



The service book for air heaters

ATESO ALFA

BREEZE® IV

WIND® IV

ATESO ALFA D2 12/24V
BREEZE IV D3 12/24V
WIND IV D5 12/24V

Producer:
BRANO a.s.,
SBU CV
Na Račanech 100, 514 01 Jilemnice
tel.: +420 481 561 111
e-mail: info@brano.eu
V4 25.4.2018

Table of Contents:

Text section:

I.	General provisions	..... 2
	a) Using	..... 2
	b) General provisions	..... 2
	c) Operational safety	..... 2
	d) Description of the device	..... 2
	e) Description of function	..... 2
II.	Control	..... 4
	Remote control and GSM control	..... 5
III.	Instructions for installation	..... 5
	a) The heater	..... 5
	b) Heated air	..... 6
	c) Combustion air	..... 7
	d) Flue gases	..... 7
	e) The fuel supply	..... 8
	f) Electrical devices	..... 11
IV.	Maintenance	..... 12
V.	Troubleshooting	..... 13
VI.	Procedures for repairs and replacement parts	..... 12
VII.	The procedure for resolving complaints	..... 15
VIII.	Completing warranty certificate	..... 15
IX.	Measuring instruments and aids	..... 15

The list of Annexes: (see website <http://breezeservice.webnode.cz>)

03-9940.185	Operating Instructions NT IV / ALFA
03-9930.104	Specification NT VI / ALFA
03-9940.173	Spare parts list for heaters
03-8900.618	Electric installation IV / ALFA
03-9940.187	Manual for LIN-Bus
03-9930.99	Error Messages
032.3736	Drawing BREEZE IV
032.3735	Drawing WIND IV
032.3737	Drawing ATESO ALFA
1020.6.50	Drawing of cables
03-9940.147	Tester underpressure of the blower – operating Instructions
-	LIN Monitor – user guide

GENERAL PROVISIONS

USING

The air heater (hereinafter referred to as the heater) is used for heating the cabin of motor vehicle box bodies, cabs of machines, caravans, stationary units, yachts, etc. by using recirculated air or with fresh air from the surrounding outside area.

PROHIBITED

The heater is not intended for continuous heating for example in a living space, garage or cottage. The heater is not further intended for drying or blowing animals or objects with hot air.

The heater is not allowed to be installed in vehicles that are subject to regulations concerning the transportation of dangerous goods ADR, TRS 003, TMD.

CAUTION!

When mounting the heater, it is necessary to follow the instructions for installation contained in this service book. The warranty is only valid if the installation is carried out by the heater manufacturer or authorized service agent. The user also forfeits all warranty claims if the authorized service agent grossly violates the rules set by the manufacturer and fails to consult with the manufacturer beforehand.

To ensure proper function the customer must be thoroughly familiar with the service and heating function (the service worker gives the instructions for the operation of an independent heater to the user) and the heater must be operated only as directed.

When resolving installation issues, it is necessary to conform to the provisions of the relevant standards relating to fire protection during installation and using heating appliances.

After the lifetime of the heater, it must be discarded appropriately.


OPERATIONAL SAFETY



- ❑ In the area of a filling station or fuel depot the heater must be off to prevent an explosion. Also, in areas where combustion fumes or dust (fuel, coal, wood or corn dust, etc.) accumulate, the heat must be off due to the danger of an explosion
- ❑ It is essential that the program pre-selection cannot switch on the heater, especially in those areas where central heating is not allowed (gas stations, garages, underground parking and where potentially there is dust or flammable vapours)
- ❑ In all circumstances and without exception only original parts supplied by the manufacturer (BRANO a.s.) and approved by the appropriate standard are to be used.

DESCRIPTION OF THE DEVICE

The independent heater is a heating device that heats the air using heat released by combustion of diesel fuel and its heat output is infinitely adjustable. Proper function of the heater requires that other components be ordered separately, i.e. the pump, harnesses, intake silencer, exhaust and parts needed for installation of the heater in a vehicle. Electrical installation is 12V / 24V. The main parts of the heater are: aluminium exchanger, combustion chamber, electric motor with fans of heated and combustion air, covers, flame sensor, overheating fuse, glow plug and control unit with a temperature sensor of heated air. The heater is controlled by a timer or a manual control, neither of which are part of the heater assembly and must also be ordered separately.

