



Altitude pump kit

Installation instructions

Eberspächer

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

Service-Hotline
0800 1234 300
Telefax
01805 26 26 24

www.eberspaecher.com

Altitude pumps – kit for operation of the heater at high altitude

The installation instructions describe the installation of an additional dosing pump (adjusted to high altitudes) to allow for longer operation of the heater at altitudes of 1500 m to 2750 m.

Altitude kit order no. 24 0221 00 00 00 is suitable for the following air heaters:

- Air heater D 1 L C **compact** - 12 Volt
- Air heater D 3 L C **compact** - 12 Volt

Altitude kit order no. 24 0222 00 00 00 is suitable for the following air heaters:

- **AIRTRONIC** D 2 - 12 Volt
- **AIRTRONIC** D 2 S - 12 Volt
- **AIRTRONIC** D 3 S - 12 Volt
- **AIRTRONIC** D 4 - 12 Volt
- **AIRTRONIC** D 4 S - 12 Volt

Scope of supply kit 24 0221 00 00 00	Order No.
1 cable harness	24 0221 01 00 00
1 dosing pump (adjusted to high altitude)	22 4721 01 00 00
1 bracket for the dosing pump	22 1000 50 03 00
1 angle bracket	20 1348 03 00 04
1 set of connection parts	24 0221 03 00 00
1 m fuel pipe 4x1	090 31 108
1 m fuel pipe 4x1.25	090 31 118
0.5 m fuel hose 3.5 x 9.5	360 75 290
1 changeover switch with cover	24 0221 02 00 00
- 1 heat-shrink hose	
- 3 tab receptacles	
1 set of cable ties	25 1801 80 02 00
1 connector housing	22 1000 31 87 00
1 installation instructions	24 0221 90 97 12

Scope of supply kit 24 0222 00 00 00	Order No.
1 cable harness	24 0222 01 00 00
1 dosing pump (adjusted to high altitude)	22 4719 01 00 00
1 bracket for the dosing pump	22 1000 50 03 00
1 angle bracket	20 1348 03 00 04
1 set of connection parts	24 0221 03 00 00
1 m fuel pipe 4x1	090 31 108
1 m fuel pipe 4x1.25	090 31 118
0.5 m fuel hose 3.5 x 9.5	360 75 290
1 changeover switch with cover	24 0221 02 00 00
- 1 heat-shrink hose	
- 3 tab receptacles	
1 set of cable ties	25 1801 80 02 00
1 installation instructions	24 0221 90 97 12

Installing the dosing pump (see fig. 1 and diagram 1)

Install the dosing pump (adjusted to high altitudes) in the fuel system parallel to the standard dosing pump. To do so, fasten the dosing pump (adjusted to high altitudes and marked with a green sticker) to a suitable point in the vehicle using a rubber holder. Always install the dosing pump (adjusted to high altitudes) with the pressure side pointing upwards. Every installation position exceeding 15° is allowed, preferably between 15° and 35°.

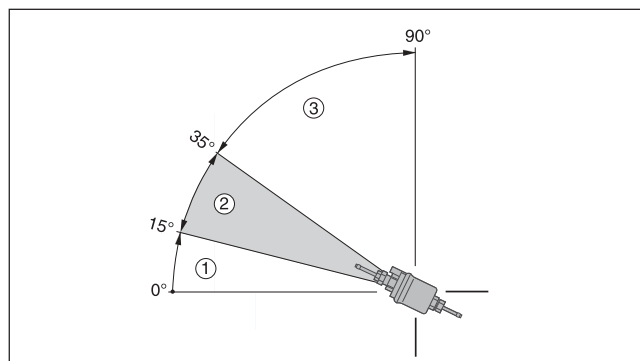


Diagram 1

- ① Installation position between 0° and 15° is not allowed
- ② Preferred installation position between 15° and 35°
- ③ Installation position between 35° and 90° is allowed

Risk of fire, explosion, poisoning and injury

Care is required when handling fuel.

