TECHNICAL DESCRIPTION
HYDRONIC S3 ECONOMY

The technical description and installation instructions are valid for the following engine-independent water heaters:

Heaters for petrol B 5 E – 12 V CL	20 1952 05 00 00 20 1993 05 00 00	(up to 07/2017) (from to 08/2017)
Heaters for diesel D 5 E – 12 V CL	25 2652 05 00 00 25 2912 05 00 00	(up to 07/2017) (from to 08/2017)

A WORLD OF COMFORT

Eberspächer

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1 INTRODUCTION

PICTURE SYMBOLS AND TEXT STRUCTURES

DANGER: Indicates that serious or fatal injury may result if specific guidelines are not followed.

CAUTION: Indicates that personal injury or damage to equipment may occur unless specific guidelines are followed.

WARNING: Indicates very important heater information that may cause personal injury, heater failures and maintenance costs.

NOTE: Indicates general heater related notes, clarifications and recommendations, which can be very useful for technician, installer, or owner; and should not be disregarded.

(•) A dot indicates a list, which is started with heading;
(-) If indented dash follows a "dot", this list is a sub section of the black dot;
(*) An asterisk symbol describes a further note on it's associated title, statement or data.

FOREWORD

- This document is applicable to the heaters listed on the title page, to the exclusion of all liability claims, and aims to support registered dealers, service technicians and end users in North America.. This does not replace documentation produced by J. Eberspächer.
- The installation instructions and standards described in this document are NOT APPLICABLE TO MARINE INSTALLATIONS.
  Please consult a certified Eberspaecher North Ameria Marine dealer for marine installation.
- There may be some design changes in any OEM installed Eberspaecher heater; therefore it is recommended to service the heater only at OEM approved dealer.
- This publication was correct at the time of going to print. However, Eberspaecher Inc. has a policy of continuous improvement and reserves the right to amend any specifications without prior notice.
- Eberspaecher North America takes regular steps to ensure that any content, illustrations and technical data in its manuals are correct; however errors do occur, and Eberspaecher North America reserves right to correct any such errors, and disclaims liability resulting therefrom.
- Eberspaecher North America is not liable for any negligence and incompetence from dealers, installers and owners thereby causing heater or any related system failures and do reserves rights to nullify the warranty under such conditions.
- Any parametric information related to the heating system (like technical data, illustration, table, calculation, graph) in this manual is available to provide a supplementary technical guidance for installers and dealers. It does not, however, replace or supersedes any application specific rules and regulations for heating and ventilation system in automobiles.
- This documentation must be considered merely as a supplementary guideline for warranty or related matters; In such case, a user or dealer must read an official warranty documentation for further information related to recognized heater troubleshooting process and claim procedure. For further information, please visit:
  http://www.eberspaecher-na.com/warranty/warranty.html

CONCEPT OF THIS MANUAL

This manual aims to support the service company installing the heater and and to provide the user with all important information about the heater. The manual has been divided into 8 chapters to make it easier to find the corresponding information quickly.

1 Introduction
Here you will find important introductory information about installation of the heater and about the structure of the manual.

2 Product Information
Here you will find information about the scope of supply, the technical data and the dimensions of the heater.

3 Installation Procedures
Here you will find important information and instructions referring to installation of the heater.

4 Operation and Function
Here you will find information about the operation and function of the heater.

5 Electrical System
Here you will find information about the electronic system and electronic components of the heater.

6 Troubleshooting / Maintenance Instructions
Here you will find information about any necessary troubleshooting procedures, maintenance and the service timer.

7 Parts List
Here you will find spare part numbers and diagrams of heater components.

8 Service
Here you will find a brief information related to product warranty, quality and disposal.

1 INTRODUCTION

HEATER WARNINGS

WARNING TO INSTALLER!

- Correct installation of this heater is necessary to ensure safe and proper operation.
- Read and understand this manual before attempting to install a heater.

DANGER! - EXPLOSION HAZARD

- Heater must be turned off while performing welding or filling up the gas tank.
- Do not install heater in enclosed areas where combustible fluid, dust from grain, coal or wood may be present.
- Do not install heaters in engine compartments of marine vessels.

DANGER! - FIRE HAZARD

- Install heater so it will maintain a minimum distance of 2” from any flammable or heat sensitive material.
- Install the exhaust system so it will maintain a minimum distance of 2” from any flammable or heat sensitive material.
- Ensure that the fuel system is intact and there are no leaks.
- Failure to follow these instructions could cause fire resulting in serious o fatal injury.
- Installation of the fuel lines under the exit locations of buses, RVs and marine vehicles is not recommended.

DANGER! - ASPHYXIATION HAZARD

- Route the heater exhaust so that exhaust fumes can not enter any passenger compartments.
- Ensure an air tight seal is maintained between the heater and mounting surface and at any exhaust connection points.
- Ensure that heating air supply is taken from an area where poisonous gases will not be present.
- If running exhaust components through an enclosed compartment, ensure that it is vented to the outside.
- Failure to follow these instructions could cause oxygen depletion resulting in serious or fatal injury.

DANGER! - ELECTRICAL HAZARD

- Improper procedure for connections to the battery and other electrical equipment leads to severe electrical shock and burns; use extra care while handling the electrical system.
- Ensure that any part of the body or heating system is not wet, while working on the electrical equipment to prevent unwanted events i.e. short circuit, electrical shock and fire hazard.
- When heater is grounded to the chassis, the negative terminal of the battery must always be connected to the chassis to prevent overload on heater negative wire (brown).
- Disconnect the heater connections to the battery while performing any electrical work or welding on the vehicle.
- Insert fuse on the main harness of the heater only after the whole installation is completed.
- For specialty vehicles requiring additional safety feature, use master switch on main wire to prevent heater from running under emergency. (Never use master switch to control the heater which could cause catastrophic failure)
- Failure to follow these instructions could cause heater failures, electrical shocks and severe burns.

CAUTION! - SAFETY HAZARD (HEATER OVERHEATING)

- Install the heater in parallel to the engine and other applications (heat exchanger, boiler) to improve coolant flow in the system.
- Use an expansion tank to relieve additional pressure or air bubble from the system if coolant lines from the heater is not connected to the engine
- Ensure suitable coolant type and appropriate quality of the coolant/water mixture available in the vehicle. (follow the information available in vehicle handbook)
- Always remove air bubble from the coolant system before commissioning the heater. (follow the procedure available in the vehicle handbook) .
- It is mandatory to apply appropriate safety (tools and PPE) while handling the heating system after its operation.
- Frequent over heating issues can increase component failures and reduce durability of the heater.

For further information (Canada & USA):
Eberspaecher North America : 1 - 800- 387- 4800

1 INTRODUCTION

GENERAL SAFETY INSTRUCTIONS

In addition to the heater warnings and notes, it is mandatory to follow general safety instructions and procedure while handling the heating system.

REQUIRED TOOLS AND PROTECTIVE EQUIPMENT

Mechanical tools:	Electrical tools:	Other tools:	Protective Equipment:
Screw driver set, plier sets, standard/metric wrenches and sockets, torque drive set, standard drill, bit set and hole saws, vice grips, clamps and clips, utility knife, hose and fuel line cutters, teflon tape, brass glow plug brush, small hammer and light duty, filler gauge, paper clips, pencils and markers, measurement cylinder (10 ml) measurement tools, other tools as required.	Multimeter, thermometer, tachometer, battery power source (DC), wire cutter, wire stripper and crimper, terminal remover tool (AMP), electrical grease and tap, extra wires, Alligator clips test lead and temporary jumper cable (small).	Coolant (as per vehicle manufactures), diesel, kerosene, lock ties and dry rug.	Safety shoes, safety glasses, hand glows, ear protection (if required). Any additional protection requirement from company or dealer.

WARNING! GENERAL SAFETY INSTRUCTIONS

- Heating systems can be hot; therefore, use appropriate measures before carry out their installations or repair.
- During the glow pin test, the glow pin can become red hot, which could create severe burn to the operator if improperly handled.
- Fuel is explosive material and its system must be handled according to the manufacturer guidelines only.
- Never keep the heating systems ON while performing the welding in the shop or fueling at the gas station.
- Apply appropriate measures to protect the heater from corrosion, contamination and overheat.
- Regardless of the season, run the heater at least once in a month for period of minimum 15 mins to burn away any residue in combustion chamber, minimize contamination in the Blower fan, and prevent unexpected component failures.
- Usage of kerosene must be limited to 30 mins and only after the repair, which, however, can not replace the required repair for excessive carboning issue. At high altitudes and under cold conditions, pre-mixing diesel with kerosene to some limit is allowed; please see fuel section of this manual.
- Frequent overheat conditions could affect heater components i.e. Gaskets, sensors, duct system, ECU and blower fan; therefore it must be promptly rectified to reduce further maintenance costs.
- Ensure that statutory regulations regarding accident prevention as well as work shop H&S standards are followed.

NOTE:

- Under the new warranty program “EW Plus”, use of EDiTH diagnosis is recommended to reduce the application processing time and other possible costs.
- Inadequate size of the heater could lead to undesired temperature in the compartment; Eberspaecher NA recommends to account all factors required for heater selection and system design.
- Heater system failures due to incorrect installation, improper handling, or abusive usage could immediately nullify the heater warranty.
- Eberspaecher NA has a strict policy against use of any non-genuine or unauthorized parts in the heater.
  Such actions could immediately nullify the parts warranty.
- Improper installation and repair could lead to further faults or failures and down time for which Eberspaecher North America is not liable and warranty could effectively become null and void.
- For any difficult repair or customized installation including on RV and specialty vehicles, contact nearby Eberspaecher certified dealer.
- The heater manual provides general guidelines for safe installation, operation and repair under normal conditions; if anything out of the ordinary; usage of due diligence is expected or contact near by certified dealer.
- The periodic heater maintenance is the responsibility of the owner and is not covered under Eberspaecher North America (ESPAR) warranty.
- OEM type heating installations are different from after market, therefore contact vehicle manufacturer or dealer for technical support.

2 PRODUCT INFORMATION

EBERSPAECHER'S *HYDRONIC* 3 HEATER

With growing demand for energy efficient systems and green technologies, the automotive market has been increasingly inclined towards new innovations in vehical systems that could reduce the overall fuel consumption and cost. For such reasons, the demand for top edge no idle technologies has increased. The hydronic 3 is quality engineered by J.Eberpsacher as a low cost, highly efficient and durable means to provide heat to the vehicle engine, cab or heat exchanger. It can be operated as an independent heater (no idle system) or an integrated part of climate control system in the vehicle. Depending on the fuel input, there are two types of Hydronic 3 heater as described here:

HYDRONIC 3:

- D5E CL - 1.3 kW to 5 kW (Diesel version).
- B5E CL - 1.8 kW to 5 kW (Gasoline version).

The Hydronic 3 is ideal for preheating engines of trucks, cars, off-road equipment, small trucks and boats. It features a step-less heat regulation matrix , smart thermal management, and advanced data communication (CAN/LIN). With lighter, smaller and modular design, the hydronic 3 brings a higher ease of installation and maintenance. The unit regulates the coolant temperature between 71°C to 83°C by steadily adjusting its heat outputs between 1.8 to 5.0KW.
Hydronic 3 can be operated by EasyStart timer using its manual ON/OFF or program features.
With modified flame detection sensor, higher energy glow pin and effective temperature sensors, the hydronic 3 is reliable, safe means to provide comfort heat during frigid winter conditions.

NON PERMITTED APPLICATIONS:

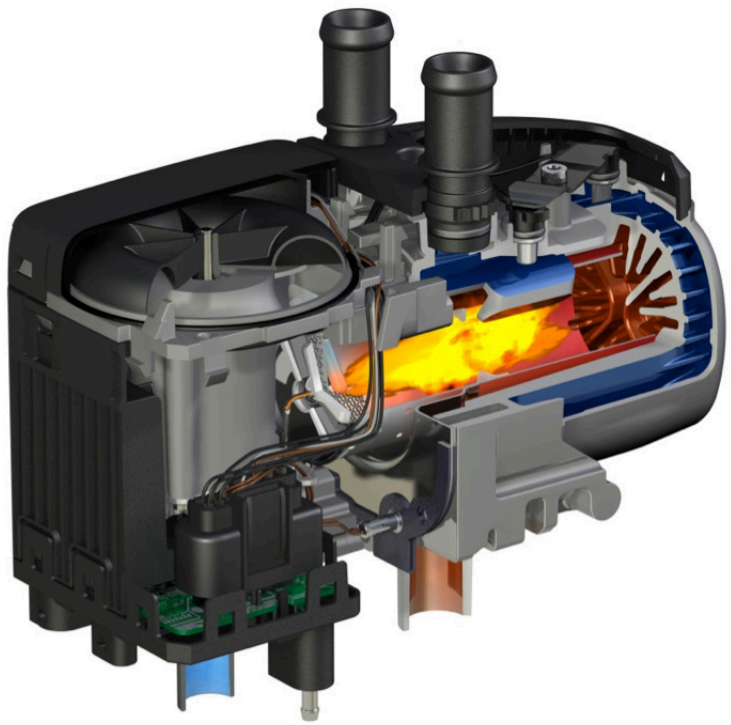
- Long term Continuous operation is not permitted
- Not compatible for pre-heating and heating of:
  - Residential rooms, and garages
  - Weekend homes, and hunting huts
- House boats etc.
- Aircrafts (high altitude) etc.

HYDRONIC 4/5 HEATER MARKING

- Technical designation:

B / D 5 E C / L

B: Benzine (gasoline)
D: Diesel
5: 5KW Heat output
E: Economy
C: CAN Interface (Extensive diagnostics)
L: LIN Interface (For controller and basic diagnostics)



2 PRODUCT INFORMATION

WHY HYDRONIC 3

- Smaller and lighter.
- Efficient and economical.
- Durable and robust.
- Smarter and faster.

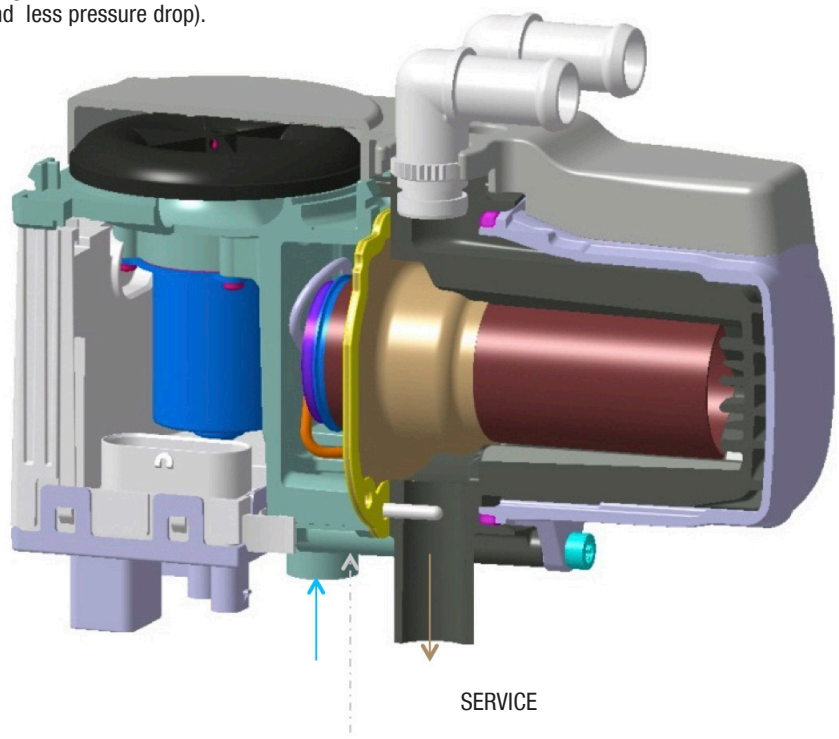
KEY FEATURES

DESIGN

- Electronically controlled BLDC motor (Reduced power consumption)
- Robust combustion chamber (Less fuel consumption and quick start-up)
- Improved ECU (Faster communication and EasyScan compatible)
- Advanced sensors (Effective in cold conditions)
- Efficient heat exchanger design (Faster heat transfer rate and less pressure drop).
- Enhanced FMP (Quieter and less vibration)

OPERATION

- Step-less heat regulation matrix.
- Improved for cold start-ups (Faster ignition).
- Better thermal management (Overall efficiency: 85%).
- Reduced power consumption.
- Lower noise level.



INSTALLATION

- Multiple fastening options (Ensures convenient and rapid installation).
- 360° Rotatable spigots for coolant connections
- Broad range of permissible mounting angles. (Heater and water pump).
- Smaller and lighter (in comparison to similar heaters).
- Well defined positions for electrical interface (All connectors are located at the bottom).

SERVICE

- Leaner and modular design (Quicker assambly and disassambly time).
- Longer service life of components.
- Enhanced diagnostic functionality (EasyScan).
- Less steps for periodic maintenance (No automizing screen).
- Better protection against salt and water ingress (IP5K6K, IP5K9K).
- Improved FMP for better cold start performance.

NOTE!

See page 8 for additinal design improvements.

2 PRODUCT INFORMATION

DESIGN IMPROVEMENTS

BLOWER MOTOR
- Electronically controlled 3-phase BLDC motor (Efficient motor control).
- Direct combustion air inlet duct (Protection against salt and water ingress).
- Lighter fan weight and lesser air gap (Increased performance and better combustion)
- Improved impeller geometry (quieter operation)
- Increased service life (No electrical harness and lesser contamination)

ECU
- Improved location (Protection against salt and water ingress).
- Faster communication, inhanced diagnostic functionality (CAN / LIN).
- Direct electical contact with motor (Less wireing).
- Smaller and lighter (in comparison to similar heaters).
- Enhanced program matrix for thermal management and fault detection.
- Improved motor control (quieter operation)

GLOW PIN
- Quick and easy installation (No special tool required)
- Larger heating element (Faster ignition).
- Increased life cycle (Increased number of activations).

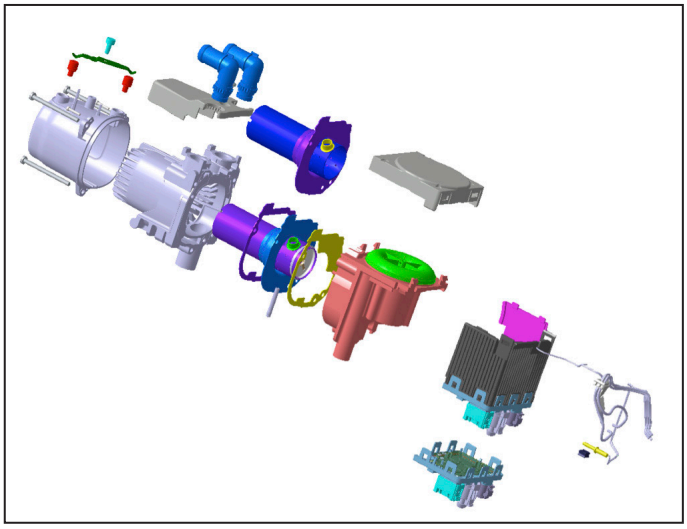
SENSORS
- Better thermal performance (reliable sensor value).
- Improved mounting location.
- Effective flame sensor reading in cold conditions.

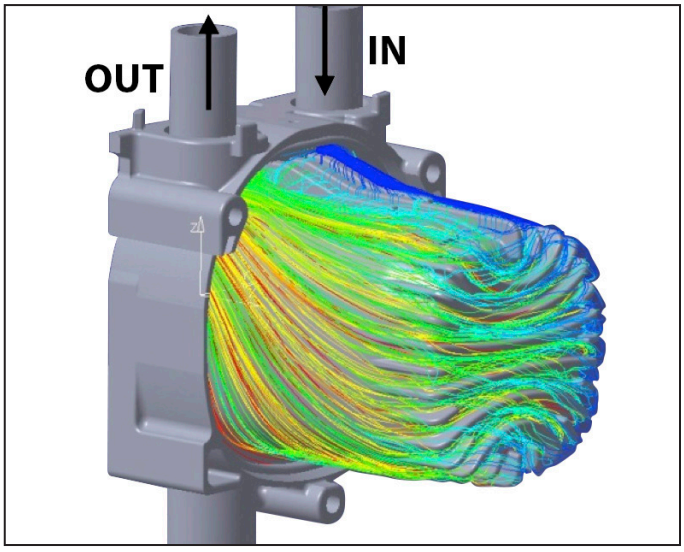
COMBUSTION CHAMBER
- Light weight, heat resistant material.
- Improved fuel automazing process (no glow pin screen).
- High thermal efficiency: 85%.

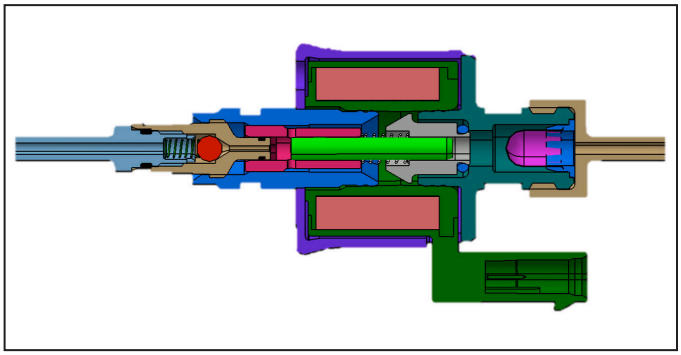
HEAT EXCHANGER
- Enhanced coolant flow pathway (Less restriction).
- Improved heat transfer rate (Larger surface area).
- Thermal uncopling of electronic components (ECU, Blower motor)

WATER PUMP
- Electronically controlled BLDC motor.
- Reduce power consumption.

FMP
- Reduced impact load from piston (Quieter operation).
- Enhanced electrical signals (increased efficiency and low power consumption).
- ❖Optimized structural design for cold start.







2 PRODUCT INFORMATION

TECHNICAL DATA - HYDRONIC 3						
Heater type			**Hydronic 3**			
Heater version			D 5 E		B 5 E	
Heating medium			Mixture of water and anti-freeze (Proportion of antifreeze at least 10 % up to 50 % maximum)			
Fuel			Diesel – standard commercially available (EN 590) Blending with max. 30% FAME according to EN 14214 is permitted.		Petrol – standard commercially available (DIN 51600 and EN 228)	
Rated voltage			12 volt			
Control of the heat flow			Maximum	Minimum	Maximum	Minimum
Heat flow (watt)			5000	1300	5000	1800
Fuel consumption (l/h)			0.59	0.15	0.67	0.23
Average electrical power consumption (watt)		during operation	32	5	32	7
without water pump, without vehicle fan relay		while starting		135		
Operating range Lower voltage limit: An undervoltage protection installed in the control box switches off the heater if the lower voltage limit is reached.			10.5 volt			
Upper voltage limit: An overvoltage protection installed in the control box switches off the heater if the upper voltage limit is reached.			16 volt			
Allowable operating pressure			up to 2.5 bar overpressure max.			
Water volume in the heater approx.			0.09 l			
Minimum water flow rate of the heater			300 l/h			
Allowable ambient temperature (Also note and follow the information for installation of the heater and metering pump!)	Heater	during operation	–40 °C to +80 °C		–40 °C to +60 °C	
		without operation	–40 °C to +105 °C, short-term		+125 °C (5 x 2h)	
	Metering pump	during / without operation	–40 °C to +50 °C		–40 °C to +20 °C	
		Storage	–40 °C to +105 °C			
		drawn-in combustion air	max. +45 °C, short-term +80 °C (15 minutes)		max. +25 °C, short-term +45 °C (15 minutes)	
Interference suppression class			5 (EN 55025)			
Weight – without coolant liquid and additional parts			2 kg			
Protection class to DIN 40050, Part 9		Heater (in operation	IP5K6K			
		Heater (not in operation)	IP5K9K			

TECHNICAL DATA, WATER PUMP	
Rated voltage	12 volt
Electrical power consumption	18 watt
Delivery rate	600 l/h
Delivery pressure difference	0.15 bar

ATTENTION

Operating the heater outside the specified technical data can cause malfunctions.

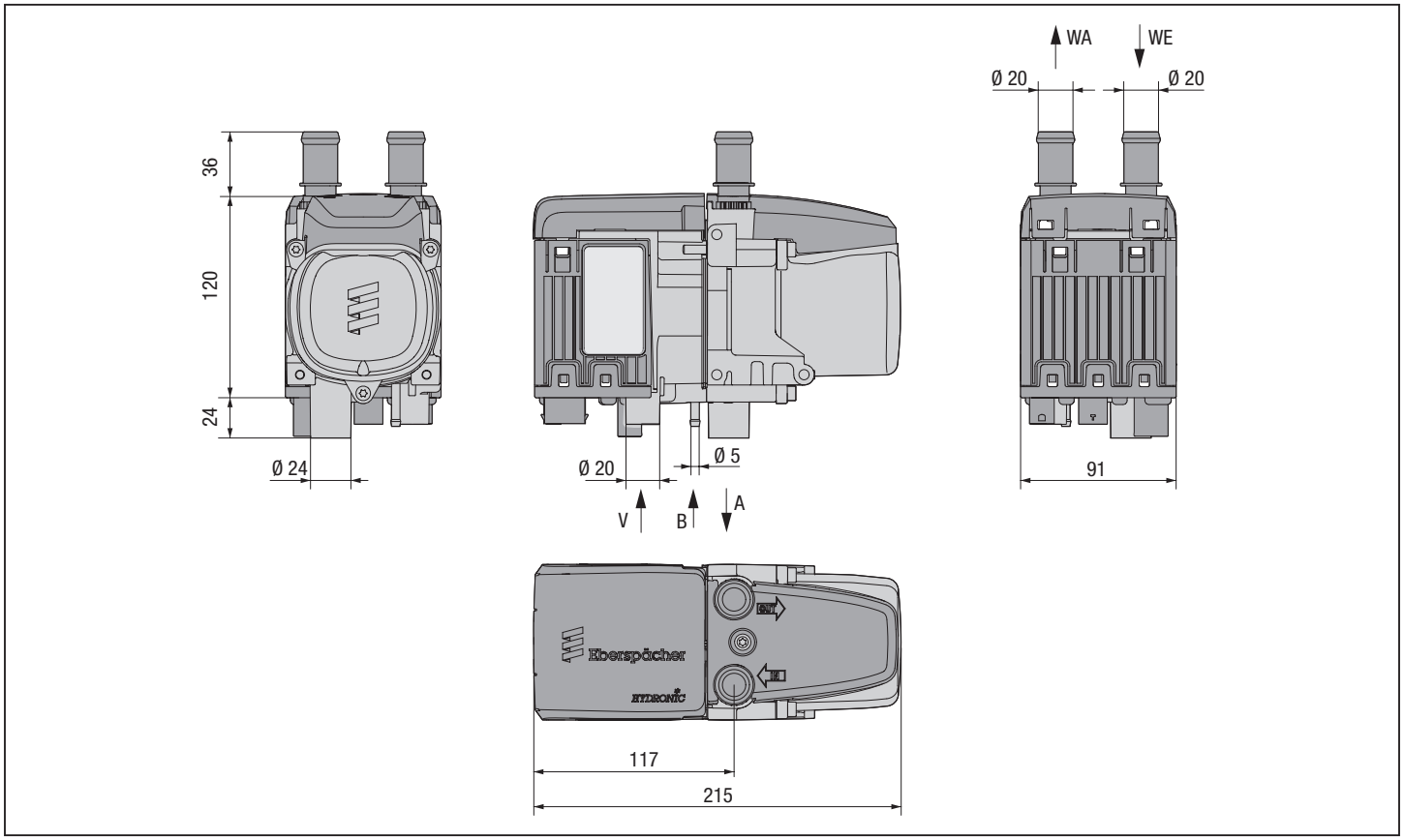
➔ The technical data must be complied with at all times.

NOTE

If no limit values are given, the technical data listed is with the usual heater tolerances of ± 10 % at nominal voltage and Esslingen reference altitude.

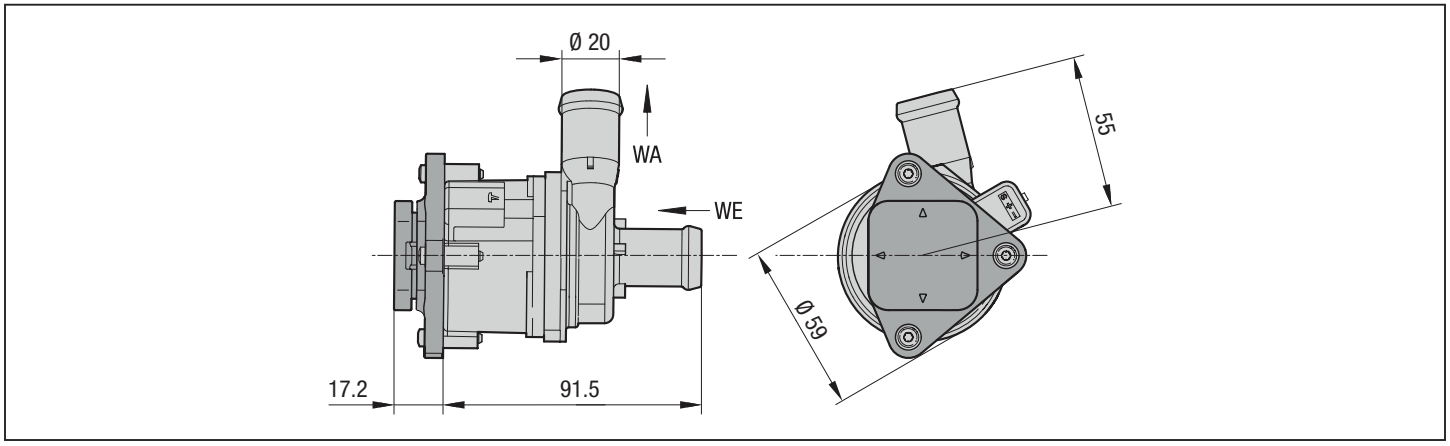
2 PRODUCT INFORMATION

MAIN HEATER DIMENSIONS



A Exhaust
B Fuel
V Combustion air
WA Water discharge

MAIN WATER PUMP DIMENSIONS



WA Water discharge
WE Water inlet

3 INSTALLATION PROCEDURE

HEATER LOCATION

The heater assembly should be securely placed in a protected area (eg: step box, engine or storage compartment). If the heater is located on the mounting rail, then guard the heater against excessive road spray to avoid internal corrosion.

Eberspaecher NA recommends the boxed version of hydronic 3 kit to ensure further protection against extreme weather conditions.

