

Coolant Heaters

DBW 2020

DBW 300

Installation Instructions



- While a Webasto heater is in use, the product surface, connected hoses, ducting and air outlet(s) may become hot to the touch. Contact with skin may cause burns.
- Improper installation or repair of Webasto heating systems can cause fire or the leakage of deadly carbon monoxide leading to serious injury or death.
- NEVER attempt to install or repair a Webasto heating system unless you have successfully completed Webasto factory training and have the technical skills, technical information, tools and equipment required to properly complete the necessary procedures. Only genuine Webasto parts may be used.
- Webasto rejects any liability for problems and damage caused by the system being installed by untrained personnel.
- Webasto products produce temperatures high enough to ignite surrounding combustible materials such as inflammable liquids, gases, vapor, and other combustible matter. The heater must be switched off when loading or unloading inflammable materials to prevent the risk of explosion.
- ALWAYS and carefully follow Webasto installation and repair instructions and heed all WARNINGS.



WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

The heater can be registered by visiting www.techwebasto.com or by scanning the code.
A proof of purchase is required for all heaters that are not registered.



Meets FMCSA Motor Vehicle Heater Requirements when installed in accordance with 49 CFR 393.77. For more information visit <https://www.govinfo.gov/content/pkg/CFR-2012-title49-vol5/pdf/CFR-2012-title49-vol5-sec393-77.pdf>

1. Using the water heaters

The water heater is used for pre-heating and retaining the heat of water-cooled motors engines. The heater works in conjunction with the heating system of the vehicle

- to heat the driver's cabin and passenger compartment and
- to defrost the windows and windscreen of the vehicle.

The heater operates independently of the vehicle engine. It is connected

to the coolant circuit or the heating circuit, the fuel supply system and the electrical system of the vehicle.

The heaters are licensed for heating the vehicle's or driver's compartment, however, not for heating the compartment of dangerous goods.

If the heater is to operate with a separately installed heating system,

the installation plan must always be presented to Webasto for approval.

The following instructions are of a general nature and, naturally, they must be interpreted according to the type of vehicle construction.

2. Technical data

HEATER	DBW 2010	DBW 2020	DBW 300	DBW 350
DESIGN	Coolant heater with high-pressure nozzle			
HEAT OUTPUT kw Btu/h	13.0 (45.000)	23.3 (80.000)	30.0 (104.000)	35.0 (120.000)
FUEL	Diesel #1, #2 or Arctic			
FUEL CONSUMPTION l/h (g/h — US) (g/h — Imp.)	1.5 (0.4) (0.3)	3.0 (0.8) (0.7)	4.0 (1.2) (0.9)	4.4 (1.3) (1.0)
RATED VOLTAGE - V	12 or 24	12 or 24	12 or 24	12 or 24
OPERATING VOLTAGE - V	10-14 or 20-28	10-14 or 20-28	10-14 or 20-28	10-14 or 20-28
POWER CONSUMPTION OF HEATER WITHOUT COOLANT CIRCULATION PUMP - WATT	60	120	130	170
PERMISSIBLE AMBIENT TEMPERATURE DURING OPERATION: HEATER, CONTROL UNIT, COOLANT CIRCULATION PUMP - °C (°F)	-40.... + 60 (-40.... + 140)			

HEATER	DBW 2010	DBW 2020	DBW 300	DBW 350
STORAGE TEMPERATURE CONTROL UNIT: HEATER, COOLANT CIRCULATING PUMP - °C (°F)	+ 85 max. (185 max.) - 40... + 85 (-40... + 185)			
MIN. CAPACITY OF COOLING SYSTEM l (Imp. gal.)	10 (2.2)	15 (3.3)		
PERMISSIBLE OPERATING PRESSURE OF THE COOLANT bar (psi)	0.4-2.0 (6-29)	0.4-2.0 (6-29)	0.4-2.0 (6-29)	0.4-2.0 (6-29)
CO ₂ IN EXHAUST GASES % BY VOL.	10.5...11.0	10.5...11.0	10.5...11.0	10.5...11.0
CO IN EXHAUST GASES % BY VOL.	0.2 max.	0.2 max.	0.2 max.	0.2 max.
SMOKE NUMBER (BOSCH)	3.0 max.	3.0 max.	3.0 max.	3.0 max.
DIMENSIONS OF THE HEATER INCL. CONTROL UNIT mm TOL. ±3mm (inch)	L 584 (23) W 205 (8.1) H 228 (9)	680 (26.7) 240 (9.5) 279 (11)	680 (26.7) 240 (9.5) 279 (11)	725 (28.5) 240 (9.5) 279 (11)
WEIGHT OF HEATER INCL. CONTROL UNIT kg (lb)	15 (33)	22 (48.5)	22 (48.5)	23 (50.7)

Technical data of the circulating pumps

CIRCULATING PUMP	U 4810	U 4814	U 4816
FLOW RATE l/h (imp. gal/min)	1600 (6.0) against 0.15 bar	5200 (19.0) against 0.2 bar	6000 (22.0) against 0.4 bar
NOMINAL VOLTAGE V	12 or 24	12 or 24	24
OPERATING VOLTAGE V	10-14 or 20-28	10-14 or 20-28	20-28
POWER CONSUMPTION W	25	104	215
DIMENSIONS mm (inch)			
L	173 (6.8)	221 (8.7)	295 (11.6)
W	94 (3.7)	108 (4.2)	113 (4.4)
H	77 (3.0)	105 (4.1)	114 (4.5)
WEIGHT kg (lb)	0.8 (1.8)	2.1 (4.6)	4.75 (10.5)
RECOMMENDED FOR HEATER*	DBW 2010	DBW 2020 DBW 300 DBW 350	DBW 2020 DBW 300 DBW 350

*Choice of circulating pump depends on resistance of coolant circuit.

Permissible extension of the connections

HEATER	DBW 2010	DBW 2020	DBW 300	DBW 350
FUEL LINE: Ø internal mm (inch) length max. m (ft) suction head m (ft)	6" (0.25) 10 (33) 2 (6.6)	6" (0.25) 10 (33) 2 (6.6)	6" (0.25) 10 (33) 2 (6.6)	6" (0.25) 10 (33) 2 (6.6)
COMBUSTION AIR INTAKE PIPE: Ø internal mm (inch) length max. m (ft) bends max.	80 (3.2) 5 (16.5) 270°	80 (3.2) 5 (16.5) 270°	80 (3.2) 5 (16.5) 270°	80 (3.2) 5 (16.5) 270°
EXHAUST PIPE: Ø internal mm (inch) length max. m (ft) bends max.	38 (1.5) 5 (16.5) 270°	70 or 80 (2.75 or 3.2) 5 (16.5) 270°	70 or 80 (2.75 or 3.2) 5 (16.5) 270°	70 (2.75) 5 (16.5) 270°
HOSE CONNECTIONS INLET/OUTLET OD mm (inch)	18 (0.75)	38 (1.5)	38 (1.5)	38 (1.5)
TEMPERATURE DIFFERENCE Δ t INLET - (° C) - OUTLET (° F)	10 (18)	10 (18)	10 (18)	10 (18)

* Other dimensions upon request

3. Principles of operation

3.1 Mode of operation

The heater contains a high pressure fuel nozzle and operates intermittently. The temperature is controlled either

- by a thermostat (heaters with control unit 1553) or
- by a temperature sensor (heaters with control unit 1563/64 »Sensoric«).

3.2 Running

Switching on and off is carried out either

- by a switch (on/off) or
- by a digital timer

An operation indicator lamp is fitted either in the timer or separately, to provide a visual indication of operation.

If desired the heaters are equipped with

- fuel nozzle pre-heater with a heating cartridge for a lower temperature level.

3.2.1 Switching on (pos. numbers see figure 4)

When the heater is switched on the operating indicator light comes on. The combustion air fan (5), the fuel pump (20) and the water circulating pump begin to run. After a period of about 15 seconds the solenoid valve (6) opens and fuel is sprayed into the combustion chamber (16) through

the fuel nozzle (11), and is simultaneously ignited by a high tension spark. By an impulse of the photocell (19) the control unit turns the electronic ignition unit (3) off after combustion has been established. If combustion does not take place, refer to para. 3.2.4 "Fault lock out".