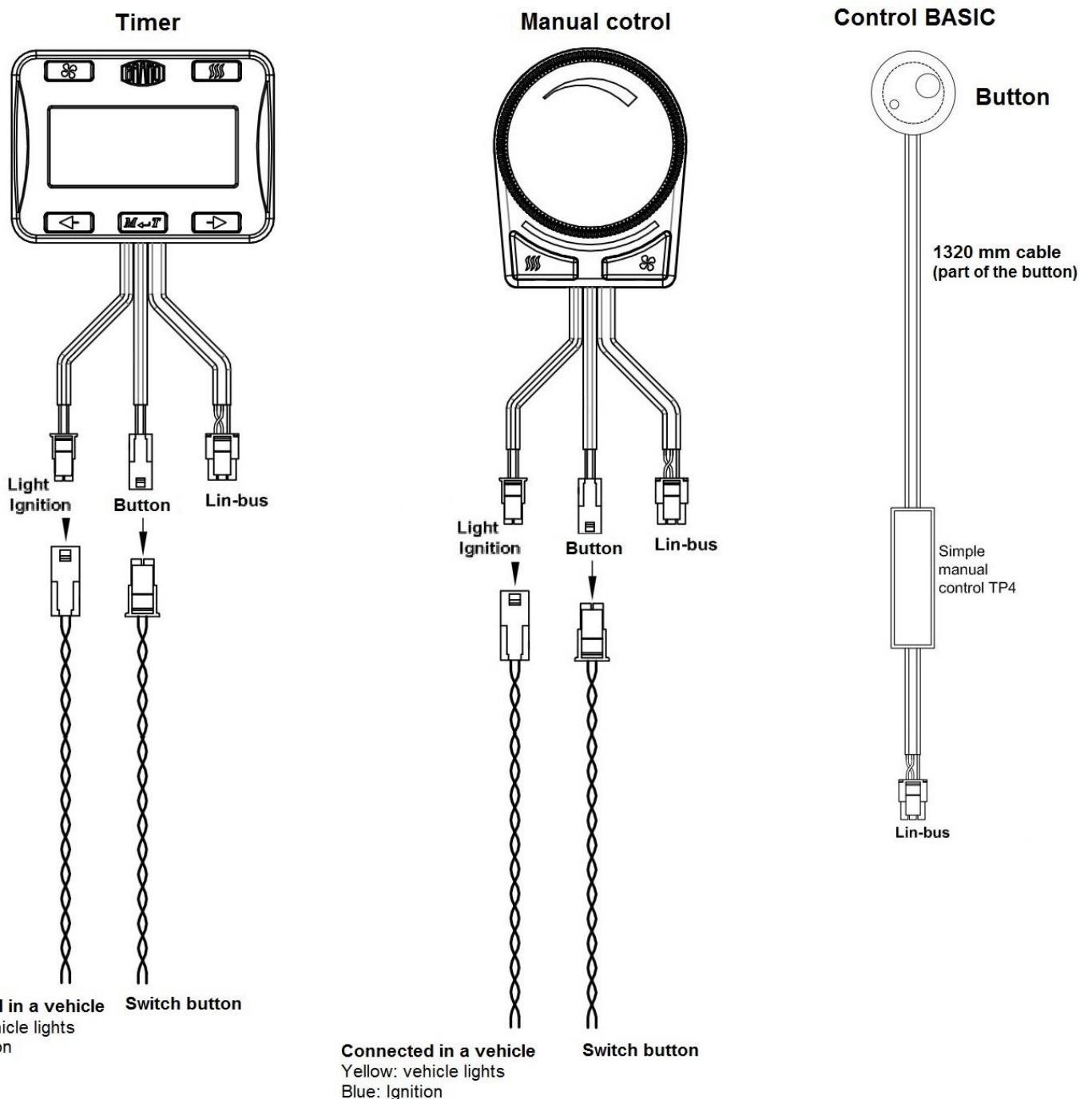
DESCRIPTION OF FUNCTION

After switching on, the heater passes through the test phase, which checks the correct functioning of the important electric circuits. For about 10 seconds the fan is made to turn. The start phase begins with ignition of glow the plug for 30s. Then the motor gradually starts rotation and simultaneously starts the fuel pump. In the combustion chamber the glow plug ignites a mixture of a fuel and combustion air. Hot flue gases flow through the exchanger and heat the flame sensor. The control unit, after reaching the required temperature, cuts off the supply to the glow plug. Burning then runs automatically. Should the first start not be successful, it is followed by a second start automatically. When even this second start does not succeed, an error "failed start" is signalled and the heater is switched off after cooling. This failed start phase is indicated by the flashing symbol  on the controller. As soon as the heater reaches the combustion temperature, the symbol stops flashing and remains lit continuously. Heating air is warmed by the heat exchanger walls and flows into the heated space. The heater can be set to regulate on the performance or on the temperature by using the

controller. When controlling for performance using control sets the desired power. When controlling temperature the performance is regulated by setting of the temperature. This regulation means that the heater is switched off when heated space is overheated. Then, only the fan runs. The heater is switched on again after falling below the set temperature. The heater operation at a reduced speed (i.e. generating speed) is indicated by a flashing symbol  on the controller. The heater vents after turning off (max.6min). During this time (i.e. deceleration) the exchanger is freed from the rest of the flue gas and cooled to about 80°C. Then the electric motor switches off. Deceleration of the heater is indicated by flashing symbol  on the controller. In the event of a fault in the heating function the E: number of the fault is displayed together with a flashing red LED on the controller (see error messages).

Control

Operating instructions are contained in the document **03-9940.185** see annexes.
Detailed cables linking in the drawing no. **1020.6.50** see Annex.

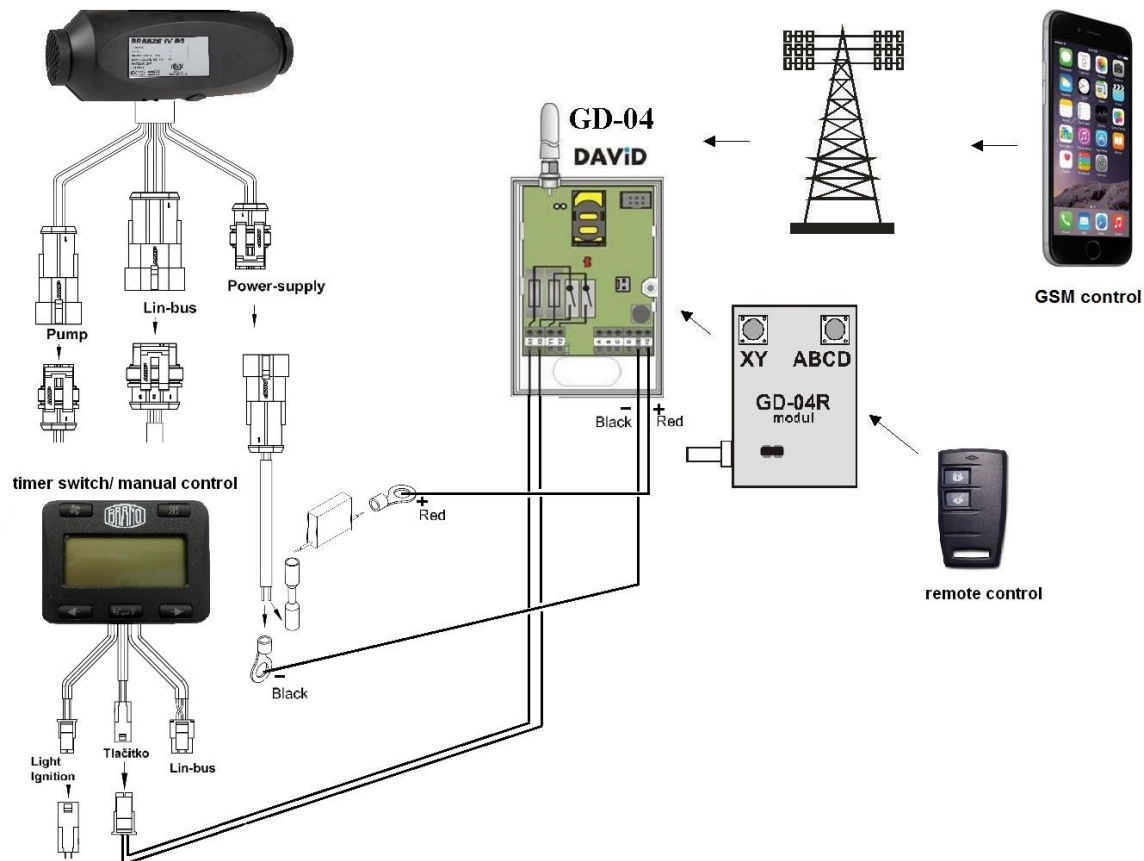


Remote control and GSM control

Remote (wireless) or GSM control can be connected to the independent heater BREEZE IV, IV and WIND ATESO ALFA, but only to the switching timer or the manual control. The heater can be controlled using the module GD-04 David heating via mobile phone. Advanced GD-04 David can also be controlled with a remote control. A connection diagram is shown in the illustration.

Connection to the control - output relay of a GD-04 module is connected via a 2-pin connector to an external button on the timer or the manual control. In this case, it is possible to start the heater in the same mode, which is set to the timer or the manual control.