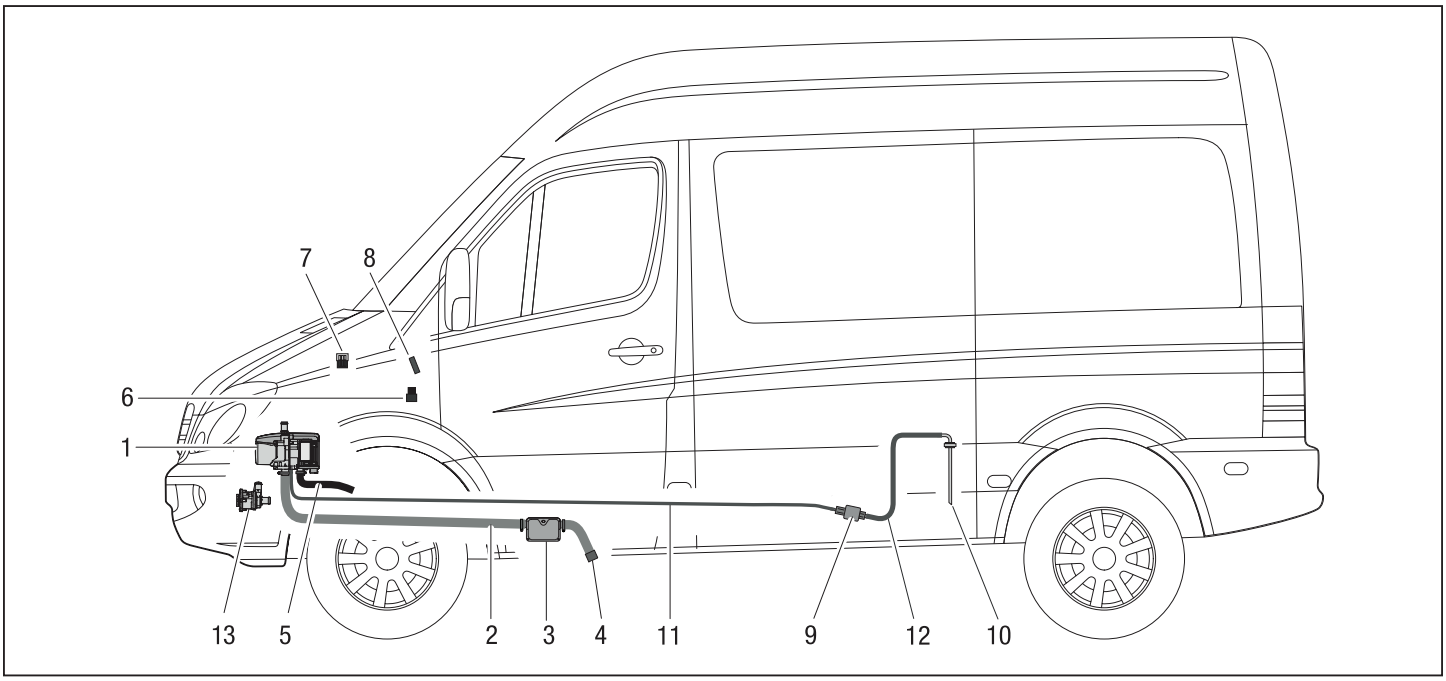
While mounting the heater adhere to the following conditions:
- Situate the heater below the normal coolant level of the engine.
- Guard against excessive road spray.
- Keep coolant hoses, fuel lines and electrical wiring as short as possible.
- Ensure minimum required coolant flow through the heater.

For proper installation of the heater system, the mounting location and angle of the heater, FMP and coolant pump should be according to the pictures provided on following pages.

⚠ **CAUTION!** Guard the heater against excessive road spray to avoid internal corrosion.

1 Heater
2 Exhaust pipe
3 Exhaust silencer
4 Exhaust pipe end
5 Combustion air hose
6 Fan relay
7 Fuse bracket
8 Control unit
9 Metering pump
10 Tank connection
11 Pressure line
12 Intake line
13 Water pump

⚠ **WARNING TO THE INSTALLER!**
- It is mandatory to use minimum required tools and protective equipment for the safety of installer as well as heating system. Please see page #5.
- Correct installation of this heater is necessary to ensure safe and proper operation.
- Read and understand this manual before attempting to install the heater. Failure to follow all these instructions could cause serious or fatal injury.
  - Disconnect the vehicle battery before starting any kind of work.
  - Before working on the heater, switch the engine off and let all hot parts cool down.
  - The heater must not be operated in closed areas, e.g. a garage or in a multi-storey parkade.
- All appropriate precautions must be taken when arranging the heater to minimize the risk of injuries to people or damage property.
- Parts related to the fuel system must not be located in the passenger compartment and at the exit doors of the vehicle. Fuel lines must not be routed on the top of any electrical lines or hot parts.
- Wrong installation could cause physical injury, fire and asphyxiation hazard as well as system failure.
- Installation and repairs by unauthorized and untrained persons, repairs using non-original spare parts and without the technical documents required for installation and repair are dangerous and therefore are not permitted.



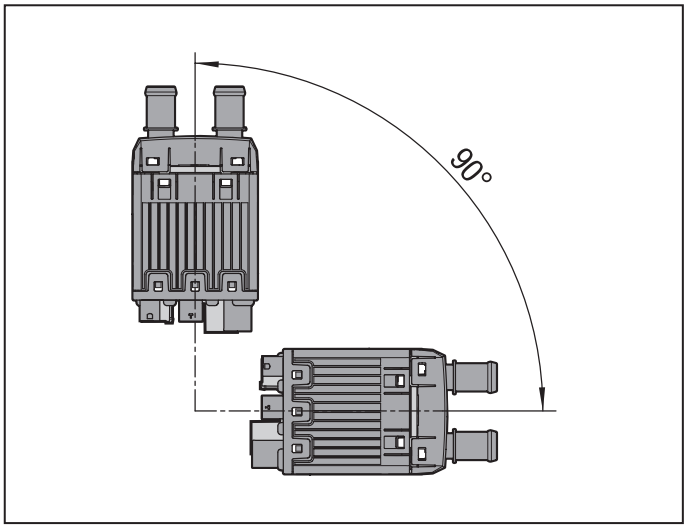
3 INSTALLATION PROCEDURE

NORMAL POSITION WITH PERMISSIBLE SWIVEL RANGES OF HYDRONIC 3 D5E HEATER

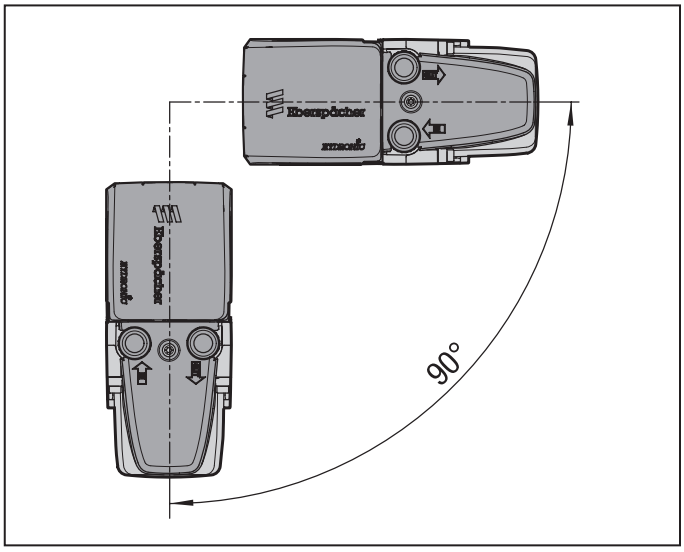
The heater should preferably be installed in the normal position.
Depending on the installation conditions, the heater can be installed with the allowable swivel ranges.

NOTE
In heating mode, the normal and maximum installation positions shown can differ by up to +15° in all directions for a short time.
These differences, caused by tilted positions of the vehicle, do not have any negative effects on the heater's function.

INSTALLATION POSITION – HEATER UPRIGHT / ON ITS SIDE
The upright installation position (normal position) with swivel range up to the horizontal (heater on its side) installation position is allowable. All installation positions between 0° and 90°are permitted.

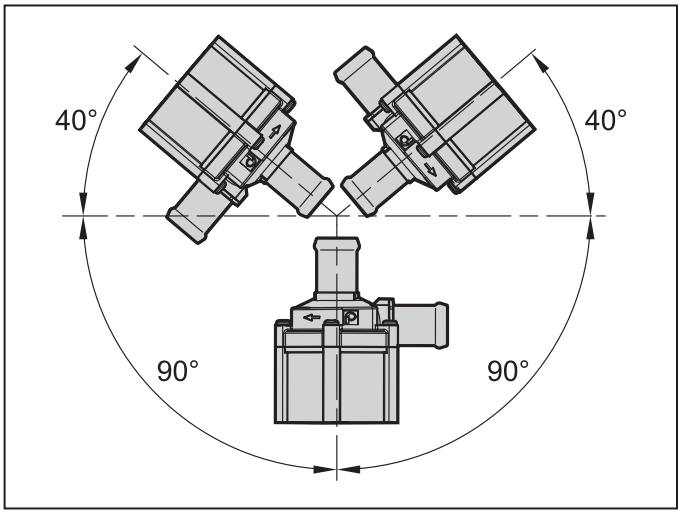


INSTALLATION POSITION – HEATER HORIZONTAL / VERTICAL
The horizontal installation position with swivel range up to the vertical installation position is allowed. All installation positions between 0° and 90° are permitted.



WATER PUMP INSTALLATION POSITION
Depending on the installation conditions, the water pump can be installed within the allowable swivel ranges, see sketch.
The water pump is not self-priming. The water inlet must therefore be arranged so that it is always completely filled with coolant liquid.

NOTE
The installation position of the water pump with the pump head facing downwards is not permissible for automatic venting.



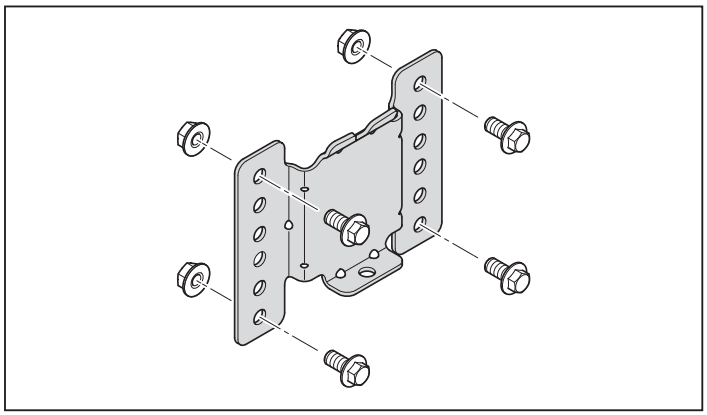
3 INSTALLATION PROCEDURE

FIXING THE HEATER

Use the bracket included in the installation kit (non-boxed version) to fix the heater in a suitable position on the vehicle.
The installation steps for the diesel and petrol heater are the same.

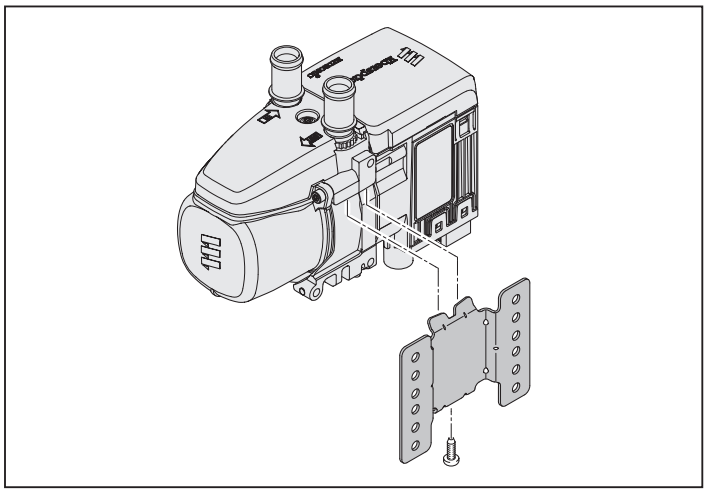
Installation steps

1. Use 4 hexagon screws M6 x 12 and 4 hexagon nuts M6 or 4 thread-forming screws to fix the bracket (tightening torque: 9+1 Nm).



NOTE
Preferably use the top and bottom fastening holes, see sketch. If using the other holes, ensure a minimum distance between the fastening screws.

2. Insert the heater in the bracket and fix onto the bracket with one screw M6 x 16, SW T30 (tightening torque: 10+1 Nm).



NOTE
A thread-forming screw is used to fix the heater onto the standard bracket. It is not necessary to pre-cut a thread. The thread is formed by the screw on screwing it into the tapping hole.

Installation instructions

- Position screw by hand and screw in.
  — Always keep to the given tightening torque.
- When screwing for the second time also position by hand and do not cut a new thread.
- The screw is suitable for max. 6 installation attempts.
- In case of repair (removal of heater) a metric screw (M6 x 16) can be used as an alternative.

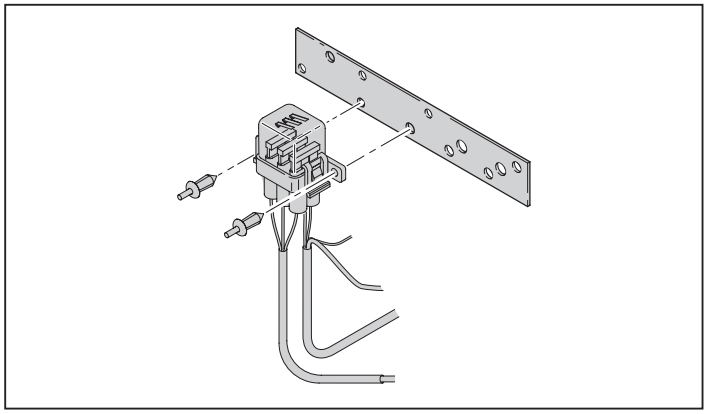
NOTE
If a vehicle-specific bracket is used, the three additional thread-forming screws enclosed must be used. Tightening torque: 10+1 Nm.

FIXING THE WATER PUMP

Use the water pump bracket included in the installation kit to fix the water pump in a suitable position on the vehicle. Then insert the water pump in the rubber element and press in until the water pump has latched into position.

FIXING THE FUSE HOLDER (OPTIONAL)

Use a hexagon screw size M6 x 12 and hexagon nut size M6 to fix the bracket in a suitable position within the vehicle's engine compartment. Fix the fuse holder to the bracket using 2 blind rivets 4 x 8; to do this, press in the bolts of the two split rivets until the fuse holder is installed securely on the bracket.



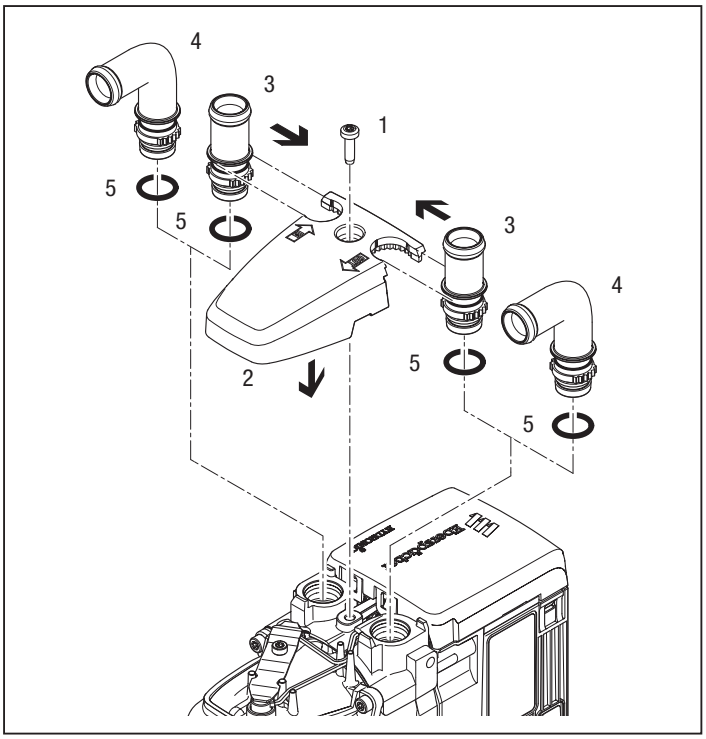
FIXING THE FAN RELAY BLOCK (OPTIONAL)

Use a cable tie or blind rivet to fix the fan relay block in a suitable, accessible position inside the vehicle, to do this, push in the bolt of the split rivet 5.5 x 12 until the relay block is securely installed.

3 INSTALLATION PROCEDURE

INSTALLING THE WATER CONNECTION SOCKETS

The heater scope of supply includes two straight water connection sockets and the installation kit includes two angled water sockets.
Depending on the installation conditions, the straight water connection sockets (3) and the angled water connection sockets (4) can be installed with the sensor cover.



1 Screw M5 x 18
2 Sensor cover
3 Connection socket, straight
4 Connection socket, angled
5 O-ring

Installation steps

- Insert O-ring (5) in the groove of the connection socket.
- Insert connection sockets (3 or 4) in the recesses of the sensor cover (2).

The collar at the connection socket is above the cover.

- Position and fix the connection sockets with the teething in the sensor cover.
- Position the sensor cover on the heater with the connection socket first.
- Push the connection socket completely into the connection holes in the heat exchanger.
- Adjust the direction for the angled connection sockets:
  – Lift the sensor cover up to the collar of the connection sockets
  – Turn connection socket in the required direction
  – Push sensor cover downwards and readjust the connection socket position until the teething intermesh once again
- Use screw M5 x 18 to fix the sensor cover (tightening torque 6.5+0, 5 Nm).

NOTE

A thread-forming screw is used to fix the sensor cover. It is not necessary to pre-cut a thread. The thread is formed by the screw on screwing it into the tapping hole.

Installation instructions

- Position screw by hand and screw in.
  — Always keep to the given tightening torque.
- When screwing for the second time also position by hand and do not cut a new thread.

NOTE

The screw is suitable for max. 6 installation attempts.

- In case of repair (removal of heater) a metric screw (M5 x 18) can be used as an alternative.

CONNECTION TO THE COOLANT LIQUID CIRCUIT

DANGER!

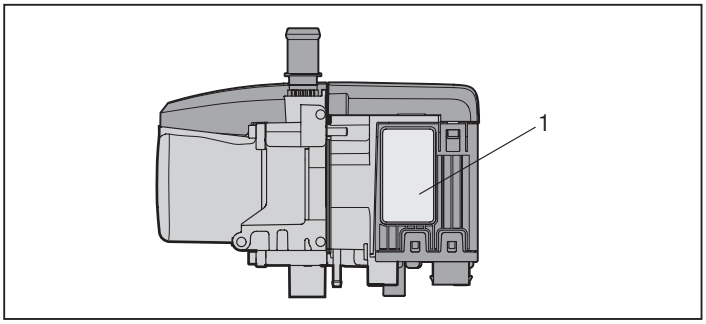
Risk of injury, scalding and burns
The high temperatures of the coolant liquid and the coolant liquid circuit components can cause injuries, scalds and burns.

➔ Before working on the coolant liquid circuit, wait until all components have cooled, wear safety gloves if necessary.
➔ Lay and fix parts carrying coolant liquid in such a way that they pose no temperature risk to man, animals or material sensitive to temperature due to radiation / direct contact.

The heater is integrated in the coolant liquid circuit in the water flow hose from the vehicle engine to the heat exchanger. There are various installation options for this. These are described from page 17.

NAMEPLATE

The nameplate (1) is fastened to the side of the heater.
The 2nd nameplate (duplicate) is enclosed with the heater and must be glued onto a readily visible place in the vehicle.



1 Nameplate

3 INSTALLATION PROCEDURE

ENGINE AND HEATER PLUMBING

The heater is incorporated in to the engine's existing coolant system using recommended steps provided in this section of the manual.
Before installation, please review the notes and warnings, list of tools and PPEs, as well as installation procedures.

NOTE

That the heater installations without engine connections in coolant circuit require an additional use of the expansion tank.

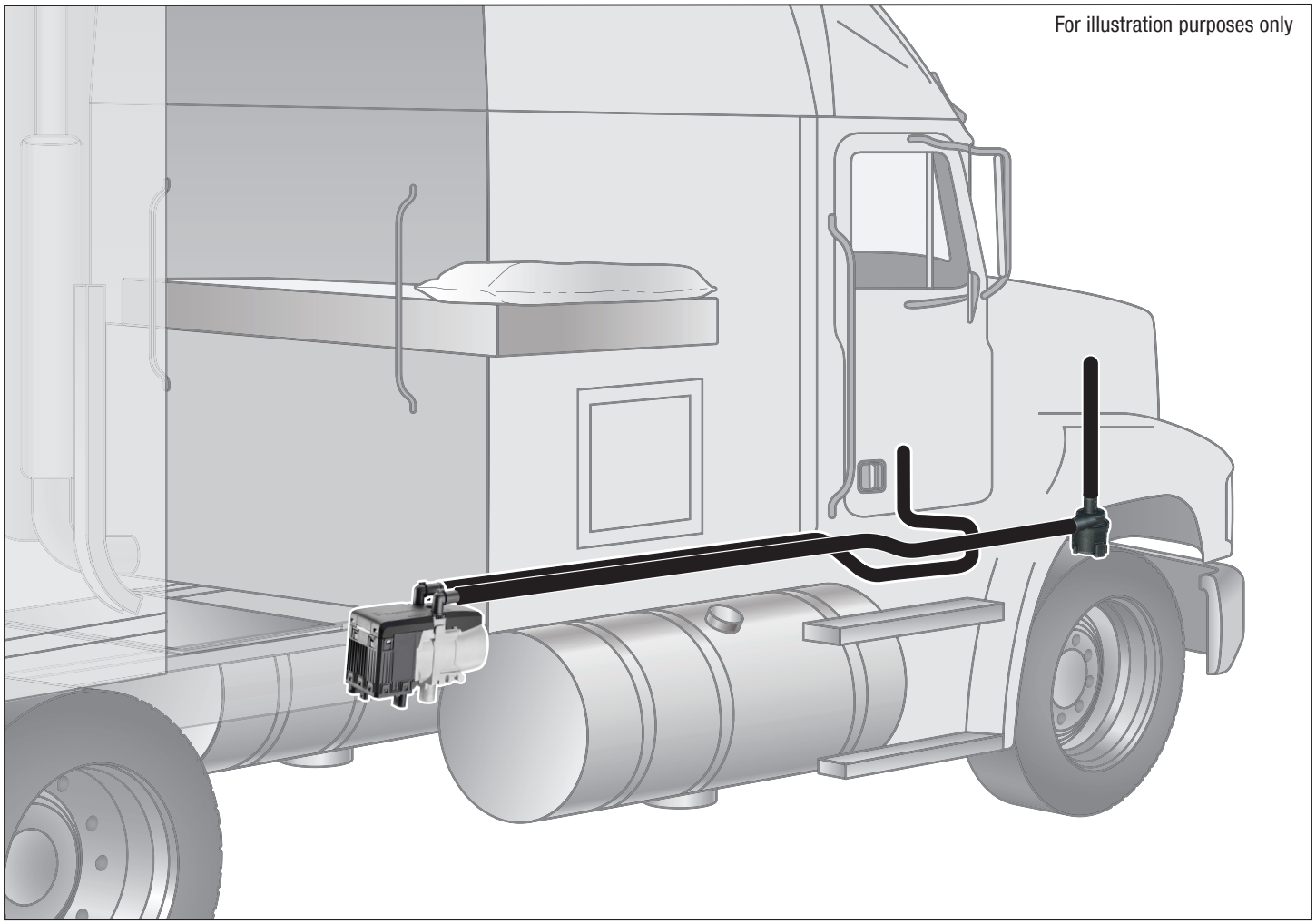
DANGER! - RISK OF INJURIES AND BURNS

- It is possible for coolant and components in its circuit to get very hot; therefore, use proper tools and protective equipment as provided on page 4, before carry out any installation of the heating systems.
- Parts conveying water must be routed and fastened in such a way that they pose no temperature risk to man, animals or material sensitive to temperature from radiation / direct contact.
- Before working on the coolant circuit, switch the engine off and wait until all components have cooled down completely, if necessary where safety gloves.

NOTE

- Route the water hoses without any kinks, and in a rising position if possible.

- When routing the water pipes, observe a sufficient clearance to hot vehicle parts.
- Protect all water hoses / water pipes from chafing and from extreme temperatures.
- Secure all hose connections with hose clips (tightening torque = 3+0.5 Nm).
- After the vehicle has been operating for 2 hours or travelled 100 km, tighten the hose clips again.
- Only overpressure valves with an opening pressure of min. 0.4 – max. 2 bar may be used in the coolant circuit.
- The cooling water must contain at least 20 % antifreeze all year round as corrosion protection.
- Please refer manufacturer's manual for the recommended coolant type and mixing amount. To minimize the corrosion, use Glysantin based coolant.
- Fill the heater and water hose with anti-freeze before connecting to the cooling water circuit.
- During cold periods the cooling water must contain sufficient antifreeze.
- Only top up with antifreeze approved by the vehicle manufacturer.



For illustration purposes only

3 INSTALLATION PROCEDURE

ENGINE PLUMBING - PROCEDURE

Follow these guidelines and refer to various engine pluming diagram shown.

1 Locate and use the existing holes in the engine block or remove blanking plugs if possible for coolant access. Install fittings into the block for pick up and returns.

2 Provide 3/4" hose barbs to connect 3/4" hose for adequate coolant flow.

3 For proper heat transfer inside the engine between coolant and the engine block, keep the pick up and return points as far apart as possible.

4 If possible, use 5/8" ball shut off valves at pick up and return lines for system isolation from the engine when not in use or under maintenance.

5 Ensure the proper direction of the coolant flow in the circuit protect heating system from overheating and leaking i.e pick up from back of the block and return to the suction side at the front. (the flow direction should never be against the vehicle coolant pump.)

6 The minimum coolant flow rate must be kept within prescribed limits available in the heater technical data to keep the heater from overheating. It is recommended to use EasyScan for post installation run up to access the data.

7 Heater and coolant pump are installed as low as possible to allow the natural purging of air (both as well as any of the coolant lines should never be installed higher than the maximum water line inside the expansion tank.)

8 Before commissioning the heater/or after replenishing the coolant, always bleed the air out of the heating circuit via radiator or expansion tank. (Ensure vehicle manufacturer's guidelines for bleeding the coolant lines are followed).

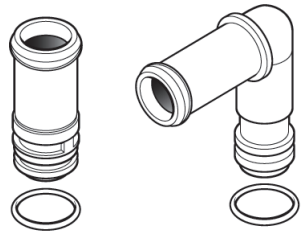
9 Carry out through inspection of heating system and record operating data from EasyScan if necessary.

10 For further installation suggestions, please contact Eberspacher North America.

NOTE

- Before working on the coolant circuit, switch the heater off and wait until all components have cooled down completely.
- Parts conveying water must be routed and fastened in such a way that they pose no temperature risk to anyone.
- Route the water hoses without any kinks and observe sufficient clearance to movable and hot vehicle parts.

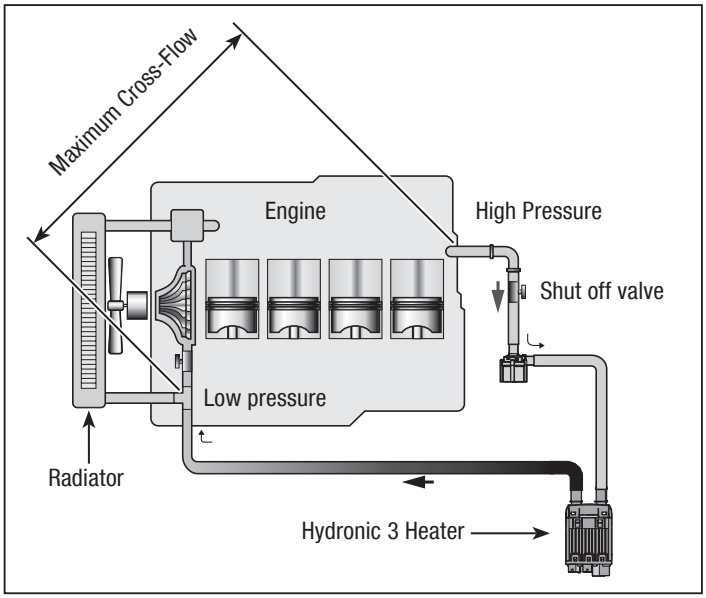
The coolant pump is the heart of the system and must be installed properly to ensure successful heater operation.



Optional Outlets available
See Product Catalogue

NOTE

- The heater should be located below the water line or engine to prevent air bubble in the circuit. Also, the inlet and outlet connections to the engine should be as far apart as possible to maximize cross flow through the engine. To reduce the heat loss through the radiator, the return line must be connected directly to the engine coolant port as shown in the figure below. Shut off valves are not required at the engine inlet and outlet connections but can be used if required. They must be left open while heater is in operation.



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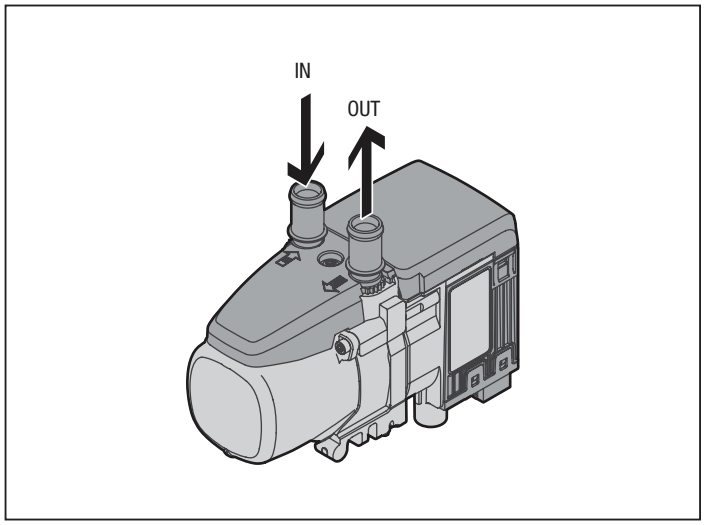


NOTE

The coolant must contain a minimum of 20% antifreeze at all times as a protection against corrosion. Fresh water will corrode internal heater parts.

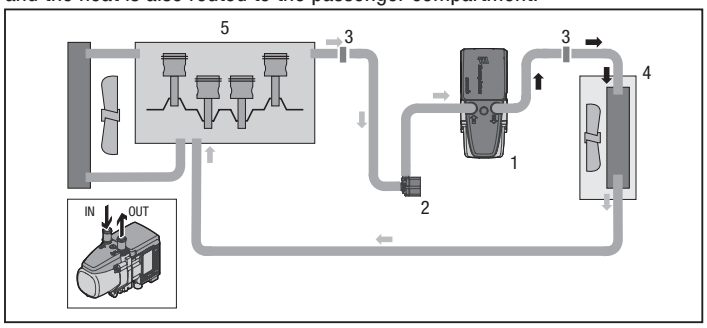
3 INSTALLATION PROCEDURE

HEATER PLUMBING

TYPES OF HEATER CONNECTION TO THE COOLING WATER CIRCUIT
As discussed earlier, the heater is integrated in to existing coolant circuit of the vehicle between engine and heat exchanger. However, the orientation of coolant layout through the heater and vehicle systems define the characteristics of the heating circuit.
There are four possible alternative installations available which can be selected based on the heating application and priority i.e cab heat, engine heat or both. The alternatives are described on pages 17 - 18.

