Water Heater

***Thermo Top Evo* Parking Heater** E1 00 0258

Installation Documentation
Nissan Cabstar

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Nissan	Cabstar	F24	e9 * 2007 / 46 * 0030 *

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.5 D (Euro 4)	Diesel	5-gear SG	81	2488	YD25
2.5 D (Euro 5)	Diesel	5-gear SG	100	2488	YD25

SG = Manual transmission

from Model Year 2012
Left-hand drive vehicle

verified equipment variants:
Front fog light

Manual air conditioning
Single cabin
12V on-board voltage

not verified:
Automatic transmission
Automatic air-conditioning
Double cabin
Parking heater, 2nd seat row

Total installation time: about 6.5 hours

Nissan Cabstar

Table of Contents

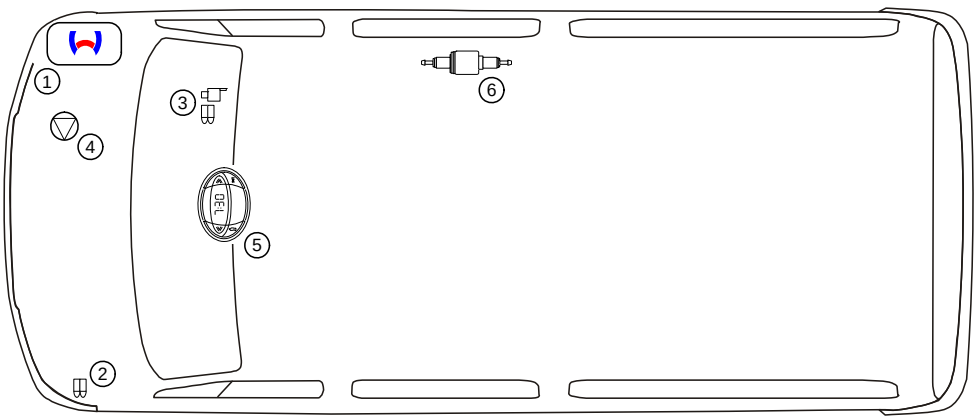
Necessary Components

- Basic delivery scope *Thermo Top Evo*based on price list
- Installation kit for Nissan Cabstar 2012 Diesel: **1318882A**
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Fuse holder of passenger compartment
4. Circulating pump
5. Digital timer
6. Metering pump



Notes on Total Installation Time

The total installation time includes the time needed for mounting and demounting of the vehicle-specific components, the heater specific installation time and all other times required for the system integration and initial start-up of the heater.
The total installation time may vary for vehicle equipment other than provided.

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

The improper installation or repair of Webasto heating and cooling systems can cause fire or the leakage of deadly carbon monoxide, leading to serious injury or death.

To install and repair Webasto heating and cooling systems you need to have completed a special company training course and have the appropriate technical documentation, special tools and special equipment.

Installation and repair may ONLY be carried out by persons trained and certified in a Webasto training course. NEVER try to install or repair Webasto heating or cooling systems if you have not completed a Webasto training course, you do not have the necessary technical skills and you do not have the technical documentation, tools and equipment available to ensure that you can complete the installation and repair work properly.

Only use genuine Webasto parts. See the Webasto air and water heaters accessories catalogue for this purpose.

1.2 Operation

To ensure safe operation, we recommend having the heater checked every two years by an authorised Webasto dealer, especially when used over a long period and/or under extreme environmental conditions.

Do not operate the heater in closed rooms due to the danger of poisoning and suffocation.

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel Diesel (DIN EN 590) or petrol (DIN EN 227).

The heater may not be cleaned with a high-pressure cleaner.

1.3 Please note

ALWAYS follow all Webasto installation and operating instructions and observe all warnings.

To become familiar with and understand all functions and properties of the heater, the operating instructions must be read carefully and observed at all times.

For proper, safe installation and repair work, the installation instructions with all warnings and safety information must be carefully read and observed at all times. Please always contact a workshop authorised by Webasto for all installation and repair work.

IMPORTANT

Webasto shall assume no liability for defects, damage and injuries resulting from a failure to observe the installation, repair and operating instructions of the information contained in them.

This liability exclusion particularly applies to improper installations and repairs, installations and repairs by untrained persons or in the case of a failure to use genuine spare parts.

The liability due to culpable disregard to life, limb or health and due to damage or injuries caused by a wilful or reckless breach of duty remain unaffected, as does the obligatory product liability.

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and wiring harnesses to original vehicle lines and wiring harnesses using cable ties. Insulate loose wire ends and tie back.

Sharp edges should be fitted with rub protection (split-open fuel hose)! Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

Observe the instructions and guidelines of the respective vehicle manufacturer for demounting and mounting vehicle specific components!

The initial startup is to be executed with the Webasto Thermo Test Diagnosis.

When installing an IPCU, the corresponding settings must be checked or adjusted before the installation.

2 Statutory regulations governing installation

Guidelines	Thermo Top Evo
Heating Directive ECE R122	E1 00 0258
EMC Directive ECE R10	E1 03 5627

NOTE

The regulations of these guidelines are binding in the scope of the Directive 70/156/EEC and/or 2007/46/EC (for new vehicle models from 29/04/2009) and should also be observed in countries in which there are no special regulations.