3.2.2 Heating operation

When the operating temperature has been reached, the control thermostat comes into operation and regulates the temperature, in that it switches the heater on and off, and ensures that the temperature of the water coolant remains at a constant temperature.

As the temperature rises above the highest switching point, the solenoid valve (6) shuts off the fuel supply and thus extinguishes the flame. The purging cycle follows, during which the combustion air blower continues to operate for about 150 seconds after which time it switches off automatically.

The water circulating pump remains in operation during the regulated intervals. The indicator lamp remains on. If the temperature falls below the lowest switching point, the starting procedure of the heater begins again.

3.2.3 Switching off

When the heater is turned off, the combustion stops. The operation

indicator light goes out, and the purge cycle begins. The combustion air fan and the water circulating pump are switched off after about 150 seconds.

It is permissible to switch the heater on again during the purge cycle.

If you have any questions, contact our technical support team at (800) 860-7866 or via email at: info-us@webasto.com.

4 Mechanical installation

4.1 Position of installation

The heater, together with the water circulating pump, should be installed in the heating system of the vehicle (or alternatively in a separate heater circuit).

The installation should be as low down as possible, to ease the bleeding of air from the heater and the water pump. This is particularly important with the water circulating pump, which is not self-bleeding. If it is not possible to install the heater in the engine compartment of the vehicle, it may be built into a locker (see para. 6.5).

The mounting positions, the dimensions including the space necessary for maintenance (e.g. to remove the combustion chamber liner), and installation examples are given as follows:

Fig. 13: Installation drawing for DBW 2020.33 to .50 and DBW 300.16 to .30

Fig. 18: Installation drawing for water circulating pump U 4814

Fig. 19: Installation drawing for water circulating pump U 4816

4.2 Manufacturer's nameplate

The manufacturer's nameplate must be in a position which is protected from damage, and must be clearly legible when the heater is mounted in position (take a duplicate if necessary).

The installer must ensure that the year in which the heater was first installed is permanently indicated on the nameplate (see Fig. 7).

4.3 Connection to coolant circuit of vehicle

The heater is connected into the coolant circuit of the vehicle.

A connection into the coolant circuit is only allowed with the approval of the manufacturer. In the coolant system of the vehicle, or alternatively in a separate heater system, a pressure cap must be fitted with an opening pressure of not less than 6 p.s.i., and not more than 30 p.s.i. The minimum coolant in the water circuit must be 10 liter.

Water hoses from Webasto should preferably be used. If this is not the

case, the hoses used must be of at least as high a quality as those used elsewhere on the vehicle. Hoses must be free of kinks and, to aid bleeding, should if possible rise gently. Hose connections must be secured with hose clips.

The heater and the pipes should be arranged in such a way that as much air as possible is bled from the system statically. Before the heater is first operated, or after replacing the coolant, it is most important that all air is carefully bled from the system (attention to the respective provisions of vehicle manufacturers).

Attention: If the overheat fuse or the temperature sensor should be changed, a danger of injury exists by leaked hot water!

4.4 Fuel supply

Fuel can be drawn either from the fuel tank of the vehicle or from a separate fuel tank.

Fuel pipes should be laid in a rising manner in order to avoid air bubbles. Joints in the pipes must be secured with hose clips when screw joints are not used.

If fuel hoses are fitted those delivered by Webasto are to be used. If Webasto hoses are not used those installed must conform to at least DIN 73739 standards. Fuel hoses must not be sharply bent or twisted in any way and must be fixed with clamps at intervals of approximately 25 cm.

Alternatively, other materials in common use on commercial vehicles, such as steel, copper, or plastic of elastomeric, light stabilized and temperature stabilized PA 11 or PA 12 (e.g. Mecanyl RWTL) to DIN 73378, may also be used. Joints must be made in a manner appropriate to the material used.

Suspended fuel lines must be secured to avoid sagging, and should be fitted so that they are protected from flying stones and heat e.g. from the exhaust pipe.

The fuel filter, supplied with the heater, must always be fitted.

A supplementary fuel pump must not be fitted.

Additional information is given in para. 7.6.

Permissible measurements of fuel pipes:

- Inside diameter of feed line:
DBW 2010 / 2012: 6 mm minimum,
DBW 2020 / 2022 / 300 / 350: 6 mm.
- Inside diameter of return line:
DBW 2010 / 2012: max. 6 mm,
DBW 2020 / 2022 / 300 / 350: 6 mm,
(other diameters on request).
- Max. permissible length of each pipe (feed and return): 10 m.
- Max. permissible suction height: 2 m (if the max. suction head is reached, we suggest the installation of a valve).
- Max. permissible pressure between suction and return pipe: 0.3 bars.

4.5 Combustion air supply

The combustion air must be taken from the outside area. Under no circumstances may the combustion air be drawn from places in which people are present. If the heater is installed in an enclosed locker, a ventilation opening is necessary:
DBW 2020 / 300: 30 cm²,

The combustion air intake must be so arranged that the least possible dirt is drawn in. The intake must not end at the direction of motion. The opening of the combustion air intake must be performed in this way that a ball of 16 mm diameter can not be introduced.

Additional information is given in para. 7.3.

If the heater is installed near to the vehicle fuel tank in the same locker, the combustion air must be drawn in from outside, and the exhaust pipe must go outside. Joints must be water-tight.

It is important to check, when installing the combustion air pipe, that the adjusting slits on the stub pipe, which adjust the combustion air supply, are not obstructed.

Permissible measurements of combustion air pipes:

- Inside diameter, minimum: 80 mm.
- Max. permissible length of pipe: 5 m.
- Max. permissible total of bends: 270°.

4.6 Exhaust pipe

Exhaust pipe should be rigid tube of alloy or unalloyed steel, with a minimum wall thickness of 1.0 mm. Alternatively, stainless steel flexible pipe must be used.

The exhaust pipe must not end at the direction of motion. The opening of the exhaust pipe outlet must be performed in this way that a ball of 16 mm diameter can not be introduced. Additional information is given in para. 7.4.

The exhaust pipe should be fixed to the heater with a clip.

Minimum permissible measurements of exhaust pipes:

- Inside diameters for
 - DBW 2020 from .33
 - / DBW 300 from .16
- Max. permissible length of pipe: 5 m.
- Max. permis. total of bends: 270°.

4.7 First operation

After the installation of the heater, all air should be carefully bled from the water system, and also the fuel system. Instructions from the vehicle manufacturer must be followed. During the test run of the heater, all fuel and water joints should be checked for tightness. If, during the run, the heater goes to fault lockout, follow the instructions of the Operating instructions.

Before starting heater for the first time, complete checklist beginning on page 6.

5 Electrical circuits

5.1 Connection of heater

The electrical components of the heater are connected direct to the battery.

Observe the cable sizes quoted on the drawing.

The heater should be connected direct to positive and negative of the battery, and not through the battery main switch. The electronic control unit 1553 contains its own negative disconnection relay.

IMPORTANT: All power connections must be fused within 14" of the battery.

5.2 Connection of switchgear

The heater can be controlled using the following alternative schemes: **Switch:** see the following wiring diagrams.

Digital timer:

The mode of connection of the digital timer has to be identified in the "Operating Instructions".

5.4 Electronic control unit

The electronic control unit should be mounted in a protected position. The control unit meets protection type IP 54 if installed in accordance with fig. 35 / 36, and IP 50 if installed in any other position.



Attention — danger to life by high-voltage: Disconnect the plugs to vehicle before opening the heater!

6 Important notes

6.1 Within the jurisdiction of the StVZO, general approval has been given to the heaters with the following test symbols:

- ~ S 136 for DBW 2020,
- ~ S 164 for DBW 300,

6.2 The installation of the heater must be in accordance with the installation instructions of the manufacturer, and is only to be carried out by an authorised installation agent. Deviations of installation are only permitted with prior written approval of an officially recognized expert or examiner.