COOLANT LIQUID CIRCUIT "INLINE INTEGRATION"
Cut the water flow hose from the vehicle engine to the vehicle's heat exchanger. Use connectors and water hoses to connect the heater and the water pump to the water flow hose.
Lay a water hose from the discharge end of the water pump to the water inlet socket of the heater and connect.

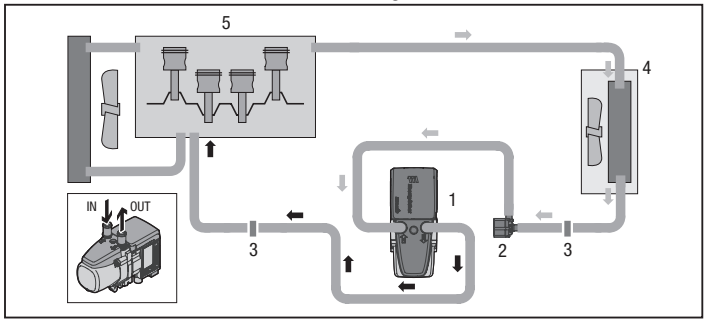
Heating characteristics
If the heater is switched on, the heat is initially fed via the heater's own heat exchanger to the vehicle's engine only.
If the coolant liquid temperature reaches approx. 30 °C, the vehicle fan starts and the heat is also routed to the passenger compartment.



1 Heater
2 Water pump
3 Connector
4 Heat exchanger
5 Vehicle engine

COOLANT LIQUID CIRCUIT "INLINE – ENGINE PRE-HEATING ONLY"
Disconnect the water return hose from the heat exchanger to the vehicle engine. Use connectors and water hoses to connect the heater and the water pump.

Heating characteristics
For engine pre-heating only, set the temperature controller to "cold" and switch off the fan. There is thus no heat discharge into the interior of the vehicle.

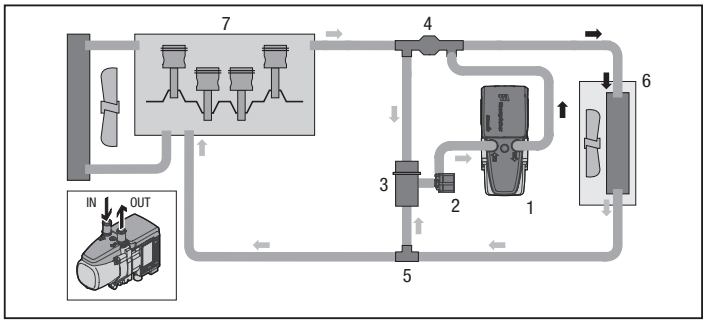


1 Heater
2 Water pump
3 Connector
4 Heat exchanger
5 Vehicle engine

COOLING LIQUID CIRCUIT WITH NON-RETURN VALVE AND THERMOSTAT
Cut the water flow hose from the vehicle engine to the vehicle's heat exchanger and insert the non-return valve.
Cut the water return hose from the vehicle's heat exchanger to the vehicle engine and insert the T-piece.
Use water hoses to connect the heater and water pump to the thermostat, the non-return valve and T-piece – as shown in the sketch.

Heating characteristics – small cooling water circuit
Initially, up to a cooling water temperature of approx. 70 °C, the heater's heat is fed to the vehicle's heat exchanger only – fast heating of the inside of the vehicle.

Heating characteristics – large cooling water circuit
If the cooling water temperature continues to rise, the thermostat slowly switches over to the large circuit (full switchover is reached at approx. 75 °C) – heating of the inside of the vehicle and additional engine pre-heating.



1 Heater
2 Water pump
3 Thermostat
4 Non-return valve
5 T-piece
6 Heat exchanger
7 Vehicle engine

NOTE
The thermostat, non-return valve and T-piece must be ordered separately, please refer to the "Product information" document for the Order No.

THERMOSTAT FUNCTION
At a coolant liquid water temperature < 70 °C – small cooling water circuit:

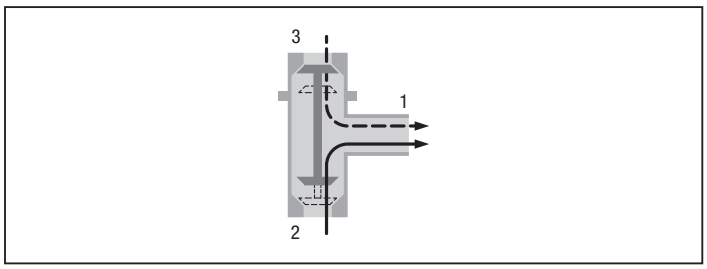
Socket 1 – open (to the heater)
Socket 2 – open (to the T-piece)
Socket 3 – closed (to the non-return valve)

At a coolant liquid temperature > 75 °C – large cooling water circuit:

Socket 1 – open (to the heater)
Socket 2 – closed (to the T-piece)
Socket 3 – open (to the non-return valve)

NOTE
Use the connections Item (1), (2) and (3) – as shown in the sketch – to integrate the thermostat in the coolant liquid circuit.

3 INSTALLATION PROCEDURE



1 Connection socket to the heater
2 Connection socket to the T-piece
3 Connection socket to the non-return valve

COOLANT LIQUID CIRCUIT WITH COMBINATION VALVE

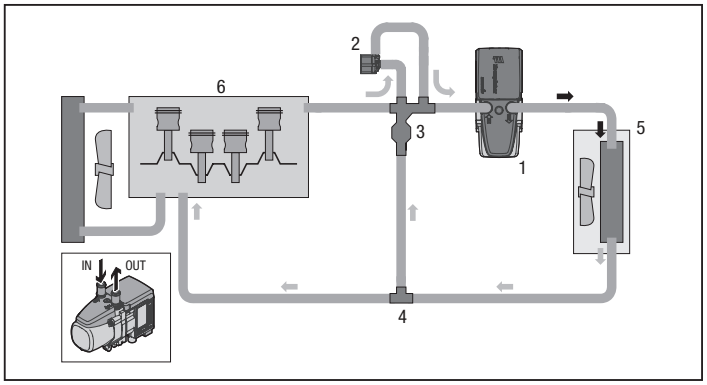
Using the combination valve with 5 connections
If the water flow line and water return line from the vehicle engine to the vehicle's heat exchanger are laid separately in the engine compartment, the combination valve with 5 connections and an additional T-piece must be used.

Using the combination valve with 6 connections
If the water flow line and water return line from the vehicle engine to the vehicle's heat exchanger are laid in parallel in the engine compartment, the combination valve with 6 connections (without T-piece) must be used.

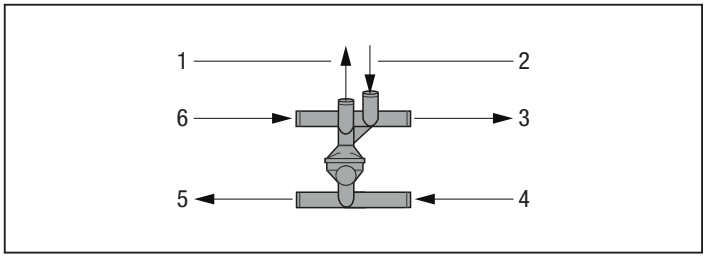
Heating characteristic in pre-heater mode – small cooling water circuit
Initially, up to a cooling water temperature of approx. 67 °C, the heater's heat is fed to the vehicle's heat exchanger only – fast heating of the inside of the vehicle.
From a cooling water temperature of approx 67 °C, part of the heater's heat is also passed to the vehicle's engine. This causes additional engine pre-heating, without rapid cooling of the "small cooling water circuit" for interior heating.

Heating characteristic in auxiliary heater mode – large cooling water circuit
While the vehicle's engine is running the heat is distributed between the vehicle's heat exchanger and the vehicle engine – further shortening of the heating up phase and heating of the inside of the vehicle.

Install combination valve with 5 connections
Cut the water flow hose from the vehicle engine to the vehicle's heat exchanger and insert the combination valve.
Cut the water return hose from the vehicle's heat exchanger to the vehicle engine and insert the T-piece.
Use water hoses to connect the heater and water pump to the combination valve and T-piece – as shown in the sketch.



Install combination valve with 6 connections
Cut the water flow hose and the water return hose from the vehicle engine to the vehicle's heat exchanger and insert the combination valve.
Use water hoses to connect the heater and water pump to the combination valve – as shown in the sketch.

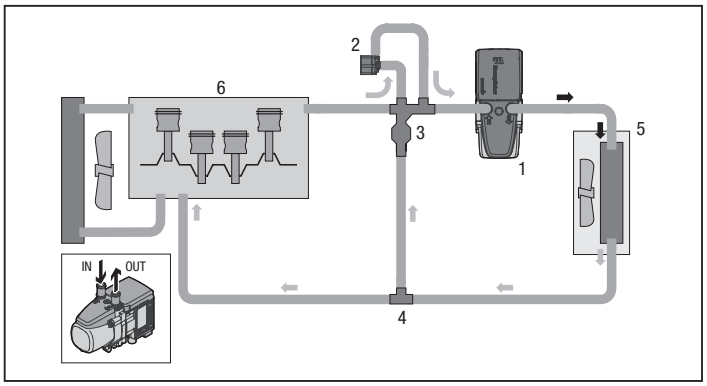


1 To the water pump
2 From the water pump
3 To the heater
4 From the vehicle's heat exchanger
5 To the vehicle engine
6 From the vehicle engine

COOLANT LIQUID WITH 2 NON-RETURN VALVES

Preheat the vehicle interior only (vehicle engine uncoupled)
Cut the water flow hose and the water return hose from the vehicle engine to the vehicle's heat exchanger and insert one non-return valve in each.
Insert the heater between the non-return valve and the vehicle's heat exchanger in the water flow hose.
Use water hoses to connect the water pump to the non-return valves.

Heating characteristics
If the heater is switched on, the heat is only fed to the vehicle's own heat exchanger. If the coolant liquid temperature reaches approx.
30 °C, the vehicle fan starts and the heat is routed to the passenger compartment.



1 Heater
2 Water pump
3 T-piece with non-return valve
4 Vehicle heat exchanger
5 Vehicle engine

3 INSTALLATION PROCEDURE

EXHAUST SYSTEM

DANGER!

Risk of injuries and burns!

Every type of combustion produces high temperatures and toxic exhaust fumes. This is why the exhaust system must always be routed as described in these installation instructions.

- ➔ Do not perform any work on the exhaust system while the heater is working.
- ➔ Before working on the exhaust system, switch off the heater first and wait until all the parts have completely cooled down, wear safety gloves if necessary.
- ➔ Do not inhale exhaust fumes.

ATTENTION!

The whole exhaust system gets very hot while the heater is running and immediately afterwards. This is why the exhaust system must always be routed as described in these installation instructions.

- ➔ The exhaust pipe must end in the open air.
- ➔ The exhaust pipe may not protrude beyond the lateral limits of the vehicle.
- ➔ Lay the exhaust pipe sloping slightly downwards. If necessary, make a drain hole with approx. Ø 5 mm at the lowest point as a condensation outlet.
- ➔ Important functional parts of the vehicle may not be impaired (maintain sufficient clearance).
- ➔ Mount the exhaust pipe with sufficient clearance to heat-sensitive parts. Pay particular attention to fuel lines (made of plastic or metal), electrical cables and brake hoses, etc.!
- ➔ Exhaust pipes must be safely fixed (recommended clearance of approx. 50 cm) to avoid damage from vibrations.
- ➔ Lay the exhaust system so that the outflowing exhaust gases are not drawn in as combustion air.
- ➔ The mouth of the exhaust pipe must not become clogged with dirt and snow.
- ➔ The mouth of the exhaust pipe must not point in the ram air or slip stream (Ensure the openings of intake and exhaust pipe are pointing downwards to reduce interference from ram air or slip stream).
- ➔ Always fix the exhaust silencer to the vehicle to minimize the exhaust noise.
- ➔ Lay the exhaust system so that the exhaust fumes do not flow directly onto heat-sensitive components.

WARNING!

- Never point the outlet of the exhaust pipe towards fuel tank or flammable material.
- Exhaust pipe can be extremely hot; therefore, handle it with care during inspection or disassembly.
- Ensure the exhaust is not drawn into the cab. Relocate the exhaust pipe if necessary.
- Improper intake or exhaust pipe installation may lead to extreme accumulation of carbon in the combustion chamber.
- Never integrate the heater exhaust in to vehicle exhaust pipe.

NOTE

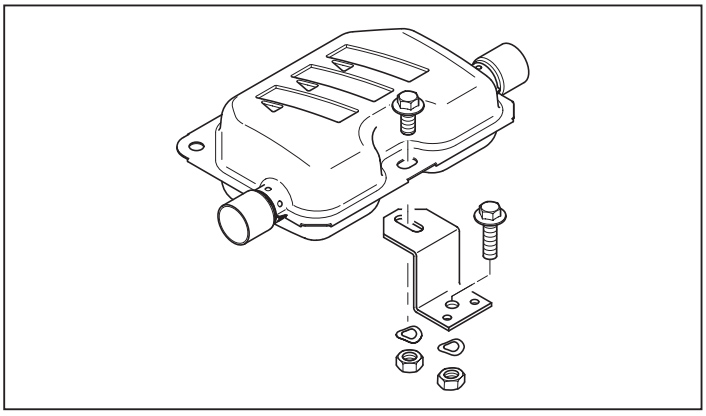
- The exhaust pipe end should be much shorter than the flexible exhaust pipe from the heater to the exhaust silencer.
- To avoid contact corrosion, the clips for fixing the exhaust pipe must be made of stainless steel. For the Order No. of the fixing clips, please refer to the “Product Information” document.

The hydronic 3 requires a stainless steel type flexible exhaust pipe (ID: 24 mm, length: 200 to 760 mm) as shown in image on page 20).

INSTALLING THE EXHAUST SYSTEM

Use a bracket to fix the exhaust silencer in a suitable place on the vehicle (see sketch).

Lay the flexible exhaust pipe from the heater to the exhaust silencer and fasten with pipe clips (tightening torque $6+^{0.5}$ Nm), adjust the length if necessary.
If necessary, shorten the exhaust pipe end with end sleeve, push onto the exhaust silencer and fix with a pipe clip (tightening torque $6+^{0.5}$ Nm).
If necessary, use pipe clips to fasten the flexible exhaust pipe and the exhaust pipe end in suitable positions in the vehicle (recommended guide value at approx. 50 cm spacings).
If necessary attach spacer rings on the flexible exhaust pipe and onto the exhaust pipe end, to ensure a safe distance from heat-sensitive parts of the vehicle. If applicable, use additional exhaust pipe insulation (see product information).



3 INSTALLATION PROCEDURE

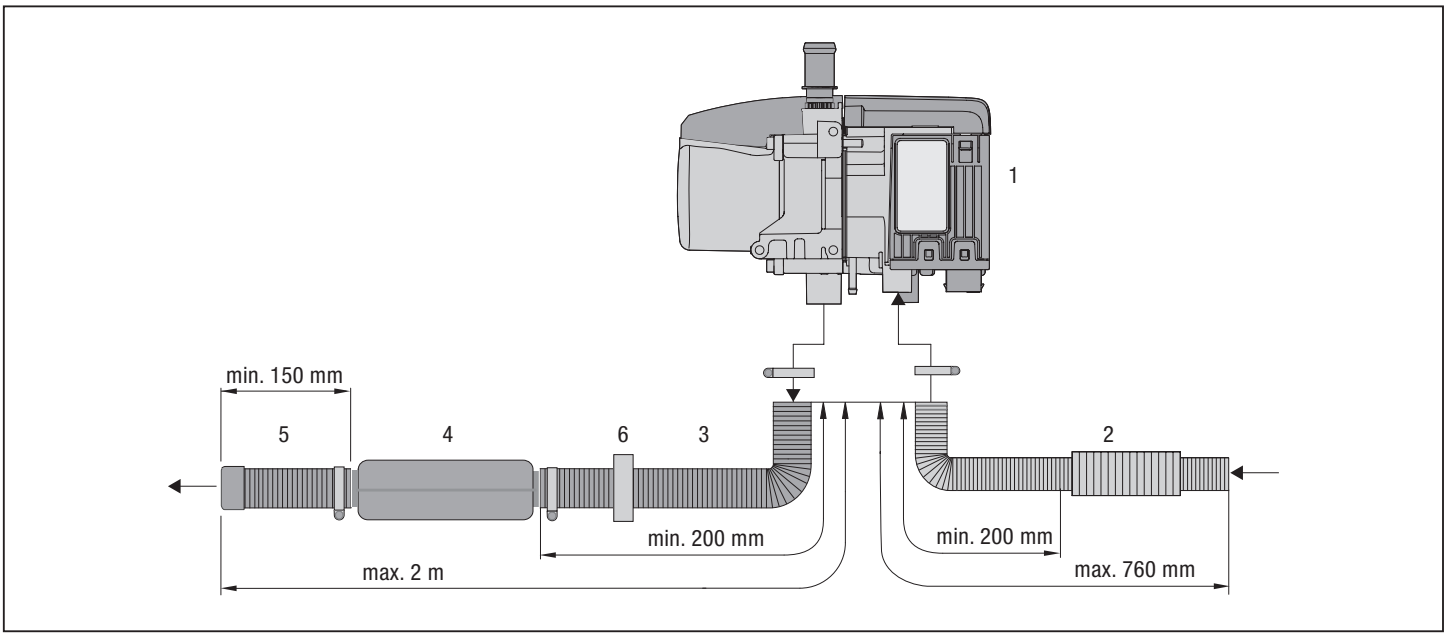
COMBUSTION AIR INTAKE SYSTEM

⚠ ATTENTION!
Safety instructions for the combustion air system

- ➔ The combustion air opening must remain free at all times.
- ➔ Lay the combustion air intake to ensure that exhaust fumes cannot be drawn in as combustion air.
- ➔ Do not direct the combustion air intake against the vehicle's airstream.
- ➔ The combustion air intake must not become clogged with dirt and snow.
- ➔ Install the combustion air intake system sloping slightly downwards. If necessary, make a drain hole approx. Ø 5 mm at the lowest point to drain off condensation.
- ➔ If necessary, use fastening clips or cable ties to fix the flexible combustion air hose to the vehicle in suitable places.

INSTALLING THE COMBUSTION AIR INTAKE SYSTEM

The hydronic 3 requires a flexible pipe for combustion air intake (ID: 20 mm, length: 200 mm to 2 m). It is recommended to include air intake silencer to improve combustion performance.
Push the flexible pipe from the combustion air intake silencer onto the combustion air connection socket of the heater and fix with a hose clip (tightening torque $3+^{0.5}$ Nm).
Lay the combustion air intake silencer so that the combustion air is removed from an area, which fulfils the named conditions.
If necessary, the flexible pipe from the combustion air intake silencer can be shortened according to the installation conditions.
When shortening the flexible pipe, ensure the cutting edge is clean, small cut-off pieces could block the combustion air fan.



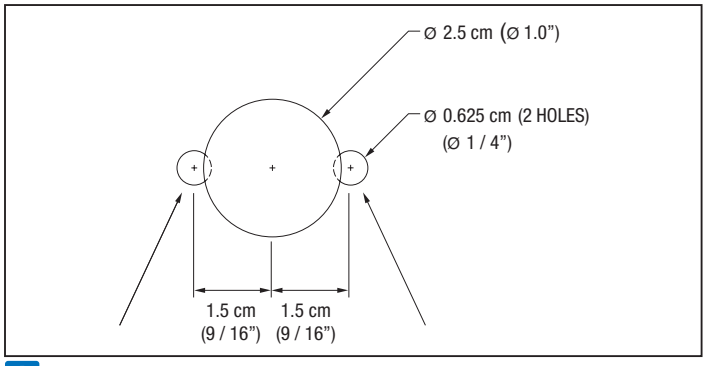
1 Heater
2 Combustion air intake silencer
3 Flexible exhaust pipe
4 Exhaust silencer
5 Exhaust pipe end with end sleeve
6 Spacer ring

3 INSTALLATION PROCEDURE

FUEL PICK UP PIPE INSTALLATION

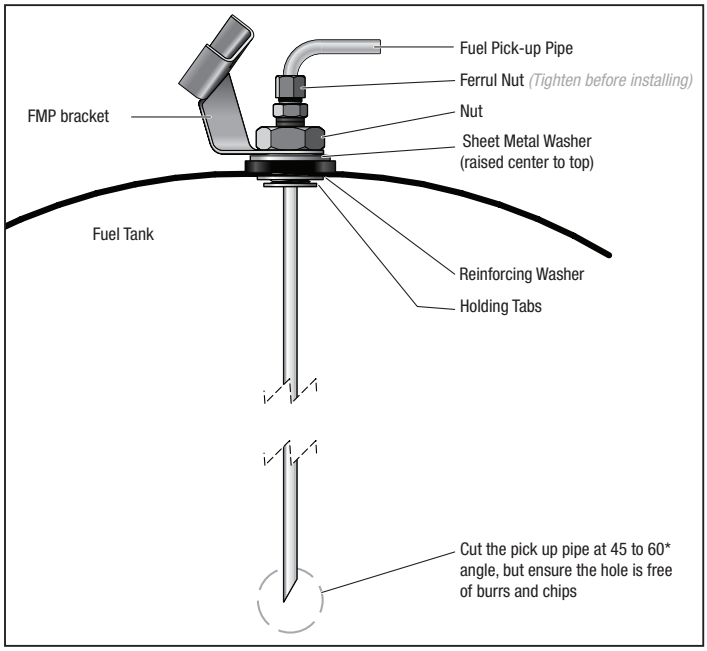
CUSTOM PICK-UP PIPE WITH 1/4" NTP FITTING - OPTION

- Choose a protected mounting location close to the pump and heater. A spare fuel sender gauge plate provides an ideal mounting location. If one is not available...
- Drill mounting holes in tank to accommodate pick-up pipe as shown.
- Tighten Ferrule nut to pick-up pipe at desired height.
- Cut the fuel pick-up pipe to length. Allow 2-2.5" from bottom of tank.
- Mount the fuel pick-up pipe as shown.
- Lower the fuel pick-up pipe (with reinforcing washer) into the tank using the slot created by the two 0.6cm (1/4") holes.
- Lift the assembly into position through the 2.5cm (1") hole.
- Assemble the rubber washer, metal cup washer and nut.



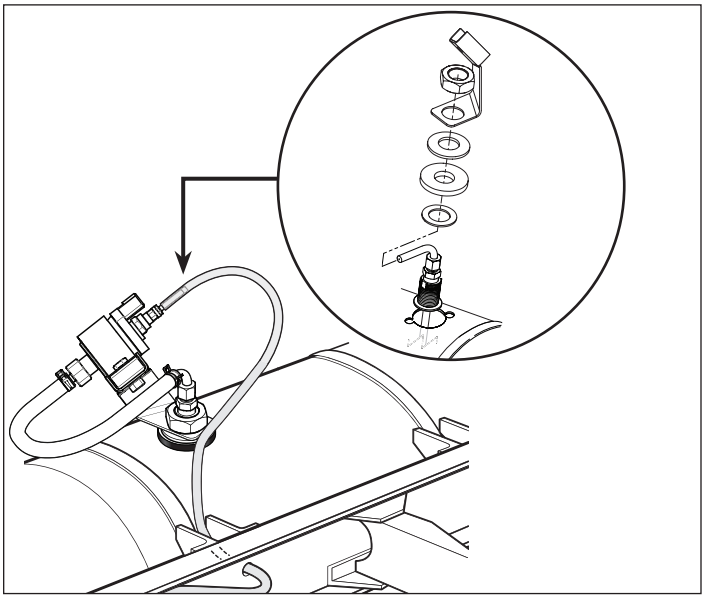
NOTE

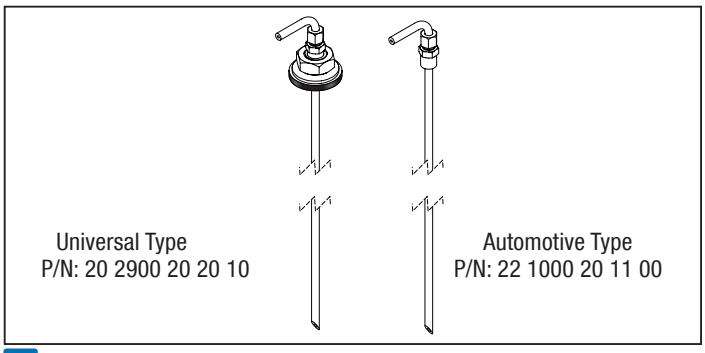
Drill the two (1/4") holes first.



NOTE

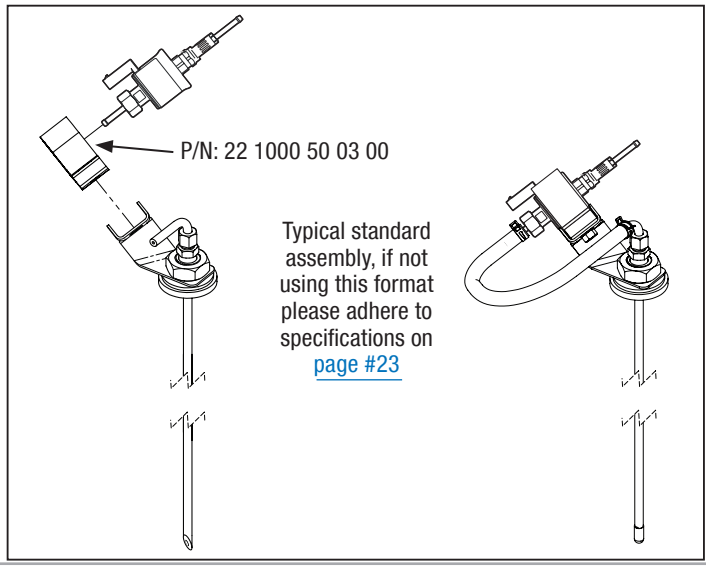
- Allow 4" from Fuel Pick-up to tank bottom. Allow only 1" for flat bottom tanks.
- Always install the fuel pick up pipe on the top of the tank.
- It is recommended to keep the heater's pick up pipe atleast 25 mm shorter than vehicle stand pipe to access clear fuel.





NOTE

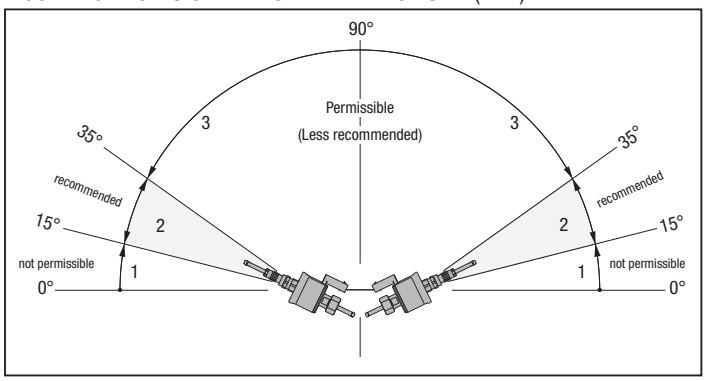
- Some pick-up pipes can be installed by either drill or NPT.
- NPT fittings are available in various sizes (Refer to Eberspaecher's North America Product Catalogue).



3 INSTALLATION PROCEDURE

FUEL SYSTEM INSTALLATION

MOUNTING ANGLES OF THE FUEL METERING PUMP (FMP)



NOTE

Improper mounting angle of the heater and FMP could cause unexpected heater faults and component failures; Also, increases the chance of fuel leakage, heater stoppage, or frequent accumulation of carbon in the combustion chamber.

FMP AND PICK UP PIPE MOUNTING HARDWARE

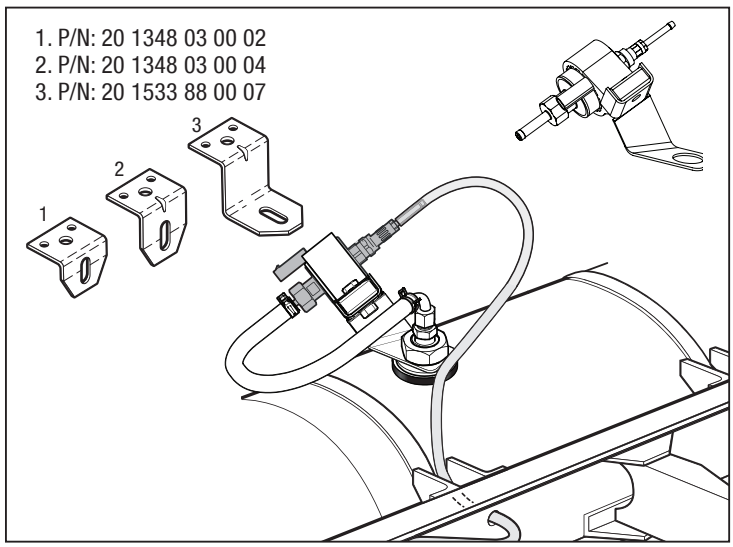
The mounting location of the FMP should be nearer to the fuel pick up pipe. The FMP must be mounted using appropriate mounting bracket and fasteners. To minimize the vibrational noise, it is recommended to use a rubber grommet for FMP.

NOTE

Proper mounting angle of the fuel pump is necessary to allow any air or vapor in the fuel lines to pass through the pump rather than cause a blockage.

FMP MOUNTING BRACKET

These FMP mounting brackets are used for the pump installation on the locations far from the tank i.e frame rail, vehicle bracket. Please consult the dealer for additional information.

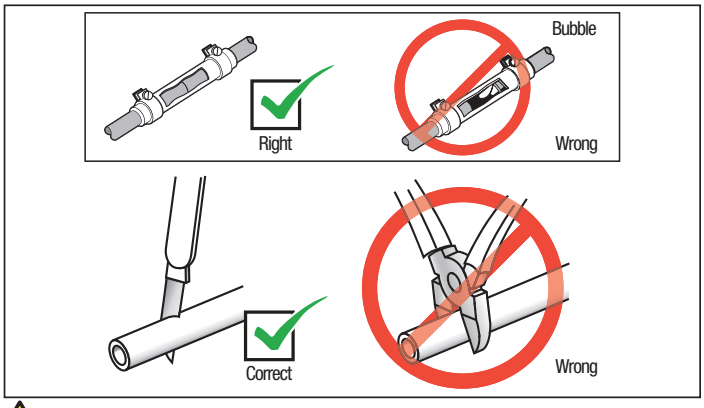


FUEL LINE

- Route fuel lines from the fuel pick-up pipe to the heater.
- Use only fuel lines provided.
- Other sizes or types of fuel lines may inhibit proper fuel flow.
- Make proper butt joints using clamps and connector pieces as shown.
- Use a sharp utility knife to cut plastic fuel lines to avoid fuel line pinching.