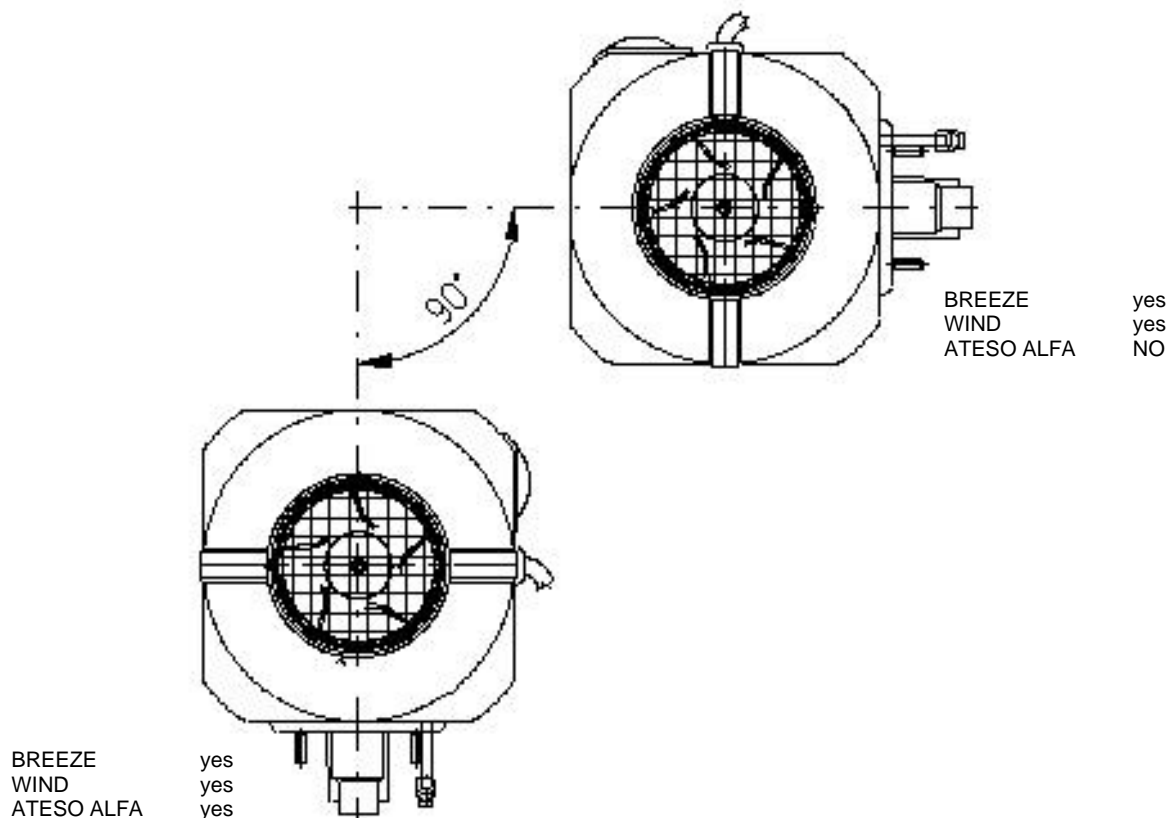
Heater BREEZE IV / WIND IV / ATESO ALFA



INSTRUCTIONS FOR INSTALATION

The heater

The heater can be mounted horizontally with exhaust vertically downward (e.g. floor mounting of the heated space). Alternatively in the vertical position can be monted only heaters BREEZE and WIND (ATESO ALFA no), where exhaust and air intake are positioned in a common horizontal plane, e.g. wall mounting of the heated space). It is also possible to mount the heater in the range 0°- 90° between these said positions. When mounting in other than the horizontal position it should be ensured that the glow plug is always upward (see Fig.). The glow plug should always be easily accessible. The heater is intended for installation in the passenger compartment or cargo hold or in a special sealable cabinet outside the heated space. Installation of the heater is performed on a prepared flat surface with the appropriate holes (see drawings in annexes) and this is mounted by means of four nuts. Straightening of undulating surface on which the heater is mounted should be made by tapping towards the heater.



Heating air

Air ducts - if needed - must be made as short as possible with the lowest number of bends. Their diameter along the whole length must not be less than 55 mm and it is advisable to make the bends smoothly. If it is essential to change a duct section from a circle to square, the opening must be increased at least by 50%. If a suction duct or a distributor duct is terminated in a higher number of holes (e.g. a grid), the sum of the Cross-sections of these holes must not be less than the cross-section of the duct.

The intake and the outlet of the heated air must be situated so that the hot air cannot flow directly back into the heater. It is advisable to provide the ducting with a thermal insulation, especially the parts going outside the heated area.

The surface temperature of the immediately accessible locations and distributing output channels must not exceed +70°C, for metals and +80°C for other materials (E/ECE/324-121 requirement of Regulation No. 122, Annex 5). Therefore, the distributing output channels must be protected by a cover or insulation.

ATESO ϕ 60 mm

- ☐ The maximum length of the straight piping of ϕ 60 mm is 10 m (Σ intake + outlet)
- ☐ the maximum number of elbows for air distribution is 5 pieces and each element reduces pipeline by 1 m
- ☐ the maximum number of T-units for air distribution is 5 pieces and each element reduces pipeline by 1 m
- ☐ the maximum number of bends in the middle radius of 120 mm is 5 pieces and each bend leads to a reduction of 1 m
- ☐ An outlet socket and an outlet grid reduces the pipeline 1m.
- ☐ A socket with a flap can be used only where there will be more outlets and at least one of them will not be closed. (a socket with a flap **must not be used alone**)
- ☐ The minimum distance between a vertical wall and the heater intake is 50 mm. The minimum distance between a vertical wall and the heater outlet is 100 mm, while the facing wall must be resistant to temperatures of 150 °C.

BREEZE ϕ 75 mm

- ☐ The maximum length of the straight piping with ϕ 75 mm is 10 m (Σ intake + outlet)
- ☐ the maximum number of elbows for air distribution is 5 pieces and each element reduces pipeline by 1 m
- ☐ the maximum number of T-units for air distribution is 5 pieces and each element reduces pipeline by 1 m
- ☐ the maximum number of bends in the middle radius of 120 mm is 5 pieces and each bend leads to a reduction of 1 m
- ☐ An outlet socket and an outlet grid reduces the pipeline 1m.
- ☐ A socket with a flap can be used where there will be more outlets and at least one of them will not be closed. (a socket with a flap **must not be used alone**)

- ❑ The minimum distance between a vertical wall and the heater intake is 50 mm. The minimum distance between a vertical wall and the heater outlet is 100 mm, and the facing wall must be resistant to temperatures of 150 °C.