6.3 The heater may be built into the vehicle heating system, or into an independent system. With an independent system, the quantity of water should be at least twice the minimum recommended quantity (see para. 2.1).

In order to minimise corrosion, it is recommended that the coolant should contain at least 10 % anti-freeze (glycol base) all the year round.

6.4 If the heater is used in special vehicles (e.g. those used to carry dangerous goods), or in applications outside the jurisdiction of the StVZO (e.g. ships), all relevant regional regulations must be complied with (see also Technical Information E3 – 5.8, order no. 770514).

6.5 The heater may not be installed in the drivers cab or the passenger compartment of vehicles. However, if some intrusion is inevitable, the heater must be fitted inside a closed casing, sealed from the interior, and well ventilated from the outside (this case is not valid for buses). In the installation casing a maximal temperature of 60°C should not exceed. Malfunctions of heater may be follow.

6.6 **Danger of explosion:** the heater must be switched off when refuelling the vehicle, and at all times when the vehicle is at a filling station or refuelling point.

6.7 Due to danger of poisoning and suffocation, the heater must not be operated in closed areas such as garages or workshops without exhaust venting by suction, not even by time pre-selection and remote control.

6.8 When carrying out electric welding work on the vehicle, the main power cables (positive and negative) must be detached from the vehicle battery and the positive cable connected to earth, in order to protect the electronic control unit.

6.9 The temperature in the vicinity of the control unit must never exceed 85°C (this could arise, for example, when paint work is being carried out on the vehicle). Permanent damage to the electronics may result from excessive temperatures.

7. Installation regulations

For checking the heaters in accordance with §§ 19, 20 or 21 of the StVZO, the following requirements are the most important to observe (§ 22a StVZO):

7.1 The checking is in accordance with the installation and operating instructions of the manufacturers.

7.2 **To para. 4.2:** The year in which the heater was first operated must be permanently marked on the manufacturer's nameplate.

7.3 To para. 4.5: It is not allowed to draw combustion air from inside the vehicle.

If the combustion air pipe is installed in places in which people are present, the pipe may only have four connections and one water-tight wall inlet. The connections must be made air tight in such a way that not more than 200 l/h are passing belonging to pressure of 0.5 bars. The combustion air pipe may be fitted and detached only with tools and it must be protected from damage and vibrations of long duration.

7.4 To para. 4.6: Exhaust pipes must be installed so that exhaust gases cannot penetrate the vehicle interior, and the functioning of components which are important for the operation of the vehicle must not be impaired.

Accumulations of condensation or water in the exhaust pipes must be directly discharged and, where necessary, a condensate drain hole may be provided. The water must be discharged into the atmosphere by a pipe which is sealed off from the interior of the vehicle.

The opening of exhaust pipe may only be pointed upwards, at the side or below the vehicle's floor near to the side or the back part of the vehicle or vehicle's compartment.

If the exhaust pipe is installed in rooms in which people are present, the pipe may only have one connection and one water-tight wall or bottom outlet. After 10 years exhaust pipes in this places must be replaced by spare parts of the factory.

If there is any water in the exhaust pipe a drainage may be fitted with a metal-tight connection. The pipe of the drainage must be tightened if passing the wall or bottom.

The heat exchanger of the heater, the connected exhaust pipe and the drainage must be so tightened that not more than 30 l/h are passing with a pressure corresponding the double overpressure in the exhaust pipe of maximal length, but at least the overpressure of 0.5 bars.

The exhaust pipe may be fitted and detached only with tools and it must be protected from damage and vibrations of long duration.

Metal pipes must be installed. If people are present in the rooms, the surface of pipe may not overstep a temperature of 110°C. A protection may be installed.

7.5 To para. 5: Electric cables, heaters switchgear and control units must be arranged in the vehicle so that their operation is not impaired in any way under normal operating conditions.

All cable apertures from the heater to the outside must be sealed such that they are splashproof.

7.6 To para. 4.4: When routing fuel pipes, or installing additional fuel tanks, the regulations § 45 and § 46 of the StVZO must be adhered to. The most important requirements are as follows:

Fuel pipes must be installed in such a way that there is no danger of the heater being damaged, or its functions impaired, by vibrations of the vehicle or movement of the engine. Fuel pipes must be protected against mechanical damage. All items in the fuel system must be installed so that high temperatures do not cause the heater to mal-function, and positioned so that dripping or evaporating fuel cannot collect or ignite on hot parts of electrical components.

On buses and coaches, fuel pipes and fuel tanks must not be fitted inside the driver's cab or the passengers saloon. Fuel tanks on such vehicles must be so positioned that, in the event of fire, the exits are not obstructed. Fuel must not be supplied by gravity, or by overpressure in the fuel tank.

If people are present in the rooms, observe the following installation instructions: The quantity of connections must be limited at the minimum. The fuel pipe may be fitted and detached only with tools and it must be protected from damage and vibrations of long duration. Metal pipes must be installed with metal-tight connections. The technical instructions may be observed.

7.6.1 To para. 4.4: Installation instructions for Webasto tanks which supply fuel to water heaters in vehicles:

7.6.1.1 On buses and coaches, installation inside the passenger saloon or the driver's cab is forbidden.

7.6.1.2 The fuel filler cap may not be inside the passenger saloon or the driver's cab of any vehicle.

7.6.1.3 Tanks for gasoline fuel must not be situated immediately behind the front of the vehicle.

They must be sufficiently far from the engine to ensure that, in the event of an accident collision, the fuel is unlikely to ignite. This does not apply to machinery with open driver's seats.

7.6.1.4 All tanks shown in the Webasto accessory catalogues are suitable for a maximum operating overpressure of 2 p.s.i.

7.6.1.5 All tanks shown in the Webasto accessory catalogues are subjected to a pressure test of at least 4 p.s.i. during the course of manufacture.

7.6.1.6 The fuel tanks must be fitted with a ventilated cap, or be ventilated in some other way (e.g. ventilation pipe).

7.6.1.7 Only filler caps meeting DIN 73400 may be used.

7.7 To para. 5: There must be a clearly visible indicator showing the current state of operation of the heater – at least whether it is switched on or off.

7.8 To para 5: When used with a pre-set timer, the maximum running time of the heater after automatically switching-on must not exceed 1 hour.

7.9 Retrofit installations of heaters must be checked by an authorised testing station (TÜV) in accordance with § 19 pos. 2 StVZO. A new operation licence for the vehicle will be issued by the appropriate government office when approval has been given.

7.10 An acceptance certificate from the respective test centre is necessary – insofar as applicable regulations exist – for heaters in vehicles which are not subject to the StVZO (see also paragraph 6.4).

The heaters "General Design Approval" and thus the General Operating License of the vehicle are void, if the installation of the heater is not approved. The same applies to improperly performed repairs or those where others than genuine spare parts were used.

Initial Start Up Checklist:

Please complete the following checklist before starting heater for the first time.

HEATER MOUNTING		Complete (Yes/No/Comments)
1	Is the heater installation safely secure / rigid? (Ensure that all bracket bolts are tight)	
2	Is there a safe clearance from heat generating Components? (I.e. exhaust, etc...)	
3	Is there sufficient clearance between heater and any vehicle moving components under all operating conditions? (steering cranked to extreme positions, torqued engine, suspension, etc...)	
4	Is the heater mounted in an acceptable position according to the limitations noted in the installation manual?	
5	Is the heater installed in a protected location from road debris and splash-water or items stored in the same area?	
6	Is there a sufficient amount clearance between the heater and the ground? (Coolant heaters only)	

COOLANT SYSTEM		Complete (Yes/No/ Comments)
1	Is there a safe clearance (min 4 in.) from heat generating components? (exhaust, etc...)	
2	Is there a safe clearance from sharp edges / objects? Ensure a heat protective has been installed (if applicable)	
3	Are there any kinks, sharp bends or the possibility for pinched hoses or harnesses, cuts and rub through?	
4	Have all the hose clamps been properly positioned and tightened?	
5	Has the coolant system been topped off and bleed per the vehicle manufacture's specifications for proper mixture and type?	
6	Has a pressure test been performed on the coolant system under all operating conditions?	
7	Have the coolant hoses been installed so that they are below the coolant filler cap?	
8	Has the coolant flow direction been verified?	