IMPORTANT

Failure to follow the installation instructions will result in the invalidation of the type approval for the heater and therefore invalidation of the general **homologation of the vehicle**.

NOTE

For vehicles with an EU permit, no entry in accordance with § 19 Sub-Section 4 of Annex VIII b to the Road Traffic Act is required.

2.1 Excerpt from the directive 2001/56/EC Appendix VII for the installation of the heater

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

1.7.1. A clearly visible tell-tale in the operator's field of view shall inform when the combustion heater is switched on or off.

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

2.1.1. Subject to paragraph 2.1.2. combustion heaters shall be installed according to the requirements of this Annex.

2.1.2. Vehicles of category O having liquid fuel heaters are deemed to comply with the requirements of this Annex.

2.2. Positioning of heater

2.2.1. Body sections and any other components in the vicinity of the heater must be protected from excessive heat and the possibility of fuel or oil contamination.

2.2.2. The combustion heater shall not constitute a risk of fire, even in the case of overheating. This requirement shall be deemed to be fulfilled if the installation ensures an adequate distance to all parts and suitable ventilation, by the use of fire resistant materials or by the use of heat shields.

2.2.3. In the case of M2 and M3 vehicles, the heater must not be positioned in the passenger compartment. However, an installation in an effectively sealed envelope which also complies with the conditions in paragraph 2.2.2 may be used.

2.2.4. The label referred to in paragraph 1.4 or a duplicate, must be positioned so that it can be easily read when the heater is installed in the vehicle.

2.2.5. Every reasonable precaution should be taken in positioning the heater to minimise the risk of injury and damage to personal property.

2.3. Fuel supply

2.3.1. The fuel filler must not be situated in the passenger compartment and must be provided with an effective cap to prevent fuel spillage.

2.3.2. In the case of liquid fuel heaters, where a supply separate to that of the vehicle is provided, the type of fuel and its filler point must be clearly labelled.

2.3.3. A notice, indicating that the heater must be shut down before refuelling, must be affixed to the fuelling point. In addition a suitable instruction must be included in the manufacturer's operating manual.

2.4. Exhaust system

2.4.1. The exhaust outlet must be located so as to prevent emissions from entering the vehicle through ventilators, heated air inlets or opening windows.

2.5. Combustion air inlet

2.5.1. The air for the combustion chamber of the heater must not be drawn from the passenger compartment of the vehicle.

2.5.2. The air inlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

2.6. Heating air inlet

2.6.1. The heating air supply may be fresh or recirculated air and must be drawn from a clean area not likely to be contaminated by exhaust fumes emitted either by the propulsion engine, the combustion heater or any other vehicle source.

2.6.2. The inlet duct must be protected by mesh or other suitable means.

2.7. Heating air outlet

2.7.1. Any ducting used to route the hot air through the vehicle must be so positioned or protected that no injury or damage could be caused if it were to be touched.

2.7.2. The air outlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

End of excerpt.

In multilingual versions the German language is binding.

Nissan Cabstar

Notes on Validity

This installation documentation applies to Nissan Cabstar Diesel vehicles - for validity, see page 1 - from model year 2012 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to this installation documentation.

Vehicle and engine types, equipment variants and other specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

Technical Instructions

Special tools
- Hose clamp pliers for self-clamping hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Automatic wire stripper 0.2 - 6mm²
- Crimping pliers for cable lug / tab connector 0.5 - 6mm²
- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

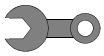
Dimensions
- All dimensions are in mm

Tightening torque values
- Tightening torques values of 5x13 heater stud bolts and heater bolts = 8Nm.
- Tightening torque of the bolt of 5x15 water connection piece retaining plate = 7Nm.
- Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.

Explanatory Notes on Document

You will find an identification mark on the outside top right corner of the page in question to provide you with a quick overview of the individual working steps.

Mechanical system



Electrical system

Coolant circuit

Combustion air

Fuel

Exhaust gas

Software

Special features are highlighted using the following symbols:

Specific risk of injury or fatal accidents

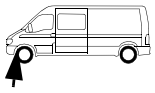
Specific risk of damage to components

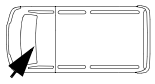
Specific risk of fire and explosion

Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents.

Reference to a special technical feature

The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle





Nissan Cabstar

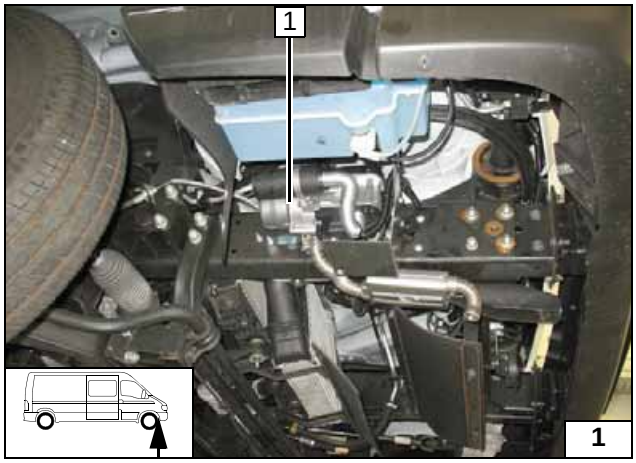
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Fold up the driver's cab.
- Remove the glove compartment.
- Remove the glove compartment.