BREEZE ϕ 55 mm

- ❑ The maximum length of the straight piping with ϕ 55 mm is 10 m (Σ intake + outlet)
- ❑ In the event that it will be used on pipelines ϕ 75 mm that will be reduced to ϕ 55 mm the previous paragraph applies whereby 2 m pipes ϕ 75 mm mean reduction distribution with ϕ 55 mm by 1 m
- ❑ the maximum number of bends in the middle radius of 70 mm is 3 pieces and each bend leads to a reduction of 1 m
- ❑ In the case of branching distribution into two branches (using a T-piece) at least one of the branches must not exceed the maximum allowable length of distribution (this length is counted distribution before branching or inlet or outlet etc.) Also, this branch must not be equipped with a shutoff flap. It is more advantageous to use air ducts on the intake heater. The minimum distance from the vertical walls are the same as for the distribution with ϕ 75mm

WIND ϕ 90mm

- ❑ The maximum length of the straight piping with ϕ 90 mm is 15 m (Σ intake + outlet)
- ❑ the maximum number of elbows for air distribution is 5 pieces and each element reduces pipeline by 2,5 m
- ❑ A metal grid outlet ϕ 90 mm reduces piping by 1,5 m

WIND ϕ 75mm

- ❑ The maximum length of the straight piping with ϕ 75 mm is 7 m (Σ intake + outlet)
- ❑ The maximum number of elbows is 4 pieces and each element reduces pipeline by 0 1m
- ❑ The maximum number of T-units for air distribution is 4 pieces and each element reduces pipeline by 1 m
- ❑ An outlet grid ϕ 75 reduces piping by 5.5 m, outlet flap Š 120, after removing the sealing flap, does not reduce piping at all

Combustion air

It is necessary to install an intake silencer at the input of the combustion air. The combustion air must not be sucked from the passenger's or crew's compartment. The intake port of the combustion air must not be orientated in the direction of the driving motion and must be positioned so that clogging with dirt, mud or snow is prevented. In a case where the suction port is situated in a place where its clogging with dirt might occur (e.g. in the wheelhouse), it is necessary to use a so-called intake silencer extension and situate the intake silencer itself in a safe place. The original part - intake silencer extension – is 1 m long but it is possible to cut it short in accordance with requirements. The whole suction piping from the inlet to the heater must be laid with a constantly rising gradient. If this condition cannot be met, it is necessary to make a 3mm hole in its lowest point, so that water or condensation can drain away.

The throttle valve of the combustion air on the heater is factory set and it is prohibited to manipulate it in any way. It is also prohibited to dismantle the sealed part of the heated air ventilator.

Flue gases

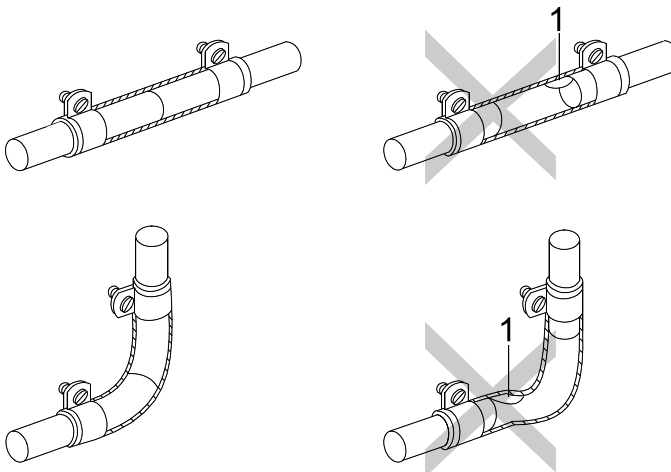
Flue gases must be reliably diverted to places where they cannot be part of the heating or combustion air. The heater exhaust must always be fitted with a flexible tube that can be ordered separately. This tube can be reduced to a minimum length of 0.5 m—or alternatively can be extended with pipeline with a minimum gradient of 20 mm of 1 m. Its end must be equipped with a tailpipe. Exhaust pipes should be fitted with a small sustained gradient towards the flue gas outlet. If this is not possible, draining holes around - 3 mm must be drilled in the lowest places, so that water and condensate can freely drain off.

The flue gas outlet should be oriented so that is not directed against the driving direction to prevent its clogging with mud or snow. It is also important to ensure that the flue pipe does not exceed the outline of the vehicle and jeopardize the function of important parts of the vehicle (fuel lines, brake hydraulics etc.). It is not appropriate to attach the exhaust pipe to the plastic parts of an automobile; the exhaust pipe temperature can reach 200 ° C. If the end of the exhaust is less than 50cm above ground level, make sure that the end of the exhaust is not oriented perpendicular to the road—in order to prevent the flue outlet being directed towards incendiary substances (dry grass, straw, sawdust, etc.). The user is to be instructed about this requirement.

The fuel supply

It is necessary to use the appropriate fuel to establish a reliable function of the heater in the whole temperature range. It is possible to use any fuel oil at temperatures over 0°C, winter diesel oil down to -20°C and a mixture of the winter diesel oil with kerosene or petrol at the ratio of 1:1, or special arctic diesel oil alternatively, under -20°C. It is necessary to determine the fuel system with regard to the capacity of the fuel pump. It is also necessary to avoid installing any part of the fuel system near a source of heat (the exhaust, the radiator etc.) and to ensure that it cannot collide with any moving part of the chassis (suspension or the axle). The fuel piping from the pump to the heater must not incline and underpressure should not arise at the collection place of the fuel (fuel tank, pipes). It is recommended to use polyamide hoses with the bore of about 2 mm for the fuel supply line and to use only rubber hose unions to connect them. The hoses have to be cut even, without burrs or deformation and their ends have to be pushed close to each other inside the connecting hose so that air bubbles cannot form there. Cut the hoses with a knife (do not use a wire cutter, shear or saw).