ELECTRICAL		Complete (Yes/No/Comments)
1	Has all wiring been safely secured away from moving components and / or heat sources?	
2	Check for proper power and ground connections.	
3	Has blower motor functionality been tested (if applicable)?	
4	Check for proper fuse tap connection.	
5	Verify the correct fuses are in the specified locations per the installation manual.	
6	Ensure heater and vehicle fuse boxes are closed and secure. Was the Webasto fuse block installed in a location protected from water and / or moisture?	
7	Ensure blower motor resistor (1.0Ω) is securely mounted and has sufficient clearance from any plastic component and battery.	
8	Ensure battery is mounted securely and connections are properly tightened.	
9	Ensure battery is at $\geq 12.2\text{Vdc}$ for 12V, 24.4Vdc for 24V.	

FUEL SYSTEM		Complete (Yes/No/ Comments)
1	Is the standpipe properly mounted in the fuel tank? (sealed, structural integrity maintained).	
2	Validate the standpipe does not interfere with function of sending unit by checking fuel gauge for proper operation before completing installation of tank.	
3	Verify that all fuel lines are properly secured and are a safe distance (min. 4 in.) from exhaust systems and / or moving components.	
4	Check all fuel lines for leaks or kinks.	
5	Check fuel line clamps for proper positioning and tightness. Ensure fuel system is free of leaks.	
6	Ensure fuel pump is securely mounted in a cool location NOTE: Vehicle fuel tank area is generally a location with minimal sound transfer path to vehicle interior.	

EXHAUST SYSTEMS		Complete (Yes/No/Comments)
1	Is the muffler and clamps securely tightened?	
2	Has muffler and exhaust tube been routed a safe distance from flammable material?	
3	Ensure drain-holes are drilled in low bend areas of exhaust tube.	
4	Ensure exhaust is venting a safe distance from any vehicle interior openings.	
5	Ensure exhaust is venting in the direction that will not cause back pressure while driving.	

COMBUSTION AIR INTAKE		Complete (Yes/No/Comments)
1	Is the combustion air intake drawing fresh air from a non-turbulent location? (i.e. not in direction of travel)	
2	Ensure air intake system is securely fastened.	

HEATER FUNCTION		Complete (Yes/No/ Comments)
1	Ensure heater starts and runs for a minimum of 20 minutes.	
2	Ensure vehicle blower turns "ON".	
3	Ensure warm air is blown out of interior vents after blower is activated.	
4	Ensure timer (control device) is functioning.	
5	Check and Modify CO2 setting as needed based on altitude (will the heater "live" or spend a lot of time above XXXXXX Feet) (See service manual for instructions to make adjustment)	

COSMETICS		Complete (Yes/No/ Comments)
1	Has the vehicle interior, engine compartment, trunk & glove compartment been inspected for cleanliness after installation.	
2	Has user manual placed in glove box?	
3	Is the vehicle clock time correct after disconnecting the battery?	

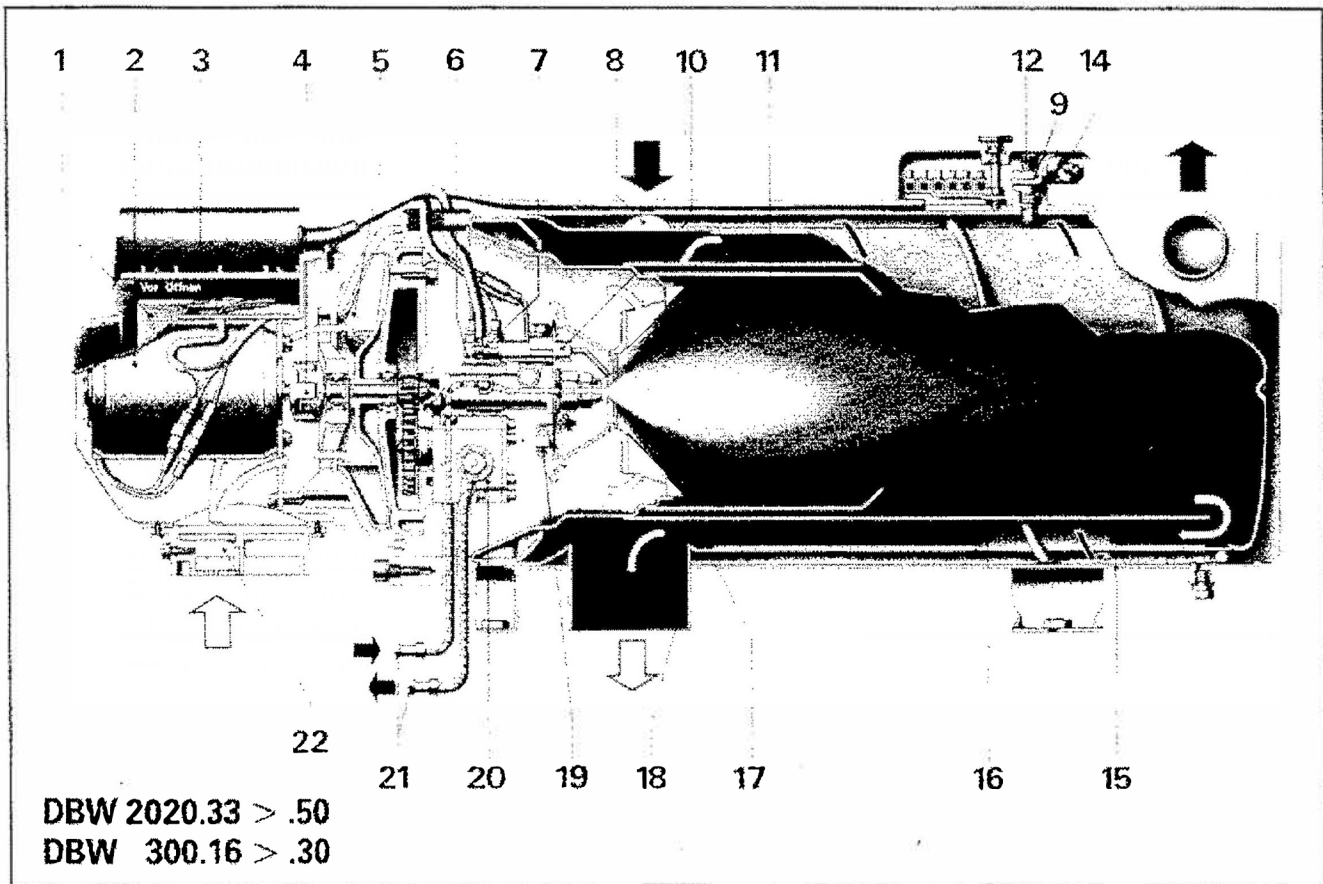
If you have any questions, contact our technical support team at (800) 860-7866 or via email at: info-us@webasto.com.



HEATER MUST BE SWITCHED "OFF" WHEN REFUELING AT FILLING STATIONS AND/OR WHILE LOADING OR UNLOADING FLAMMABLE MATERIALS FOR TRANSPORT, TO PREVENT THE RISK OF EXPLOSION. PLEASE REVIEW OWNER'S MANUAL FOR SAFETY AND USE INSTRUCTIONS.