- Always switch the vehicle engine and heater off when refuelling and working on the fuel supply system
- No naked lights when handling fuel
- Do not smoke
- Do not inhale fuel fumes
- Avoid contact with the skin

Please note!

- Always install the dosing pump with the pressure side pointing upwards – minimum angle 15°
- Protect the dosing pump and filter from heating up more than is allowed, do not install near to exhaust silencers and exhaust pipes.

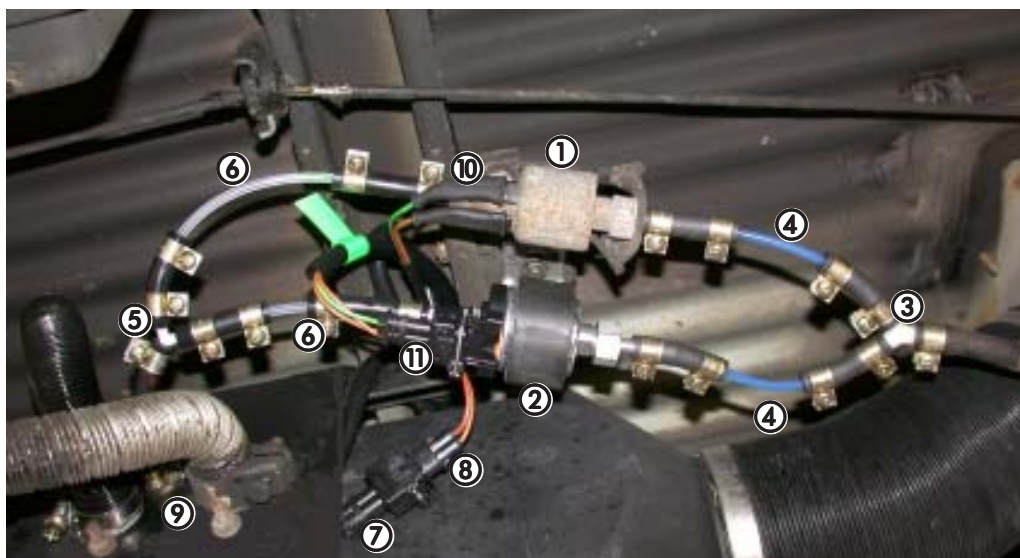


Fig. 1 Fig. shows installation of the dosing pump (adjusted to high altitudes) in VW T4

- ① Standard dosing pump
- ② Dosing pump (adjusted to high altitudes)
- ③ Y-piece $\text{Æ}5\text{mm}$ in the fuel pipe – suction side
- ④ Fuel pipe $\text{Æ}4\text{mm}$ in the fuel pipe – pressure side
- ⑤ Y-piece $\text{Æ}4\text{mm}$ in the fuel pipe – pressure side
- ⑥ Fuel pipe $\text{Æ}4 \times 1.25$ with connection hoses $\text{Æ}3.5 \times 3$
- ⑦ Cable harness of the standard dosing pump; in air heater D 1 L C compact or D 3 L C compact with new fitted 2-pin connector
- ⑧ 2-pole flat connector coupling from cable harness from the altitude pump kit
- ⑨ Fuel connection at air heater D 3 LC compact
- ⑩ Cable harness with rubber bushes from the altitude pump kit connected to the standard dosing pump (the drawing shows the dosing pump from heater D 1 L C compact or D 3 L C compact)
- ⑪ 2-pin connector connected to the dosing pump (adjusted to high altitudes)

Inserting the Y-piece in the fuel pipe, suction side

(See fig. 1)

Pull the existing fuel hose off the suction fitting of the standard dosing pump, shorten if necessary. Insert the Y-piece \varnothing 5mm in the fuel hose and secure with a hose clip \varnothing 10 mm.

Connect two adapters \varnothing 5x3.5 to Y-piece \varnothing 5mm and secure with hose clips \varnothing 10mm.

Route the fuel pipe \varnothing 4x1 (blue pipe) from an adapter \varnothing 5x3.5 to the standard dosing pump and shorten accordingly.

Connect the fuel pipe \varnothing 4x1 to the standard dosing pipe using an adapter \varnothing 5x3.5 and secure with hose clips \varnothing 10mm.