Heater

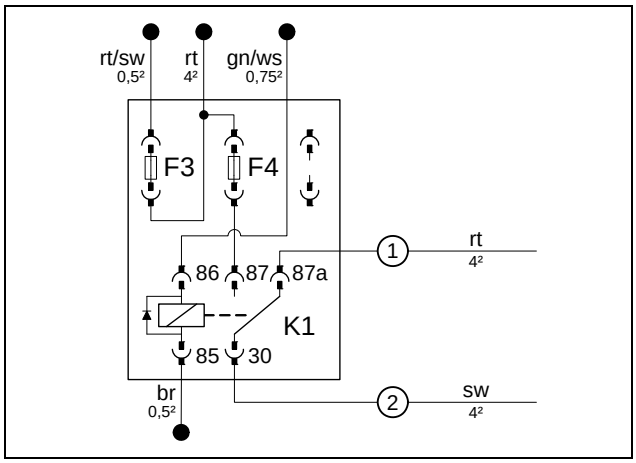
- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) in the appropriate place inside the engine compartment.



Heater Installation Location

1 Heater

Installation location

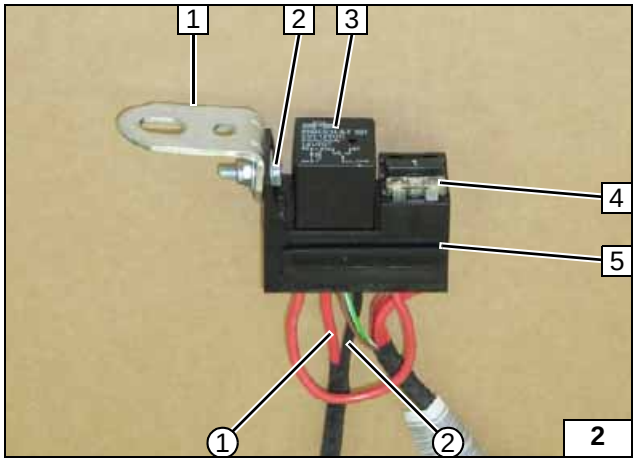


Preparing Electrical System

The wire sections retain their numbering in the entire document.

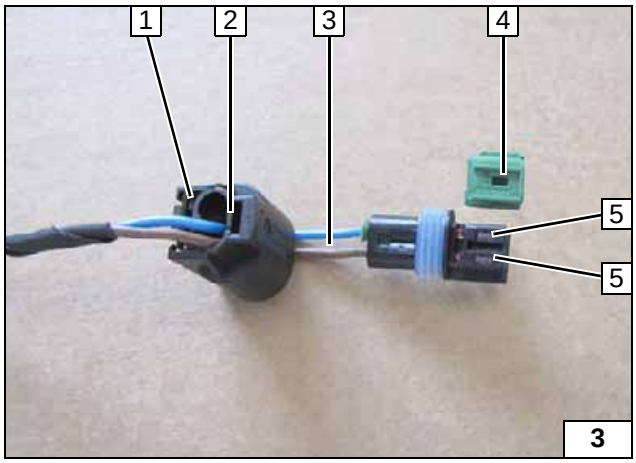
Connect wires of fan wiring harness according to wiring diagram to the K1 relay socket. Insert 25A fuse F4 and K1 relay.

Preparing K1 relay and F4



1 Angle bracket
2 M5x16 bolt, washer [2x], nut
3 K1 relay
4 Fuse F4 25A
5 Fuse holder of passenger compartment
① Red (rt) wire from K1/87a
② Black (sw) wire from K1/30

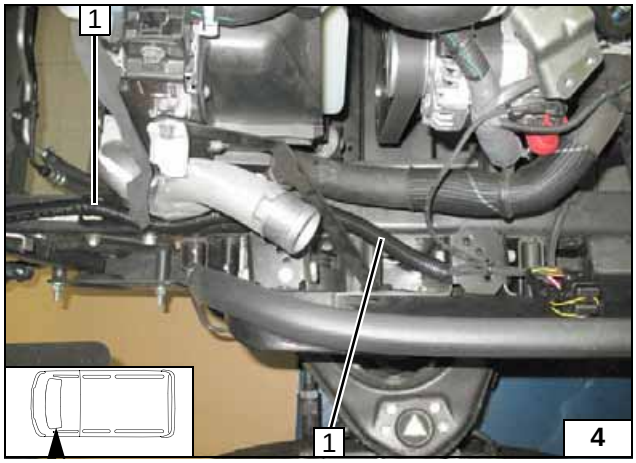
Premounting fuse holder



Complete connector of metering pump again after routing. Pin assignment is not relevant.

1 Connector housing
2 Lock
3 Blue/brown (bl / br) wires
4 Coding
5 Timer lock

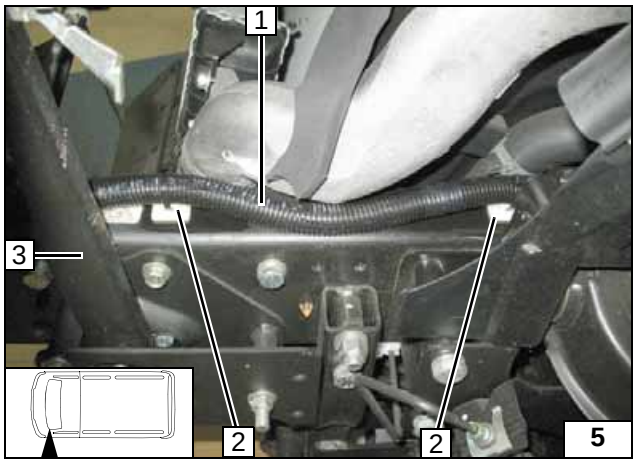
Dismantling connector



Wiring Harness Routing

Slit open 17mm dia. corrugated tube lengthwise.
Route wiring harnesses of heater, earth wire, fan control, heater control and metering pump in 17mm dia. corrugated tube to the front on top of the frame side member.