Fig. 4: Water heaters DBW 2020 from .33 to .50 and DBW 300 from .16 to .30

- | | |
|--|--|
| 1 Electronic control unit | 11 Fuel nozzle |
| 2 Motor | 12 Overheat fuse |
| 3 Electronic ignition unit | 14 Overheat thermostat |
| 4 Clutch | 15 Heat exchanger |
| 5 Combustion air fan | 16 Combustion chamber |
| 6 Solenoid valve | 17 Combustion air swirler |
| 7 Electrode plug | 18 Exhaust pipe |
| 8 Water pipes | 19 Flame detection photocell |
| 9* Control thermostat | 20 Fuel pump |
| 9a Temperature sensor (alternat. to item 9b) | 21 Fuel pipes |
| 10 Ignition electrodes | 22 Combustion air intake, with adjusting shutter |



* as to version of heater

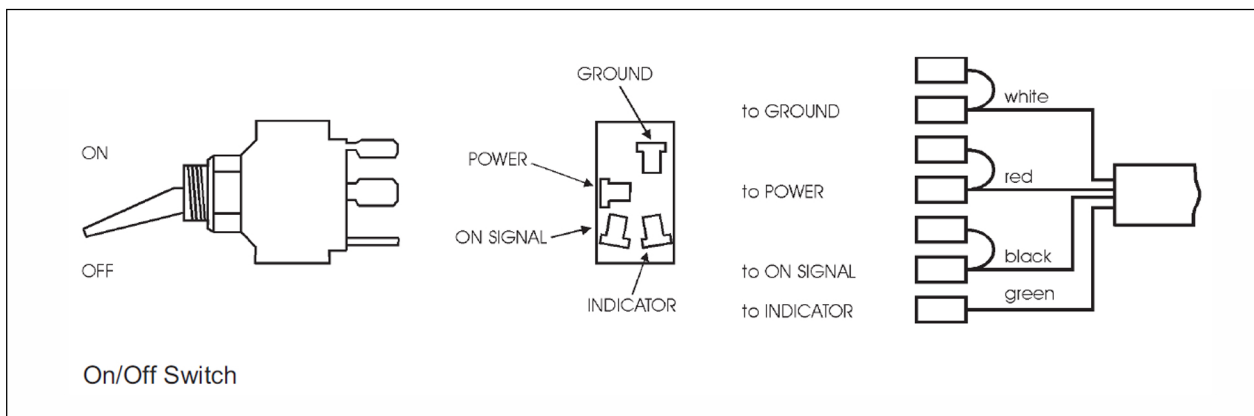


Bild / Fig. 13

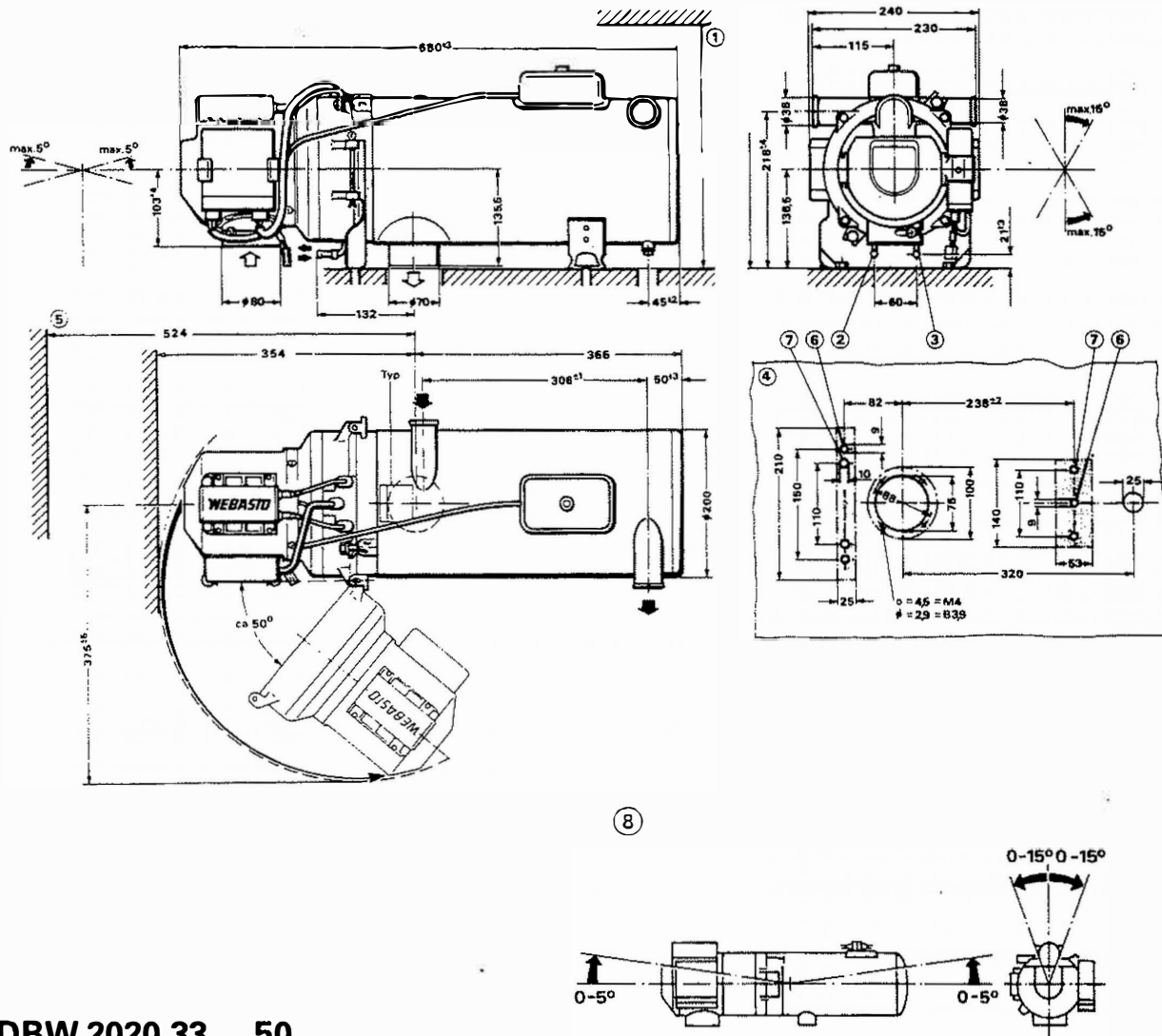


Fig. 13: Installation drawing
for DBW 2020 from .33 to .50 and
DBW 300 from .16 to .30

- ① Space required for removal of over-heat fuse
- ② Fuel feed pipe with hose diameter of 6 mm
- ③ Fuel return pipe with hose diameter of 6 mm
- ④ Mounting holes
- ⑤ Space required for removal of combustion chamber liner

Alternatives:

- ⑥ a) for 8 mm screw (nut is welded to stand)
- ⑦ b) for through way screw (screw with nut)
- ⑧ Permissible mounting position