NOTE

Apply butt joint on the fuel lines connections using an appropriate fuel adapter/hose and clamps.



WARNING!

- Switch off the vehicle engine before carry out refueling or maintenance work.
- Avoid fuel line installation inside the compartments and underneath of the exit doors.
- Never keep any ignitable material or appliance nearby while working with fuel system.
- It is required to make sure the parts carrying fuel must be protected from any possible heat source in vehicle. Also, dripping or evaporating fuel must never be allowed to collect on the hot parts.
- Do not inhale fuel vapours and avoid any contact with the skin.

CAUTION!

- Always have appropriate PPE and minimum required tools while installing fuel system.
- Only use sharp knife to cut off fuel hoses and lines, also ensure the interface must not be crushed, also free of burrs.
- Fuel lines must be fastened safely to avoid any damage and/or noise production from vibrations. It is recommended to apply fasteners at every 50 cm. approximately.
- Never fasten or route the fuel lines to the heater or vehicle exhaust system
- Lay out fuel lines under the electrical lines and make sure the motion of vehicle parts while in operation.

NOTE

- Always protect the fuel line from adverse weather conditions like extreme cold temperature. It is recommended to use appropriate fuel grade insulating sleeve to reduce chances of fuel gelling due to wind chill effect.
- If the size of air bubble is larger than 10 mm, then bleed the air, and re prime the fuel line to prevent frequent heater stoppages (micro air bubble may cause an unstable flame).
- Before commissioning a heater, always prime the fuel line. (FMP test through Switch on component option in EasyScan is good option for priming the heater).

3 INSTALLATION PROCEDURE

FUEL SYSTEM INSTALLATION

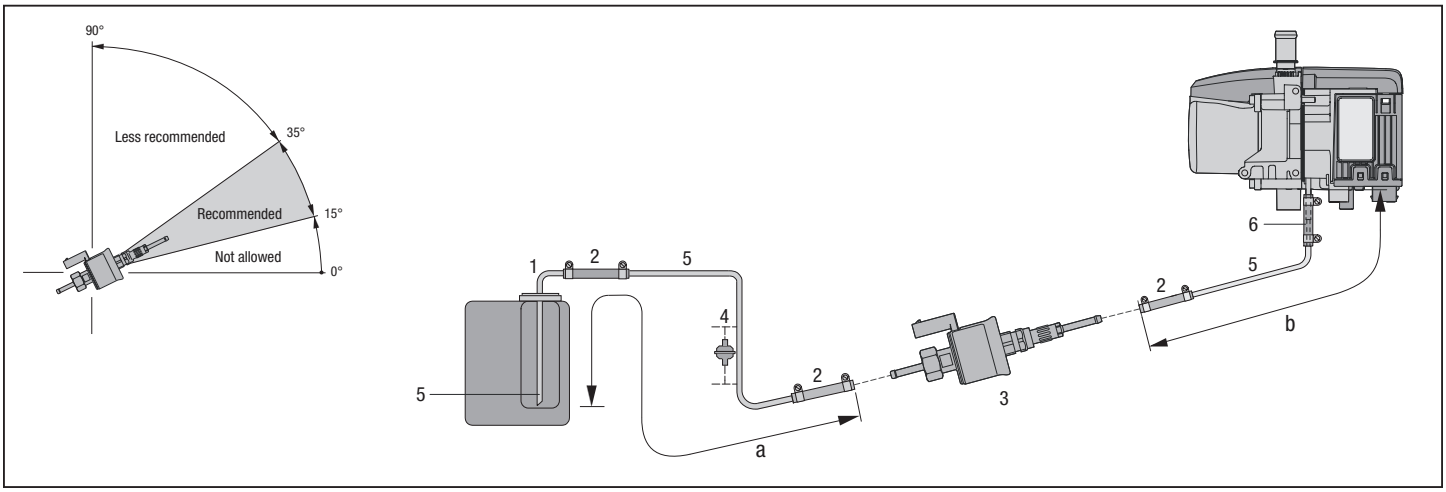
FUEL LINE

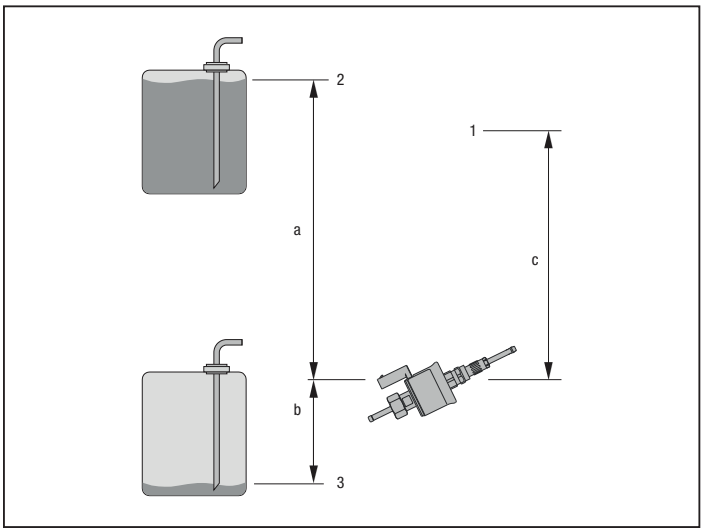
Due to specific capacity of the FMP according to the heater requirement, It is extremely important to install the fuel line with appropriate dimensions. A standard plastic fuel line (2mm) from Eberspaecher is sufficient for small size hydronic heaters including hydronic 3. The following image describes necessary technical information for fuel line installation.

1 Tank connection, di = Ø 2 mm, da = Ø 4 mm – installed in the vehicle's own tank fitting.
2 Adapter, Ø 7.5 / 3.5 mm – connected to the vehicle's own tank fitting, at a connection socket Ø 8 mm, used to pass through the intake line (fuel pipe 4 x 1) up to just before the bottom of the tank.
3 Metering pump.
4 Fuel filter – only required for contaminated fuel.
5 Fuel pipe, 4 x 1 (di = Ø 2 mm).
6 Adapter, Ø 4.5 / 3.5 mm.
7 Fuel hose, 3.5 x 3 (di = Ø 3.5 mm), approx. 50 mm long.

NOTE
Please read all necessary information available in this page before carry out fuel line installation.

- Never install the fuel system (Hydronic 3) beyond the specification provided in the image as shown below.
- Do not tap the heater fuel line to the existing fuel line of the vehicle without inspecting line pressure and fuel availability. If the line pressure is higher than 0.2 to 4 bar max, use a pressure reducer 22 1000 20 08 00 or separate fuel tank 22 1000 20 28 00). Use an additional tank and filter 25 1226 89 00 37, if the pressure values are beyond 4 bar. For further information, please contact Eberspaecher N/A).
  If the distance between the fuel tank to heater is outside specified dimension in image as shown below, then use an auxiliary fuel circulation pump 25 1226 89 83 00 (24V only) and filter 25 1156 20 00 09 to supply the fuel up to the heater fuel line.
- For installations where the fuel tank is located higher than FMP, the maximum recommended height from FMP to the top end of the tank should be no more than 3 meter or 10 ft.
- Make sure that all parts related to the fuel system, are not located in the passenger compartment or exit doors. Fuel lines must not be routed on the top of any electrical lines or hot parts.





PERMISSIBLE SUCTION AND PRESSURE HEAD OF THE METERING PUMP

1 Connection at the heater
2 max. fuel level
3 min. fuel level

Pressure head from vehicle tank to metering pump:
a = max. 3000 mm
Suction head in pressure-less vehicle tank:
b = max. 500 mm for petrol
b = max. 1000 mm for diesel

Suction head in a vehicle tank in which negative pressure occurs during extraction (valve with 0.03 bar in the tank cap):
b = max. 150 mm for petrol
b = max. 400 mm for diesel

Pressure head from the metering pump to the heater:
c = max. 2000 mm

NOTE
Check tank ventilation.

3 INSTALLATION PROCEDURE

FUEL QUALITY FOR PETROL HEATERS
The heater can run on commercially available fuel as per **DIN EN 228** as used in the vehicle tank.

FUEL QUALITY FOR DIESEL HEATERS
The heater can run on commercially available fuel as per **DIN EN 590**, as used in the vehicle tank.

FUEL FOR SPECIAL CASES
In special cases (above 0 °C), the heater can also run on fuel oil EL or kerosene for short periods only.

FUEL FOR LOW TEMPERATURES
Refineries and fuel service stations automatically adjust the fuel to normal winter temperatures (winter diesel). This means that difficulties are only to be expected for extreme drops in temperature, as also apply to the vehicle engine. Please, refer to the vehicle manual.

If the heater gets fuel from a separate tank, please comply with the following rules:
- For temperatures above 0 °C, any kind of diesel fuel as per **DIN EN 590** can be used.
- If no special diesel fuel is available for low temperatures, then kerosene or petrol should be mixed with the fuel according to the following table:

Temperature	Winterdiesel	Addition
0 °C to – 25 °C	100 %	–
–25 °C to –40 °C	50 %*	50 % paraffin or petrol

* or 100 % special cold diesel fuel (Arctic diesel)

FUEL WARMER FOR EXTREME COLD CONDITIONS:

The fuel quality varies significantly depending on geographic location, altitude, and local climate. Some fuels are modified with additives, which may or may not affect the heater operation. Overall, it has been seen that the chances of fuel to gel or frost inside the line is higher if improper grade or low quality of the fuel is used. Therefore, by adding a third party fuel/tank warmer may help reduce the effect of winter and minimize the fuel frost or gel inside the lines.

NOTE
- An insulation sleeves compatible with fuel may reduce wind chill effect on the fuel lines.
- Eberspaecher NA is not liable for any direct or indirect results of any third party products.

NOTE
- The ideal diesel fuel for the heater should have no additives, high in 'Cetane rating = 52, low in sulfur* = %Wt 0.005 (10 ppm is ok), Cloud point should be at minimum: -20 °C and Pour point at: -45 °C min, low Flash point rating = 67 and low Carbon residue, on 10% water distillation residue, %Wt <0.001 and must not have Lead (or < 0.005 gram/l). (should be equivalent to the fuel grade DIN 590).
  * The fuel filter (FMP) must be regularly inspected, if the low sulfur diesel is used.
- The Gasoline heaters can also run on motor oil as per **DIN 51600**. (however due to higher content of lead, it is less recommended)

NOTE
- Aviation fuel like JET A may be similar to diesel and kerosene; however it is not recommended. In addition, fuel mixture with used oil is not allowed.
- After refueling with winter diesel or the listed blends, the fuel pipes and the metering pump must be filled with the new fuel by letting the heater run for 15 mins.
- Kerosene can be premixed with diesel during the winter condition or during traveling at high altitudes to reduce the no start event.
- Improperly stored fuel quality tends to degrade into various layers, which also decreases the overall cetane number of the fuel.
- Running heater on untested fuels (other than listed here) may cause unexpected effects on the heater and not recommended.
- It is important to contact Eberspaecher NA or near by dealer before adding non tested additive for the first time. Some additives MSDS specifically restricts its usage on different materials like copper.
- Eberspaecher North Amercia is not liable for any damage whatsoever caused by use of unspecified fuel.

OPERATION WITH BIODIESEL (PME- FAME)

Hydronic D5 E
The heater is not approved for operation with bio diesel fuel (FAME). However, a regular diesel blended with 10 % bio diesel fuel (FAME) is acceptable.

OPERATION WITH ETHENOL

Hydronic B5 E
It is not allowed to operate Gasoline heaters with 100% Ethenol fuel. an ethanol blended Gasoline (E85) fuel is not recommended for B4 airtronic heaters.

DANGER - FUEL HANDLING
Ensure extreme care while handling any type of fuel; Use manufacturer's guidelines for the fuel handling and storage procedures.

3 INSTALLATION PROCEDURE

ELECTRICAL SYSTEM

All parts needed are included with the kit. (*) indicates external mounted fuel and or water pump versions of Hydronics.

A	Main Heater Harness	▪ Main harness between 6 pin I/O connector at ECU and electrical branches (Easy Scan, EasyFan, Control options and FMP). ▪ 5 core harness (Blue/white**, Blue/black, Blue/red, Green, Green).
B	Power Harness	▪ Interface between 2 pin connector at ECU and battery/power terminal. ▪ Attach ring terminal (Red wire) to vehicle battery (+). ▪ Connect brown wire to vehicle battery (-) using ring terminal provided. ▪ 20 amp fuse - 12V.
C	Switch Harness	▪ 3 core harness (red, brown, blue/white**). ▪ Connects to the control options (Easy start timer). Some switch harness have 5 amp. fuse.
D	*Fuel Metering Pump Harness	▪ 2 core harness (green, green) or (green, brown). ▪ Connect to fuel metering pump using terminals and protective seals + connector block (no polarity required).
E	*Water Pump Harness	▪ 3 core harness (Violet/red, Violet, Brown). ▪ Interface between water pump and 3 pin I/O connector at the ECU.
F	Diagnostic Harness	▪ 4 core harness (Red, Brown, Blue/red, Blue/black). ▪ Plug-in connection to VCI (EasyScan) harness.

HYDRONIC HEATERS

NOTE

- The following cable cross sections are to be used between the battery and heater. This ensures that the max. tolerable voltage loss in the cables does not exceed 0.5V for 12V or 1 V for 24V rated voltage.
- Cable cross sections for a cable length of:
  - up to 5 m (plus cable + minus cable) = cable cross section 4 mm²
  - from 5 to 8 m (plus cable + minus cable) = cable cross section 6 mm²
- Wire must be inserted into fuse holder prior to terminating.

NOTE

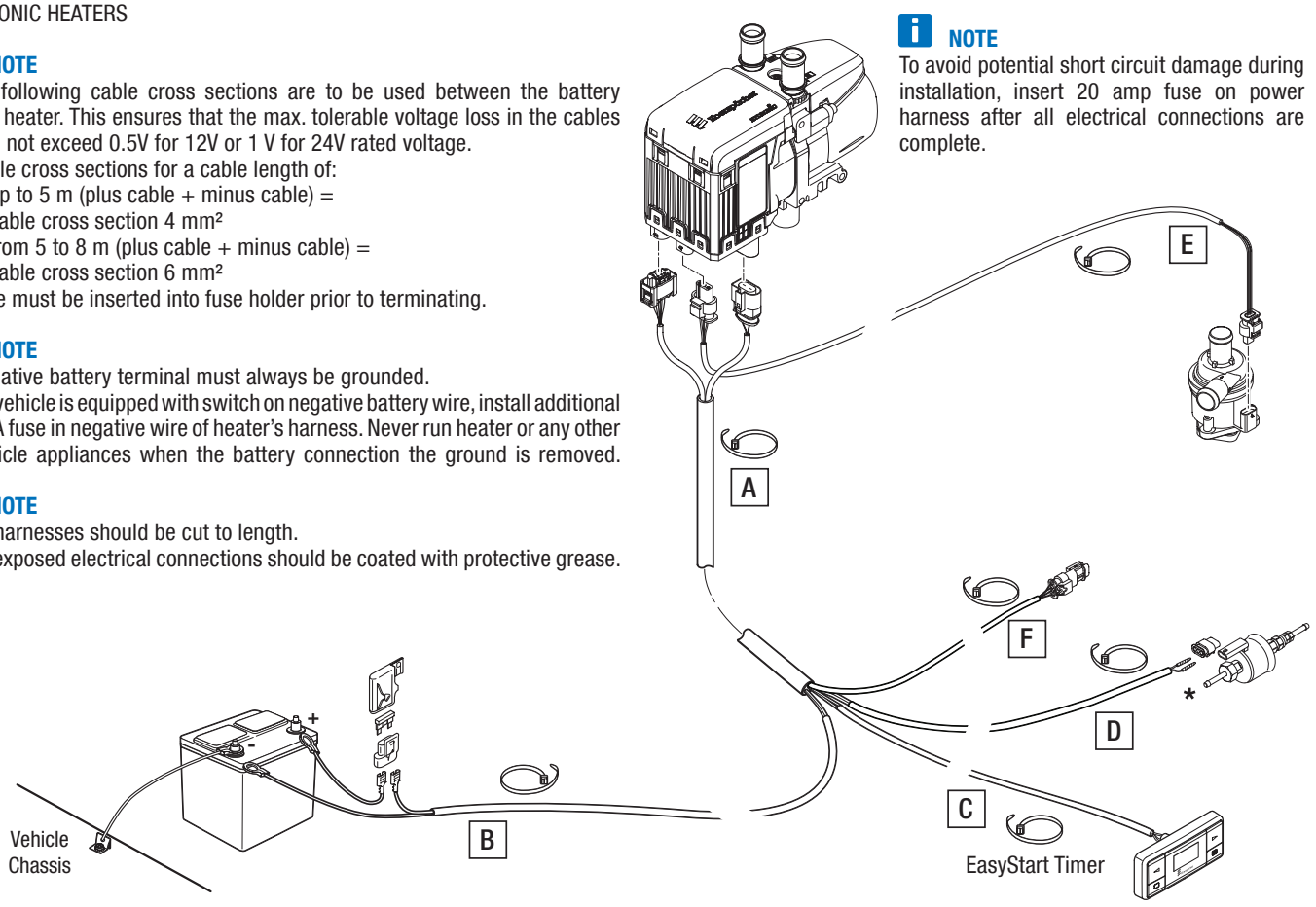
- Negative battery terminal must always be grounded.
  If a vehicle is equipped with switch on negative battery wire, install additional 20 A fuse in negative wire of heater's harness. Never run heater or any other vehicle appliances when the battery connection the ground is removed.

NOTE

- All harnesses should be cut to length.
- All exposed electrical connections should be coated with protective grease.

NOTE

To avoid potential short circuit damage during installation, insert 20 amp fuse on power harness after all electrical connections are complete.

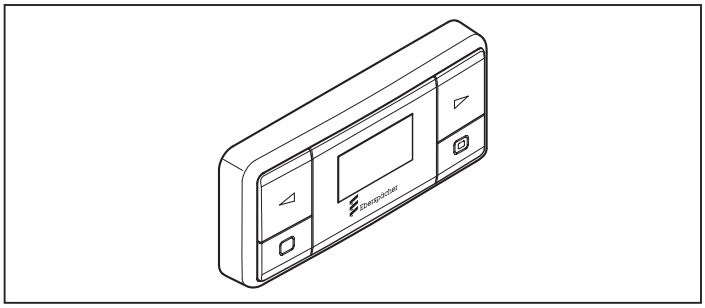


For illustration purpose only.

PLEASE NOTE: ** = Refer to the important color coding note regarding **blue/white** and **yellow** wires on page 28.

3 INSTALLATION PROCEDURE

EASYSTART TIMER (12V* / 24V)**



Part number:	**22 1000 34 1500**
Compatibility	Airtronic/ Hydronic heaters (H-kit)*
Voltage	Operating range: 12/24V Maximum range: 9 to 32V
Heater Single	JE diagnosis (H-kit): LIN network (Diagnostic cable: Blue/White**)
Display	4 push buttons, LCD Display (shows real time control parameters, set up options and fault codes), back light.
Feedback	Heater/ventilation status, fault code, program, add on, internal temperature sensor readings.
Control Features	Heater ON/OFF, Heating/Ventilation, digital set point control, Runtime selection, Add on device (multi heater control), Program (3 presets), EN/GE language.
Set up Options	LVD, start/departure time, Diagnostic fault code, Run time selection, °C/°F, after run duration.

NOTE

- The timer must be placed in passenger compartment where there is no direct heat from sunlight, appliance; however sufficient ventilation (room temperature) surrounding the controller is necessary.
- During fault condition, a real time fault is displayed. In addition, there are total of 5 stored fault memory which can be accessed by entering into the set mode of the controller.
- Using the program feature, It is possible to program for auto start and stop the heater in 3 different sequences (mo-fr/sa-su/mo-su) in a week.
- The Easy start timer is capable of operating two heaters (independently), using its Add on feature. Contact eberspaecher NA for further information.
- The timer is fully compatible with high altitude sensor (a separate adapter cable is not necessary).
- The LCD may get sluggish when the interior temperature is below -20 °C; however, it can operate the heater using push buttons up to -45 °C.
- This controller may be suitable for operating in the industrial or mining environment if additional measures are taken to protect the controller from moisture, dust and vibration.
- The procedure for accessing a service menu of the timer, see page 30.
- For wiring diagram of the easy start timer, see page 29.

PLEASE NOTE: ** = Refer to the important color coding note regarding **blue/white** and **yellow** wires on page 28.

4 OPERATION AND FUNCTION

OPERATING INSTRUCTIONS

The heater is operated by a control unit. Detailed documentation / CD for operation is enclosed with the control unit.

NOTE
The documentation / CD will be issued to you by the installation workshop.

IMPORTANT INSTRUCTIONS FOR OPERATION

INITIAL COMMISSIONING OF THE HEATER
The following points are to be checked by the company installing the heater during initial commissioning.
- Following installation of the heater, the coolant liquid circuit and the whole fuel supply system must be carefully vented. Comply with the instructions issued by the vehicle manufacturer.
- Open the coolant circuit before the trial run (set the temperature control to "WARM").
- During the heater trial run, all water and fuel connections must be checked for leaks and secure, tight fit.
- If faults occur while the heater is running, use a diagnostic unit to determine and correct the cause of the fault.

SAFETY CHECKS BEFORE STARTING UP THE HEATER
After a lengthy stoppage (summer months), check all components for secure fit (tighten screws where necessary).
Carry out a visual check of the fuel system for leaks.

BEFORE SWITCHING ON
Before switching on or pre-programming heating mode, switch the vehicle's heating control to "WARM" (maximum setting) and the fan to "slow level" (low electricity consumption).
In vehicles with automatic heating, before switching off the ignition, switch the heating control to "MAX" and the required damper position to "OPEN".

PARKING VENTILATION
Parking / cab ventilation means: possible activation of the vehicle fan directly via the control unit or – even more useful – via the radio remote control by bypassing heating mode, in order to ventilate the often overheated vehicle interior with fresh air just before driving away.

DESCRIPTION OF FUNCTIONS

SWITCHING ON
When the heater is switched on, the symbol appears in the control unit or the operating display lights up.

HEATING MODE
The water pump starts up and, following a preset sequence, the combustion air fan, glow plug and metering pump are started.
The glow plug is switched off once a stable flame has formed in the combustion chamber.
Depending on the heat requirement, the heater adjusts continuously between the heating outputs: Max – Min – Off (pause mode). The temperature thresholds for these are permanently programmed in the electronic control box.
If the coolant liquid is cold the heater starts in "Max" control stage. If the water temperature continues rising to 75 °C (water outlet temperature of the heater), the heater adjusts the heat output continuously depending on the heat removed (heat requirement), in order to keep the water outlet temperature at a constant 75 °C. The heater provides the exact heat output required, if this is between the "MAX" and "MIN" control stages.
- If the heat output of the heater in control stage "MIN" is higher than the removed heat (heat requirement) and the water temperature rises to 85 °C, the heater adjusts to control stage "OFF" (pause mode) and then starts the after-run.
- If the water temperature cools to 70 °C during pause mode, a controlled start follows in "MIN" control stage. The heater now adjusts the heat output continuously, depending on the removed heat, between the "MAX" and "MIN" control stages.
  During pause mode the water pump continues to run and the On symbol continues to be displayed in the control unit.

PRE-HEATER MODE FOLLOWING LENGTHY STOPPAGE
Following a lengthy stoppage (e.g. summer break) it is recommended that you switch on the heater once while the vehicle engine is running and cold.
The empty fuel lines are filled quickly; the next start of the heater (pre-heater mode) can take place without problems.

CONTROL AND SAFETY DEVICES

- If the petrol heater does not ignite within 105 seconds of being switched on or the diesel heater does not ignite within 70 seconds, the start is repeated. If the heater still does not ignite within the specified safety time (240 seconds), a safety shut-down occurs.
  After an unacceptable number of failed start attempts, the control box is locked.*
- If the flame goes off by itself during operation, the heater is restarted.
  If the heater does not ignite or ignites but goes out again within 10 minutes, a safety shutdown occurs. The safety shut-down can be cancelled by briefly switching off and on again (heater ON / OFF).
- In the case of overheating (e.g. water shortage, poorly ventilated coolant liquid circuit), the overheating sensor triggers, the fuel supply is interrupted and the heater is automatiWeby shut down. Once the cause of the overheating has been eliminated, the heater can be re-started by switching off and on again.
  Precondition: the heater has cooled down sufficiently, water temperature < 70 °C.
  After a maximum of 10 shutdowns on overheating, the control box is locked*.
- If the lower or upper voltage limit is reached, the heater is shut down automatiWeby.
- The heater does not start up if the glow plug is defective or if the electric cable to the metering pump is interrupted.
- The speed of the fan motor is monitored continuously. If the fan motor does not start up, if it is blocked or if the speed falls below 40 % of the set speed, a safety shutdown occurs after 60 sec.

* Cancellation of the lock or reading out errors is possible:
- with the EasyStart Timer.
- with the EasyScan diagnostics tool.

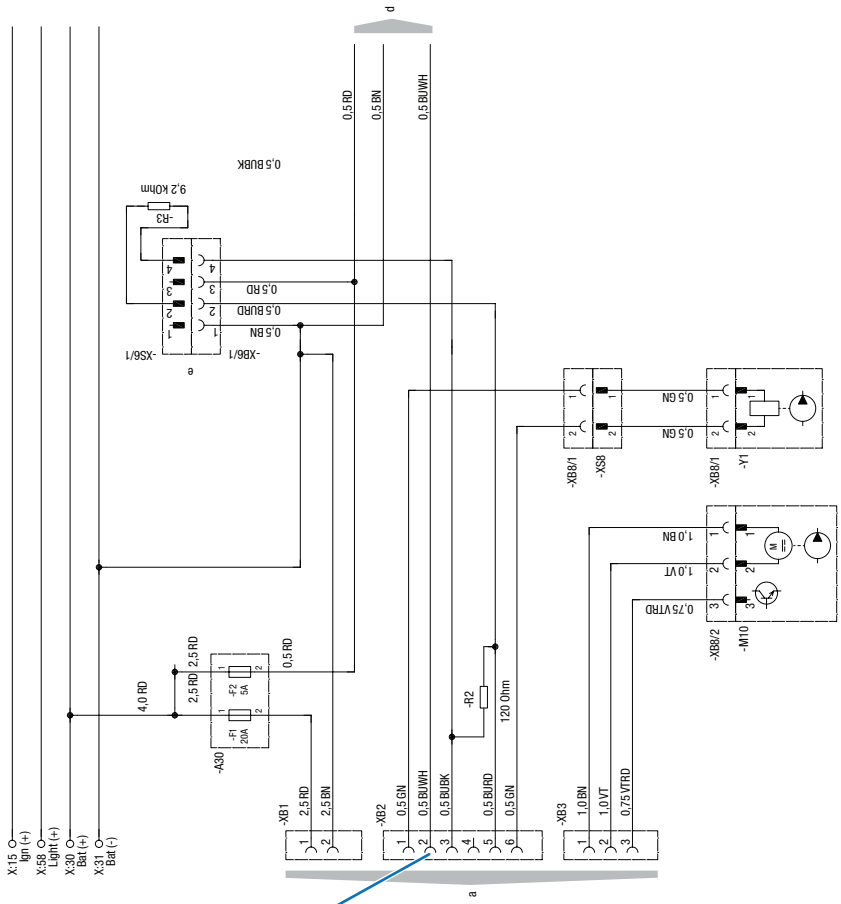
NOTE
Do not repeat the switching off / on routine more than twice.

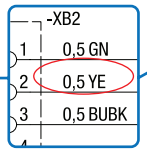
EMERGENCY STOP – EMERGENCY OFF
If an emergency stop – EMERGENCY OFF – is necessary during operation, proceed as follows:
- Switch the heater off at the control unit or
- remove the fuse or
- disconnect the heater from the battery.

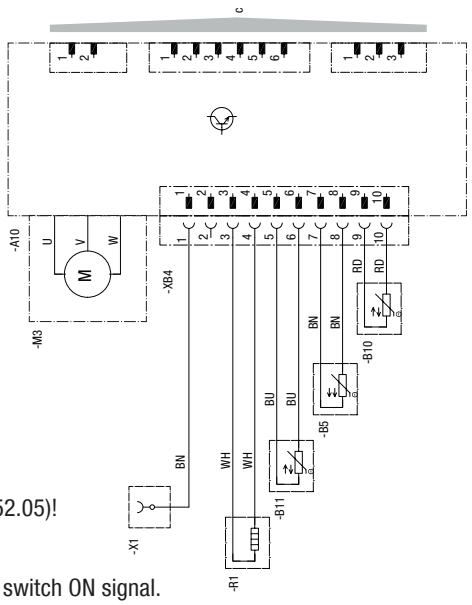
5 CIRCUIT DIAGRAM

PARTS LIST FOR CIRCUIT DIAGRAM, HEATER AND CABLE HARNESS

-A10	Control box
-A30	Fuse holder, 3 pin
-B5	Flame sensor
-B10	WAF
-B11	WEF
-F1	Fuse, heater
-F2	Fuse, control unit
-M3	Burner motor
-M10	Water pump
-R1	Glow plug
-R2	Terminating resistor 120
-R3	Terminating resistor 9.2
-X1	Ring terminal end
-XB1	Bush housing, heater power supply
-XB2	Bush housing, heater signals
-XB3	Bush housing, heater water pump
-XB6/1	Bush housing, EasyScan
-XB8/1	Bush housing, metering pump plug-in connection
-XB8/2	Bush housing, water pump
-XS6/1	Mating connector with terminating resistor
-XS8	Connector housing, metering pump plug-in connection
-Y1	Fuel metering pump
a	to the heater
c	to the cable harness
d	to the control unit
e	EasyScan connection







CABLE COLOURS

RD	red	GR	grey	BK	black
BU	blue	YE	yellow	GN	green
WH	white	VT	violet	BN	brown

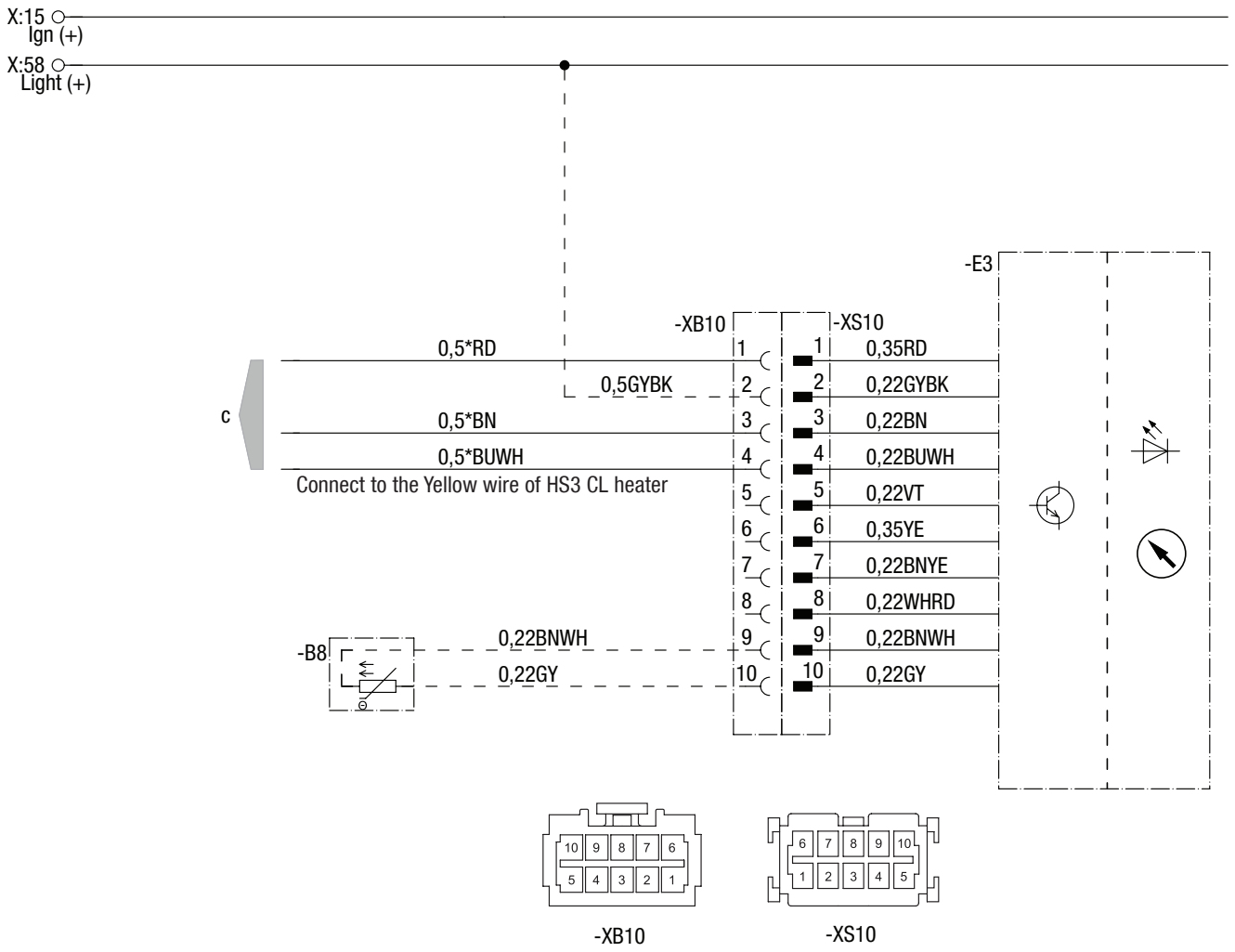
PLEASE NOTE! Currently all current models of HS3CL heaters may come with the new harness with changed wire color from Blue/White to Yellow (pin #2 of the 6 pin connector).