Route the remaining fuel pipe \varnothing 4x1 (blue pipe) from the free adapter \varnothing 5x3.5 to the dosing pump (adjusted to high altitudes) and shorten accordingly.

Connect the fuel pipe \varnothing 4x1 to the dosing pump (adjusted to high altitudes) using an adapter \varnothing 5x3.5 and secure with hose clips \varnothing 10mm.

Inserting the Y-piece in the fuel pipe, pressure side

(See fig. 1)

Pull the fuel hose off the pressure fitting of the standard dosing pump, shorten if necessary. Insert the Y-piece \varnothing 4mm in the fuel hose and secure with a hose clip \varnothing 9mm.

From the fuel hose \varnothing 3.5x3/0.5 m in the kit, cut four connection hoses each measuring approx. 50 mm long.

Route the fuel pipe \varnothing 4x1.25 from the Y-piece \varnothing 4mm to the standard dosing pipe, shorten accordingly and connect with the connection hoses \varnothing 3.5x3, approx. 50 mm long.

Secure all connection points with hose clips \varnothing 9mm.

Route the remaining hose pipe \varnothing 4x1.25 mm from the free connection at the Y-piece \varnothing 4mm to the dosing pump (adjusted to high altitudes), shorten accordingly and connect with the connecting hoses \varnothing 3.5x3, approx. 50 mm long.

Secure all connection points with hose clips \varnothing 9mm.

Please note!

Fuel withdrawal

- The fuel must not be conveyed into the fuel tank by gravity or overpressure.
- Withdrawal of fuel out of the system after the vehicle's own fuel pump is not allowed.
- When the pressure in the fuel pipe is between 0.2 bar and max. 2 bar, a pressure regulator (order no. 20 1645 89 30 00) or separate tank connection must be used.
- When the pressure in the fuel pipe exceeds 2 bar or when there is a non-return valve in the return pipe (in the tank), a separate tank connection must be used.

Fuel pipe

- Only use a sharp knife to shorten fuel hoses and pipes. Cut points must not be squashed and must be without any burrs
- Always insert support bushes in the plastic when inserting a T-piece in a plastic pipe. Connect the T-piece and the plastic pipe with corresponding fuel hoses and secure with hose clips.
- Fuel pipes must be fastened securely to avoid damage and/or noise development from vibrations (recommended: secure at intervals of approx. 50 cm)
- Fuel pipes must be protected from mechanical damage.
- Route fuel pipes in such a way that any distortion of the vehicle, movements of the engine etc. do not have any detrimental effect on the service life.

- Protect fuel pipes etc. from extreme heat detrimental to operation
- Never route or fasten fuel pipes in the immediate vicinity of the heater or vehicle engine exhaust system. When the systems cross, always ensure there is sufficient clearance, if necessary fit thermal deflection plates.
- No dripping or condensing fuel may collect or ignite on hot parts or electrical systems.
- In buses and coaches, fuel pipes and fuel tanks must not be located in the passenger or driver compartments.
- Fuel tanks in buses and coaches must be positioned in such a way that in the event of a fire, the exits are not directly at risk.

Avoid air bubbles in the fuel system

(diagram 2)

When connecting fuel pipes with a fuel hose, always fit the fuel pipes head on.

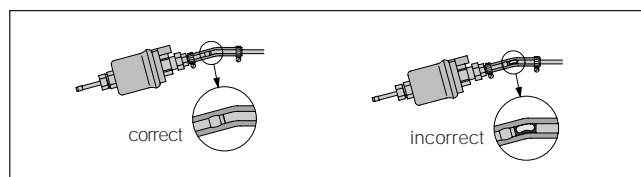


Diagram 2

Electric system

Connecting the cable harness for Compact heaters (see diagram 3)

Pull the cable harness off at the standard dosing pump and pinch off both tab receptacles with rubber bushes. The tab receptacles and rubber bushes are no longer needed and can be thrown away.

Fasten the 2-pin connector contained in the kit to the cable harness of the standard dosing pump (brown cable in chamber 2).