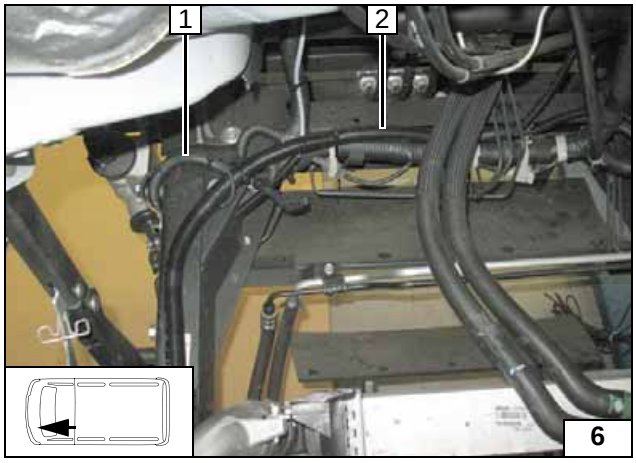
Routing wiring harnesses



Degrease adhesive surfaces at position **1**. Check for freedom of movement between 17mm dia. corrugated tube and retaining bracket of driver's cab **3**.

1 Wiring harnesses of heater, earth wire, fan control, heater control and metering pump in 17mm dia. corrugated tube
2 Adhesive base, cable tie [2x each]

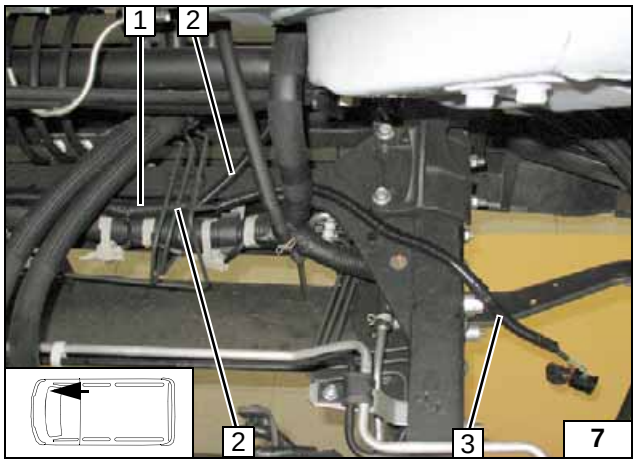
Routing wiring harnesses



Detach earth wire **1** from 17mm dia. corrugated tube.

2 Wiring harnesses of heater, fan control, heater control and metering pump in 17mm dia. corrugated tube

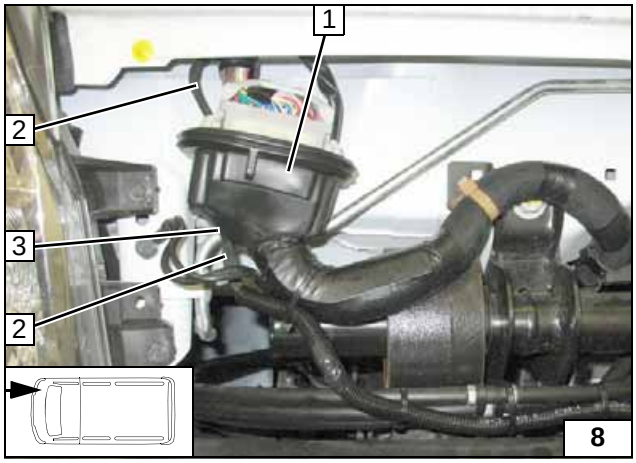
Routing wiring harnesses



Separate 10mm dia., 1130mm long corrugated tube in the centre and slit it open lengthwise.

1 Wiring harnesses of heater, fan control, heater control and metering pump in 17mm dia. corrugated tube
2 Wiring harnesses of heater control and passenger compartment fuse holder in 10mm dia. corrugated tube
3 Wiring harnesses of heater and metering pump in 10mm dia. corrugated tube

Routing wiring harnesses



Remove dummy plug **3** from wiring harness pass through **1**. Route wiring harnesses of fan control and heater control **2** to the passenger compartment.