Prevent the formation of air bubbles

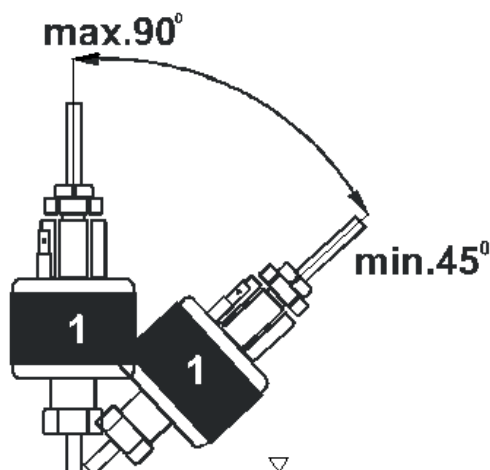


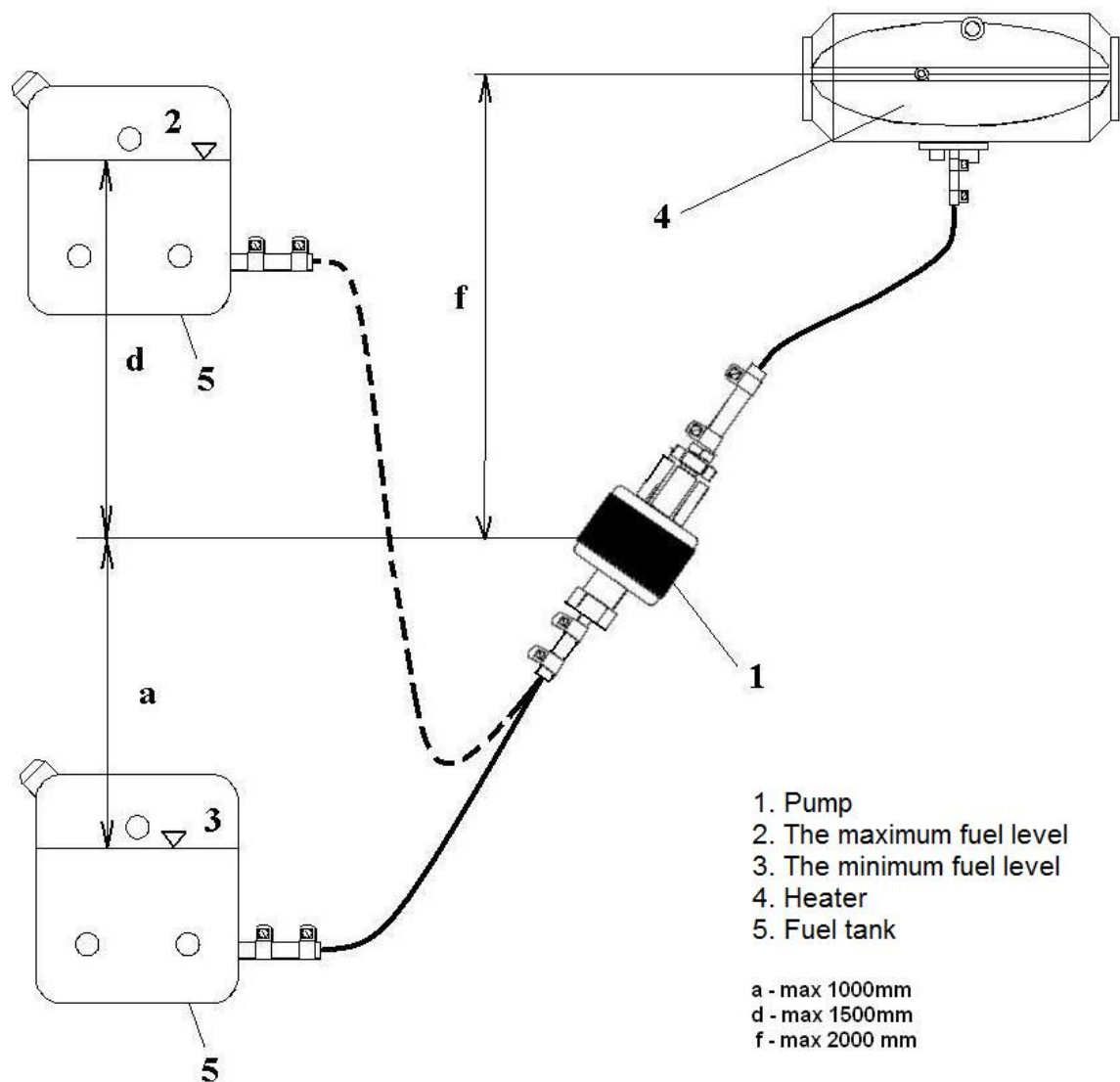
Regulation of fuel standards:

- ☐ Diesel EN 590
- ☐ BIO diesel ČSN 65 6509 (containing up to 5% rapeseed oil methyl ester)
- ☐ Light heating oil

Pump

The pump must be mounted on a vehicle using a spring washer (silent block), which is part of the kit. It must also ensure a certain position of the pump (see fig. below) to prevent its spontaneous aeration.

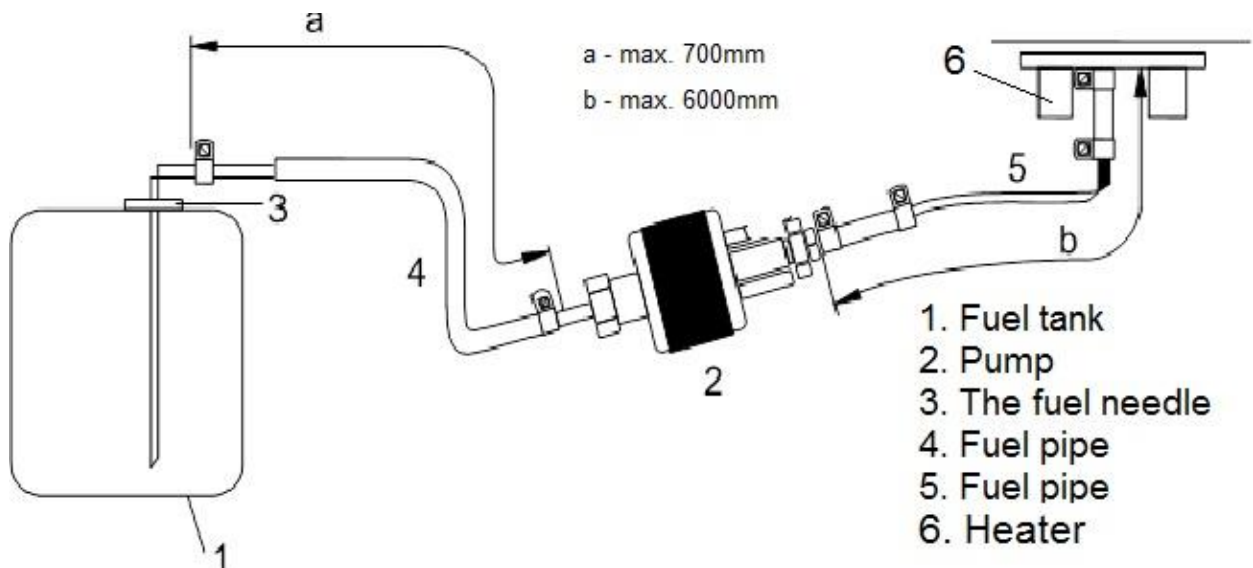




Fuel take-off for heating operation in practice is possible in three different ways.

