Air heaters B 3 L / D 3 L

Technical Description
Installation Instructions
Operating Instructions

Specifications
Heating medium: Air
Heating air flow*: 180 kg/hr ± 10%
Heating capacity**: B 3 L: 3000 Watts ± 10%
D 3 L: Full: 3200 Watts ± 10%
Heating (without counterpressure) capacity: B 3 L: 1600 Watts ± 10%

Fuel:
B 3 L: On-Off, possible with room thermostat
D 3 L: Full-stop with On-Off switch or with room thermostat
B 3 L: Gasoline (commercial grade)
D 3 L: Diesel fuel (commercial grade), see also "Fuel at Low Temperatures"

Fuel consumption**: B 3 L: 0.36 l/h ± 5%
D 3 L: 0.38 l/h ± 5%

Rated voltage:
12 V or 24 V

Operating range:
Minimum voltage: 10 V or 20 V respectively
Maximum voltage: 14 V or 28 V respectively

D 3 L – consisting of: Basic heater with standard equipment
No. 25 1642 05 00 00
Universal installation kit
No. 25 1642 80 00 00

D 3 L for diesel

Electric power consumption: B 3 L: at start: 170 Watts ± 10%
in operation: 50 Watts ± 10%
D 3 L: at start: 280 Watts ± 10%
with 12 V: 520 Watts ± 10%
with 24 V:
in operation: 45 Watts ± 10%

Ventilation:
Possible with suitable circuit arrangement

Degree of radio interference suppression: Remote, additional interference suppression measures possible approx. 6.5 kg

Design with full-half setting of heating capacity and undervoltage safety device
with glow plug current regulator, otherwise as 2)
Design with cable harness, 2 m long, between heater and control unit, otherwise as 2)
At rated voltage
An undervoltage safety device built into the control unit switches off the heaters when at around 10.5 and 21 V respectively.
In the case of B 3 L, an overvoltage safety device built into the control unit switches off the heaters when at approx. 15 V.
Design with cable harness, 2 m long, between heater and control unit, otherwise as 2)
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</tr>
</tbody>
</table>

Operating instructions are supplied with control elements.

## Scope of delivery (See page 3 for illustration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 L</td>
<td>1</td>
<td>Basic heater with standard equipment:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cat. No. 20 1643 05 00 00 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>including items 1, 4 and 5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Basic heater 20 1643 01 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>not available alone</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Fuel metering pump</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Intake silencer</td>
</tr>
</tbody>
</table>

For additional orders, see under D 3 L.

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 L</td>
<td>1</td>
<td>Basic heater with standard equipment:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cat. No. 25 1482 05 00 00 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>optionally 25 1483 05 00 00 (24 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 1573 05 00 00 (24 V)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Basic heater 25 1482 01 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>not available alone</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Control unit</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Holder</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Fuel metering pump</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Intake silencer</td>
</tr>
</tbody>
</table>

For additional orders, see under B 3 L.

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 L</td>
<td>1</td>
<td>Basic heater with standard equipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cat. No. 25 1484 05 00 00 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 1485 05 00 00 (24 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 1642 05 00 00 (24 V)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Basic heater 25 1484 01 (12 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 1485 01 (24 V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 1642 01 (24 V)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Control unit</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Holder</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Fuel metering pump</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Intake silencer</td>
</tr>
</tbody>
</table>

For additional orders, see under B 3 L.

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 L</td>
<td>1</td>
<td>Universal installation kit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cat. No. 25 1482 80 00 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 L</td>
<td>1</td>
<td>Reinforcing plate, if necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cat. No. 20 1577 88 00 03</td>
</tr>
</tbody>
</table>

## Optional control elements

### Heating timer with fasteners

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1482 89 19 00</td>
<td>25 1483 89 02 00</td>
<td></td>
</tr>
</tbody>
</table>

### Timer

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1482 70 01 00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fasteners (only required for installation with screen)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1482 70 01 00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Universal switch

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1380 89 04 00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bulb

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 7 00 00 05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Room thermostat

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1557 80 01 00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>12 V</th>
<th>24 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1557 80 07 00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Under this cover: control unit and ignition spark generator

parts without item number = universal installation kit

http://www.hagerbv.com/catalogus/73-eberspacher-d3l-onderdelen
Installation Instructions

The suggestions put forward in these installation instructions are only examples. Possibilities other than those illustrated (e.g. with regard to the choice of installation location, means of running air) are also permissible, provided they meet the requirements of the West German road traffic regulations (StVZO), and if necessary after consultation with the manufacturer.