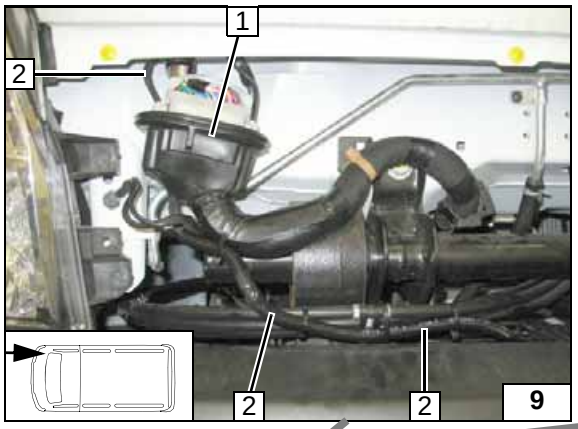
Routing wiring harnesses

Electrical System

Wiring harness pass through

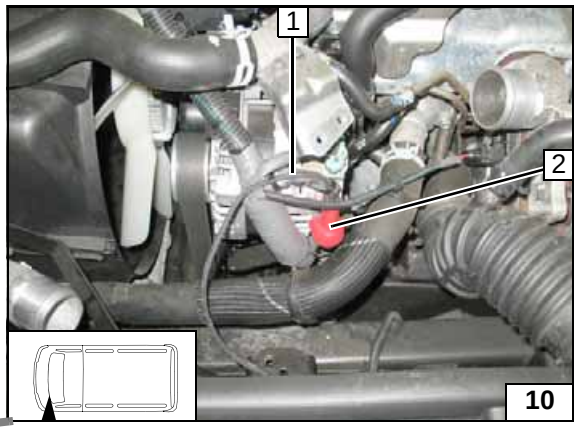
For wiring harness routing, see previous pages.

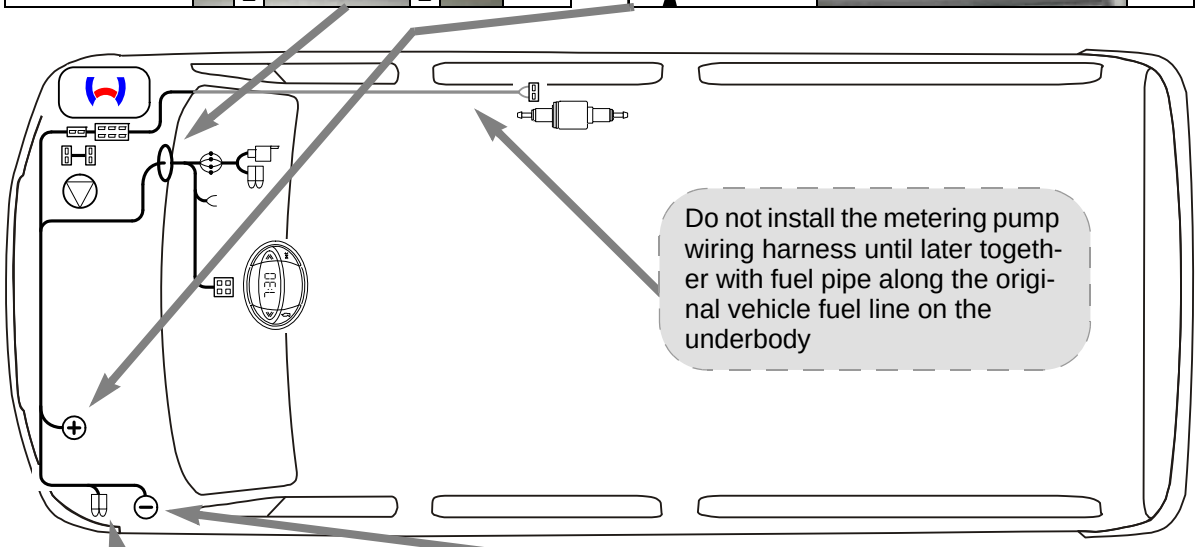
1 Wiring harness pass through, detached for demonstration purposes
2 Wiring harness of heater control and fan wiring harness in 10mm dia. corrugated tube



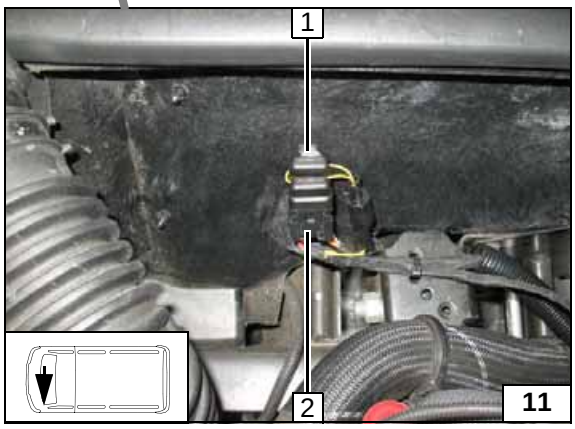
Positive wire

1 Positive wire
2 Terminal B+



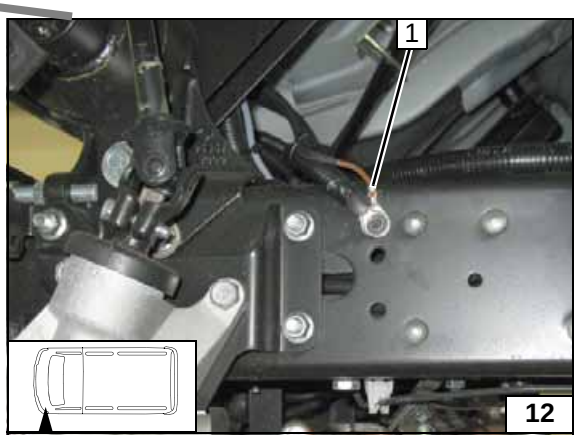


Wiring harness routing installation diagram



Fuse holder of engine compartment

1 6.5mm dia. hole in wheel well trim on driver's side, M6x16 bolt, large diameter washer [2x], retaining plate of fuse holder, nut
2 F1-2 fuses mounted