Fig. 18: Installation drawing for water circulating pump U 4814

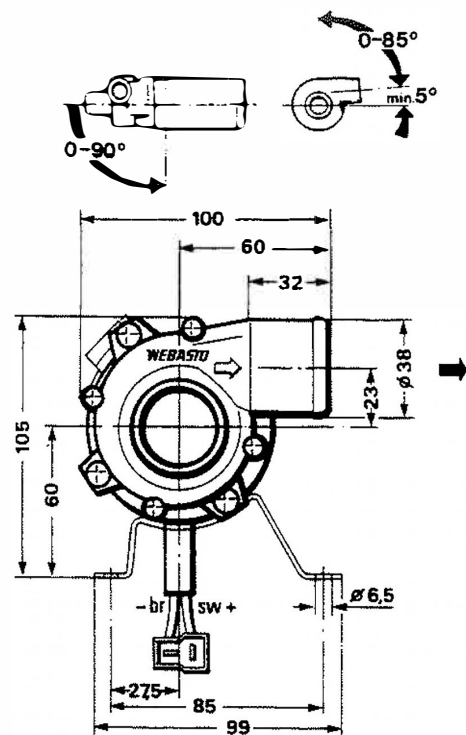
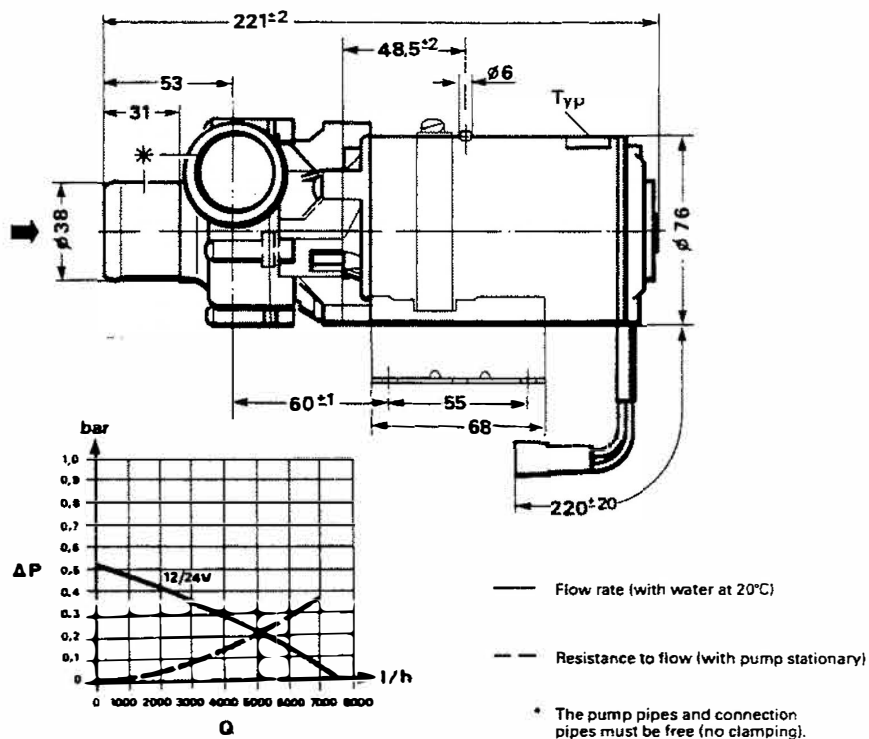
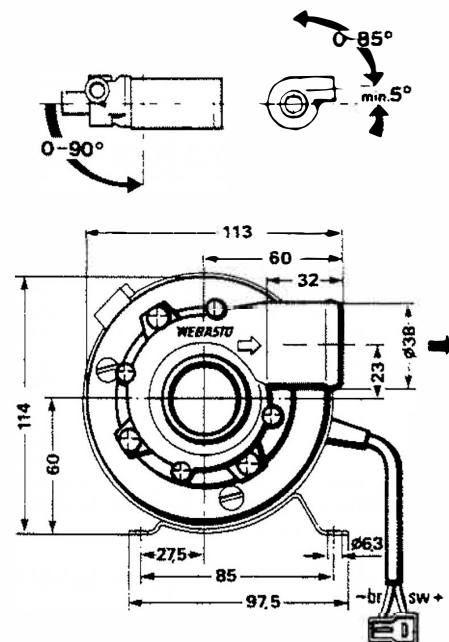
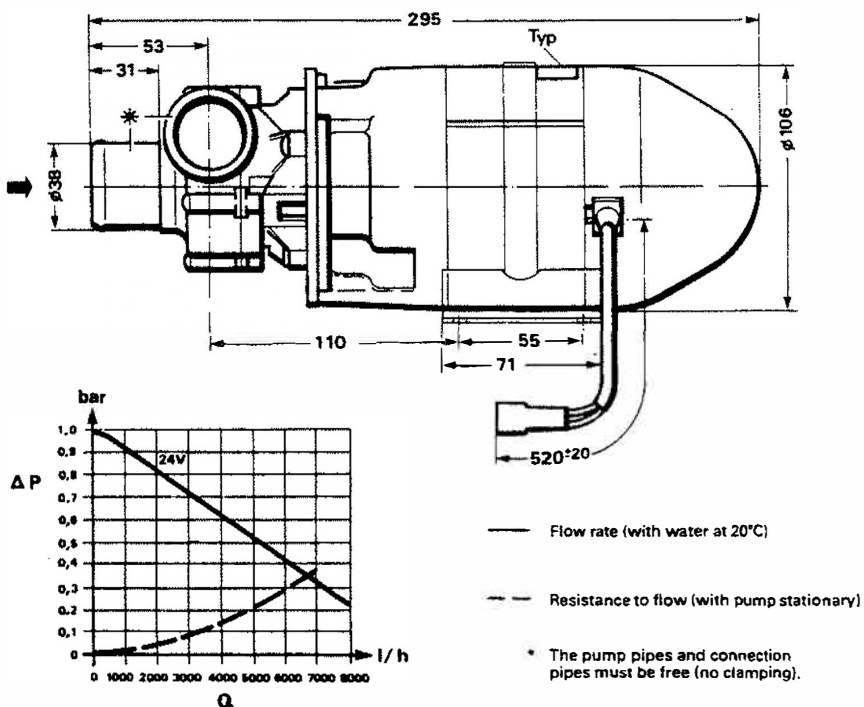
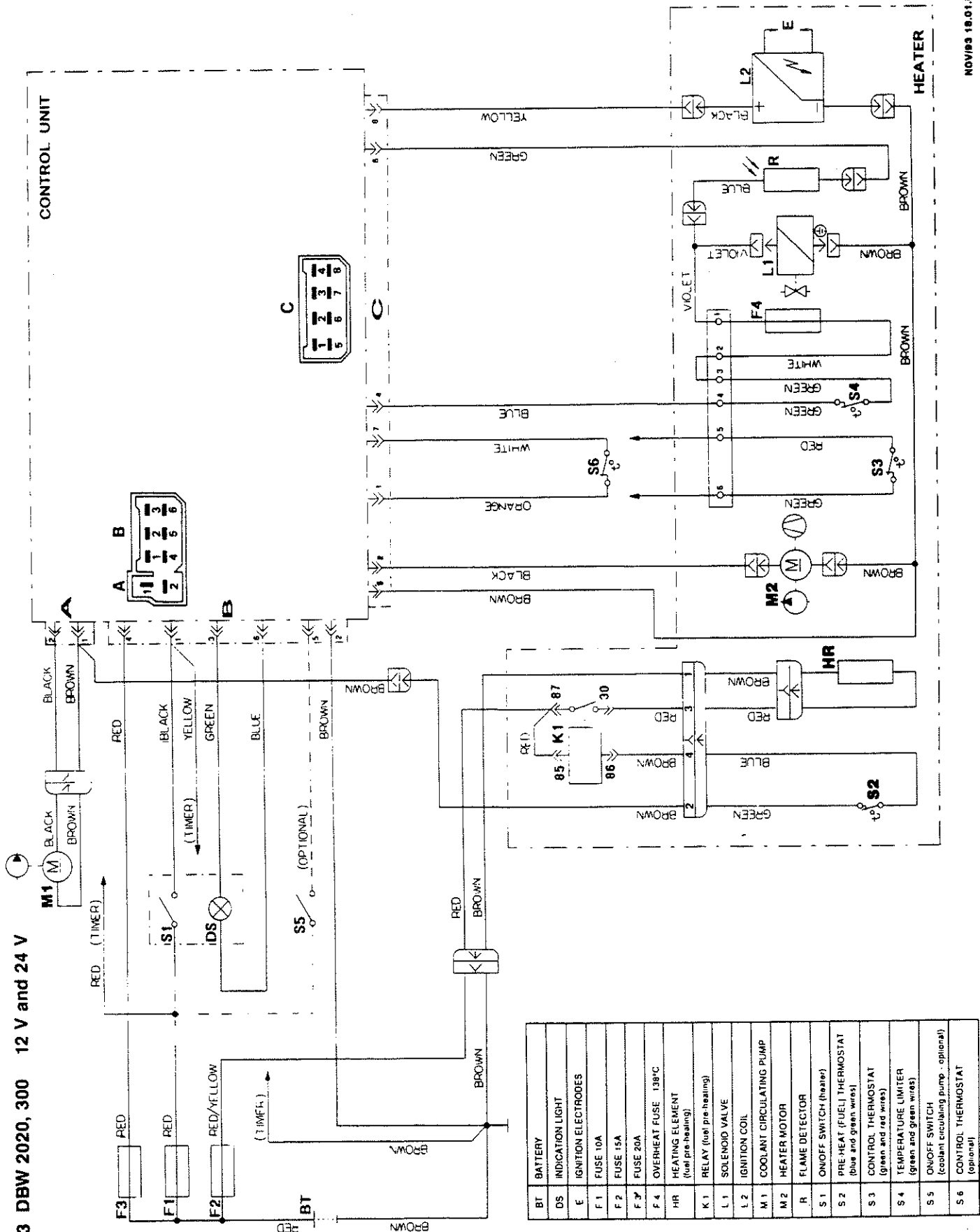