Approval, official regulations, general

1. For vehicles registered in West Germany subject to the road traffic regulations StVZO, the heaters are approved by the Federal Motor Vehicle Office and receive an official test symbol (63L. 63K, 63K. 63E) indicated on the name plate.

2. The year of first operation is a requirement of German approval not representing a model number.

3. The heater must not be operated in closed rooms, e.g. garages.

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

5. The heaters may only be used for the purpose specified by the manufacturer and in compliance with the operating instructions supplied with every heater.

6. The proposed installations in the installation instructions are only examples. Other installation locations are also permissible, provided they comply with the general installation requirements; the manufacturer should be consulted if necessary. In all other respects, differences from the installation instructions, particularly with regard to wiring (wiring diagrams), fuel supply, combustion air and exhaust ducts, and use of operating and control elements not supplied by the manufacturer, are only permissible with the written approval of the manufacturer. Failing that, the manufacturer's warranty is null and void for the entire heater system, i.e. the general operating permit.

7. Every combustion process generates exhaust gas, which has toxic constituents. Because of this and the high temperatures generated, the exhaust ducts must comply with the installation instructions. Failure to comply with the instructions or operation of the heater in closed rooms (garages) increases the risk of poisoning.

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

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

Typical installations/installation location

In truck:
D 3 L
1. on the rear wall of the cab
2. under the seat of the driver or co-driver

In cab:
D 3 L
1. in the cab
Installing the heater

The B 3 L and D 3 L heaters are suitable and approved for installation in vehicle areas used by passengers.

In the case of installation in passenger areas, the exhaust, combustion air and fuel lines in these areas must not have any detachable connections, and must be splash-water-tight at the penetrations to the outside.

For this reason, the heater must be mounted by its base on an outside panel of the vehicle or on its floor, using the seal seated on the base.

Principal dimensions of B 3 L and D 3 L. Differing dimensions of B 3 L shown by dotted line.

Control element can also be mounted separately or on the other side of the heater.
Permissible installation positions

B3L and D3L
either

or

D3L only

Installation should generally speaking be in the standard position, as illustrated. If this is not feasible, please consult the manufacturer.

During starting and thermostatic operation, a heater installed in the standard position may deviate, due to the inclination of the vehicle during motion, by up to ±15° in both axes from this standard position.

Continuous heating operation after starting is even possible at a deviation from the standard position of up to ±30°. With deviations exceeding ±30° a reliable continuous heating operation is no longer possible. This does not however lead to damage of the heater if the deviation occurs only for a short interval.

Fastening to the vehicle wall/floor
Make penetrations in accordance with the hole pattern.

The mating surface for the heater base must be smooth. To drill the penetrations and if necessary to smooth the mating surface, a special tool is available from the manufacturer under Cat. No. 991201.466329.

Special tool

If the mating surface sheet is too thin (criterion: less than 1.5 mm), a reinforcing plate – Cat. No. 201577 99 00 03 can be installed additionally on the outside.
Running the heating air

Standard heating air running parts. See Additional Equipment Catalogue for further parts.

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Component rating</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Protective grid, round, nickel-plated</td>
<td>0.4</td>
<td>251226890500</td>
</tr>
<tr>
<td>2</td>
<td>Connection piece, 75 mm dia.</td>
<td>0.2</td>
<td>251226890012</td>
</tr>
<tr>
<td>3</td>
<td>Hose clip, 70-90 mm dia.</td>
<td>-</td>
<td>102064070090</td>
</tr>
<tr>
<td>4</td>
<td>Flexible pipe, 75 mm dia., lin. m.</td>
<td>1.0 per lin. m.</td>
<td>102114340000</td>
</tr>
<tr>
<td>5</td>
<td>Protective grid, 75 mm dia.</td>
<td>2.0</td>
<td>251482800500</td>
</tr>
<tr>
<td>6</td>
<td>Pipe bend, 75 mm dia.</td>
<td>3.0</td>
<td>251482800005</td>
</tr>
<tr>
<td>7</td>
<td>Air outlet, rotatable, 75 mm dia.</td>
<td>1.0</td>
<td>251080892100</td>
</tr>
</tbody>
</table>

Do not connect too many parts. The sum of the component ratings may not exceed the heater rating.