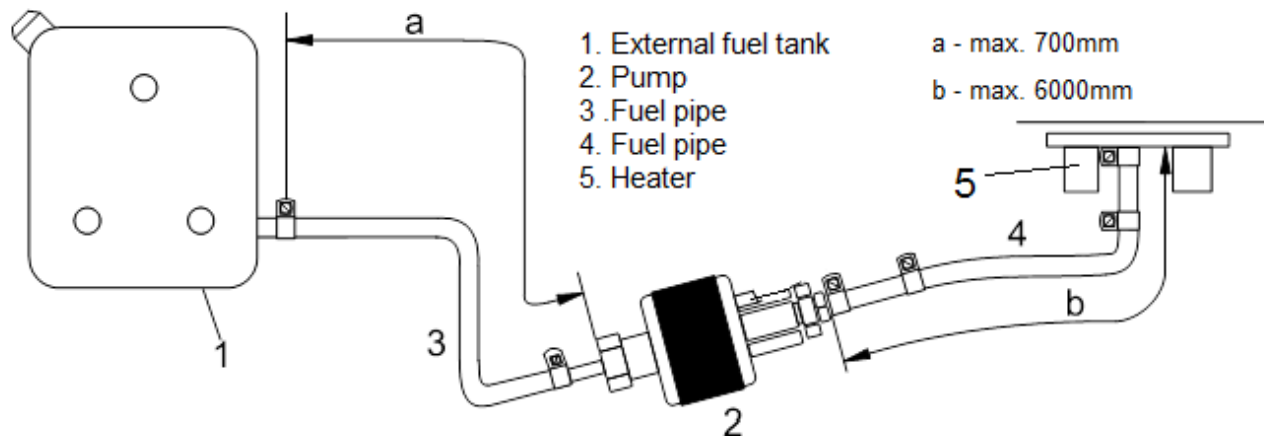
1. Taking the fuel from the vehicle tank by a needle

This is the most suitable and recommended method of fuel take-off. This way may be used with all means of transport, powered by a Diesel engine and it is recommended for vehicles with a turbocharger, where an additional pump in the tank of a vehicle is used creating an overpressure in the fuel system of vehicles (TDI, HDI, etc.) The fuel flow is not affected by the running engine. It is necessary to fit the length of the fuel needle so that its end is approximately 20 mm over the bottom of the fuel tank. Its lower end must be bevelled.



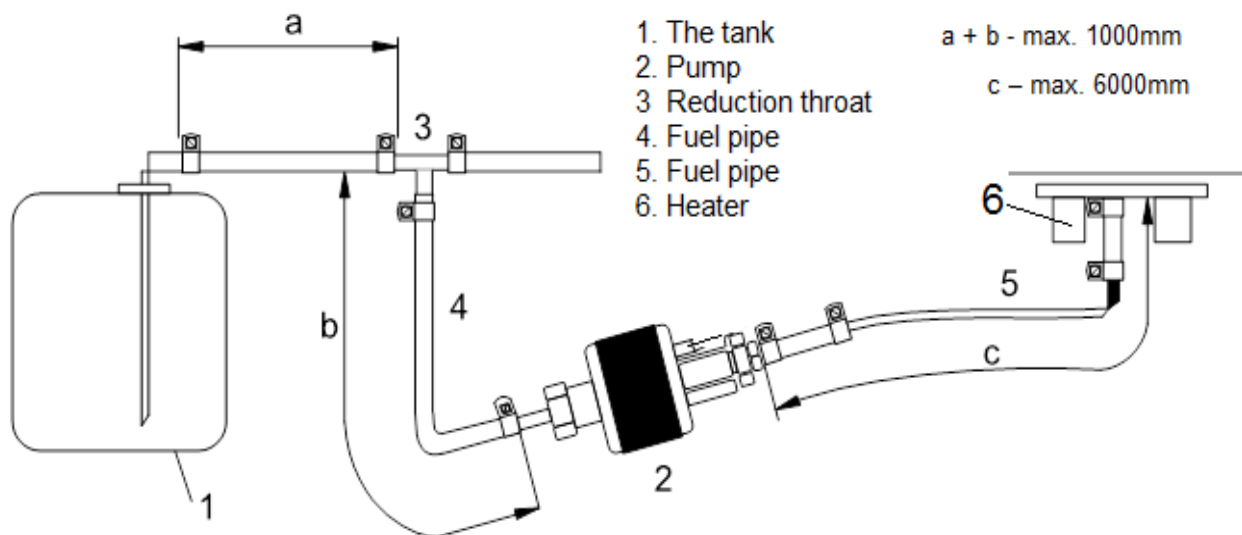
2. Taking the fuel from an extra fuel tank

It is necessary to use an extra tank where there is a petrol engine (e.g. with caravans, cabins etc.) and also in the two above other cases, when the suction lift could exceed 1 000 mm during operation. It is advisable to install an extra fuel tank as soon as the suction lift reaches over 500 mm. The additional fuel tank must meet the directive 70/221/EHS and is subject to the approval of a government appointed test laboratory.



3. Taking the fuel with a branch at the fuel line of the vehicle.

This method should only be built in to a vehicle where it is not possible to use any of the above methods of assembly and where fuel piping is of outside diameter 10 mm max. The reduction socket must be connected to the vehicle fuel line between the tank and the fuel pump (in front of the fuel filter). It is not possible to mount it at the overflow pipe



Needle into the tank

Tank needle is intended for installation in plastic or metal tanks of the vehicle. For plastic tanks it must be installed at reserved places (with suitable thickness of the tank wall). If the hole be drilled in another location the tank could crack. The needle must be placed only on upper horizontal surface of the tank.

Mounting instructions:



JEHLA DO NÁDRŽE

AFTERMARKET No. 903000005

BRANO No. 163-C090500750

Pro přívod paliva k nezávislému topení
(BREEZE III, WIND III) z nádrže vozidla.

ZÁSTAVBA:

Montáž do víka nádrže

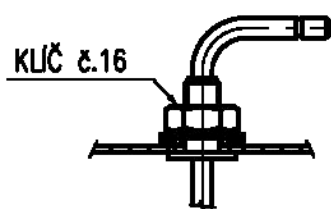
1. Na vhodném místě víka nádrže vytvořit otvor $\varnothing 10$ mm.
2. Do otvoru zavléknout ze spodní strany nádrže jehlu, případně upravit její délku tak, aby její konec byl cca 20 mm nad místem odběru paliva motorem vozidla. Konec jehly je nutno seříznout šikmo.

Montáž do stěny nádrže

1. Na vhodném místě stěny nádrže vytvořit otvor $\varnothing 16$ mm.
2. Do otvoru zavléknout jehlu (viz obr.), případně upravit její délku tak, aby její konec byl asi 20 mm nad místem odběru paliva motorem vozidla. Konec jehly je nutno seříznout šikmo.



3. Montáž dokončit nasazením těsnění, podložky a dotažením matice.



KLÍČ č.16

Datum/Date:

Kontrola/Check:



NEEDLE FOR TANK

AFTERMARKET No. 903000005

BRANO No. 163-C090500750

It is for fuel supply into independent heating
(BREEZE III, WIND III) from vehicle tank.

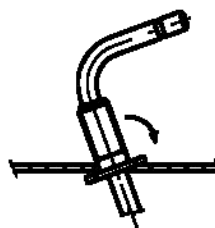
INSTALLATION:

Installation to lid of tank

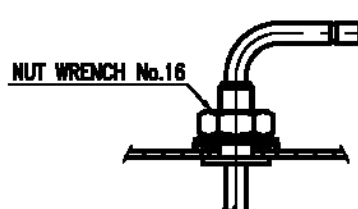
1. Make hole $\varnothing 10$ mm in convenient place on lid of tank.
2. Put needle into hole of lid from bottom side. Adjust its length, if it is needed. The end of needle should be about 20 mm over the place of taking fuel of car motor. Its lower end must be bevelled.