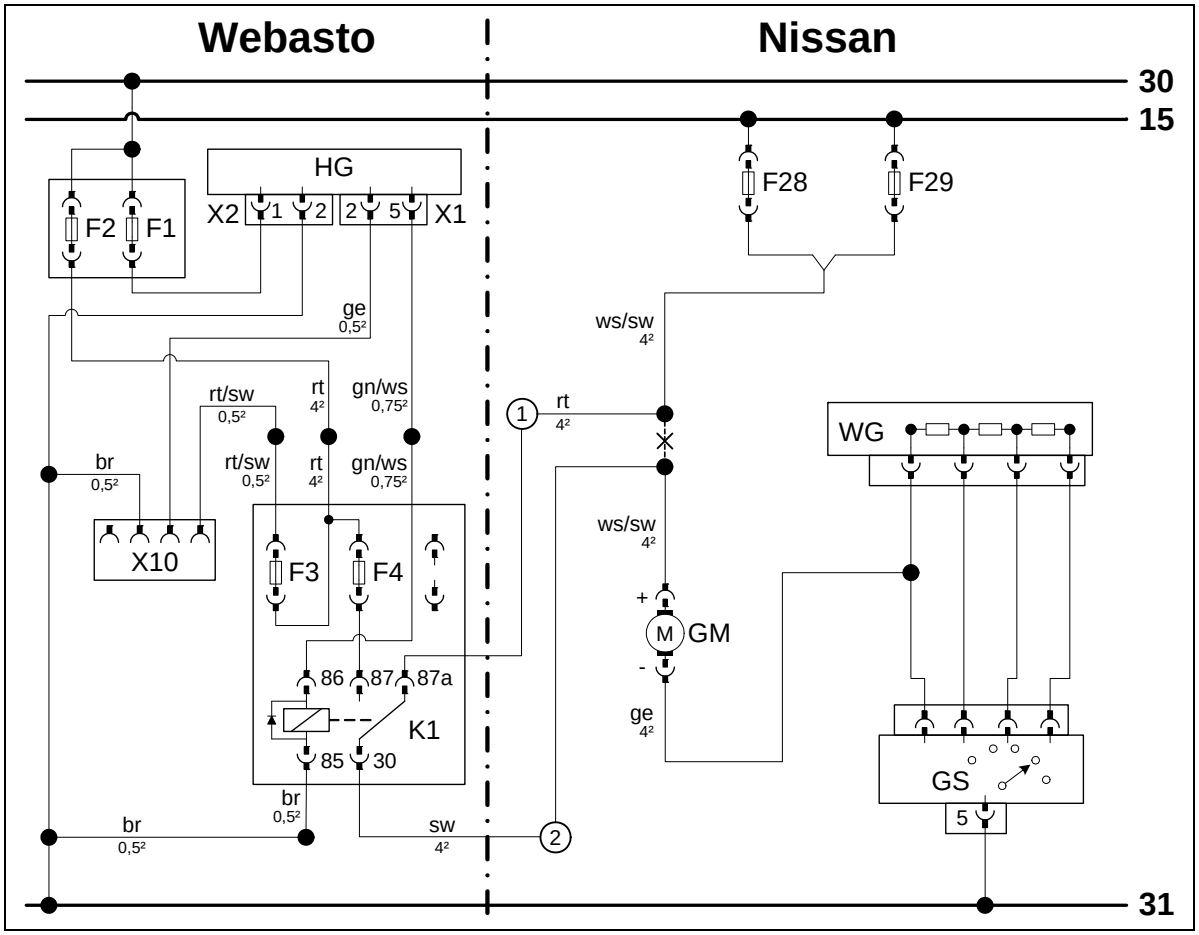


Earth wire

1 Earth wire to original vehicle earth support point

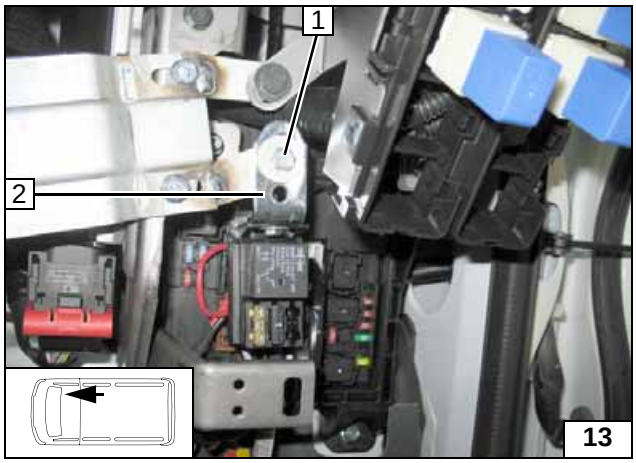
Fan Control

Wiring diagram



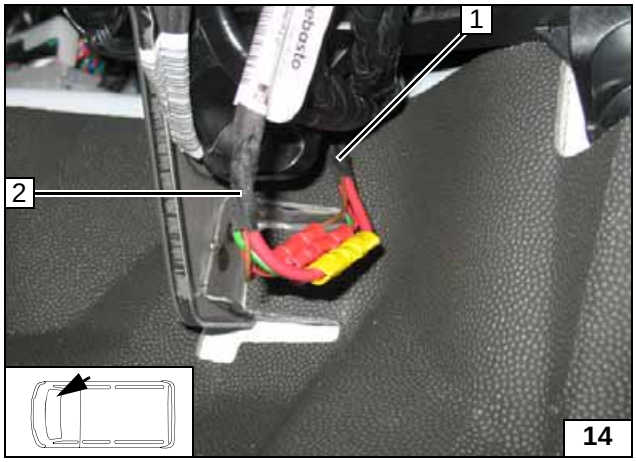
Legend

Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	GM	Fan motor	rt	red
X1	6-pin heater connector	WG	Resistor group	sw	black
X2	2-pin heater connector	GS	Fan switch	ge	yellow
X10	4-pin connector Heater control	F28	15A fuse GM	gn	green
		F29	15A fuse GM	or	orange
K1	Fan relay			ws	white
F1	20A fuse			br	brown
F2	30A fuse				
F3	1A fuse			**X**	Cutting point
F4	25 A fuse			Wiring colours may vary.	



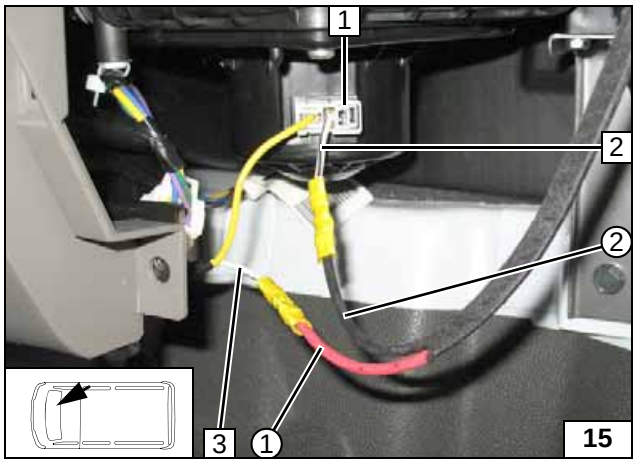
1 M6x20 bolt, spring lockwasher, large diameter washer, existing threaded hole
2 M5x16 bolt, large diameter washer [2x], nut
3 Angle bracket