Example:

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Component rating</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Protective grid, 75 mm dia., painted</td>
<td>2</td>
<td>251482800500</td>
</tr>
<tr>
<td>2</td>
<td>Flexible pipe, 75 mm dia., 4 lin. m.</td>
<td>4</td>
<td>102114340000</td>
</tr>
<tr>
<td>3</td>
<td>2 x 90° flexible pipe bends</td>
<td>2 x 1 = 2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Air outlet, rotatable, 75 mm dia.</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Sum of component ratings: 9

The sum of the component ratings does not exceed the heater rating of 10, installation is therefore permissible.

When checking an installation, the average outlet temperature should not at the outlet point significantly exceed 110°C with an intake temperature of 20°C. This will ensure that the safety thermal cutout switch will not respond under normal operating conditions.

Heating air intake openings shall be arranged in such a manner that exhaust from the vehicle's engine and from the heater cannot be expected to be sucked in under normal operating conditions, and the heating air cannot be contaminated.

When operating as a recirculating heater, locate the inlet for the heating air in such a way that the outflowing hot air cannot be sucked directly in again.
Running the Combustion and Exhaust Air

Permissible diameters, lengths and bends of combustion air and exhaust lines

The scope of delivery includes a flexible exhaust tube, internal dia. 24 mm, 1 m long, which can be shortened as required. Longer tubes are available as given in the Additional Equipment Catalog.

The intake silencer supplied with the heater must be employed at least. Extension to a total of 2 m (including silencer) is permissible.

The silencer must then be fitted on the free end of the extension.

Additional noise suppression is possible by installing an exhaust silencer (see chapter "Exhaust Parts" in the Additional Equipment Catalog). The permissible length of the exhaust line is reduced here by the length of the exhaust silencer.

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

Do not install the intake opening facing the slipstream, but run it in such a manner that dirt and snow cannot enter and that any water which does enter can flow out.

Exhaust lines must not project beyond the sides of the vehicle. They must be laid either with a slight slope or with 5 mm dia. holes at the lowest points for draining off condensate.

It must not be possible to suck in the exhaust through the combustion air blower.

The exhaust outlet must be on the outside. Exhaust lines must be laid in such a way that neither the penetration of exhaust into the vehicle interior nor the intake of exhaust through the vehicle or heater blowers need be expected, and that the operation of essential vehicle parts is not affected (ensure adequate clearance). Place the outlet opening of the exhaust line in such a way that it cannot be clogged by dirt and snow and that any water which does enter can run off.

1) This requirement can be considered met if the outlet opening of the exhaust line is located at the usual places in motor vehicles (see examples on pages 4-5), e.g. in engine compartment, in wheel case, on the vehicle underside, or on the rear of the cab.
Fuel supply

The instructions given here should not be disregarded as deviations may cause malfunctions.

1. Fuel intake from fuel line to engine (usually in passenger cars):

   - Precondition: the fuel line from the fuel tank to the engine must be tight, so that the flow of fuel is not interrupted when the engine is not running.

   - At fuel points includes fuel metering pump.

   - The fuel intake from fuel line to engine.

2. Fuel intake separately from fuel tank or separate tank (usually in trucks, construction machinery, agricultural machinery)

   - A = intake from above
   - B = lateral intake at tank
   - C = lateral intake at tank or beneath it, metering pump below lowest fuel level

With connection types A and B, the intake line – A includes tank connection (8) – including all connection points must have an internal dia. of 2 mm, for this reason, fuel pipe (10) and connections must touch each other at every joint.