Modified harnesses part numbers are:
25.2800.70.0512 (For unboxed HS3 heater, effective date June 20, 2018)
Used in the following kits:
HYD 3 B5E HEATER ASSEMBLY 12V P/N 25.2819.52.0520
HYD 3 D5E HEATER ASSEMBLY 12V P/N 25.2826.52.0520
HS3 D5E HEATER ASMBLY 12V W/P.U.P NO E.S P/N 25.2826.52.0525
25.2800.70.0511 (For boxed HS3 heater, effective date Nov. 5, 2018)
Used in the following kits:
BOXED HYD 3 ASSEMBLY 12V RIGHT no PUP P/N 25.2826.52.0540
BOXED HYD 3 HEATER ASSEMBLY 12V LEFT P/N 25.2826.52.0545
Affected heaters models: 20.1952.05 and 25.2652.05.
The new version of the harness has full backward electrical compatibility. For use of the new harness with combination of the current HS3CL heaters and Easy Start Timer controller, the Blue/White wire of the controller needs to be connected to the yellow wire of the heaters harness.
DO NOT APPLY BATTERY VOLTAGE TO THE YELLOW WIRE IN THE CONBINATION OF THE NEW HARNESS WITH THE ABOVE MENTIONED HS3 CL HEATERS (p/n 20.1952.05 and 25.2652.05)!

PLEASE NOTE! HS3 CS heaters will use the yellow wire as normally for battery voltage switch ON signal.

5 CIRCUIT DIAGRAM

CIRCUIT DIAGRAM, CONTROL UNIT – EASYSTART TIMER



Parts list
-B8 Room temperature sensor (optional)
-E3 EasyStart Timer
c to the cable harness

Connectors and bush housings are shown from the cable inlet side.

NOTE
Further circuit diagrams for the EasyStart timer are printed in the Installation Instructions Plus, these are available to view and download from the Service Portal.

PLEASE NOTE: Refer to the important color coding note regarding **blue/white** and **yellow** wires on page 28.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

RECOMMENDED PERIODIC MAINTENANCE

- Use the fuel suitable for the climate (see engine manufacturers recommendations).
  Blending used engine oil with diesel fuel is NOT permitted.
- Maintain your batteries and all electrical connections in good condition. With insufficient power the heater will not start.
- Visual check of electrical lines and connections for corrosion.
- Check the battery voltage. Low and high voltage cutouts will shut the heater down automatically.
- Check and if necessary replace fuel filter inserts.
- Visual check of all fuel lines for leaks.
- Check the glow pin and replace if necessary.
- Replace filters and gaskets at least once a year.
- Inspect blower motor, coolant pump for any visible signs of damage.
- Check coolant hoses, clamps, and make sure all valves are open. Maintain the engine manufacturers recommended coolant level and ensure that the heater is properly bled after service on or involving the coolant system.
- Run your heater at least once a month during the year (for a minimum of 15 minutes).

TROUBLESHOOTING

BASIC TROUBLESHOOTING

In the event of failure there are several items which should be checked first before any major troubleshooting is done.

Check:

- Circuit breakers and fuses.
- Electrical lines and connections.
- For interference in combustion air and exhaust pipes.
- That there is fuel in the tank.
- Battery voltage (> 10.5V/> 21V)
- Check On/off signal wires (blue/white** wire)
- Carry out visual inspection of the coolant line

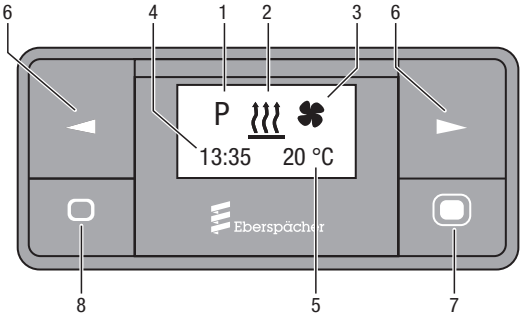
⚠ WARNING -SAFETY:
Before performing the troubleshooting and repair on the heater, always have minimum required tools and protective equipments as provided on page 5.

SELF DIAGNOSTICS

The heater is equipped with self diagnostic capability. You can retrieve information on the heaters last 5 faults using the Eberspaecher's diagnostic tools, i.e., EasyStart timer and EasyScan.

DIAGNOSTIC TOOLS

1. EASYSTAR TIMER - P/N: 22 1000 34 15 00

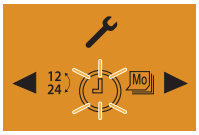


1 Program symbol
2 Heat symbol
3 Fan symbol
4 Current time
5 Temperature (Optional)
6 Menu selection button
7 Enter / "ON"
8 Exit / "OFF"

STEPS TO UNLOCK THE ECU

- Use the buttons ◄ ► to select the setting symbol in the Menu bar and confirm by pressing the button. The Setting Menu is used to set current time, weekday and local time format selecting , and symbols respectively, then confirm them by pressing the button.

- Service/Workshop Menu
  The service/Workshop menu is a part of SETTINGS MENU , and can be accessed by pressing for more than 5 seconds while the EasyStar timer screen looks like the image below.

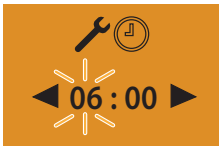
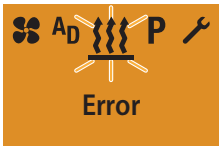


In the Service/ Workshop menu, a number of different parameters of the EasyStart timer can be changed via item selection between 1.1 to 14.6.

The Diagnostic Fault Codes can be found in the menu item # 1.1 of Service/ Workshop Menu.

PLEASE NOTE: ** = Refer to the important color coding note regarding **blue/white** and **yellow** wires on page 28.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

EASYSTART FAULT DISPLAYS	DESCRIPTION	REMEDY / WORKSHOP
	▪ Automatic detection is active. ▪ The timer has been disconnected from the voltage and reconnected.	Wait until the automatic detection has ended, then set the time and weekday.
	▪ The timer has been disconnected from the voltage and reconnected. ▪ The automatic detection has ended.	Set the time (hours and minutes) and the weekday. Then the Start display appears.
	▪ No communication. ▪ It means heater can not be recognized by EasyStart timer (please see the manual)	▪ Check and if necessary renew the heater fuse. ▪ Check the voltage supply. ▪ Check the wiring.
	▪ 1st heater fault.	Perform the heater diagnosis. ▪ Access service/workshop menu via settings and select service function #1.1.1 to display current fault and #1.2.1 to display fault memory F1 - F5. ▪ 1.2.1: read out memory fault 1 to 5 by selecting the function using ▭ and pressing ◄ ► buttons. ▪ 1.3.1: Select the delete → function by pressing the ▭ button, the DEL display (appears flashing), press the ▭ to confirm. “no diag” is displayed if no diagnostics cable is connected.
	▪ 2nd heater fault.	Perform the heater diagnosis. ▪ Access service/Workshop menu via settings and select service function #1.1.2 to display current fault and #1.2.2 to display fault memory F1 - F5. ▪ 1.2.2: read out memory fault 1 to 5 by selecting the function using ▭ and pressing ◄ ► buttons. ▪ 1.3.2: Select the delete → function by pressing the ▭ button, the DEL display (appears flashing), press the ▭ to confirm. “no diag” is displayed if no diagnostics cable is connected.
	▪ Voltage too low.	▪ Charge the battery. ▪ Check the heater’s power supply.
	▪ Temperature sensor is defective.	Check and if necessary renew the temperature sensor.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

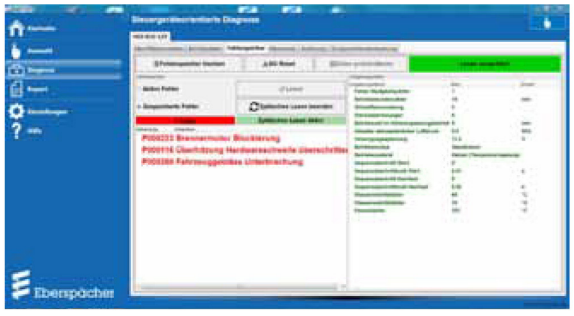
2. EASYSCAN - P/N: 22 1550 89 00 00

EasyScan is the latest diagnostic tool from Eberspaecher NA, which is replacing the current version ISO adapter kit (EDiTH S4V1-F).
This computer based tool is required for extracting fault codes and diagnosting Hydronic 3 series heaters.

1. ADVANTAGES (FUNCTIONS)
- Future-proof as a result of compatibility with widely used standards in the automotive industry (OBD).
- New, modern, user-friendly user interface.
- Comprehensive evaluation of current operating status.
- Automatic creation of a usage profile.
- Error analysis of devices and components.
- Error code display with ambient conditions.
- Function check of a vehicle application.
- Heating system commissioning support.
- Integrated results log at the end of commissioning and for diagnostic processes.
- Existing heater adapters are still applicable.
- Reliable software for the user.
- Option of direct link to the Eberspaecher Partner Portal.

2. FURTHER FEATURES
- Additional languages to those already defined are available upon request.
- P C software is downloaded via the Partner Portal.
- Software can also be installed and updated locally from data media.
- Automatic update check every time software is used.
- Delivery content includes VCI, USB cable + Y-adapter cable (Connection for current heaters as well as future applications)

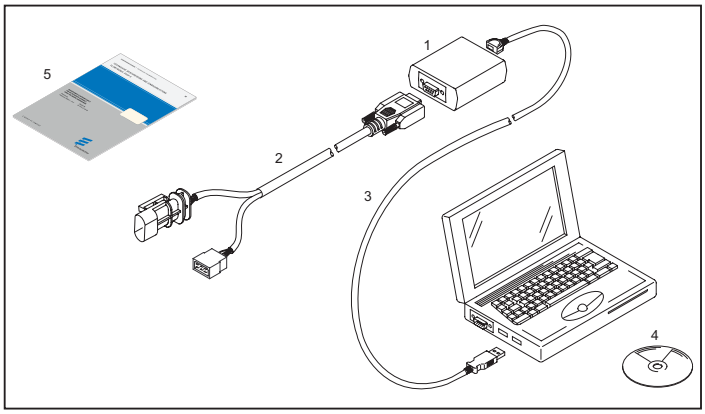
NOTE
For installation and operation purpose, it is important to read the EasyScan manual available at http://www.eberspaecher-na.com/download-center.htm



SCOPE OF SUPPLY

The scope of supply includes:

No.	Quantity	Designation
1	1	VCI
2	1	“Diagnostics interface” connection cable
3	1	“PC” connection cable
4	1	CD with software and complete opera ting instructions
5	1	Quick start guide



SYSTEM REQUIREMENTS

Check before installing the software

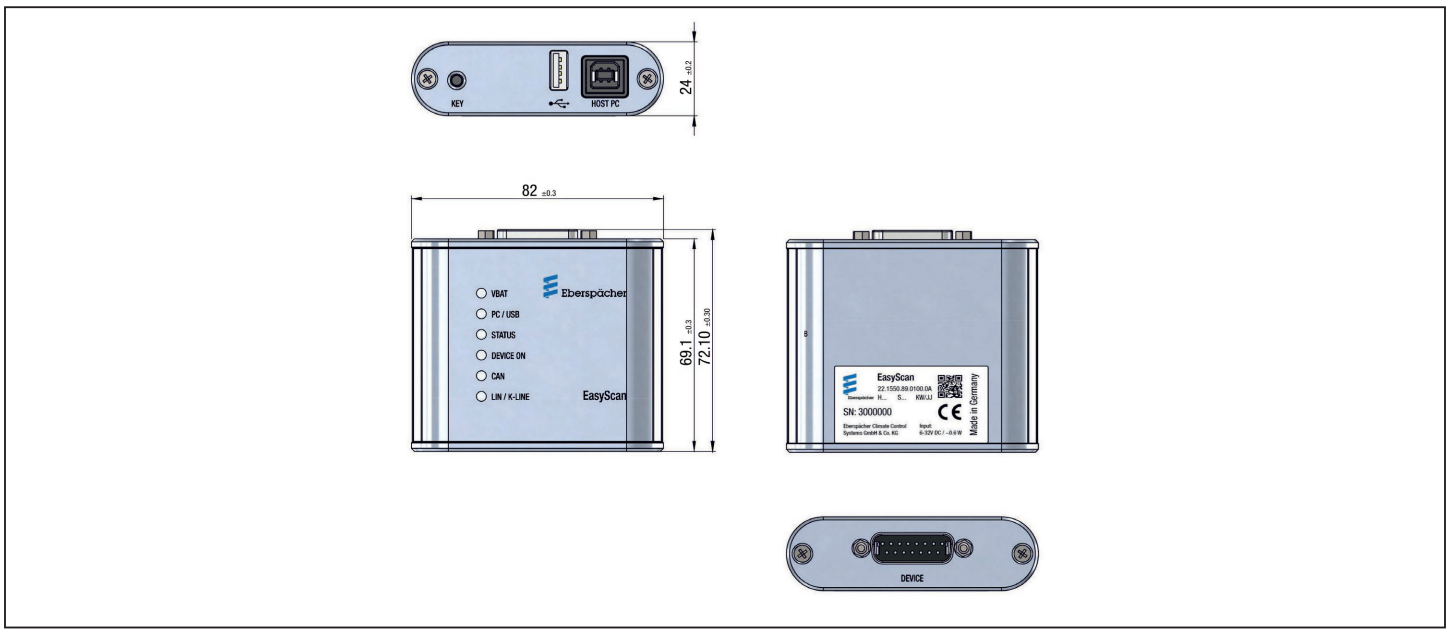
Is an operating system, which supports the software, installed on the PC or notebook?
- Are the minimum hardware requirements for the supporting operating system met?

Supporting operating systems:
- Microsoft Windows 7 or newer versions.

Minimum hardware requirements:
- 1 gigahertz (GHz) 32-bit (x86) or 64-bit (x64) processor.
- Hard drive: with at least 16 Gbyte (32-bit) or 20 Gbyte (64-bit) free memory.
- Working memory (RAM): at least 1 Gbyte (32-bit) or 2 Gbyte (64-bit).
- DirectX 9 graphics device with WDDM 1.0 or higher drivers.
- CD ROM or DVD drive.
- USB 2.0 interface (port).
- Screen: resolution min. 800×600 dots (recommended 1024×768 or higher), colour palette 65536 colours ormore, small text.

NOTE
If the minimum requirements are not fulfilled, the EasyScan software cannot be installed.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS



DEVICE CONNECTIONS

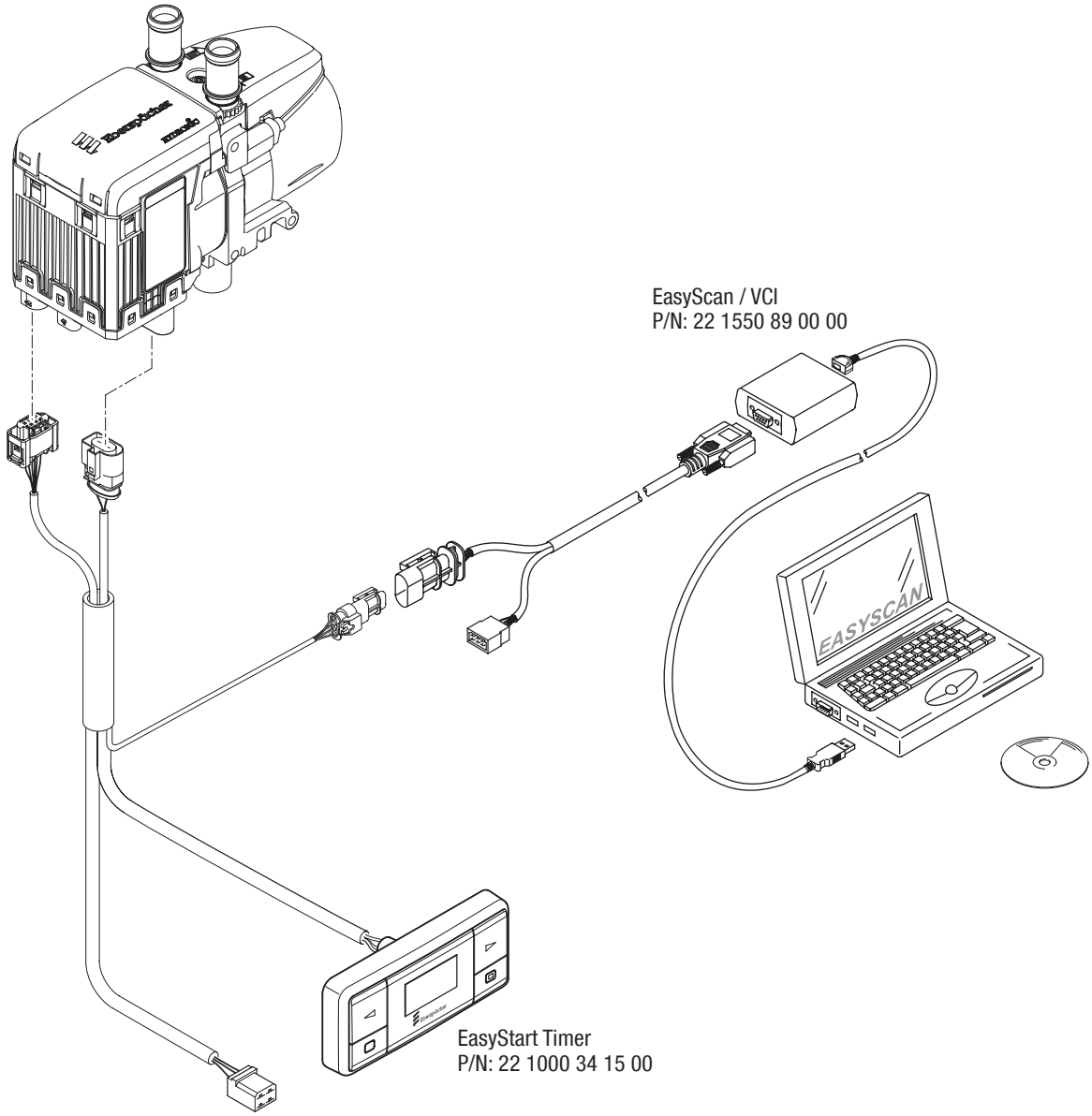
KEY	Key function: Restore the software
⇐	Not used
Host PC	“PC” connection cable connection
DEVICE	“Diagnostics interface” connection cable connection

LED DESCRIPTION

Designation	Colour	Signalling	Operating state
VBAT	GREEN	Dark	Power supply not connected or is outside outside the allo wable range (VBAT < 6V or VBAT > 32 V)
		Illuminated	Power supply connected and is within the allo wable range (VBAT > 6V up to VBAT < 32V)
PC / USB	YELLOW	Dark	No PC connection (USB not connected)
		Illuminated	VCI is connected with the PC (USB connected)
		Flashing	Data is being transferred between the PC and the VCI
STATUS	GREEN	Dark	Software in the VCI is not ready for use (fault condition)
		Slow flashing (1 Hz)	Software in the VCI is ready for use (normal condition)
		Fast flashing (2 Hz)	The devices is in bootloader mode, the software in the VCI is faulty or has not been installed (fault condition).
DEVICE ON	RED	Dark	On-cable for heating inactive.
		Illuminated	On-cable for heating active.
CAN	BLUE	Dark	Communication via CAN bus not in opera tion
		Flashing	CAN communication in operation. The flash frequency indicates the CAN bus load.
LIN / K-LINE	BLUE	Dark	Communication via LIN / K-LINE not in operation.
		Flashing	LIN / K-LINE communication in operation. The flash frequency indicates the bus load.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

DIAGNOSTIC TOOLS



HOOK UP

- Disconnect the main harness from heater and insert adapter cable harness between them.
- Connect adapter cable to the cable loom of the ISO Adapter/Diagnostic unit/Eberspaecher Universal Diagnostic Tool.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

FAULT CODE P000… for EasyScan (…) for TP 7	FAULT DESCRIPTION	CAUSE ▪ REMEDIAL ACTION
P000100 (071) **P000101** (072)	Water outlet sensor – Interruption – Short circuit	▪ Check the water outlet sensor. — Check cables for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable RD (chamber 9) and cable RD (chamber 10). > Measured values see page 45, deviating values –> renew lead harness of heater.
P00010A (051)	Cold air – timeout	The combustion chamber has not cooled sufficiently for a restart. ▪ Check whether hot combustion air is drawn in, if not –> check the flame sensor, see Fault code P000120 (064) and Fault code P000121 (065).
P000110 (060) **P000111** (061)	Water inlet sensor – Interruption – Short circuit **NOTE!** Fault code P000110 (060) and P000111 (061) are displayed only if ▪ the heater is in operation ▪ temperature reached at water outlet sensor at least 80 °C.	▪ Check the water inlet sensor. Check cables for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable BU (chamber 5) and cable BU (chamber 6). > Measured values see page 45, deviating values –> renew lead harness of heater.
P000114 (014)	Possible risk of overheating (implausible signal) **NOTE!** In case of flame cutout during the start phase or in normal operation the heater is restarted (max. 3 times). If the restart was successful, the fault code display is deleted.	Too large temperature difference between the water inlet and water outlet sensor. ▪ For remedial action see Fault code P000115 (012). ▪ Check the water inlet sensor. — Unplug connector XB4, measure resistance between cable BU (chamber 5) and cable BU (chamber 6). > Measured values see page 45, deviating values –> renew lead harness of heater.
P00015 (012)	Overheating – software threshold exceeded	Temperature at the water outlet sensor >125 °C. ▪ Check water circuit for leaks (heater controller in warm position) ▪ If non-return valve / thermostat in the water circuit, check the flow direction. ▪ Check water throughput rate. ▪ Vent water circuit. ▪ Check the water outlet sensor — Check cables for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable RD (chamber 9) and cable RD (chamber 10). > Measured values see page 45, deviating values –> renew lead harness of heater. ▪ Check water pump, see Fault code P000253 (044) to Fault code P000258 (046).
P000116 (017)	Overheating – hardware threshold exceeded.	Temperature at the water outlet sensor >130 °C. ▪ For remedial action see Fault code P000115 (012). ▪ Check the water outlet sensor. — Check cables for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable RD (chamber 9) and cable RD (chamber 10). > Measured values see page 45, deviating values –> renew lead harness of heater.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

FAULT CODE P000… for EasyScan (…) for TP 7	FAULT DESCRIPTION	CAUSE ▪ REMEDIAL ACTION
P00011A (015)	Operating lock-out – too many overheating events detected.	The control box is locked due to too frequent consecutive overhea ting (Fault code P000114 (014), Fault code P000115 (012)). ▪ For remedial action see Fault code P000114 (014), Fault code P000115 (012). ▪ Unlock control box, see pages 30 - 34.
P000120 (064) **P000121** (065)	Flame sensor interruption Short circuit in flame sensor	▪ Check flame sensor. — Check cable for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable BN (chamber 7) and cable BN (chamber 8). > Measured values see page ##, deviating values –> renew lead harness of heater. ▪ Next display Fault code P000120 (064), Fault code P000121 (065) –> renew control box, see Repair step 1, pages 30 - 34.
P000125 (057) **P000126** (056) **P000127** (055) **P000128** (054) **P000129** (053)	Flame cutout from start process Flame cutout within the control range 0% – 25% Flame cutout within the control range 25% – 50% Flame cutout within the control range 50% - 75% Flame cutout within the control range 75% - 100% **NOTE!** In case of flame cutout during the start phase or in normal operation the heater is restarted (max. 3 times). If the restart was successful, the fault code display is deleted.	▪ Check exhaust and combustion air system. ▪ Check fuel quantity and fuel supply, Page 41. ▪ Check flame sensor, see Fault code P000120 (064) and Fault code P000121 (065).
P00012A (052)	Safety time – exceeded	▪ Check exhaust and combustion air system. ▪ Check fuel quantity and fuel supply, see page 41. ▪ Renew the fuel filter. ▪ Clean the fuel filter in the connection socket of the metering pump.
P000128 (050)	Operating lock-out, too many safety timeouts.	Following three unsuccessful start a ttempts the control box is locked. ▪ Unlock control box, see pages 30 - 34. ▪ Check fuel quantity and fuel supply, see page 41.
P000200 (048) **P000201** (047)	Metering pump interruption Metering pump – short circuit	▪ Check metering pump lead harness for continuity, short circuit and damage. > Lead harness ok –> renew the metering pump.
P000202 (049)	Metering pump – short circuit downstream of +Ub or transistor error	▪ Check cables for continuity, short circuit and damage. — Unplug the connector at the metering pump. ▪ Display Fault code P000200 (048) metering pump defective –> renew metering pump.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

FAULT CODE P000… for EasyScan (…) for TP 7	FAULT DESCRIPTION	CAUSE ▪ REMEDIAL ACTION
P000210 (020) **P000211** (021) **P000212** (022)	Glow plug – interruption Glow plug – short circuit Glow plug – short circuit downstream of +Ub or transistor error ⚠ **CAUTION!** **Damage to unit in case of over-voltage** Voltage > 9.5 V irreparably damages the glow plug. ➔ Test function with max. 9.5 V. **NOTE** Note the short-circuit withstand capability of the power pack.	▪ Check glow plug. — Check cables for continuity, short circuit and damage. — Unplug connector -XB4, unclip cable WH (chamber 3) and cable WH (chamber 4). — Apply 9.5 V ±0.1 V voltage to the glow plug and after 25 sec measure the current intensity. > Measured value 9.5 A (+1 / –1.5) the glow plug is ok. > Deviating values –> renew the glow plug.
P000213 (019)	Glow plug – ignition energ y too low	Glow plug energy input is too low. — Check cables for continuity, short circuit and damage. — Test glow plug, see Fault code P000210 (020) to Fault code P000212 (022).
P000220 (031) **P000221** (032) **P000222** (033)	Electric motor – interruption Electric motor – short circuit Electric motor – short circuit downstream of +Ub or transistor error	Measure blower speed with EasyScan diagnostic tool, see EasyScan operating instructions.
P000223 (030) **P000224** (029)	Electric motor – blocking Electric motor – current input too low	Impeller blocked (frozen, soiled, sluggish, ...). ▪ Remove blockage. — Check electric motor for smooth and easy running by turning the impeller manually. ▪ Next display Fault code P000223 (030) / Fault code P000224 (029) –> renew the blower, see Repair step 7, Page 46.
P000250 (041) **P000251** (042)	Water pump – interruption Water pump – short circuit	▪ Check lead harness of the wa ter pump: — Unplug connector -XB3 at the heater — Unplug connector -XB8/2 at the water pump. — Check cable for continuity, short circuit and damage. > Lead harness of the water pump ok –> renew the wa ter pump.
P000252 (043)	Water pump - short circuit downstream of +Ub or transistor error	▪ Unplug connector -XB8/2 at the water pump. > Display Fault code P000250 (041) Water pump defective –> renew water pump.
P000253 (044)	Water pump – blocking	▪ Water hoses laid free from kinks?
P000254 (044)	Water pump – overcurrent cutout	▪ Water pump / water circuit dirty?
P000255 (044)	Water pump – speed below minimum	▪ Water pump / water circuit dirty?
P000256 (045)	Water pump – dry running	▪ Check the coolant liquid level in the water circuit. ▪ Vent the water pump / water circuit.
P000257 (045)	Water pump – overheating	Water pump ambient temperature too high. ▪ Position the water pump at an adequate distance from hot vehicle parts.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

FAULT CODE P000… for EasyScan (…) for TP 7	FAULT DESCRIPTION	CAUSE ▪ REMEDIAL ACTION
P000258 (046)	Water pump – undervoltage / overvoltage	▪ Check lead harness of the wa ter pump: — Unplug connector -XB3 at the heater pump. — Unplug connector -XB8/2 at the water pump. — Check cable for continuity, short circuit and damage. > Lead harness of the water pump ok –> renew the water
P000260 (038) **P000261** (039)	Vehicle blower – interruption Vehicle blower – short circuit	▪ Check electric motor cover for dama ge and correct fit. > Electric motor cover ok –> renew blower relay -K1.
P000300 (074)	Overheating detection Metering pump hardware or cutout circuit defective	▪ Check the water outlet sensor. Check cables for continuity, short circuit and damage. — Unplug connector XB4, measure resistance between cable RD (chamber 9) and cable RD (chamber 10). > Measured values see page 17, deviating values –> renew lead harness of heater. ▪ Next display Fault code P000300 (074) –> renew lead harness of the heater. ▪ Unlock control box, see pages 30 - 34.
P000301 (090) **P000302** (090)	Control box defective Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000303 (094)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000304 (091)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000305 (096)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000306 (098)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000310 (010) **P000311** (010)	Control box cutout due to overvoltage Heater cutout due to over voltage **NOTE** Heater is not functioning.	Overvoltage applied at the control box without interruption for a t least 20 seconds. ▪ Unplug connector -XB1 at the heater. ▪ Start the vehicle engine. ▪ Measure voltage between cable RD (chamber 1) and cable BN (chamber 2). > Voltage >15 volt — Check alternator controller — Check the battery.
P000312 (011) **P000313** (011)	Control box cutout due to undervoltage Heater cutout due to under voltage **NOTE** Heater is not functioning.	Undervoltage applied at the control box without interruption for a t least 20 seconds. ▪ Unplug connector -XB1 at the heater. ▪ Start the vehicle engine. ▪ Measure voltage between cable RD (chamber 1) and cable BN (chamber 2). > Voltage < 10 volt — Check the fuses, the supply cables, the ground connections and the positive terminal post at the battery for voltage drop (corrosion).
P000330 (092)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000331 (093)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.
P000332 (099)	Control box defective	▪ Replace control box, see Repair step 1, Pages 42 - 43.