Installing fuse holder of passenger compartment



Connect fuse holder of passenger compartment **2** to wiring harness of fan control **1** according to wiring diagram, with same colour wires connected to each other.

Connecting wiring harnesses



Connection to 2-pin connector **1** from fan motor. Produce connections as shown in wiring diagram.

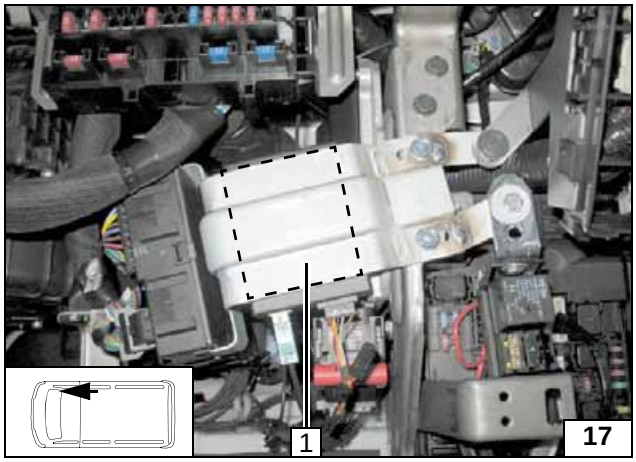
2 White/black (ws/sw) wire of GM connector
3 White/black (ws/sw) wire of original vehicle fan fuse
① Red (rt) wire from K1/87a
② Black (sw) wire from K1/30

Connecting fan motor

Digital Timer

1 Digital timer

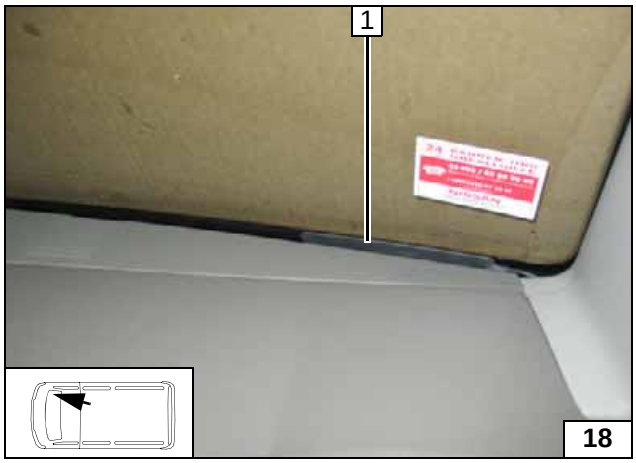
Installing digital timer



Remote Option (Telestart)

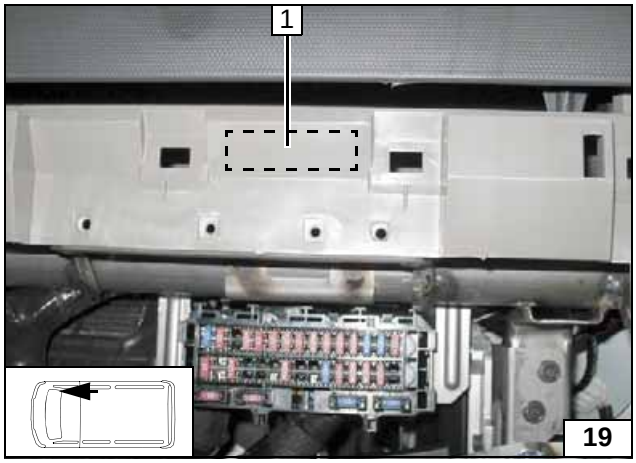
Fasten receiver **1** behind original vehicle bracket using adhesive tape.