Fig. 19: Installation drawing for water circulating pump U 4816



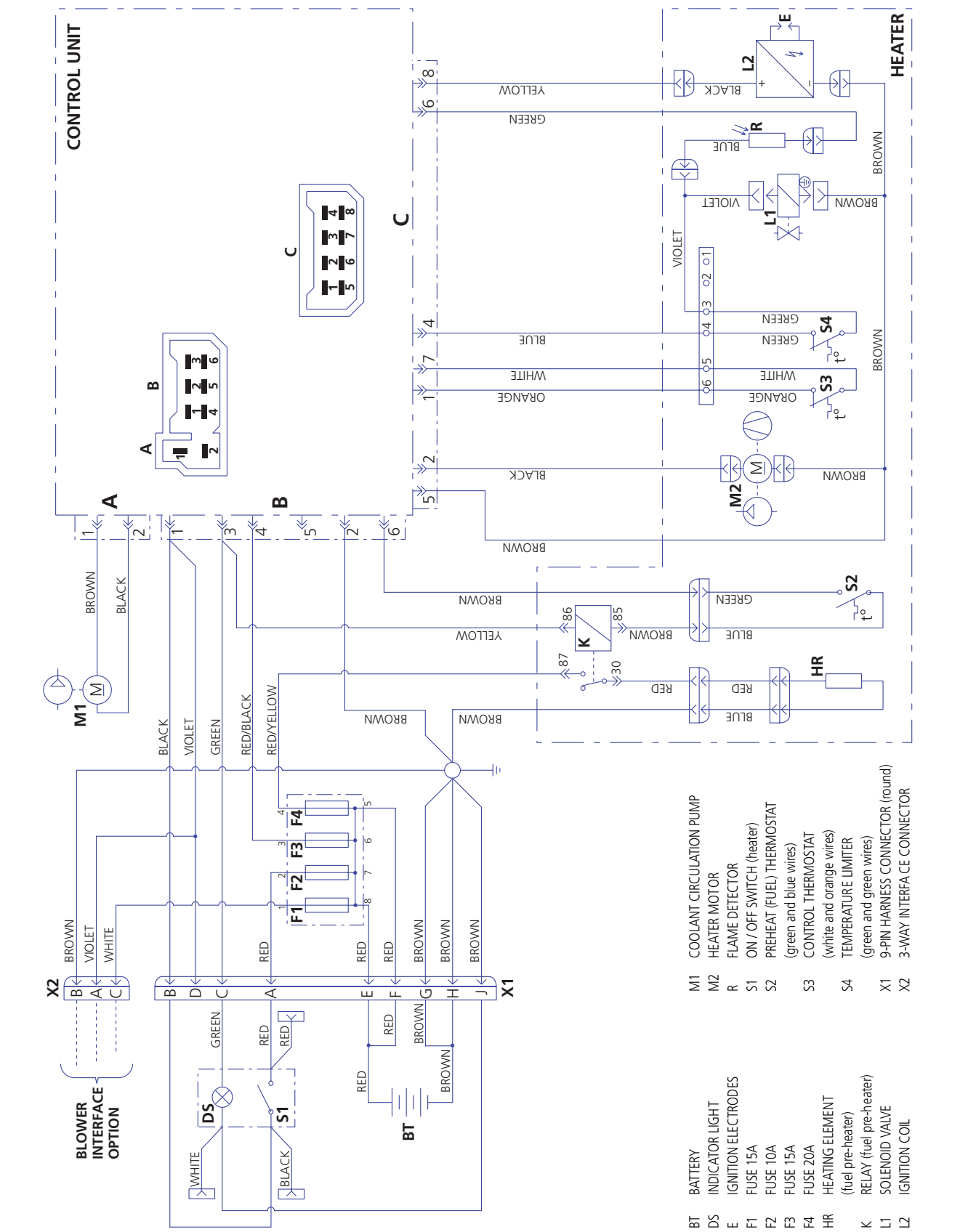
Important note: The choice of water pump for the heaters depends on resistance of the water circuit.