NOTES:

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

REPAIR INSTRUCTIONS

This chapter describes the permitted repair work on the heater. The heater must be removed from the vehicle for the repair work to be carried out.

Assembly of the heater is described from page 47.

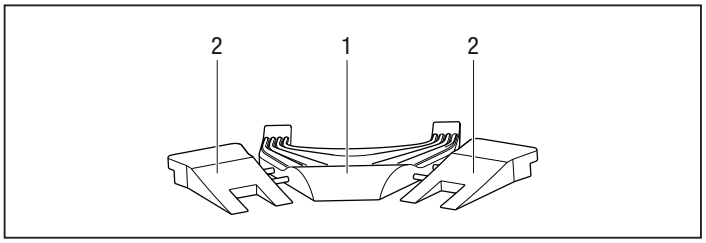
DANGER!
Risk of injury, burns and poisoning!
Ensure the following before carrying out any work on the heater:
- ➔ Switch off the heater and leave it to cool.
- ➔ Disconnect the battery.
- ➔ Do not operate the heater in enclosed spaces (garage / workshop). Exception: use of an exhaust extractor.

CAUTION!
Damage to the unit
- ➔ Always renew the seals and O-rings of dismantled components.
- ➔ Check all components for damage and replace if necessary.
- ➔ Check plug-in contacts, plug-in connections and cables for corrosion and damage, and repair if necessary.
- ➔ Use original spare parts only.
- ➔ After working on the coolant circuit, check the coolant level and if necessary top up according to the vehicle manufacturer's instructions.
- ➔ Then vent the coolant circuit.
- ➔ Operation and after running of the heater may only be stopped in an emergency (see "EMERGENCY OFF" on page 20) by interrupting the battery current (risk of hea ter overheating).

NOTE
After completing all the work and installing the hea ter in the vehicle, perform a functional test of the hea ter, see page 31 - 34.

SPECIAL TOOL

CONTROL BOX DISMANTLING KIT
Order No. 25 2652 81 10 00
The dismantling kit is required to unlock the control box and consists of a lever (1) with two release wedges (2). To use the wedges, break them off at the connection pins.



RELEASE TOOL

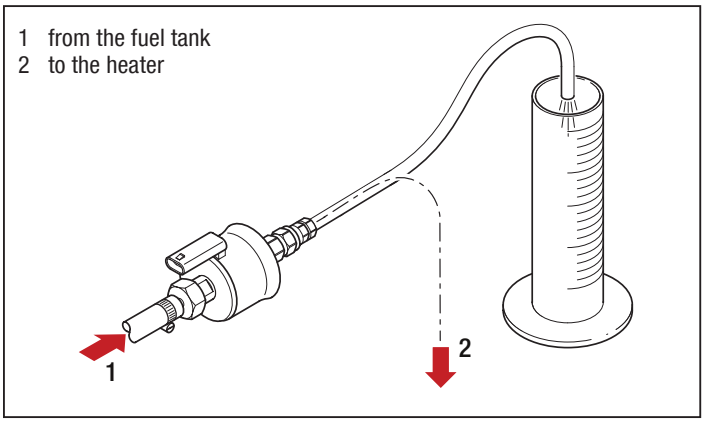
The release tool is used to release contacts in the connectors. The tool can be ordered directly from the manufacturer HER TH+BUSS ELPARTS.
- For tab connector 1.2 mm — Order No. 959 45 400
- For tab connector / tab receptacle 2.8 mm — Order No. 959 45 402

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

MEASURING THE FUEL QUANTITY

PREPARING FOR THE MEASUREMENT

- Pull off the fuel pressure line from the hea ter and insert in a measuring cylinder (size 25 cm³).
- Switch on heater.
- Depending on the heater type, the metering pump starts pumping fuel after 17 to 20 sec. If the fuel comes out uniformly and free of bubbles, the fuel line is filled and vented.
- Switch off heater and empty measuring cylinder.



MEASUREMENT

- Switch on heater.
- Depending on the heater type, the metering pump starts pumping fuel after 17 to 20 sec.
- During the measurement, hold the measuring cylinder at the level of the heater.
  In the case of petrol hea ters, because of the deliver y rate, it is sufficient to start once to measure the fuel quantity.
  In the case of diesel hea ters, after starting once, two automatic start repeats must take place to obtain sufficient fuel for the measurement.
- After measuring, switch off the heater.
- Read off the quantity of fuel in the measuring cylinder.

EVALUATION

- Compare the measured quantity of fuel with the values in the following table.
- Measured fuel quantity above the maximum value or belo w the minimum value –> replace the metering pump.

Heater type	Hydronic S3	
Heater version	B 5 E	D 5 E
Discharge period		
one-off start	75 sec.	86 sec.
Fuel quantity, nominal [cm³]	8.9	7.0
Fuel quantity - max. [cm³]	9.8	7.35
Fuel quantity - min[cm³]	8.0	6.65

NOTE!
The given fuel quantities result from the initial start of the heater.
Carry out the fuel measurement only if the battery is sufficiently charged.
During the measurement at least 12 volt or max. 13 volt should be applied to the control box.

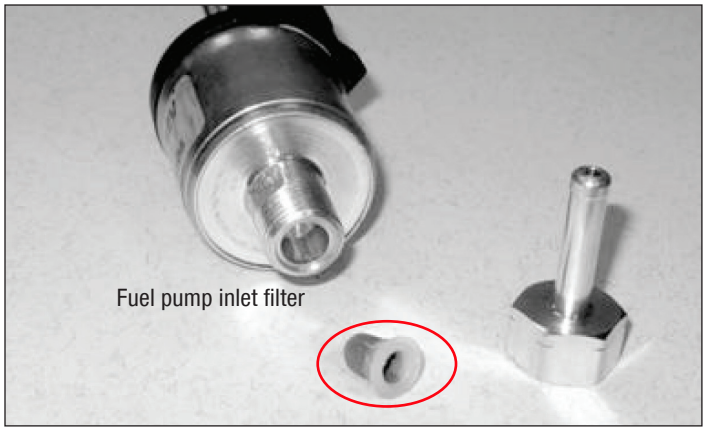
MEASURE FUEL QUANTITY, WITH EASYSCAN

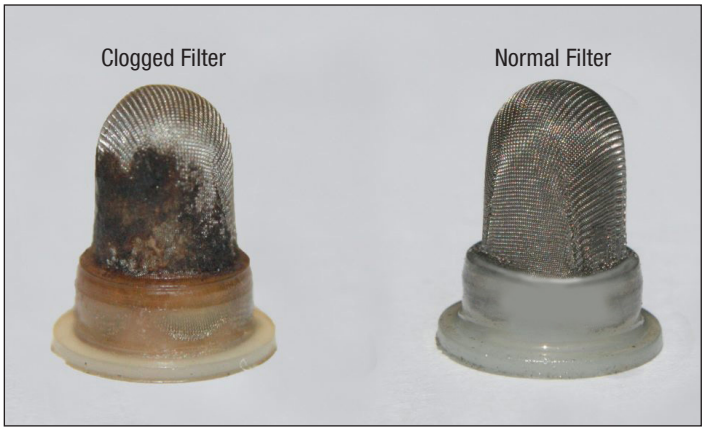
PREPARATION / MEASUREMENT / EVALUATION

See the EasyScan Call operating instructions for procedure.

Heater type	Hydronic S3	
Heater version	B 5 E	D 5 E
Delivery period in sec.	80 sec.	80 sec.
Fuel quantity, nominal [cm³]	12.4	8.2
Fuel quantity - max. [cm³]	13.7	9.0
Fuel quantity - min[cm³]	11.2	7.4

FUEL PUMP FILTER INSPECTION





NOTE!
Fuel pump inlet filter – clean or replace annually, more frequently if fuel contamination is noticed.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

REPAIR STEPS

NOTE

This repair instruction describes ho w to dismantle the hea ter in individual repair steps. Reference is made to the necessar y preceding steps to be carried out at the relevant repair steps.

DISMANTLE THE HEATER

CAUTION!

Unit damage due to unbalance!

The impeller is precisely balanced and ver y sensitive. Putting down the heater on the impeller causes unbalance, which in turn leads to damage to the blower or heater.

➔ Do not lay heater on its impeller.

➔ Always lay the heater on its side or clamp it in a jig.

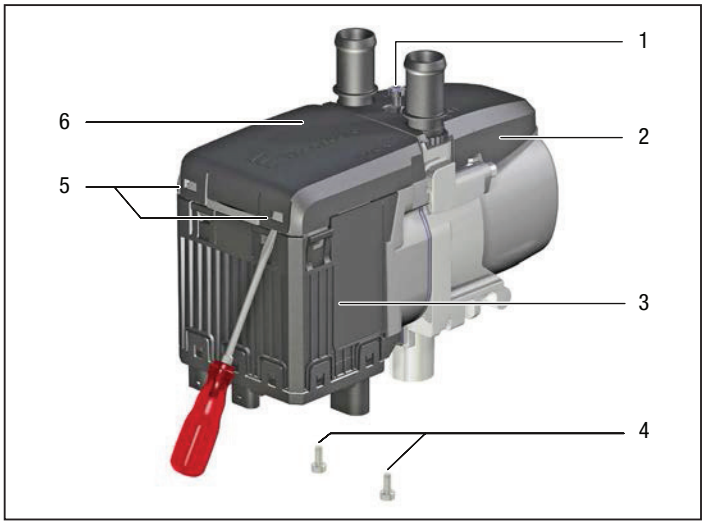
REPAIR STEP 1

REMOVE THE CONTROL BOX

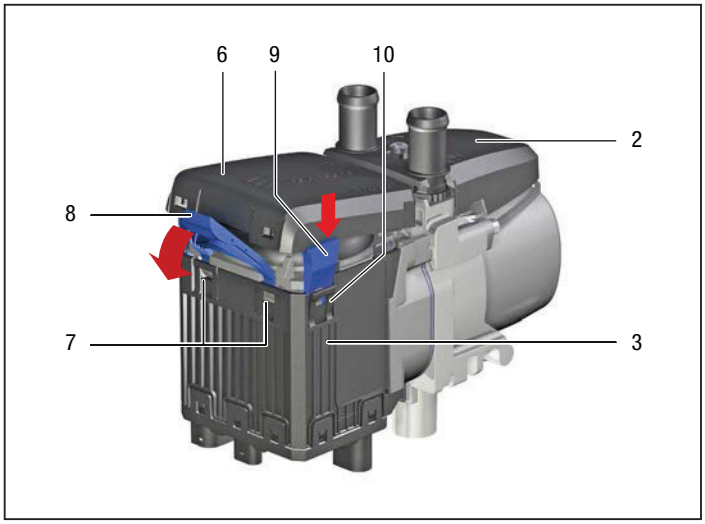
NOTE

Use the dismantling kit to remove the control box. Do not undo the bottom snap connections of the control box.

1. Undo both screws (4) from the control box (3).
2. Undo the screw (1) from the sensor cover (2) by 3 turns.
3. Release both snap connections (5) on the blower cover (6).



4. Lift up the sensor cover (2) and blower cover (6).
5. Insert both wedges (9) between the blo wer cover (6) and the snap catches (10) of the control box (3), release the snap catches.
6. Insert the lever (8) in the sna p catches (7) of the control box (3) and unlock the control box.



6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

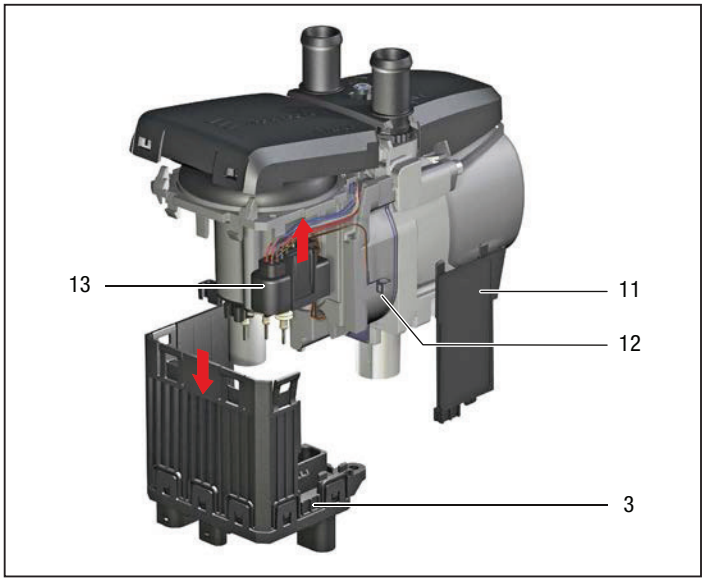
7. Pull off the control box (3) carefully, at the same time remove the electric motor cover (11) and the ground cable (12).
8. Unlock and unplug connector -XB4 (13).

RENEW THE ELECTRIC MOTOR COVER

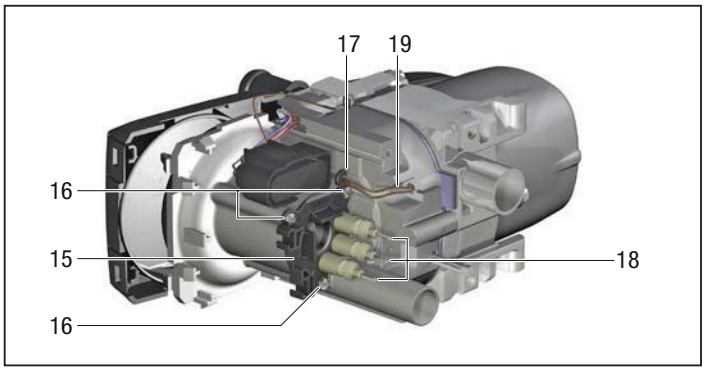
CAUTION!
Damage to the unit caused by leak or dirt

The seals of the electric motor cover are permanently deformed after removing the control box. An integral seal with the control box is not ensured on re-installation.
➔ Always replace the electric motor cover.
If the electric motor cover is renewed, dirt particles and metal parts can get inside the motor.
➔ Install the new electric motor cover immedia tely.
➔ For installation details, see point 12 onwards.

The electric motor cover is included in the
- Kit – control box
- Kit – glow plug
- Kit – lead harness of the heater.



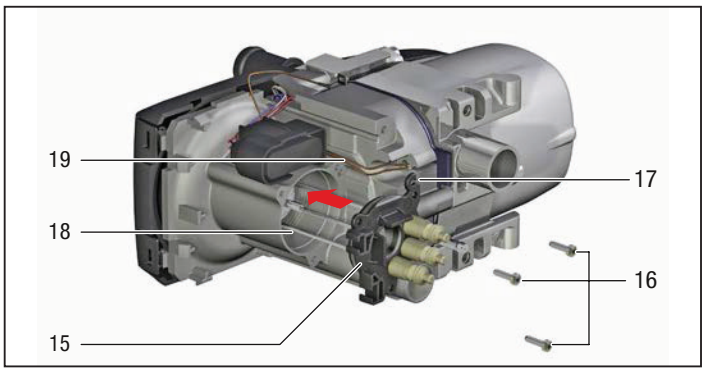
9. Unhook the flame sensor (19) connection cables a t the guide hook (17).
10. Undo three screws (16) from the electric motor cover (15).
11. Pull the electric motor cover (15) carefully off the connection pins (18).



12. Push the new electric motor cover (15) carefully onto the connection pins (18) and press on lightly.

NOTE
Do not change the position of the connection pins.

13. Screw in the 3 screws M3 × 12 (16). Tightening torque $1.5^{\pm 0.05}$ Nm.
14. Hook the flame sensor (19) connection cables into the guide hook (17).



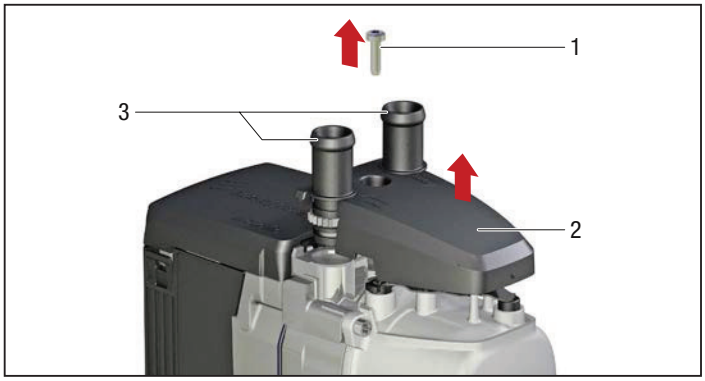
Install the control box, see page 49, point 26–32.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

REPAIR STEP 2

REMOVE THE SENSOR COVER AND WATER CONNECTION SOCKET

1. Undo the screw (1).
2. Remove the sensor cover (2) and water connection socket (3).

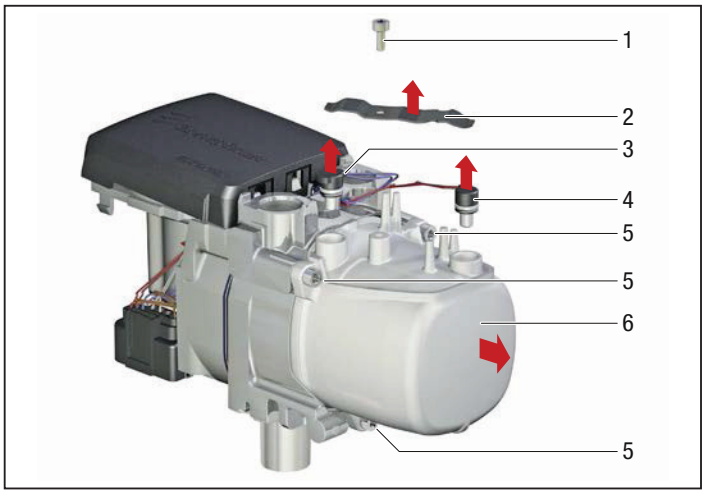


Install the sensor cover and water connection socket, see page 49, point 21–32.

REPAIR STEP 3

REMOVE THE HEAT EXCHANGER

Carry out Repair step 1 and Repair step 2 first.
1. Undo the screw (1), remove the compression spring (2).
2. Use pliers to pull out the water inlet sensor (3) and wa ter outlet sensor (4).
3. Undo the screws (5), pull off the heat exchanger (6).



Install the heat exchanger, see page 49, point 13–32.

NOTE
Repair step 1 is not necessar y if the heat exchanger is replaced.

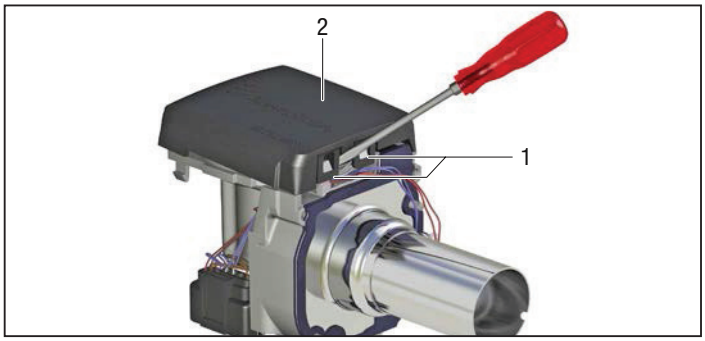
1. Undo both screws (4) from the control box (3).
2. Undo the screw (1) from the sensor cover (2) by 3 turns.
3. Release both snap connections (5) on the blower cover (6).

REPAIR STEP 4

REMOVE COMBUSTION CHAMBER

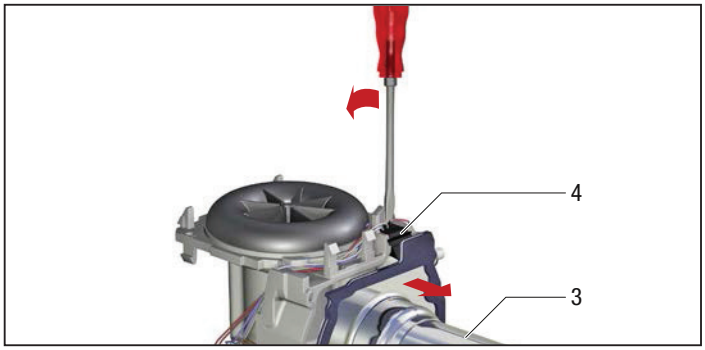
Carry out Repair step 1 to Repair step 3 first.

1. Unlock the snap connections (1) on the blo wer cover (2).



2. Pull the combustion chamber (3) together with the glow plug off the blower housing.

3. Pull out the glow plug (4).



Install the combustion chamber, see page 48, point 10–32.

NOTE
Repair step 1 is not necessar y if the combustion chamber is replaced.

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

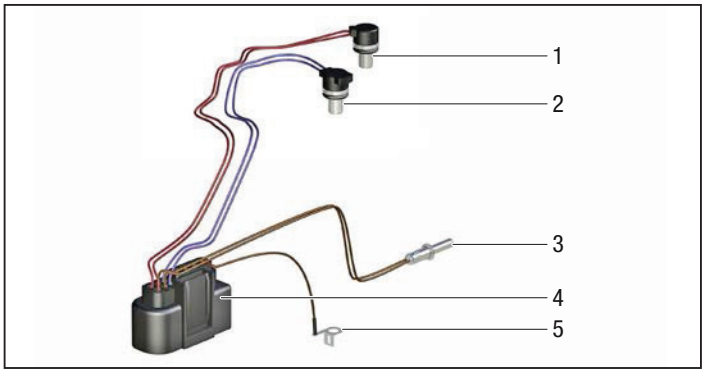
REPAIR STEP 5

REMOVE THE LEAD HARNESS OF THE HEATER

NOTE

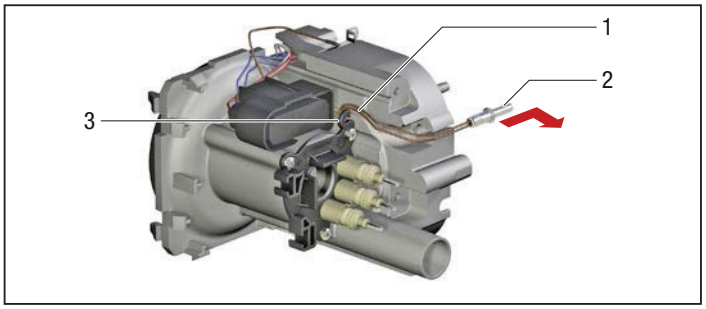
If the lead harness of the heater (4) is renewed, unplug the glow plug connection cables from the connector -XB4 (Chamber 3 and 4), see Repair step 6, Page 48.

Apart from the flame sensor (3), the other components on the lead harness of the heater (4) (ground cable (5), water inlet sensor (2) and water outlet sensor (1) have already been removed from the heater.



Carry out Repair step 1 to Repair step 4 first.

1. Unhook the flame sensor connection cables (1) from the guide hook (3) on the electricmotor.
2. Remove the flame sensor (2) on the blower housing.



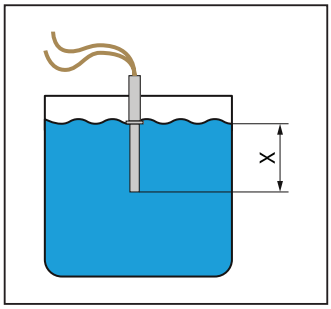
CHECK FLAME SENSOR

Use a multimeter to measure the resistance in connector -XB4 between cable BN (chamber 7) and cable BN (chamber 8). If the value lies outside the values table, replace the lead harness of the heater.

Table of values

ϑ [°C]	R [Ω]	ϑ [°C]	R [Ω]
– 50	830 ±11	50	1194±12
0	1000 ±10	100	1385±15
20	1078 ±11	150	1573±20
25	1097±11	200	1758±24

Install the lead harness, see page 49, point 7–32.



The sensor test is performed in liquid at temperatures up to max. 200 °C.

Sensor insertion depth
X = 15 mm

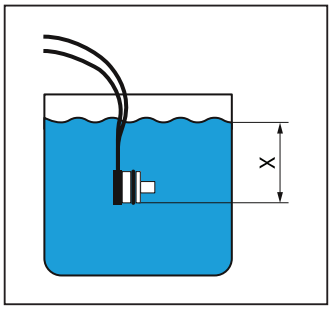
CHECK THE WATER INLET AND OUTLET SENSOR

Check the water inlet sensor

Use a multimeter to measure the resistance in connector -XB4 between cable BU (chamber 5) and cable BU (chamber 6). If the value lies outside the values table, replace the lead harness of the heater.

Check the water outlet sensor

Use a multimeter to measure the resistance in connector -XB4 between cable RD (chamber 9) and cable RD (chamber 10). If the value lies outside the values table, replace the lead harness of the heater.



The sensor test is performed in liquid at temperatures up to max. 200 °C.

Sensor insertion depth
X = 50 mm ± 5

ϑ [°C]	R [kΩ]	ϑ [°C]	R [kΩ]
– 50	657 ±80	80	1.26 ±100
– 40	330.6 ±33	100	0.677 ±60
– 20	96.3 ±8	120	0.389 ±38
0	32.55 ±500	150	0.83 ±20
25	10* ±11	180	0.095 ±12
40	5.33 ±320	200	0.064 ±0
60	2.49±175		

6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

REPAIR STEP 6

DISMANTLE GLOW PLUG

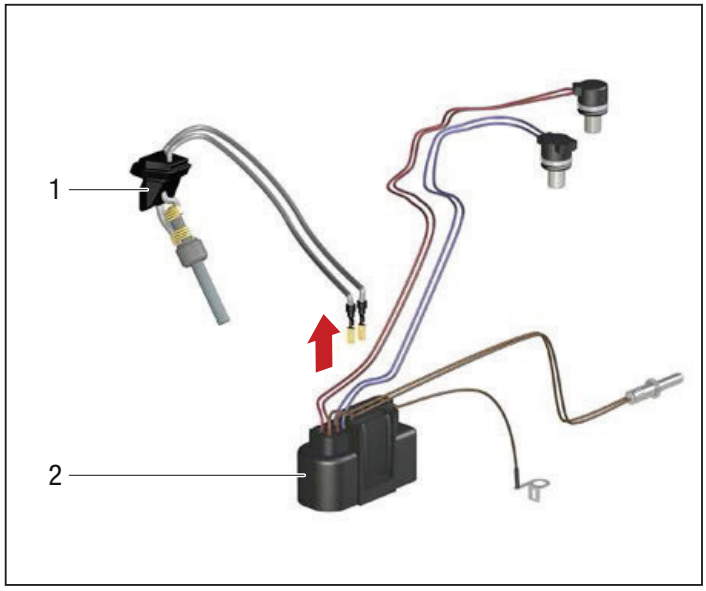
Carry out Repair step 1 to Repair step 5 first.

1. Unplug the WH connection cables from the glo w plug (1) at the connector -XB4 (2) (chamber 3 and 4).

CHECK THE GLOW PLUG

DANGER!
Risk of burning due to glowing component.
After the operating voltage is applied the glow plug becomes very hot and can cause burns.
➔ Insert glow plug in combustion chamber or jig.
1. Apply voltage 9.5 ± 0.1 volt to the glo w plug.
2. After 25 sec., measure the current intensity.
   Measured value 9.5 A (+1 / –1.5) the glow plug is ok.
   Deviating values –> renew the glow plug.

Install the glow plug, see pages 47 - 49, point 6–32.

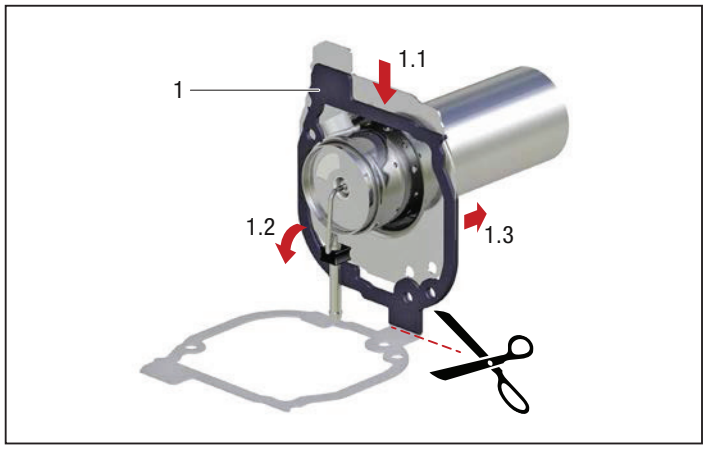


REPAIR STEP 7

REPLACE THE BLOWER

Carry out Repair step 1 to Repair step 5 first.
Then replace the blower.

NOTE
Refer to page # ?? that provides explanation for selecting suitable blower motor unit.



REPAIR STEP 8

REMOVE THE BLOWER HOUSING / HEAT EXCHANGER SEAL AND THE FUEL CONNECTION GROMMET

Carry out Repair step 1 to Repair step 4 first.

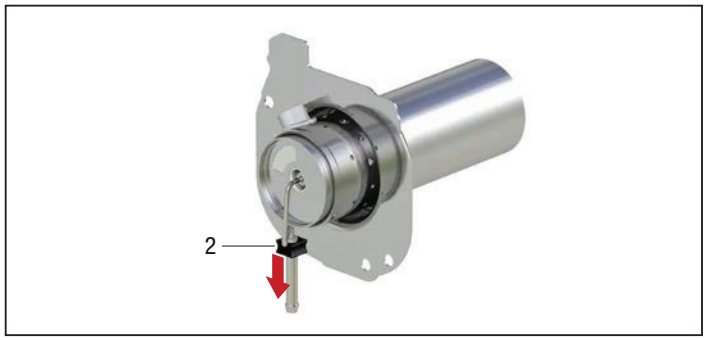
1. Remove the seal (1) from the combustion chamber.