Installation to wall of tank

1. Make hole $\varnothing 16$ mm in convenient place on wall of tank.
2. Put needle into hole (see fig.). Adjust its length, if it is needed. The end of needle should be about 20 mm over the place of taking fuel of car motor. Its lower end must be bevelled.



3. Put seal, washer and tighten nut.



NUT WRENCH No.16

Electrical devices

Individual kit components are electrically connected by connecting beam. Connection and cable cuts for vehicle networks must conform to the code of el. installation (see Chapter XI of the electrical network of heater). Electric installation of heater is double wire. Control is placed inside the cabin so that it will be in the operator's reach and in his visual field.

During assembly wire cross sections must be in accordance with the values given below in the table to avoid voltage depression. The difference between the voltage at the battery and voltage of the heater must not exceed 0.3 V

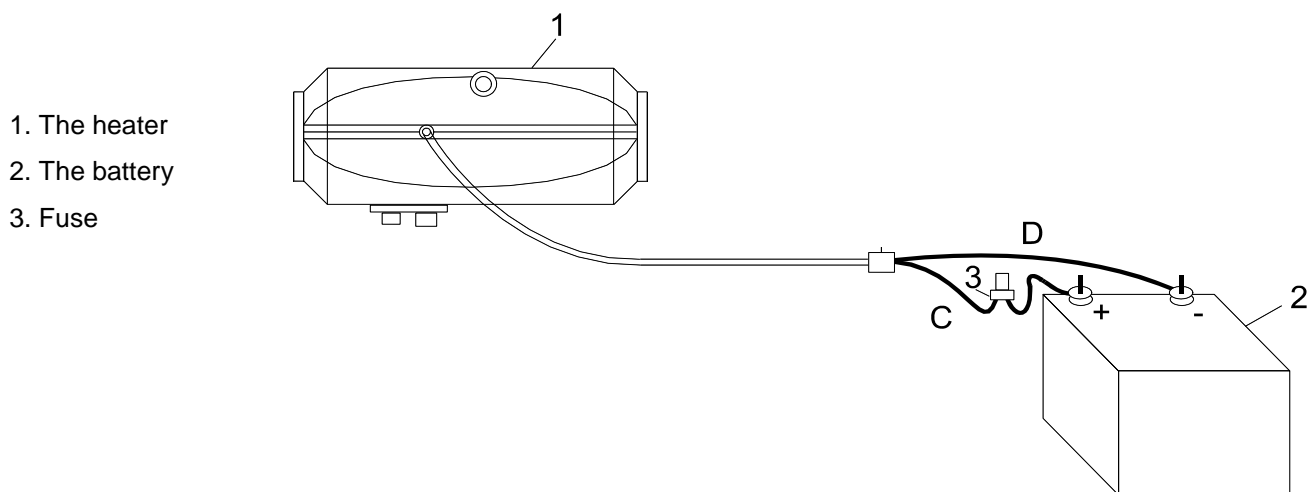
Wire\ Length	to 5m	5 to 10m	above 10m
A,B	0,5 mm ²	1,0 mm ²	1,5 mm ²
C,D	2,5 mm ²	4,0 mm ²	6,0 mm ²

During installation the cross-sections conductor listed in the table must be conformed with to avoid voltage drop. The difference between the voltage on the battery voltage and on the heater must not be greater than 0.3 V.

The wires C, D are connected so that there cannot be a disconnection from the power supply heater (e.g. when ignition is switched off). The heater must not be connected behind the battery disconnect or.

In the event that after turning off the battery isolator the backlight timer illuminates it is necessary to connect it with the two relay switching contacts (see picture).

It is appropriate to protect conductor C by an additional safety fuse with suitably rated current value. (see the technical part)



MAINTENANCE

It is recommended that common inspection and maintenance is carried out every year before the winter season which covers the following operations

- ☐ checking the fuel piping - carry out a test of the heater
- ☐ checking the electric wiring and connections to eliminate defects, if there are any
- ☐ cleaning the heating air ventilator and ribs and remove accumulated deposits

After the duration of the design life i.e. 10-year period from the beginning of operation, the heater has to be placed in charge of a competent workshop for overhaul, which covers the following work:

- ☐ dismantling the heater
- ☐ replacement of the motor and the heat exchanger
- ☐ checking and repair or replacement of other parts regarding to their conditions
- ☐ reassemble of the heater
- ☐ function test and adjustment
- ☐ function test of the overheating fuse

TROUBLESHOOTING

The various defects that may occur on the heater are described in detail in the document Error Messages **03-9930.99** (see Annex), together with their probable causes and possible remedies.

In the event of any defect, try, after switching off the red LED to reset the error code on the display, and start the heater again. In the event of any defect, try again to run the heater. If it is reloading or frequent occurrence of errors continues check the connection of all connectors inside and outside heater. Then follow the referred instructions.

PROCEDURE FOR REPAIRS AND REPLACEMENT PARTS

Breeze IV a Wind IV

A. Replacement plug

1. Turn and tighten the sleeves. Use a screwdriver to gradually push four tabs in the cover, separate the upper cover.
2. Disconnect the spark plug connector from the control unit.
3. Replace the plug
4. Connect the spark plug connector to the control unit.
5. Place the upper cover on the heater and a harness grommet placed into a circular hole between the two covers. Push the covers together so that all four tabs engage. Fit the sleeve.

B. Removing the heater from the vehicle

6. Release and eject the exhaust pipe, the intake silencer and fuel pipe.
7. Unscrew the four nuts.
8. Remove fuse, disconnect the harnesses and possibly heating air pipes.
9. Remove the heater from the vehicle.

C. Complete disassembly of the heater

1. Dismount the heat exchanger seal
2. Turn the sleeves and remove them
3. Use a screwdriver to gradually push four tabs in the cover and separate the upper cover.
4. Remove the heater from covers (the heater can be placed on the bottom cover which is turned upside down).
5. Remove insulation and heat reflective coat.
6. Disconnect the individual electrical harnesses from the control unit (sensor flame glow plug and electric) and disconnect the connector of overheating fuse
7. Unscrew the self-tapping screw securing the control unit and ejected UC from the engine bracket.
8. Take off the locking washer and remove the overheating fuse.
9. Unscrew the glow plug.
10. Unscrew the flame sensor.
11. Unscrew the four nuts to separate the fan from the exchanger and remove the flange seal.
12. Eject the fuel pipe from the fan assembly and remove the O-ring from it
13. Remove the locking washer on the motor shaft, using the tool to download a fan wheel, hit pin from the motor.
14. Unscrew 2 screws M3, remove the motor support.
15. From exchanger assembly unscrew two screws, eject the combustion chamber from the exchanger and remove the O-ring from the throat plug.