4.3 DBW 2020, 300 12 V and 24 V



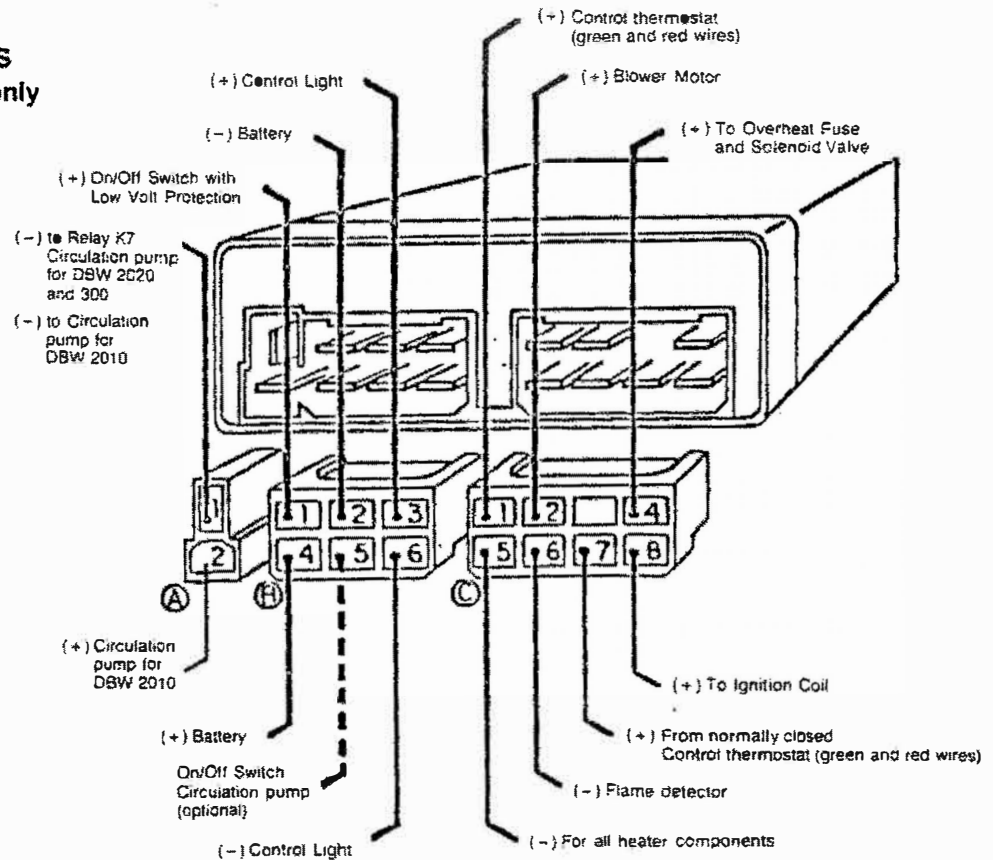
NOV/93 19.01.8

DBW 2010 12 V AND 24 V - PRESENT NORTH AMERICAN VERSION

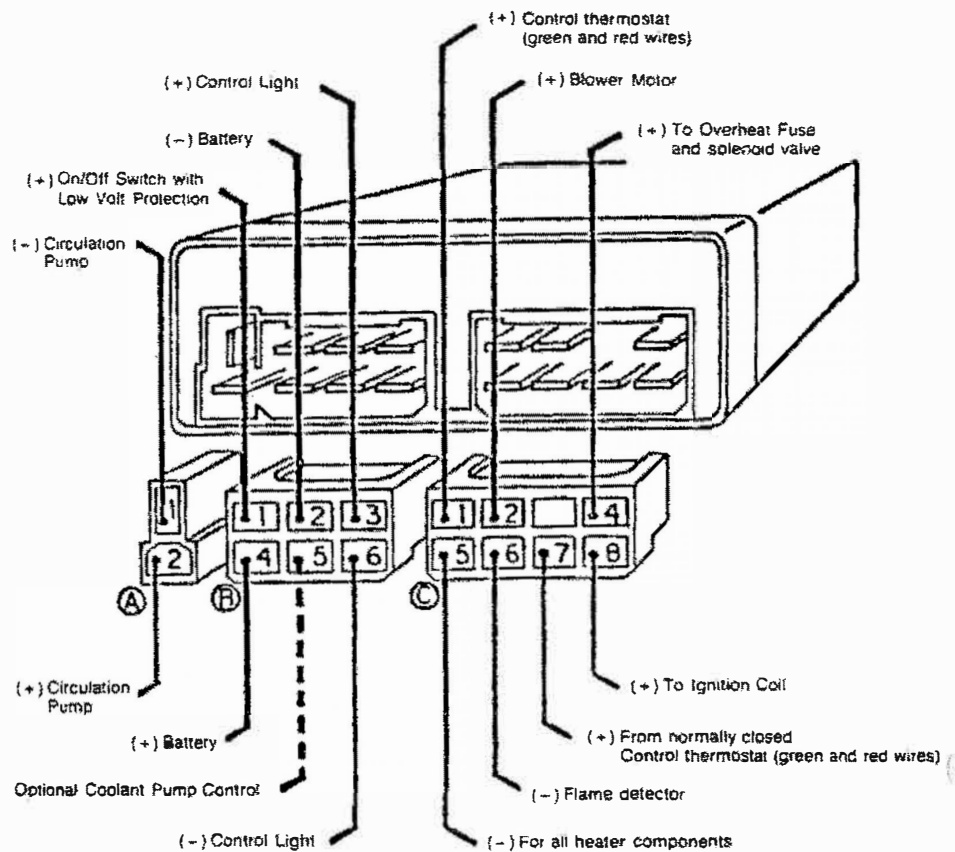


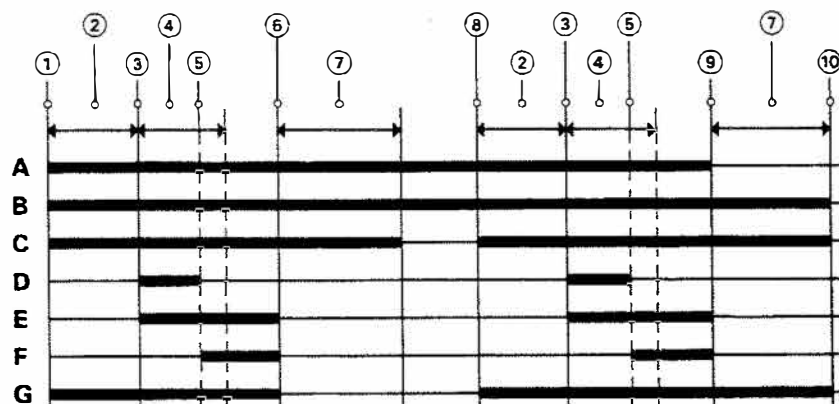
Schematic - DBW 2010 Present Version

IDENTIFICATION OF TERMINALS OF CONTROL UNIT — 12 Volt only



IDENTIFICATION OF TERMINALS OF CONTROL UNIT — 24 Volt only





**Fig. 33: Functional diagram
with control unit 1553**

(regular sequence of operations)

- ① Switching on
- ② Initial cycle 10 ... 25 s
- ③ Start
- ④ Safety delay time 5 ... 25 s
- ⑤ Combustion (starts during safety delay time)
- ⑥ Control pause starts
- ⑦ Purge cycle ~ 150 s
- ⑧ Control pause ends
- ⑨ Switch off
- ⑩ Heater stops

- A operation indicator light
- B Water circulation pump,
negative for heater
- C Heater motor
- D Electronic ignition unit
- E Solenoid valve
- F Flame detection photocell
- G Control thermostat

It is possible during the purge cycle switching on again the heater.

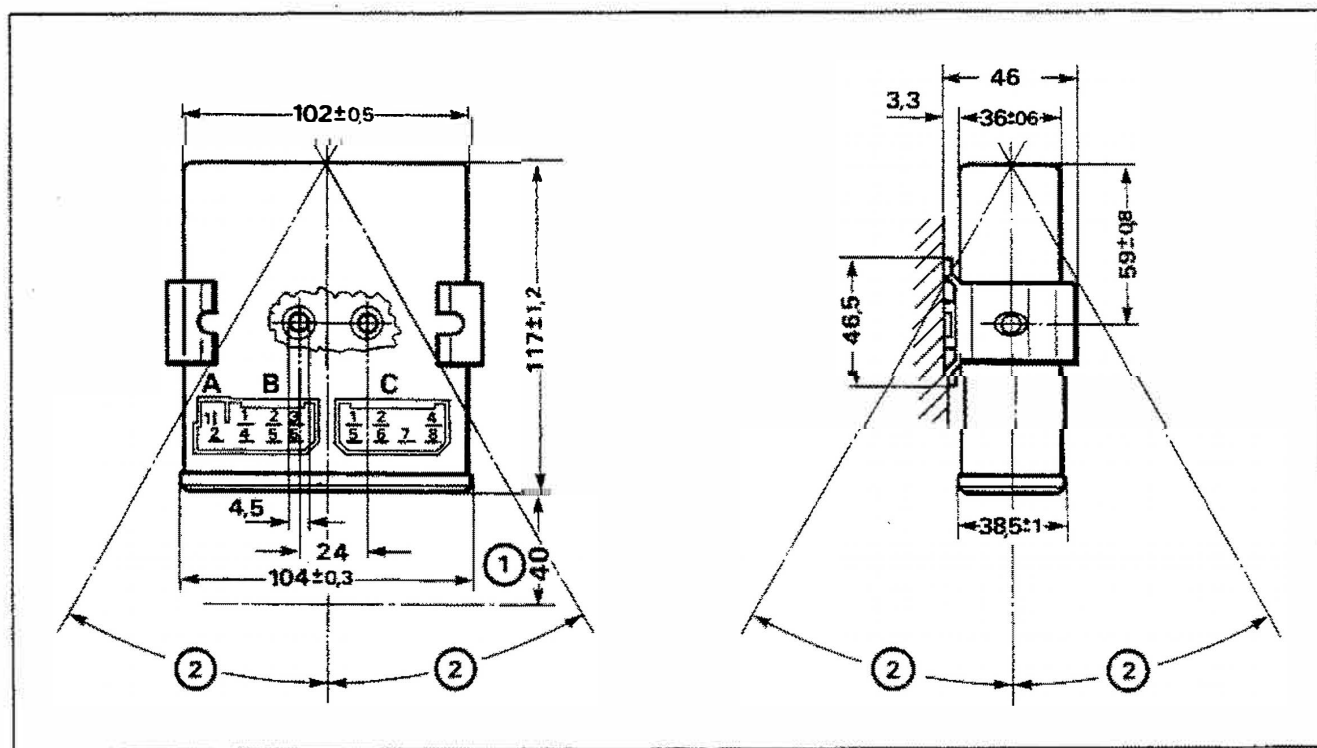


Fig. 35: Installation drawing of electronic control unit 1553 for separate installation

- ① Space required for removal of plugs
- ② Installation and usage position $\cong 30^\circ$

Any installation position is permitted (see para. 5.4), when the compartment is adequately ventilated and no water spray can be expected.



Rev. 11/2021 P/N 907506



Webasto Thermo & Comfort N.A., Inc.

15083 North Road

Fenton, MI 48430

Technical Assistance Hotline

USA: (800) 860-7866

Canada: (800) 67-8900

www.webasto.us

www.techwebasto.com