NOTE
The folding seal can be cut for easier removal.

2. Pull off the fuel connection grommet (2) from underneath.

Install the blower housing / heat exchanger seal and fuel connection grommet, see pages 47 - 49, point 1–32.

NOTE
Illustration shows the combustion chamber of a diesel heater.



6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

ASSEMBLE THE HEATER

CAUTION!

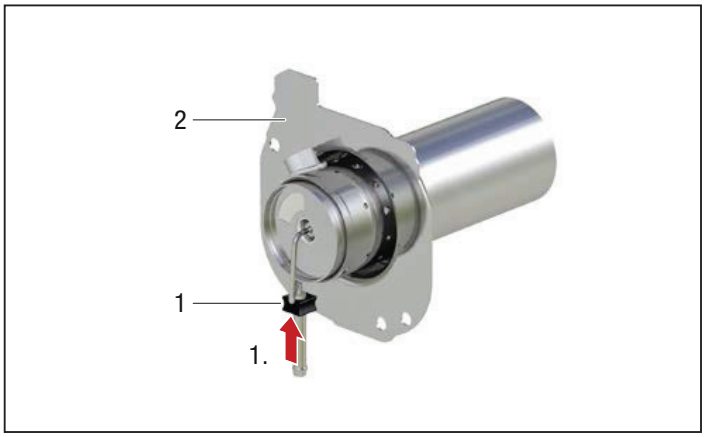
Damage to unit caused by third party, damaged or deformed components

Installing third party, damaged or deformed components has a negative effect on the function of the heater.

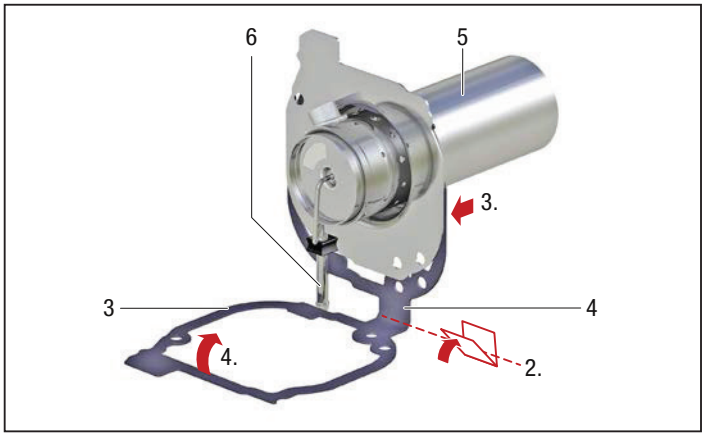
➔ Replace damaged, deformed or defective components.
➔ Use original Eberspächer spare parts, see spare parts list.
➔ Use all the components included in spare parts kits.

INSTALL THE FUEL CONNECTION GROMMET AND BLOWER HOUSING / HEAT EXCHANGER SEAL

1. Push on the fuel connection grommet (1). Bottom edge of the grommet is flush with the combustion chamber flange (2).



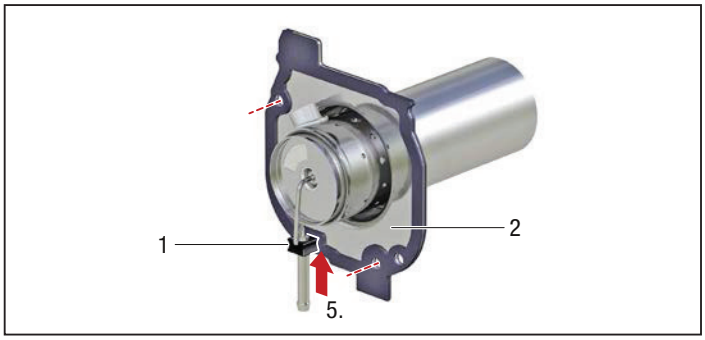
2. Before installing fold the blo wer housing / heat exchanger seal (3) at the connecting web (4).
3. Push the top part of the seal over the flame tube (5) up to the combustion chamber flange (2).
4. Fold the bottom part of the seal up over the fuel connection (6).



5. Hold both seal parts together and push them upwards between the combustion chamber flange (2) and the fuel connection grommet (1). The drillholes in the seal and combustion chamber lie above each other.

NOTE

Illustration shows the combustion chamber of a diesel heater.

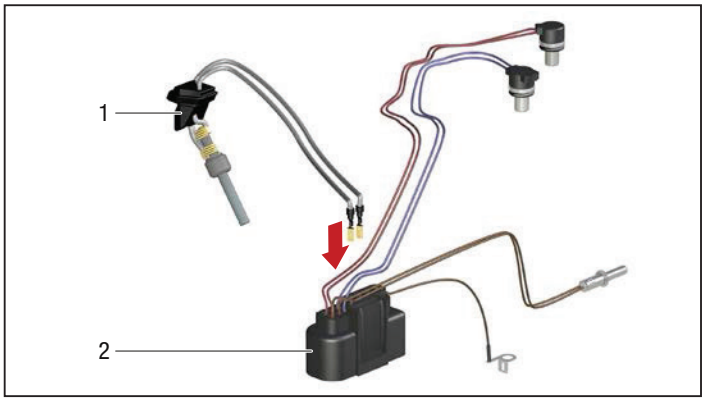


INSTALL THE GLOW PLUG

NOTE

Do not twist the glo w plug connection cables.

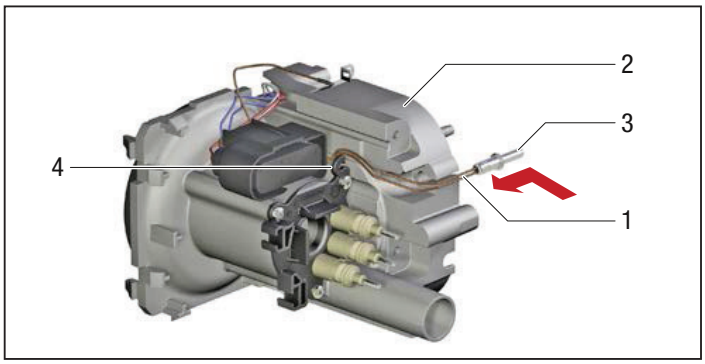
6. After replacing the glow plug (1) or lead harness of the heater (2), plug the glow plug connection cables onto connector -XB4 in chamber 3 and 4.



6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

INSTALL THE LEAD HARNESS OF THE HEATER / FLAME SENSOR

7. Insert the flame sensor connection cables (1) in the blo wer housing (2).
8. Push in the flame sensor (3).
9. Hook the connection cables in the guide hook (4) on the electric motor.



INSTALL THE COMBUSTION CHAMBER

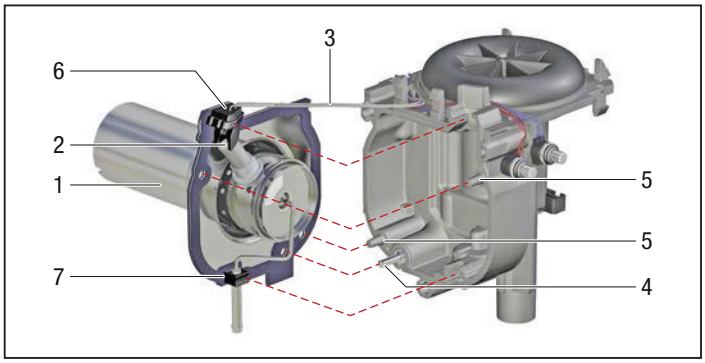
CAUTION!

Unit damage due to unbalance

The impeller is precisely balanced and very sensitive. Putting down the heater on the impeller causes unbalance, which in turn leads to damage to the blower or heater.

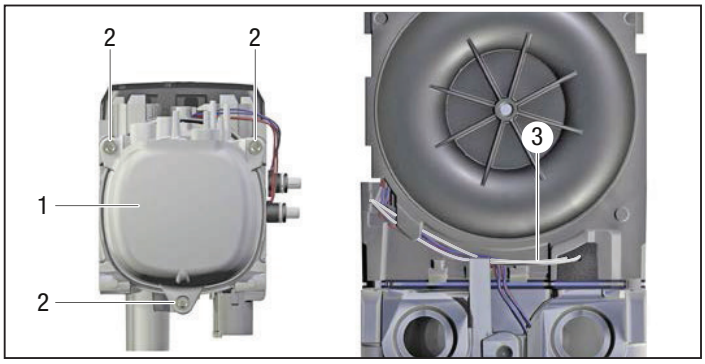
➔ Do not lay heater on its impeller.
➔ Always lay the heater on its side or clamp it in a jig.

10. Insert the glow plug (2) in the combustion chamber (1). The connection cables (3) point to wards the middle of the unit.
11. Place the combustion chamber on the blower housing, at the same time.
    - feed the flame sensor (4) and guide pins (5) into the drill holes in the combustion chamber flange.
    - Push the glow plug grommet (6) and fuel connection grommet (7) into the corresponding recesses in the blower housing.
12. Check the fit of the grommets. The grommets must be completely pushed in.



INSTALLING THE HEAT EXCHANGER

13. Position the heat exchanger (1) on the flame tube and guide pins.
14. Fix heat exchanger with screws (2) M5 × 65. Tightening torque $6^{+0,6}$ Nm.
15. Lay the glow plug connection cables (3) parallel in the guides, do not twist.

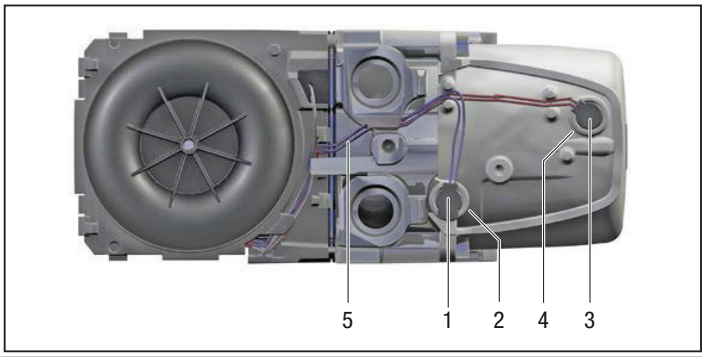


INSTALL THE WATER INLET SENSOR / WATER OUTLET SENSOR

NOTE

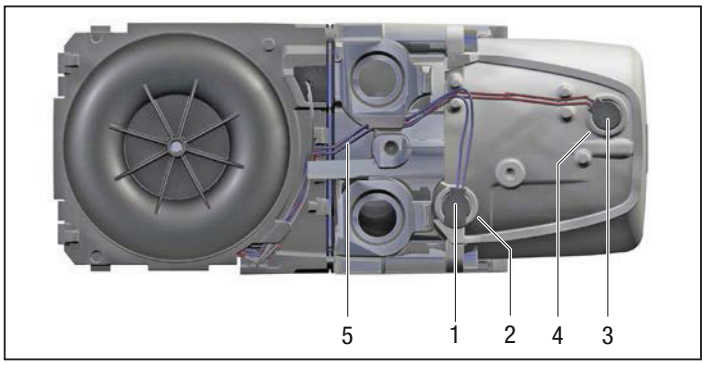
- If the lead harness of the heater is re-used, always renew and grease the O-rings of the sensor.
- If the lead harness of the heater has been renewed, grease the O-rings of the sensor.

16. Insert the water inlet sensor (1) (cables BU) in the holder (2).
17. Insert the water outlet sensor (3) (cables RD) in the holder (4).
18. Lay the sensor connection cables (5) in the guides as shown.



6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

19. Check the sensor compression spring (6) for damage and deformation. Renew damaged or deformed compression spring.
20. Position the compression spring as shown and fix with screw (7) M4 × 10. Tightening torque 4.2 ±0.4 Nm.



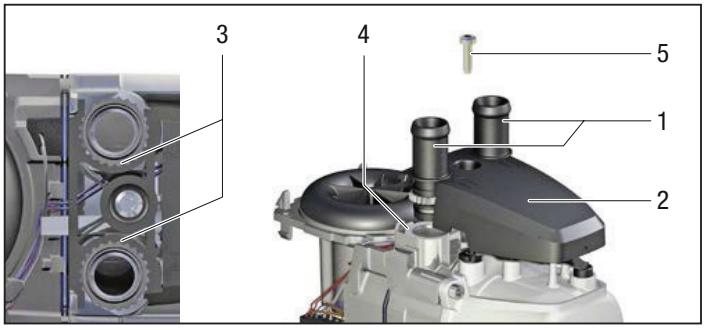
INSTALL WATER CONNECTION SOCKET / SENSOR COVER

NOTE

The sensor cover together with the screw is not a tool for pushing the water connection socket into the heat exchanger.

- Check the O-rings of the water connection socket for damage.
- Replace damaged O-rings.
- Grease O-rings.

21. Insert the water connection socket (1) in the sensor cover (2). The teeth (3) engage in each other.
22. Insert the water connection socket in the holders (4) on the heat exchanger and press in, until the teeth sit on the heat exchanger.
23. If using an elbow socket, set the required direction.
24. Push the sensor cover downwards and readjust the connection socket position until the teeth (3) engage once again.
25. Fix the sensor cover with screw (5) M5 x 18. Tightening torque 7 +0,7 Nm.



MOUNTING THE CONTROL BOX

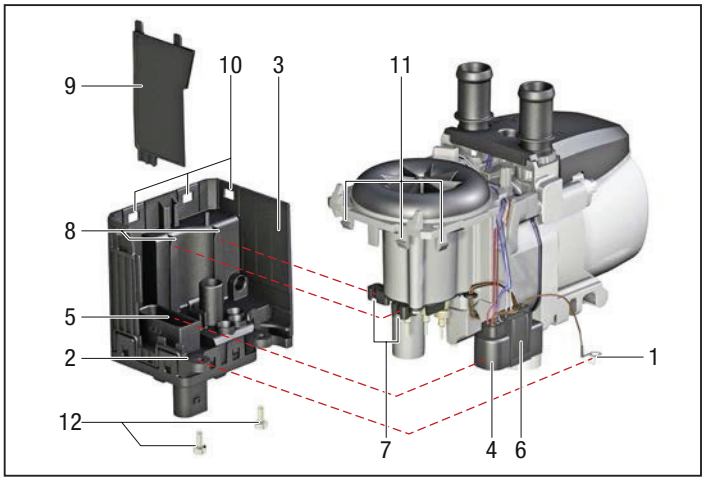
CAUTION!

Damage to unit due to o verload

A>n excessive tightening torque on the screw (12) overloads and damages the plug-in connection of the electric motor / control box and causes malfunctions.

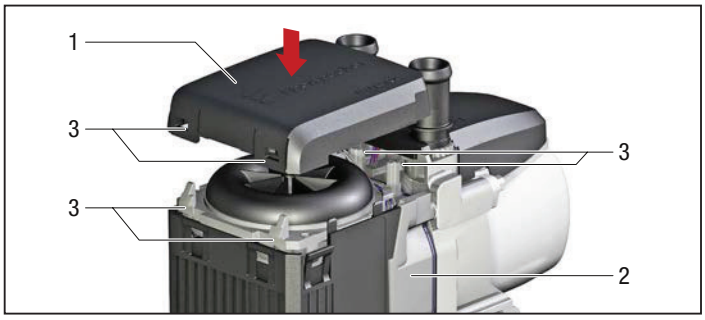
➔ Keep to the specified tightening torque.

26. Insert the ground cable (1) in the holder (2) on the control box (3).
27. Push the connector (4) of the hea ter lead harness into the control box connection (5), until the locking device (6) snaps into position.
28. Feed the guides (7) on the electric motor into the rails (8) on the control box.
29. Push the control box (3) upwards. The snap connections (10) latch onto the blower housing (11).
30. Fix the control box with 2 screws (12) M4 × 10. Tightening torque 4.2±0.4 Nm.
31. Stow away the cables and push in the electric motor cover (9) from above.



INSTALLING THE BLOWER COVER

32. Place the blower cover (1) on the blower housing (2) and push downwards, until the snap connections (3) latch into position.



6 TROUBLESHOOTING / MAINTENANCE INSTRUCTIONS

STANDARD TIMES

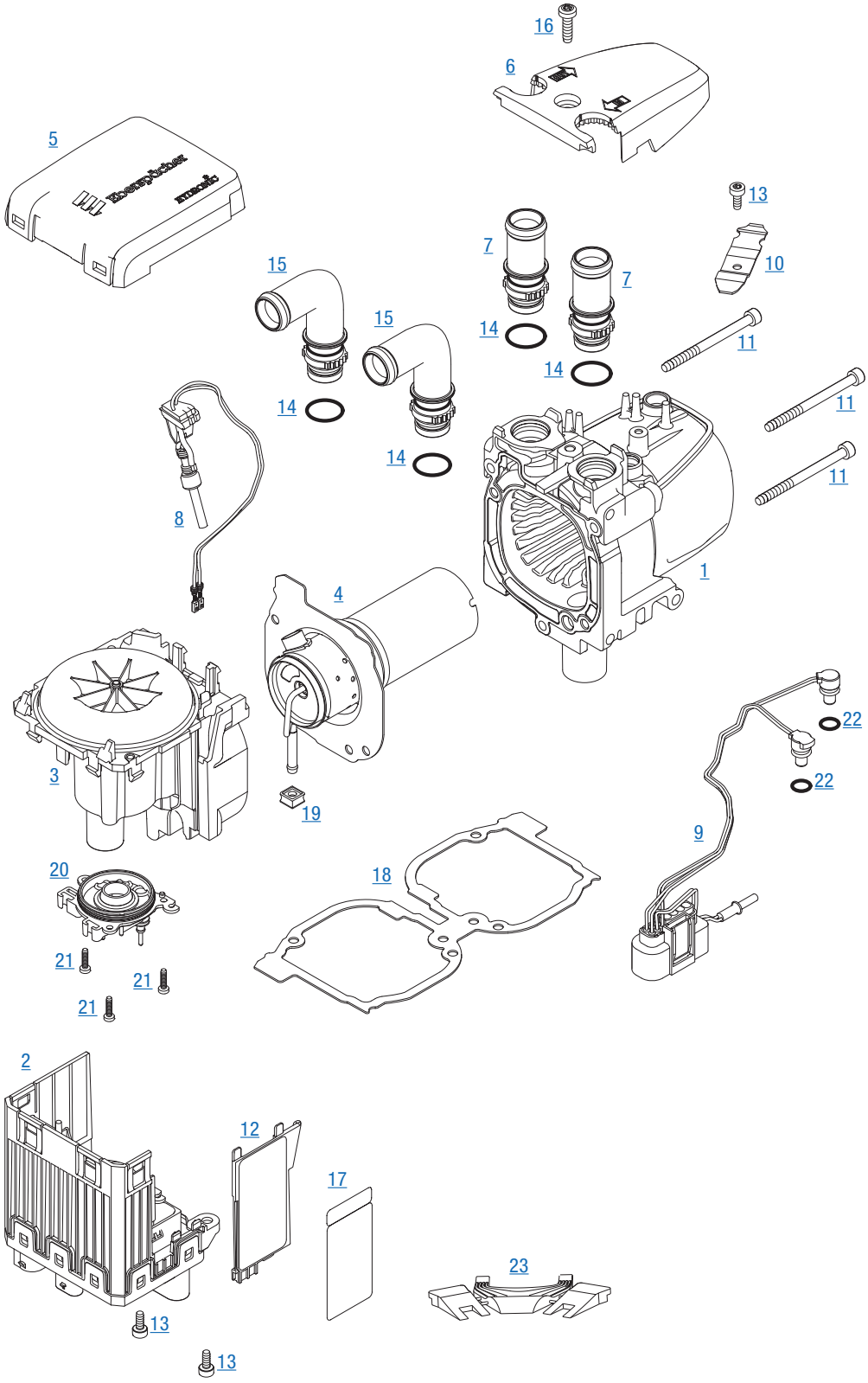
The standard times important for the guarantee are summarised in the following overview. The standard times are given as a work value.
1 work value (AW) = 6 minutes
The standard times are based on well-equipped garages/workshops and include all material and personal allowances taking into account the safety regulations.
Guarantee / warranty work must be carried out within these standard times.

		PARTS TO BE REMOVED													
DEFECTIVE COMPONENT	WORK VALUE (AW)	Control box	Electric motor cover	Sensor cover	Water connection socket / O-ring	Compression spring	Water inlet and outlet sensor / O-ring	Heat exchanger	Combustion chamber	Blower cover	Heater lead harness	Glow plug	Blower	Combustion chamber seal	Fuel pipe grommet
Control box	1	•	•												
Electric motor cover	1	•	•												
Sensor cover	1			•											
Water connection socket / O-ring	1			•	•										
Compression spring	1			•	•	•									
Water inlet and outlet sensor / O-ring	1			•	•	•	•								
Heat exchanger	1			•	•	•	•	•							
Combustion chamber	2			•	•	•	•	•	•	•	•	•		•	•
Blower cover	2			•	•										
Heater lead harness	2	•	•	•	•	•				•	•	•			
Glow plug	2	•	•	•	•	•	•	•	•	•	•	•		•	•
Blower	2	•		•			•	•	•	•	•	•	•	•	•
Combustion chamber seal	2			•	•	•	•	•	•	•	•	•		•	•
Fuel pipe grommet	2			•	•	•	•	•	•		•	•		•	•

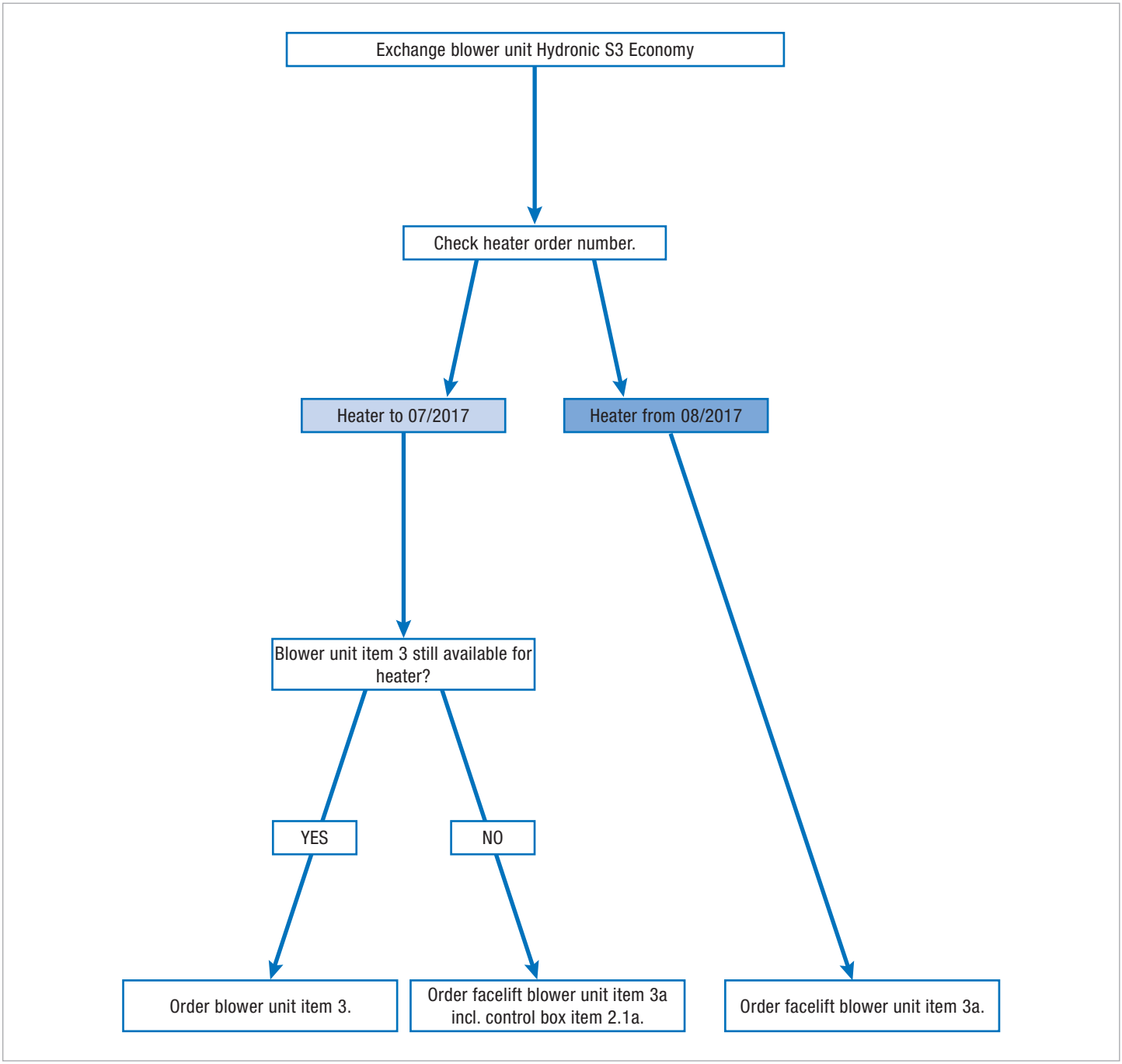
PERIPHERAL REPAIR WORK	
Diagnosis, fault memory, functional check	4
Fuel metering pump	2
Control unit	3
Water pump	4
Exhaust pipe	1.5
Exhaust silencer	2.5
Combustion air silencer	2
Combustion air hose	2
Replace the main fuse	1
Replace the combination valve	4
Replace the non-return valve	4

7 PARTS LIST

SPARE PARTS DIAGRAM (INTERNAL COMPONENTS - HYDRONIC 3)



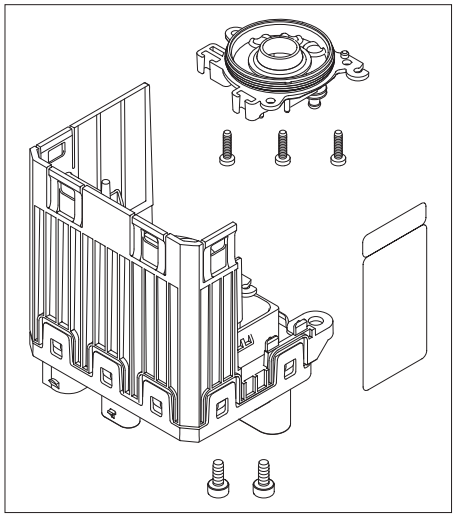
7 PARTS LIST


Exchange blower unit Hydronic S3 Economy
Check heater order number.
Heater to 07/2017
Heater from 08/2017
Blower unit item 3 still available for heater?
YES
NO
Order blower unit item 3.
Order facelift blower unit item 3a incl. control box item 2.1a.
Order facelift blower unit item 3a.

7 PARTS LIST

SPARE PARTS LIST

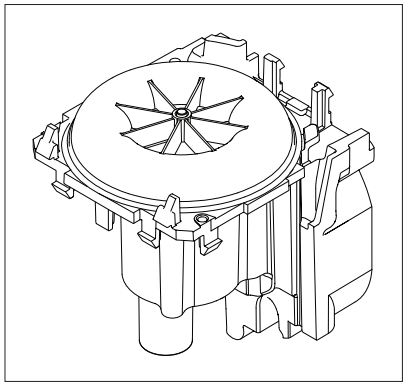
Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit 20 1993 05	20 1952 05	25 2694 05	25 2912 05
1	1	1	Jacket and heat exchanger	25 2651 01 01 00	•	•	•	•
2	1	–	Control box	see item 2.1				
2.1	1	1	Kit – control box	20 1963 99 50 00				
			includes: Item 2, 13, 17, 20, 21	20 1952 99 50 00		•		
				25 2694 99 50 00				
				25 2652 99 50 00			•	•
2.1a	1	1	Kit – control box, includes: 2, 13, 17, 20, 21	20 1993 99 50 00	•	•		



NOTE

Use the dismantling kit Item 23 to dismantle the control box.