Dimensions:

- Dimension a = max. 2000 mm with gasoline
- Dimension f = max. 5000 mm with diesel oil
- Dimension d = max. 4 m with gasoline
- Dimension f = max. 1000 mm with diesel oil
- Dimension c = max. 300 mm
- Dimension d = max. 4 m for gasoline
- Dimension e = max. 8 m for diesel oil
- Dimension b = 50 mm
- Dimension d = 4 m for gasoline

At all joints, fuel pipe (7) and connection pieces must touch.
3. Permissible suction and pressure heads for installation per 1. and 2.; permissible positioning of metering pump

<table>
<thead>
<tr>
<th>max. fuel level</th>
<th>Fuel line connection to heater</th>
</tr>
</thead>
<tbody>
<tr>
<td>e 15° to vertical</td>
<td></td>
</tr>
<tr>
<td>f Metering pump</td>
<td></td>
</tr>
<tr>
<td>g min. fuel level</td>
<td></td>
</tr>
</tbody>
</table>

Supply pressure from tank to metering pump:
- \( e = \text{max.} \) 3000 mm suction head:
  - Tank at zero pressure
- \( f = \text{max.} \) 500 mm with gasoline
  - \( \text{max.} \) 1000 mm with diesel oil

Check whether tank ventilation works properly:
- Intake from tank when underpressure occurs during operation (valve 0.03 bar in tank cap):
  - \( f = \text{max.} \) 150 mm with gasoline
  - \( \text{max.} \) 400 mm with diesel oil

Pressure head metering pump to heater:
- \( g = \text{max.} \) 2000 mm

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

4. Important

Protect fuel lines, filter and metering pump from overheating; do not install near silencers and exhaust pipes. Temperatures above 30°C lead to gas bubbles and problems with gasoline.

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

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

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

**Fuel grades**

**Fuel of D3L at low temperatures**

The heater can take without problem the fuel you use in your tank and which is commercially available. In the USA diesel fuel no. 1 and no. 2. Admixture of used oil is not permitted.

The refineries automatically adapt their fuels to normal winter temperatures (Winter Diesel).

Therefore, difficulties can only arise at extremely low temperature (as in the engine — see the vehicle's instruction manual).

If the heater is operated from a separate tank, the following rules must be observed: at temperatures above 0°C any type of diesel fuel can be used.

If no special cold-weather diesel fuel is available at low temperatures, mix kerosine or gasoline according to the adjacent table.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Winter diesel fuel</th>
<th>Additive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C to -15°C</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>-15°C to -25°C</td>
<td>50%</td>
<td>50% Petroleum or petrol</td>
</tr>
<tr>
<td>-25°C to -40°C</td>
<td></td>
<td>100% Petroleum*</td>
</tr>
</tbody>
</table>

* or special winter diesel fuels.
** or in accordance with fuel manufacturer's specifications.

The fuel line and the fuel pump must be filled with new fuel by operation for 15 minutes.

**Fuel for special cases**

In special cases, the heaters can also be operated with extra-light fuel oil (above 0°C) or petroleum. If in doubt, please consult the manufacturer.
Electrics

Arrange electric cables, switches and control units in the vehicle in such a way that their correct functioning cannot be impaired under normal operating conditions.

Fit the control unit so that it is protected from splash water (from both its own vehicle and preceding ones). Outside installation is thus not permissible. The unit is best arranged in the vehicle interior, with the plugs pointing downward.

Control unit
Permissible installation angles

The pilot light (built into the switch or timer) should be within the field of vision of the driver, or at least be visible to him without great effort.

Install the room thermostat where it is sheltered from draughts and sunlight. Do not fit it to non-insulated outer walls.

The following cable cross-sections must be observed between battery and heater, in order that the maximum permissible voltage losses in the cables (0.5 at 12 V rated voltage and 1 V at 24 V) are not exceeded.

$L^* + L^- < 5 \text{ m} \rightarrow \text{cross-section 4 mm}^2$

$L^* + L^- = 5 \text{ to } 8 \text{ m} \rightarrow \text{cross-section 6 mm}^2$

If the plus cable is to be connected to the fuse box (e.g. terminal 30), the vehicle’s cable too from the battery to the fuse box must be included in the calculation of the total line length, and if necessary re dimensioned in accordance with the above.

Smear plug and earth connections with contact protection grease outside the vehicle interior.
Connect this cable for fan operation.

Proceed as follows for connection of "On-Off" operation:

1. A Break cable
2. B Cable not required
3. C Connect cables

Parts list:
1.1 Burner
1.2 Glow plug
1.4 Temperature switch
1.6 Safety thermal cutout switch
1.7 Printed circuit board
2.1 Control unit
2.1.1 Motor fuse
2.2 Fuel metering pump
2.7 Main fuse, 16A
3.1.1 Universal switch
3.1.2 Continuous operation switch
3.1.4 Additional Full-Half switch
3.2.1 Timer
3.3.1 Room temperature controller
5.1 Battery
Connection of room thermostat: "Full-Half" operation illustrated.