D. Reassembling the heater

16. Insert a new O-ring into the neck of plugs, combustion chamber inserted into the exchanger and screw two screws.
17. Tap pin into the motor shaft.
18. Fit the bracket to the electric motor and screw the 2 screws.
19. Push fan wheel onto the motor shaft and fasten it with the locking washer.
20. Push fuel pipe into the fan housing and put on it new O-ring
21. Paint contact area between the fan and the exchanger with sealant, insert a flange seal with the 4 nuts screwed both assemblies - observe the correct position of the O-ring and the flange seal.
22. Insert the control unit into the slots of the motor support and screw self-tapping screw into the console.
23. Screw the flame sensor together with a copper washer.
24. Fit the overheating fuse and fix it with new locking washers. Check adequate fixation against rotation.
25. Screw the glow plug.
26. Connect all harnesses to the control unit and connect overheating fuse.
27. Refit the insulation and the heat reflective coat.
28. Refit the rubber cap and insert the heater into the top cover while the harness grommet is placed into the notch in the cover. Press down the bottom cover to the upper cover so that all four tabs engage.
29. Fit sleeve.
30. Refit the exchanger seal.

E. Refitting the heater in a vehicle

1. Place the heater into the vehicle to the designated place.
2. Screw 4 nuts.
3. Connect the exhaust tube, intake silencer and fuel supply.

4. Connect the wiring harnesses and eventual distributions of heating air, insert the fuse

These procedures shall include a brief description of each step and serve as the basis for determining the specific procedures for repairs.

The heater WIND has added interposer which is between the motor with the impeller and the exchanger. It is not recommended to dismantle a fuel pipe for heater WIND.

Sealant to seal the seating surfaces of the heat exchanger:

Sealant that is used is produced by BRANO a.s. This Czech product is type **LUKOPREN S 9780**. It is a durable silicone sealant with a temperature resistance of 250 ° C.

Ateso ALFA

A. Replacement plug

1. Turn and download the grid on the fan side. Loosen 2 clips to separate the top cover.
2. Disconnect the spark plug connector from the control unit.
3. Replace the plug
4. Connect the spark plug connector to the control unit.
5. Place the upper cover on the heater and a harness grommet placed into a circular hole between the two covers. Top cover press down the bottom, so as to capture both clips. Fit the grid.

B. Removing the heater from the vehicle

6. Release and eject the exhaust pipe, the intake silencer and fuel pipe.
7. Unscrew the four nuts.
8. Remove fuse, disconnect the harnesses and possibly the heating air pipes.
9. Remove the heater from the vehicle.

C. Complete disassembly of the heater

10. Dismount the heat exchanger seal.
11. Turn and download the grids.
12. Loosen 2 clips and to separate the top cover. Separate the back cover from the bottom cover and remove the bottom cover (the heater can be placed on the bottom cover which is turned upside down).
13. Disconnect the individual electrical harnesses from the control unit (sensor flame glow plug and electric) and disconnect the connector of the overheating fuse.
14. Unscrew the self-tapping screw securing the control unit and ejected UC from the supporting cross.
15. Use a screwdriver to loosen the impeller fan on the shaft and remove it from the shaft.
16. Loosen the clamp and download the supporting cross from the motor.
17. Slightly turn the overheating fuse to enable unlocking the locking washers and download washers. Remove overheating fuse.
18. Unscrew the glow plug.
19. Unscrew the flame sensor.
20. Unscrew the four screws and separate the fan assembly from the exchanger and remove the blower housing seal.
21. Unscrew the 3 screws into the exchanger end eject the combustion chamber together with the fuel pipe seal. Remove the seal of a combustion chamber.
22. Remove the glow plug seal.

D. Refitting the heater in a vehicle

1. Insert the glow plug seal together with sealing ring into the opening in the exchanger so that the groove on the seal grasps the pin on the exchanger.
2. Under the flange of the combustion chamber insert a new seal the combustion chamber and screw the 3 screws. The glow plug seal must encircle the neck of the combustion chamber.
3. Insert the new seal between the subassembly fan and heat exchanger and tighten 4 screws.
4. Slide the impeller fan on the motor shaft so that the surface of the shaft is against the surface of the impeller and ensure protrusions on the impeller fit into the recess on the shaft.
5. Slide crossing support and secure it by the clamp.
6. Insert the control unit into the slots of the crossing support and screw the self-tapping screw into the blower housing.
7. Screw the flame sensor together with a copper washer.
8. Fit the overheating fuse and fix it with new locking washers. Slightly turn the flame sensor so that the connectors perpendicular to the axis of the heater.
9. Screw in the glow plug.

10. Connect all harnesses to the control unit and connect overheating fuse.
11. Insert the heater into the bottom cover while the harness grommet is placed into the notch in the cover. Next, put on the back cover and the top cover press down the bottom, so as to capture both clips.
12. Fit the grids.
13. Refit the exchanger seal.

THE PROCEDURE FOR RESOLVING COMPLAINTS

If there is a defect within the warranty period the following procedure must be observed, otherwise entitlement to a claim lapses, as stated in the warranty certificate.

1. A customer who is claiming for a defective heater, submits a warranty certificate, which is completed in all sections (a type of heater, date of manufacture, serial number, date of sale, installation performed, the type and brand of car, the name and address of the customer).
2. The service organization repairs the heater and replaces the defective parts.
3. The service duly completes the complaint protocol, which specifies the type of defect and the method of its removal. Service sends it together with a copy of the warranty certificate and defective parts to the address BRANOMARKET s.r.o.; Na Račanech 100, Jilemnice 514 01.

The credit note will be sent to the contracting service after evaluation of the complaint. On the basis of it the contracting service issues an invoice and send it to the address of the service BRANO, a.s., Na Račanech 100, Jilemnice 514 01.

Amount of the credit will be equal to the work identified in the claim report and will respond time standards, which are integral parts of the service representation

COMPLETING WARRANTY CERTIFICATE

Following items are completed from BRANO a.s. manufacturer's plant:

- ☐ Heating type – 12V (24V)
- ☐ Day of manufacture
- ☐ Serial Number
- ☐ Output QC certificate

The following items will be fulfilled by a service person:

- ☐ Date of sale
- ☐ Vehicle brand & type
- ☐ Name & address of the customer
- ☐ Assembled to the vehicle by (name service, address, stamp, date, signature)

The customer will acknowledge taking over the Warranty by signature in *Customer's signature* cell.

The warranty certificate remains with the customer. An electronic copy of the warranty certificate (* .pdf or * .jpg) is sent to Brano a.s. service support (reklamacent@brano.eu).

MEASURING INSTRUMENTS

For diagnostics and service of the BREEZE IV, WIND IV ATESO ALFA air heater it is necessary that the service was equipped with these meters and instruments: the program LIN-bus and the tester of underpressure of air discharge.

N-6747/16	15.4.2016	D.Eliášová		
No. Revision	Date	Make	Approved	Index