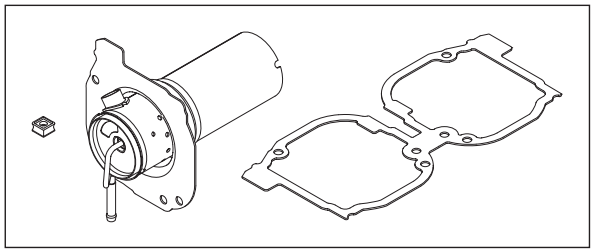
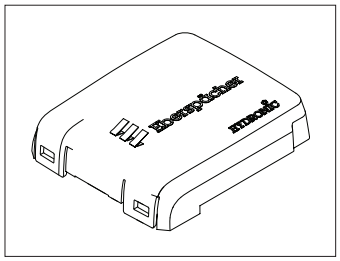
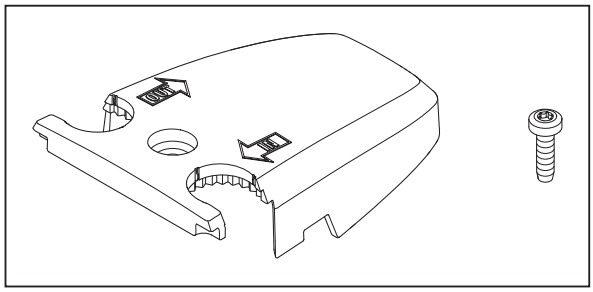
3	1	1	Blower	25 2652 15 00 00		•	•	



3 a (not ill.)	1	1	Blower	25 2652 16 00 00	•	•	•	•

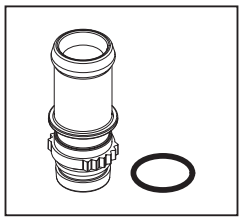
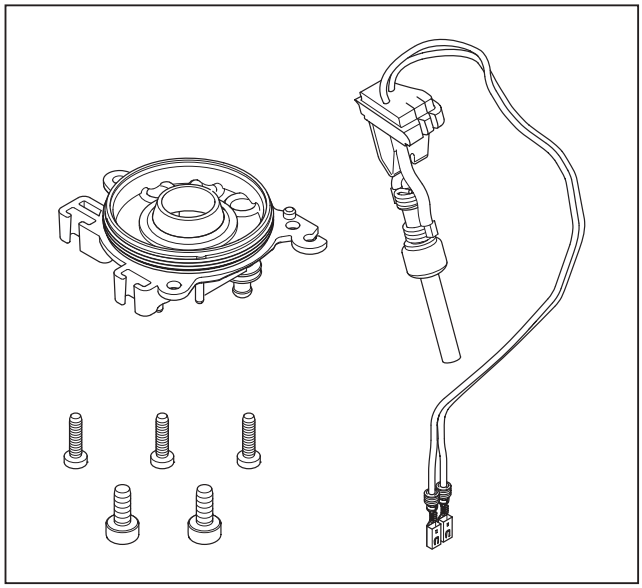
7 PARTS LIST

SPARE PARTS LIST

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit 20 1963 05	20 1952 05	25 2694 05	25 2652 05
4	1	–	Combustion chamber	see item 4.1				
4.1	1	1	Kit – combustion chamber includes: Item 4, 18, 19	20 1952 99 10 00 25 2652 99 10 00		•	•	•
								
5	1	1	Cover, blower	25 2652 01 00 03	•	•	•	•
								
6	1	–	Cover, sensor	see item 6.1				
6.1	1	1	Kit – cover, sensor includes: Item 6, 16	25 2652 99 01 12	•	•	•	•
								

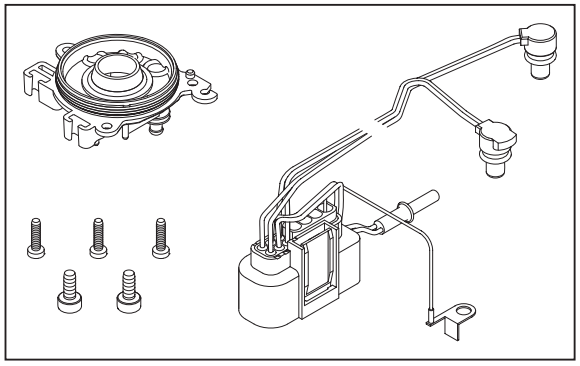
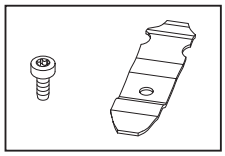
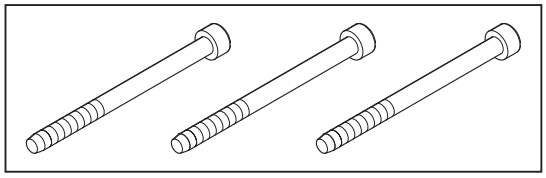
7 PARTS LIST

SPARE PARTS LIST (INTERNAL COMPONENTS - HYDRONIC 3)

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit			
					20 1993 05	20 1952 05	25 2694 05	25 2912 05
7	2	–	Water connection socket 20, straight	see item 7.1				
7.1	1	1	Kit – water connection socket 20, straight includes: Item 7, 14	25 2652 99 05 01	•	•	•	•
								
8	1	–	Glow plug	see item 8.1				
8.1	1	1	Kit – glow plug includes: Item 8, 13, 20, 21	25 2652 99 01 09	•	•	•	•
								

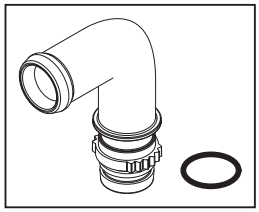
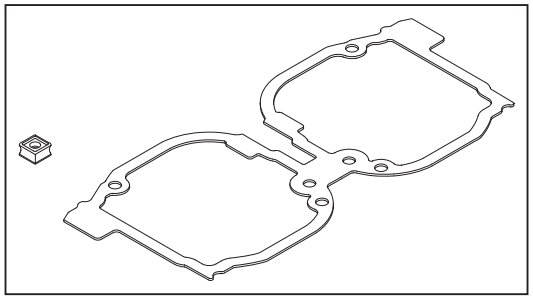
7 PARTS LIST

SPARE PARTS LIST (INTERNAL COMPONENTS - HYDRONIC 3)

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit			
					20 1993 05	20 1952 05	25 2694 05	25 2912 05
9	1	–	Heater lead harness see item 9.1					
9.1	1	1	Kit – heater lead harness includes: Item 9, 13, 20, 21	25 2652 99 01 02	•	•	•	•
								
10	1	–	Compression spring see item 10.1					
10.1	1	1	Kit – compression spring includes: Item 10, 13	25 2652 99 00 06	•	•	•	•
								
11	3	–	Screw, M5 x 65 thread forming, DIN 7500-EE	see item 11.1				
11.1	3	3	Kit – screw, M5 x 65 (3 no.) includes: Item 11	25 2652 01 00 14	•	•	•	•
								
12	1	1	Cover, electric motor	25 2652 01 00 04	•	•	•	•
13	2	–	Screw, M4 x 10 thread forming, DIN 7500-EE	see item 2.1, see item 8.1, see item 9.1, see item 10.1				
14	2	4	O-ring, 16 x 2	22 1000 70 00 19	•	•	•	•

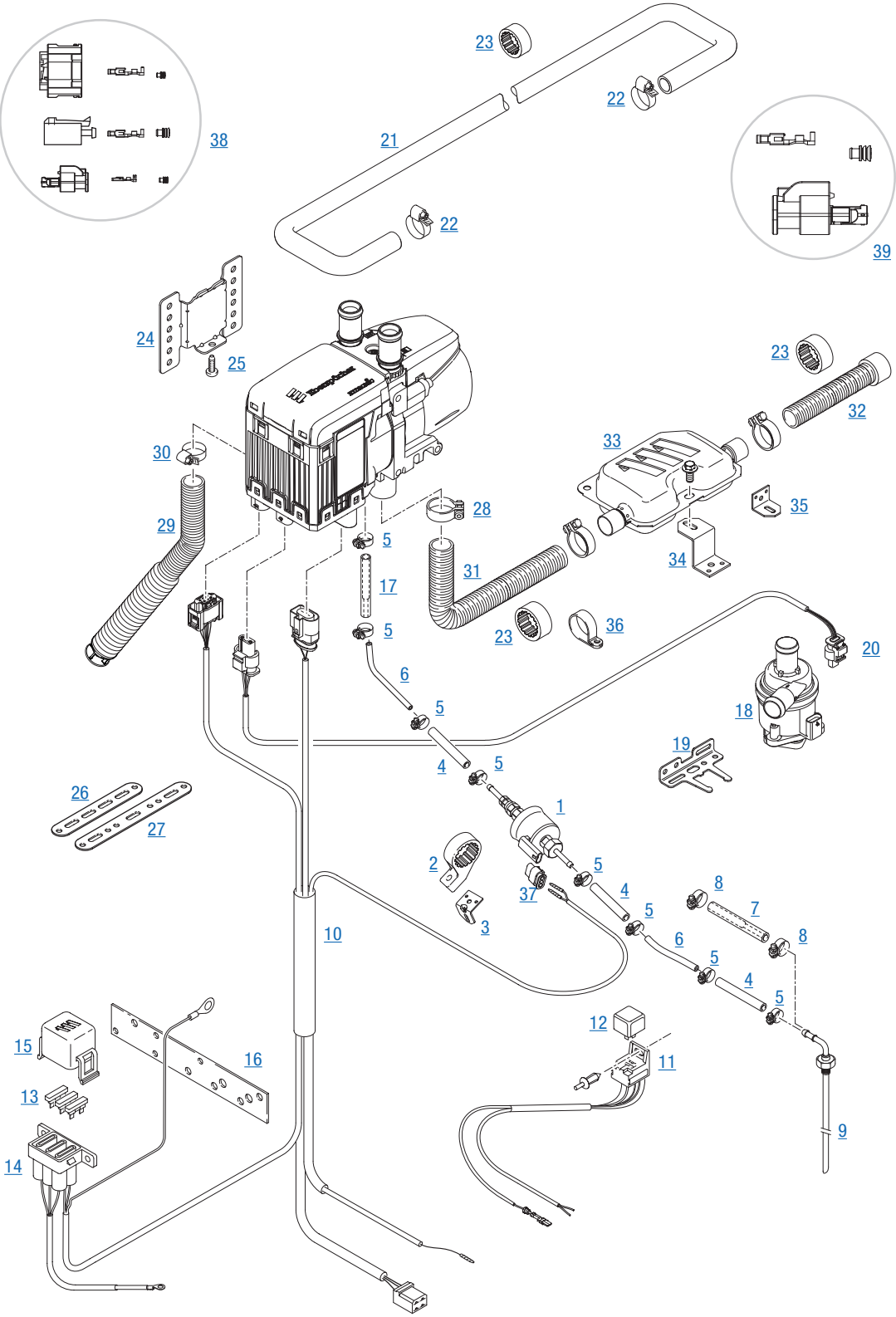
7 PARTS LIST

SPARE PARTS LIST (INTERNAL COMPONENTS - HYDRONIC 3)

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit			
					20 1993 05	20 1952 05	25 2694 05	25 2912 05
15	2	–	Water connection socket 20, angled	see item 15.1				
15.1	1	–	Kit – water connection socket 20, angled includes: Item 15, 14	25 2652 99 80 01	•	•	•	•
								
16	1	–	Screw, M5 x 18 thread forming, DIN 7500-CE see item 6.1					
17	1	–	Nameplate, replacement	see item 2.1				
18	1	–	Seal, heat exchanger	see item 18.1, see item 4.1				
18.1	1	–	Kit – seal	20 1952 99 01 05	•	•		
			includes: Item 18, 19	25 2652 99 01 05			•	•
								
19	1	–	Fuel pipe grommet	see item 18.1, see item 4.1				
20	1	–	Cover, electric motor see item 2.1,	see item 8.1, see item 9.1				
21	3	–	Screw, M3 x 12 thread forming, DIN 7500	see item 2.1, see item 8.1, see item 9.1				
22	2	20	O-ring, 7.5 x 2	25 2481 99 01 07	•	•	•	•
23	–	1	Dismantling kit for control box	25 2652 81 00 00	•	•	•	•

7 PARTS LIST

SPARE PARTS DIAGRAM (EXTERNAL COMPONENTS - HYDRONIC 3)

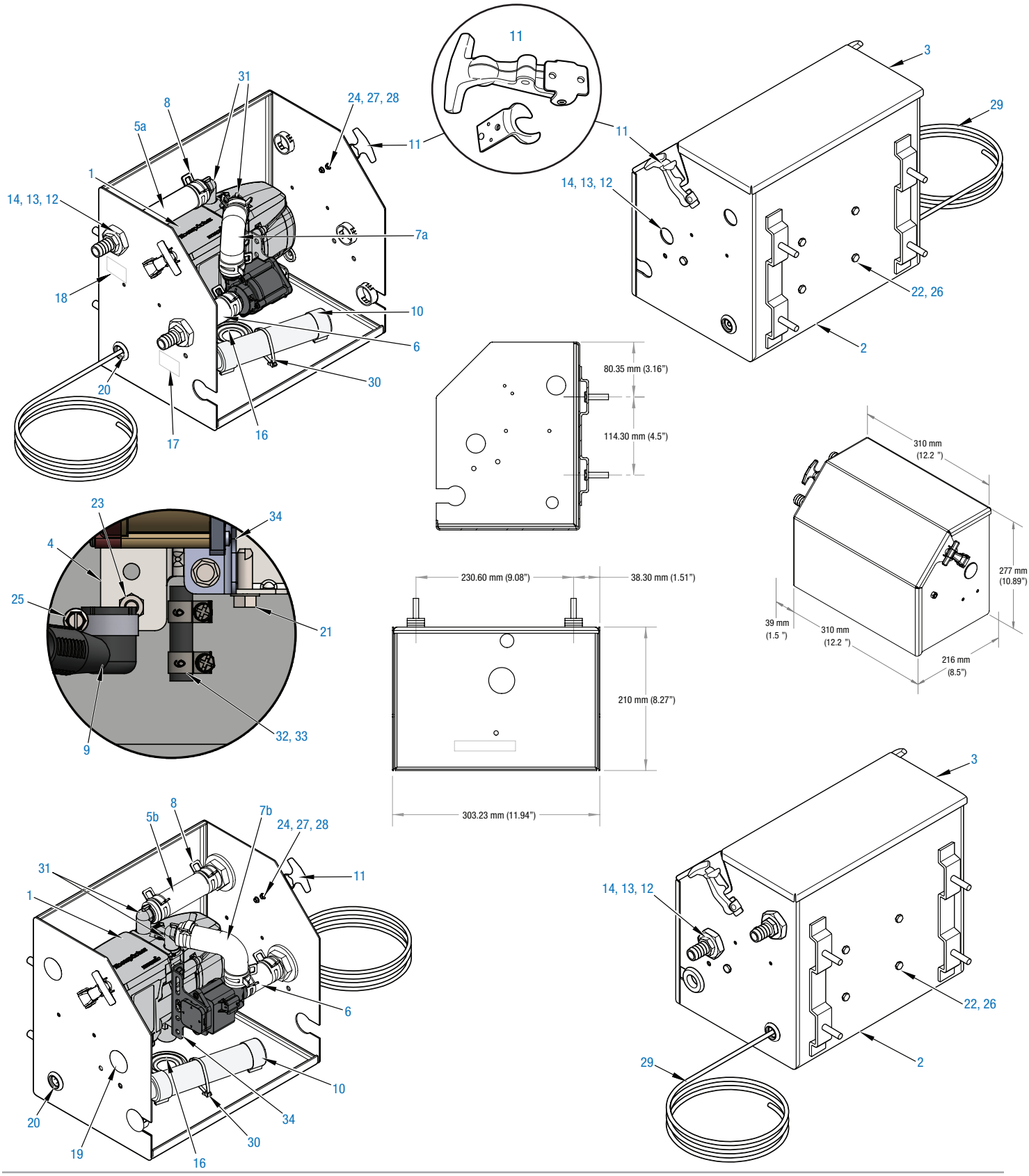


7 PARTS LIST

SPARE PARTS LIST (EXTERNAL COMPONENTS - HYDRONIC 3)

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit			
					20 1993 05	20 1952 05	25 2652 05	25 2912 05
1	1	1	Fuel metering pump, 12 V	22 4550 05 00 00	•	•	•	•
2	1	1	Bracket, fuel metering pump	22 1000 50 04 00	•	•	•	•
3	–	1	Bracket	20 1348 03 00 02	•	•	•	•
4	–	m	Hose 3.5 x 3 mm	360 75 400	•	•	•	•
5	8	1	Hose clip, ø 9 mm	10 2068 00 90 98	•	•	•	•
6	–	m	Pipe, 4 x 1, DIN 73378, blue	890 31 054	•	•	•	•
		m	Pipe, 4 × 1 VW TL 524 35-A, black	890 31 138	•	•	•	•
7	1	1	Adapter, ø 7.5 / 3.5 mm	22 1000 20 30 00	•	•	•	•
8	2	1	Hose clip, ø 11 mm	10 2068 01 10 98	•	•	•	•
9	1	1	Tank connection, d = 4 mm	22 1000 20 16 00	•	•	•	•
10	1	1	Cable harness, heater	25 2652 80 11 00	•	•	•	•
10a	1	1	Boxed Hyd B/D5E H-3 HARNESS 12V	25 2800 70 05 11	•	•	•	•
10b	1	1	Hyd B/D5E H-3 HARNESS 12V	25 2800 70 05 12	•	•	•	•
11	1	1	Lead harness, fan	22 1000 35 01 00	•	•	•	•
12	1	1	Relay, 12 V	203 00 097	•	•	•	•
13	1	1	Fuse link, 5 A	204 00 007	•	•	•	•
	1	1	Fuse link, 25 A	204 00 011	•	•	•	•
	1	1	Fuse link, 20 A	204 00 010	•	•	•	•
14	1	1	Fuse holder, housing, receptacle	22 1000 31 06 01	•	•	•	•
15	1	1	Fuse holder, cover	22 1000 31 06 02	•	•	•	•
16	1	1	Combined bracket	22 1000 51 21 00	•	•	•	•
17	1	1	Adapter di = 4.5 / 3.5 mm	25 2635 05 00 07	•	•	•	•
18	1	1	Water pump, 12 V	25 2652 25 00 00	•	•	•	•
19	1	1	Bracket, water pump	22 1000 51 39 00	•	•	•	•
20	1	1	Lead harness, water pump, 12 V, L = 2 m	25 2652 80 15 00	•	•	•	•
21	–	1	Hose, water, di = 20 mm	25 1917 80 00 01	•	•	•	•
22	–	1	Hose clip, 20 – 32 mm	10 2067 02 00 32	•	•	•	•
23	–	1	Spacer ring, exhaust pipe, 21 / 44	22 1000 50 10 02	•	•	•	•
24	1	1	Bracket, heater	22 1000 51 42 00	•	•	•	•
25	1	1	Screw, M6 × 16 thread forming	25 2517 05 00 06	•	•	•	•
26	–	1	Holder, straight, L = 135 mm	22 9000 50 93 05	•	•	•	•
27	–	1	Holder, straight, L = 180 mm	22 9000 50 93 06	•	•	•	•
28	3	1	Clamp	22 1000 51 44 00	•	•	•	•
29	1	1	Combustion air intake silencer	22 1000 40 00 10	•	•	•	•
30	1	1	Hose clip, 16 – 25 mm	10 2067 01 60 25	•	•	•	•
31	1	1	Hose, exhaust, di = 24 mm, L = 900 mm	360 61 274	•	•	•	•
32	1	1	Hose, exhaust, di = 24 mm, L = 300 mm, with end sleeve	20 1731 80 04 00	•	•	•	•
33	1	1	Exhaust silencer	22 1000 40 21 00	•	•	•	•
34	1	1	Bracket, exhaust silencer, Z shape	20 1533 88 00 07	•	•	•	•
35	1	1	Bracket, exhaust silencer, L shape	20 1348 03 00 04	•	•	•	•
36	–	1	Clip, ø 28 mm	152 09 010	•	•	•	•
37	1	1	Connector, metering pump	206 31 294	•	•	•	•
38	–	1	HS3 heater electrical control kit	25 2800 90 00 53	•	•	•	•
39	1	1	HS3 FMP connector kit	25 2800 90 00 54	•	•	•	•

7 PARTS LIST


11
3
29
31
8
5a
24, 27, 28
11
1
14, 13, 12
7a
18
10
6
30
20
17
16
14, 13, 12
22, 26
2
80.35 mm (3.16")
114.30 mm (4.5")
310 mm (12.2 ")
277 mm (10.89")
39 mm (1.5 ")
310 mm (12.2 ")
216 mm (8.5")
23
34
4
25
21
9
32, 33
230.60 mm (9.08")
38.30 mm (1.51")
210 mm (8.27")
303.23 mm (11.94")
8
5b
7b
24, 27, 28
31
11
1
6
10
34
20
19
30
16
3
14, 13, 12
22, 26
29
2

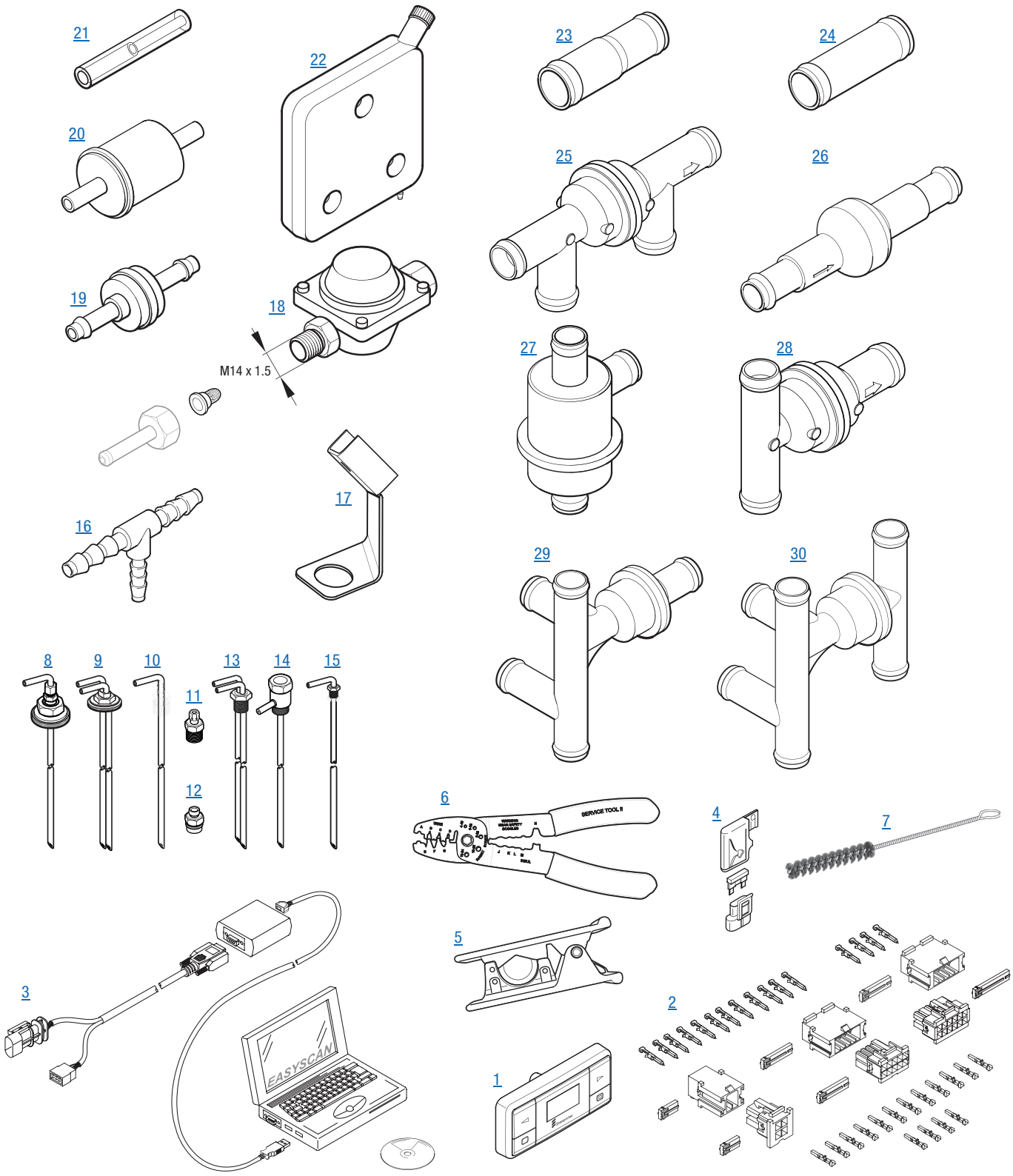
7 PARTS LIST

SPARE PARTS LIST (INTERNAL COMPONENTS - BOXED HYDRONIC 3 ASSEMBLY)

Item No.	Quantity per unit	Quantity per SU	Designation	Order No. (SU)	For unit	
					25 2826 52 05 45	25 2826 52 05 40
1	1	–	Hydronic 3 d5e 12v	25 2652 05 0000	•	•
2	1	–	HS3 enclosure base	25 2800 40 0528	•	•
3	1	–	HS3 enclosure lid	25 2800 40 0529	•	•
4	1	–	HS3 heater mounting bracket	22 1000 51 4200	•	•
5a	1	–	HS3 coolant hose 20 mm x 130 mm length	20 2900 60 0042	•	
5b	1	–	HS3 coolant hose 20 mm x 113 mm length	20 2900 60 0045		•
6	1	–	HS3 coolant hose 20 mm x 72 mm length	20 2900 60 0043	•	•
7a	1	–	HS3 coolant hose 90° - 1	20 2900 60 0046	•	
7b	1	–	HS3 coolant hose 90° - 2	20 2900 60 0044		•
8	6	–	Spring clamp, 29mm	5530021	•	•
9	1	–	Elbow 90 combustion air	22 1000 40 0004	•	•
10	1	–	HS3 combustion air intake	22 1000 40 0010	•	•
11	2	–	Southco latches	5520059	•	•
12	2	–	Bulk head fitting	20 2900 60 1010	•	•
13	2	–	1/2 - 3/4 Straight barb connector	5520068	•	•
14	2	–	Washer.m27 bulk head	5590086	•	•
15	1	–	HYD b/d5e h-iii harness 12v	25 2800 70 0511	•	•
16	1	–	Silicon seal - exhaust	25 1216 88 0301	•	•
17	1	–	Decal. coolant in	5580011	•	•
18	1	–	Deal. coolant out	5580012	•	•
19	3	–	Snap in plug black dop 1093	5530027	•	•
20	2	–	Grommet	20 1280 09 0103	•	•
21	3	–	HS3 m6 mounting bolt	25 2517 05 0006	•	•
22	5	–	bolt m6 x 12 din 933-8.8pl	5590008	•	•
23	5	–	Hex nut 6mm	5590064	•	•
24	6	–	Nut 3mm	5590069	•	•
25	1	–	Clamp 16-25mm id	10 2067 01 6025	•	•
26	5	–	Washer 6mm .spring	5590084	•	•
27	6	–	M3 wave washer din137	5590117	•	•
28	4	–	Screw. phil. head m3x10	5590024	•	•
29	1	–	Plastic fuel line 2mm x6m	20 2900 20 0015	•	•
30	1	–	Cable tie comb air	209 31 091	•	•
31	1	–	HS3 90 deg barb w/o -ring(2 pcs)	25 2652 99 8001	•	•
32	2	–	Clamp 9mm	10 2068 00 9098	•	•
33	1	–	Fuel line adaptor 3.5 to 5mm	25 1888 80 0102	•	•
34	1	–	Bracekt,water pump h-ii	22 1000 51 3900	•	•
35	1	–	Flex exh 1 layer 24mm x 1 mtr	20 2900 20 0003	•	•
36	1	–	EasyStart timer	22 1000 34 1500	•	•
37	1	–	Bag parts- HS3 boxed aftermarket	25 2800 90 0052	•	•

7 PARTS LIST

SPARE PARTS DIAGRAM (ADDITIONAL COMPONENTS - HYDRONIC 3)



7 PARTS LIST

SPARE PARTS LIST (ADDITIONAL COMPONENTS - HYDRONIC 3)

Item No.	Designation		Order No. (SU)	For unit 20 1952 05	For unit 25 2652 05
1	EasyStart Timer		22 1000 34 15 00	•	•
2	EasyStart Call / EasyStart Timer - Single part electrical connection parts		22 1000 34 26 00	•	•
3	EasyScan (VCI)		22 1550 89 00 00	•	•
4	Packard ATC Fuse Holder with Terminals (Without Fuse)		5670051	•	•
5	Fuel Line Cutter		5520003	•	•
6	Wire Crimper		5670003	•	•
7	Light Brush (Brass)		5590002	•	•
8	Single Pick-up Pipe	2.0 mm Universal (Drill or 1/4” NPT fitting) (66 cm or 26”)	20 2900 20 20 10	•	•
9	Double Pick-up Pipe	2.0 mm (56 cm or 22”)	20 2900 20 20 57	•	•
10	Single Pick-up Pipe	2.0 mm (66 cm or 26”)	20 2900 20 20 42	•	•
11	Compression Fitting	1/4” NPT	20 2900 20 20 44	•	•
	Compression Fitting	3/8” NPT	5520002	•	•
	Compression Fitting	1/2” NPT	5520006	•	•
	Compression FTNG	3/4” NPT	20 2900 20 20 82	•	•
12	Compression FTNG	9/16” w/O-ring	5520007	•	•
13	Double Pick-up Pipe	2.0 mm (1/2” NPT) (66 cm or 26”)	20 2900 20 21 07	•	•
14	Fuel Pick-up pipe	2 mm W/FTNG (59.5 cm or 23.5”) - Vent fitting 1/2” NPT	20 2900 20 20 04	•	•
15	Automotive Fuel Pick-up Assembly (48 cm or 18.8”)		22 1000 20 11 00	•	•
16	Fuel T-piece	d = 4 mm, D = 8 mm	262 31 155	•	•
		d = 6 mm, D = 6 mm	262 31 150	•	•
17	FMP Bracket		20 2900 40 01 04	•	•
18	Pressure Reducer	D = 60 mm	22 1000 20 08 00	•	•
19	One Way Check Valve	D = 6 mm	244 31 060	•	•
		D = 8 mm	244 31 061	•	•
20	Plastic Fuel Filter (installed in front of fuel metering pump), d = 6mm		25 1156 20 00 09	•	•
21	Fuel Line Adapter	3.5mm to 5mm	25 1888 80 01 02	•	•
22	Plastic Fuel Tank	(10L or 2.6 gal - Blue)	22 1000 20 28 00	•	•
23	Brass Reducer	D = 20 mm, d = 18 mm	20 1645 89 00 06	•	•
24	Brass Hose Connector	D = 20 mm	20 1534 88 00 01	•	•
25	One Way Check Valve	D = 20 mm	22 1000 10 10 00	•	•
26	One Way Check Valve	D = 20 mm	22 1000 10 08 00	•	•
27	Brass Water Thermostat	D = 20mm (70°C-75°C) 158°F-167°F	330 00 124	•	•
28	Water Check Valve	D = 20 mm	22 1000 10 07 00	•	•
29	Valve with Thermostat	5 Way Valve with Thermostat	25 2014 80 72 00	•	•
30	Valve with Thermostat	6 Way Valve with Thermostat	25 2014 80 62 00	•	•

8 SERVICE

WARRANTY

The product warranty is a part of the quality service and support for Eberspaecher NA products to ensure customer satisfaction.
Normally, the warranty period for Hydronic 3 heater is 2000 hours/2 years (whichever comes first).
Refer warranty manuals :

- Warranty Manual
- Web link: http://www.eberspaecher-na.com/warranty/warranty.html

It is mandatory to use warranty related manual for authorized troubleshooting for warranty claim.

PLEASE NOTE!

- The heater must be installed within 1 year of its purchasing date to be eligible for warranty. Also, It is mandatory to notify the Eberspaecher NA by registering the heater within 30 days of installation.
- The warranty claim must be administered and performed by Eberspaecher NA authorized dealers only.
- Usage of EDiTH/Easy Scan for heater diagnostics reduces additional processing time for warranty.
- Regardless of the type and nature of the fault, the original ECU must be replaced at last. Contact Eberspaecher NA or authorized dealers for additional information.

CERTIFICATION

We are commited to provide quality products, to achive that we organized all of our work processes based on objectives provided in quality policy.
Even so, we still pursue a large number of activities for continuous improvement of product quality in order to keep pace with the similarly constantly growing requirements made by our customers.
All the steps necessary for quality assurance are stipulated in international standards.
This quality is to be considered in a total sense.
It affects products, procedures and customer/supplier relationships.
Officially approved public experts assess the system and the corresponding certification company awards a certificate.

Eberspaecher has already qualified for the following standards:

Quality management as per
DIN EN ISO 9001:2000 and ISO/TS 16949:2009

Environment management system as per
DIN EN ISO 14001:2004

HEALTH AND SAFETY

Eberspacher North America gives utmost importance to workplace health and safety and abides by highest standards possible:

Health and Safety
ISO/TS 16949:2009

DISPOSAL

Disposal of materials

Old devices, defect components and packaging material can all be separated and sorted into puregrade factions so that all parts can be disposed of as required in an environment-friendly manner or recycled where applicable.
Electric motors, controllers and sensors (e.g. temperature sensors) are deemed to be “electronic scrap”.

Dismantling the heater

The heater is dismantled according to the repair stages in the current troubleshooting / repair instructions.

Packaging

The packaging of the heater can be kept in case it has to be sent back.

CONTACT US:

Eberspaecher North America (ESPAR)

6099A Vipond Dr., Mississauga
Ontario L5T 2B2
Canada

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Technical page: http://www.eberspaecher-na.com/download-center.html
Warranty page: http://www.eberspaecher-na.com/warranty/warranty.html

www.eberspaecher-na.com

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