Proceed as follows for connection of "On-Off" operation:
1. Connect this cable for full operation.
2. A break cable
3. B cable not required
4. C connect cables

Parts List:
1.1 Burner
1.2 Glow plug
1.4 Temperature switch
1.5 Safety thermal cutout switch
1.7 Printed circuit board
1.8 Series resistor for glow plug
1.2.3 Temperature fuse
2.1 Control unit
2.1.1 Motor fuse
2.2 Fuel metering pump
2.5.1 Relay for glow plug
2.7 Main fuse, 10 A
3.1.1 Universal switch
3.1.2 Continuous operation switch
3.1.4 Additional Full/Half switch
3.2.1 Timer
3.3.1 Room temperature controller
5.1 Battery

Sp 25 1483 01 96 01-D
Connection of room thermostat:
"Full-Hall" operation illustrated.

Proceed as follows for connection of "On-Off" operation:
2 A Break cables
2 B Cable not required
2 C Connect cables

Parts list
1.1 Burner
1.2 Glow plug
1.4 Temperature switch
1.6 Safety thermal cutoff switch
1.7 Printed circuit board
2.1 Control unit
2.1.1 Motor fuse
2.2 Fuel metering pump
2.6.1 Relay glow plug
2.7 Main fuse, 16 A
3.1.1 Universal switch
3.1.2 Continuous operation switch
3.1.4 Additional Full-Hall switch
3.2.1 Timer
3.3.1 Room temperature controller
3.7 Glow-plug current regulator
5.1 Battery
11 Connect this cable for fast operation.

Connection of room thermostat: "Full-Half" operation illustrated.

Proceed as follows for connection of "On-Off" operation:
2 A Brush cables
2 B Cable not required
2 C Connect cables

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Wiring diagram D.3 L - 24 V - design 25/16/1 - 25/16/2

Parts list
1.1 Burner
1.2 Glow plug
1.4 Temperature switch
1.5 Safety thermal cutoff switch
1.7 Printed circuit board
1.2.1 Series resistor for glow-plug
1.2.3 Temperature fuse
2.1 Control unit
2.1.1 Motor fuse
2.2 Fuel metering pump
2.5.1 Relay for glow plug
2.7 Main fuse, 16 A
3.1.1 Universal switch
3.1.2 Continuous operation switch
3.1.4 Additional Full/Half switch
3.2.1 Timer
3.3.1 Room temperature controller
3.7 Glow plug current regulator
5.1 Battery

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Description of operation (see page 16 for text)

D 3 L: shown complete
B 3 L: differences shown in inset
- additional housing (12c) with control unit (12a) and ignition spark generator (12b) for the ignition plug

1. Fresh air blower wheel
2. Electric motor
3. Combustion air blower wheel
4. Glow plug: D 3 L
   - Glow-ignition plug: B 3 L
5. Safety thermal cutout switch
6. Combustion chamber
7. Temperature switch
8. Heat exchanger
9. Room thermostat
10. Timer
11. Universal switch
12. Control unit: D 3 L for "Full-Half" operation
12a. Control unit: B 3 L
12b. Ignition spark generator: B 3 L
12c. Housing: B 3 L
13. Casing
14. Exhaust pipe
15. Connecting flange
16. Fuel connection
17. Plug area ventilation
18. Combustion air silencer
19. Fuel metering pump
20. Cup sieve built into fuel metering pump
21. Heating coil switch: B 3 L
Description of operation (see Fig. on page 17)

Heaters D 3 L and B 3 L are of identical design wherever practicable. However, as a result of the differing fuel types (diesel/gasoline) and, in the case of D 3 L, depending on whether “Full-Half” setting is required or not, design differences are unavoidable.

Control elements (see also page 2)
The following can be used optionally in D 3 L and B 3 L:
1. Universal switch (T)
2. Timer (T1)
3. Room thermostat (T)
4. Operation with thermostat is also possible in conjunction with universal switch or timer. Please bear in mind the following:

Electrical connection diagram for connection. With On-Off operation, the burden on the battery is greater, and heavier wear on the plugs must be expected.