Connect the cable harness from the altitude pump kit to the standard dosing pump and protect both plugged connections with the rubber bushes.

Connect the cable harness from the standard dosing pump (with new fitted 2-pin connector) with the flat connector coupling from the cable harness in the altitude pump kit.

Connect the second 2-pole connector from the cable harness of the altitude pump kit (green marking) to the dosing pump (adjusted to high altitudes).

Connecting the cable harness for *AIRTRONIC* heaters (see diagram 3)

Pull the cable harness off at the standard dosing pump and connect the 2-pin flat connector coupling with the cable harness from the cable harness in the altitude pump kit.

Connect the second 2-pin connector from the cable harness in the altitude pump kit (green marking) to the dosing pump (adjusted to high altitudes).

Please note!

In the *AIRTRONIC* heaters it is not necessary to fit the 2-pin connector to the cable harness of the standard dosing pump.

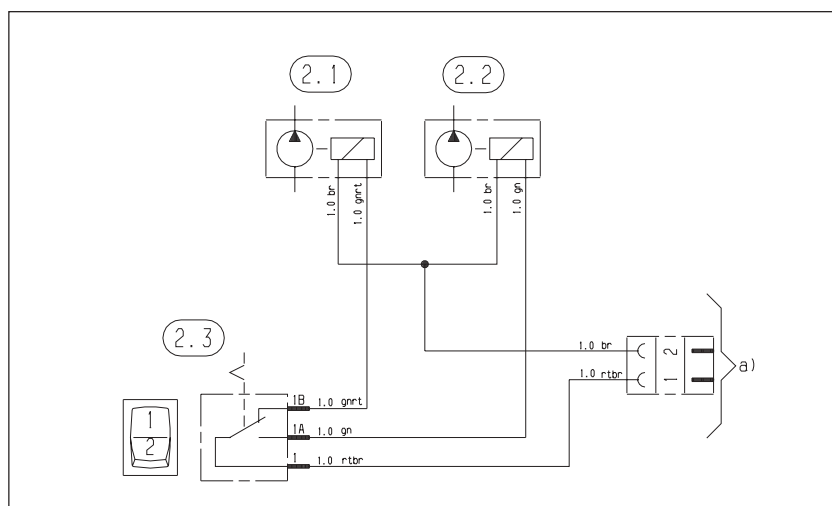


Diagram 3

- 2.1 Standard dosing pump
- 2.2 Dosing pump (adjusted to high altitudes)
- 2.3 Changeover switch
- a) Connect the flat connector coupling with the original cable harness of the standard dosing pump.



Safety instructions!

The heater is to be connected up electrically according to the EMC regulations.

Unqualified interference can be detrimental to EMC so that the following instructions must be followed:

- Ensure that the insulation of the electrical cables is not damaged.
Avoid chafing, buckling, jamming or exposure to heat
- In waterproof connectors, ensure that any connector chambers not in use are sealed with dummy plugs to be dirt-repellent and waterproof.

- Electrical plug connections and ground connections must be free of corrosion and firmly connected.
- Plug connections and ground connections outside the inner chamber must be greased with contact protection grease.

DE

EN

Installing the changeover switch (see diagram 4 and 5)

Position the changeover switch at a suitable place inside the vehicle.

Route the cable harness from the dosing pumps inside the vehicle along the cable harness from the standard dosing pump, shortening the cable harness if necessary.

Fit the three tab receptacles to the cable harness and cover with the heat-shrink hose.

Connect the cable harness to the changeover switch as shown in diagram 4.

