6 Relay, water pump
- a) Connection, heater
- x) Representation of control unit from blower impeller side

Plug and socket housings are depicted from the cable entry side.

**Circuit diagram - heater, page 2 and Circuit diagram - control, page 3**

- 2.5.7 Relay for activating vehicle blower, etc.
- 2.7 Main fuse 15 A
- 2.7.1 Fuse, operation 5 A
- 2.7.2 Fuse, water pump 15 A
- 2.12.1 BUS 2000 water pump
- 2.12.2 Water pump
- 2.15.9 Sensor outer temperature
- 3.1.1 Universal switch
- 3.1.2 Switch, heater, continuous duty
- 3.1.4 Switch, temperature reduction
- 3.1.5 Switch, water pump
- 3.1.12 Fault code interrogation
- 3.2.6 Timer, „Mini“
- 3.2.9 Timer, square
- 3.4.1 Status display / combustion display
- 3.4.3 Fault code display
- 3.4.6 Power lamp
- 5.1 Battery
- 5.2 Battery disconnecter
- a) Connection, heater
- b) connect to + 15 V
- c) Lamp terminal 58
- d) optional: 2.12.1 or 2.12.2
- e) external push-button ON / OFF (option)
- f) if 3.2.6 is used: either Tl. 15 or 30; otherwise: switch-on signal wire (1<sup>2</sup> yellow)
- i) Connection, radio remote control module

**(E)****Lista de piezas para los esquemas de conexiones en las páginas 1 hasta 3**

Los esquemas de conexiones son válidos para los siguientes tipos de aparatos.

D 16 W N	25 2165 01 00 00
D 24 W N	25 1817 01 00 00
D 30 W N	25 1818 01 00 00
D 35 W N	25 1819 01 00 00

**Esquema de conexiones - calefacción, página 1**

- 1 Calefacción
- 1.1 Motor del quemador
- 1.2 Electrodo de encendido
- 1.3 Transmisor de la chispa de encendido
- 1.4.1 Interruptor de temperatura - sólo en el *HYDRONIC 16 / 24*
- 1.5 Sensor de sobrecalentamiento
- 1.11 Válvula magnética de combustible
- 1.13 Sensor de Temperatura
- 1.14 Cartucho calefactor para precalentamiento de inyectores
- 2.1 Unidad electrónica
- 2.5.1 Relé, cartucho calefactor
- 2.5.6 Relé, bomba de agua
- a) Conexión de la calefacción
- x) Representación ilustrada de la unidad electrónica vista desde el lado del ventilador

Las clavijas de enchufe y la caja de conexiones están representadas por el lado de entrada de cables.

**Esquema de conexiones - calefacción, página 2 y Esquema de conexiones - calefacción, página 3**

- 2.5.7 Relé de maniobra, p.ej., ventilador del vehículo
- 2.7 Fusible principal 15 A
- 2.7.1 Fusible, accionamiento 5 A
- 2.7.2 Fusible, bomba de agua 15 A
- 2.12.1 Bomba de agua „BUS 2000“
- 2.12.2 Bomba de agua
- 2.15.9 Sensor temperatura exterior
- 3.1.1 Interruptor universal
- 3.1.2 Interruptor, calentar, funcionamiento continuo
- 3.1.4 Interruptor, reducción de temperatura
- 3.1.5 Interruptor, bomba de agua
- 3.1.12 Consulta de código de fallos
- 3.2.6 Reloj de conmutación „Mini“
- 3.2.9 Reloj de conmutación, rectangular
- 3.4.1 Indicación de funcionamiento
- 3.4.3 Indicación del código de fallos
- 3.4.6 Lámpara indicadora de funcionamiento
- 5.1 Batería
- 5.2 Conmutador separador de batería
- a) Conexión de la calefacción
- b) Conectar a + 15
- c) Iluminación, borne 58
- d) 2.12.1 o 2.12.2., a elección
- e) Tecla externa „CONEXION / DESCONEXION“ (opción)
- f) Si se emplea 3.2.6: borne 15 o 30, a elección. En otro caso: conductor de señal de conexión (1<sup>2</sup> amarillo)
- i) Conexión módulo radio

**(S)****Delförteckning till kopplingsscheman på sidorna 1 till 3**

Dessa scheman gäller för följande apparatutföranden:

D 16 W N	25 2165 01 00 00
D 24 W N	25 1817 01 00 00
D 30 W N	25 1818 01 00 00
D 35 W N	25 1819 01 00 00

**Kopplingsschema - värmare, sidan 1**

- 1 Värmare
- 1.1 Brännarmotor
- 1.2 Glödtändstift
- 1.3 Tändgnistgivare
- 1.4.1 Temperaturbrytare - endast vid *HYDRONIC 16 / 24*
- 1.5 Överhettningssensor
- 1.11 Bränslemagnetventil
- 1.13 Temperatursensor
- 1.14 Värme patron för bränsledyshållarens förvärmning
- 2.1 Styrdon
- 2.5.1 Relä, värme patron
- 2.5.6 Relä, vattenpump
- a) Anslutning värmare
- x) Bild av styrdonet, sett från fläkt hjulets sida

Stickpropp och uttagshöjor visas sett från den sida där ledningarna förs in.

**Kopplingsschema - värmare, sidan 2, och Kopplingsschema - manöverorgan, sidan 3**

- 2.5.7 Relä för aktivering av t ex bilfläkten
- 2.7 Huvudsäkring 15 A
- 2.7.1 Säkring, manövrering 5 A
- 2.7.2 Säkring, vattenpump 15 A
- 2.12.1 Vattenpump „BUS 2000“
- 2.12.2 Vattenpump
- 2.15.9 Avkännare för utomhustemperatur
- 3.1.1 Universalbrytare
- 3.1.2 Brytare, värmedrift, kontinuerlig drift
- 3.1.4 Brytare, termperatursänkning
- 3.1.5 Brytare, vattenpump
- 3.1.12 Avkänning av störningskoder
- 3.2.6 Timer „Miniklocka“
- 3.2.9 Timer, rektangulär
- 3.4.1 Driftsindikering / flamindikering
- 3.4.3 Störkodsindikering
- 3.4.6 Driftindikeringslampa
- 5.1 Batteri
- 5.2 Batterifrånskiljare
- a) Anslutning värmare
- b) Anslut till + 15
- c) Belysning, klämma 58
- d) 2.12.1 alt. 2.12.2
- e) Extern tangent „TILL / FRÅN“ (optional)
- f) Vid användning av 3.2.6: valfritt klämma 15 alt 30; annars: inkopplingssignal-ledning (1<sup>2</sup> gul)
- i) Anslutning radiomodul