With B 3 L regulation is of the On-Off type, but a built-in heating coil switch (L) ensures that the heater coil stays off in short-circuiting periods, in which the ignition sparks are sufficient to create a flame.

This means that the battery is not too heavily taxed and that the plug wear does not increase.

Operation after switching on:
After switching on, the pilot light in the switch or timer comes on, the heater is switched on. The combustion air begins to produce heating air and combustion air respectively. At the same time, the fuel metering pump provides precisely measured amounts of fuel to the combustion chamber.

Procedure after switching off:
After switching off, the pilot light in the switch or timer goes out, the heater is switched off. The heating air and combustion air is immediately stopped. The heater is then automatically switched off after 3 minutes (in case the “Service” switch has been turned on). The motor is automatically switched off after 20 seconds. If after this period the switch has not been turned on, the motor pump is automatically switched off.

Controls and Safety Equipment
The flame is monitored by the temperature switch. This switch acts on the safety switch in the control unit, which shuts down the heater in the event of a malfunction.

- a) The temperature switch switches off the glow plug after a stable flame has been attained. In addition, the heater has been switched on, it automatically stops the motor when the temperature switch has been uploaded.

- b) If the heater fails to ignite, it switches off automatically not more than 3 minutes after being switched on.

- c) If a defect in the motor causes the heater to switch off, the motor current fuse has been installed in the control unit may have been tripped. Check and replace if necessary. The heater can be switched back on by briefly switching it off and on again. If the motor current fuse blows repeatedly have the fault remedied.

- d) If the flame goes out spontaneously during operation, the heater is automatically switched off after 4 minutes at the most. Restarting is by switching off and on again.

- e) The safety, thermal cutout switch shut off the fuel pump when the heater overheats, e.g. in the event of the heating air ducts becoming blocked. The heater is then switched off automatically. See under “Malfunctions” for switching back on.

- f) The glow plug monitor in the control unit – heaters D 3 L only – prevents fuel being pumped when the glow plug is defective and when the temperature fuse on the glow plug series resistor has blown (D 3 L 24 V only).

- g) Undervoltage safety device
An undervoltage safety device built into the control unit switches off the heaters when the voltage at the control unit drops below approx. 10.5 V or 21 V, as the case may be.

- h) Overvoltage safety device
In the case of B 3 L and D 3 L heaters, models 25 1484 and 25 1485, an overvoltage safety device built into the control unit switches off the heaters when the voltage at the control unit exceeds 15 V and 30 V respectively.

1) If other switches that are usual in motor vehicles are used, they should be able to take at least 10 A.
2) With heaters D 3 L the blower does not run until approx. 5 seconds after switch-on, and the fuel metering pump not until after approx. 25 seconds.

Maintenance:
The heater should also be switched on briefly (about 10 minutes) once a month during the warm season.

Malfunctions
You can remedy the following malfunctions yourself:
1. The blower cannot be heard after the heater is switched on:
a) Check the 18 A fuse in the cable harness of the heater.
b) Check the motor current fuse in the control unit.

Important: Only the following Eberspächer spare fuse inserts (special monitored design) may be used:
- for 12 V fuse insert TT4:
- blue marking, No. 460 26 016
- for 24 V fuse insert TT2:
- yellow marking, No. 460 26 000

The use of other fuse inserts may lead to damage to the heater in the event of a malfunction.
c) Check the glow plug, and replace it if necessary (D 3 L only).
d) Consult the workshop.

2. If the heater still does not ignite and is switched off automatically:
- Briefly switch the heater off and back on again (not more than twice).
- Check the glow plug, and if it is defective (D 3 L) replace it.
- Have the trouble seen to in the workshop (B 3 L and D 3 L).

3. If the heater is switched on, the blower only runs for about 3 minutes, the motor does not ignite and is switched off automatically:
- Check the glow plug, and replace it if necessary (D 3 L).
- Have the trouble seen to in the workshop (B 3 L and D 3 L).

4. If the heater goes out during operation:
- If the fault is due to overheating, switch the heater off, eliminate the cause of overheating (e.g. blocked heating air lines). Press the safety, thermal cutout switch (T) through the rubber cap, switch the heater back on.

Remember that heaters D 3 L only start to work some 5 seconds after being switched on.

The pilot lamp in the universal switch comes on at once when the heater is switched on.

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