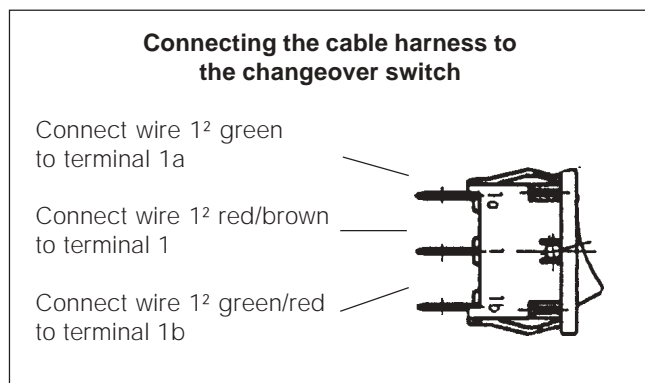


Diagram 4

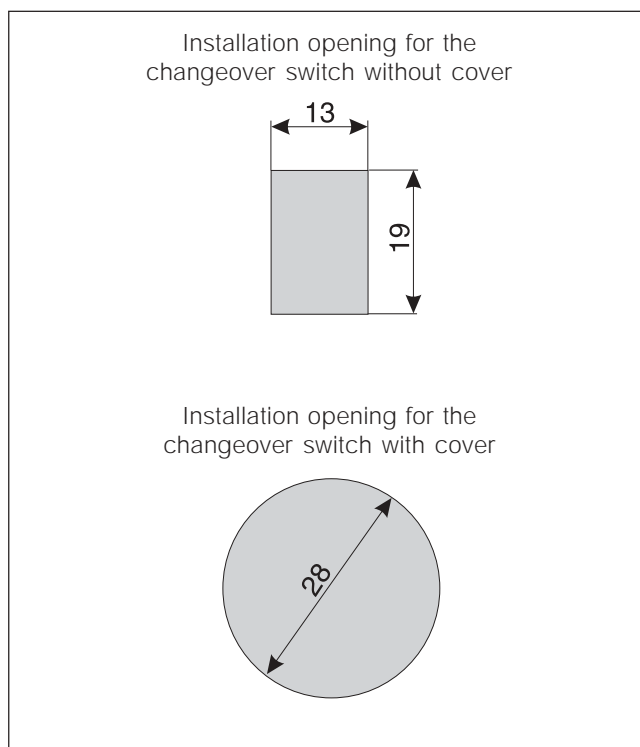


Diagram 5

Please note!

Fasten the newly installed cable harnesses at suitable points with cable ties.

When routing the cable harnesses, always ensure there is sufficient clearance to hot vehicle and heater components.

Working the changeover switch (see diagram 6).

Select the required switch setting before switching the heater on.

- Changeover switch in setting 1 = altitudes up to 1500 m
- Changeover switch in setting 2 = altitudes from 1500 to 2750 m

Please note!

When the changeover switch is connected up according to diagram 3 and 4, the standard dosing pump works in setting 1. If the changeover switch is connected up differently, this changes the allocation of switch setting to dosing pump.

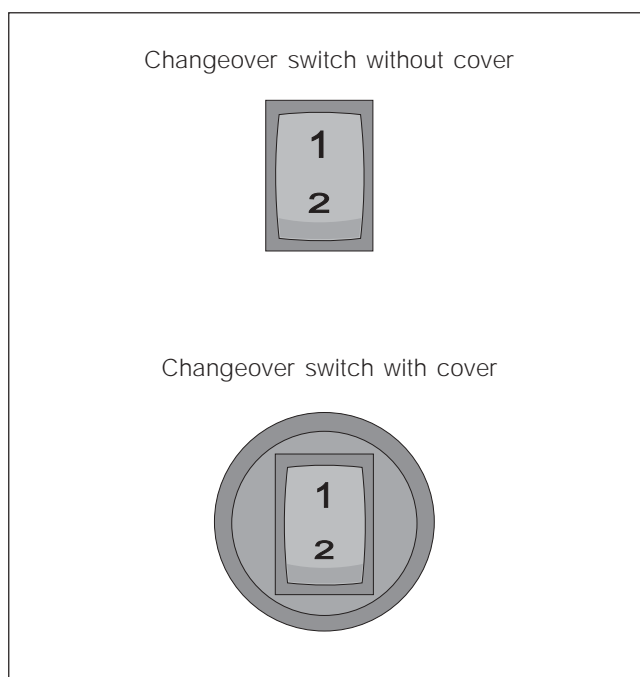


Diagram 6