Mounting receiver



1 Antenna

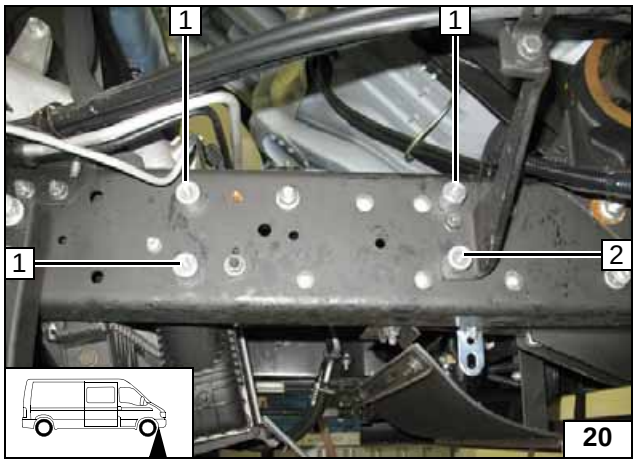
Mounting antenna



Temperature sensor T100 HTM

Fasten temperature sensor **1** with adhesive tape behind the bracket.

Installing temperature sensor

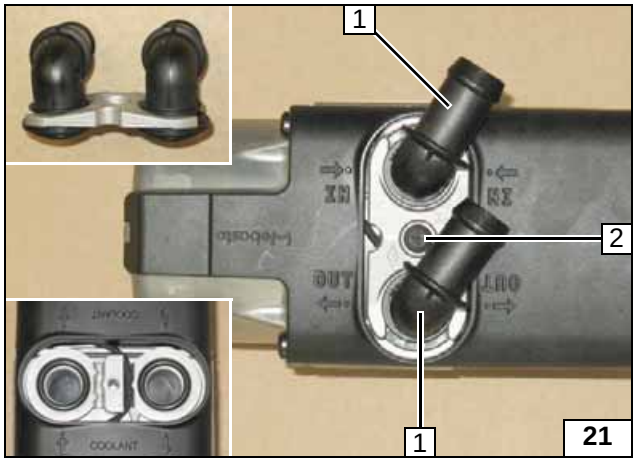


Preparing Installation Location

Remove original vehicle bolt at position **2** and discard. Insert bolts with large diameter washers in the frame side member.

1 M6x40 bolt, large diameter washer, 20mm shim, pin lock, existing hole [3x each]
2 M6x40 bolt, large diameter washer, 20mm shim, pin lock, existing hole

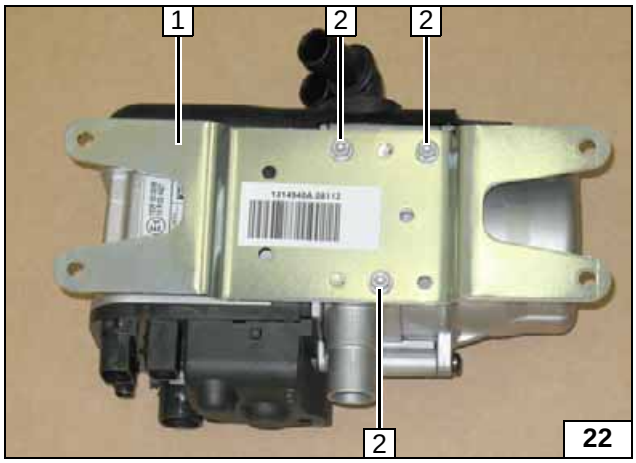
Preparing installation location



Preparing Heater

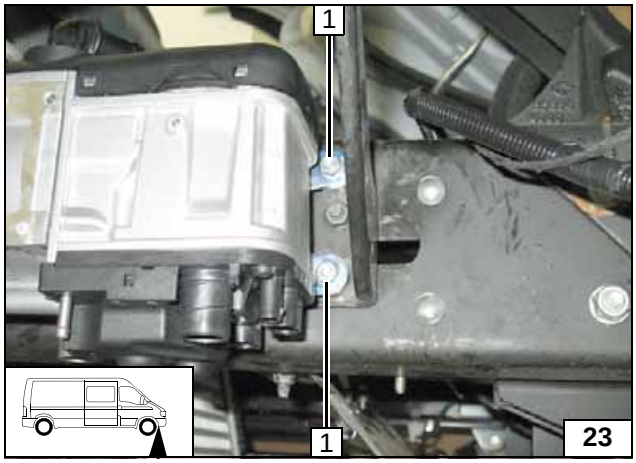
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



1 Bracket
2 5x13 self-tapping bolt [3x]

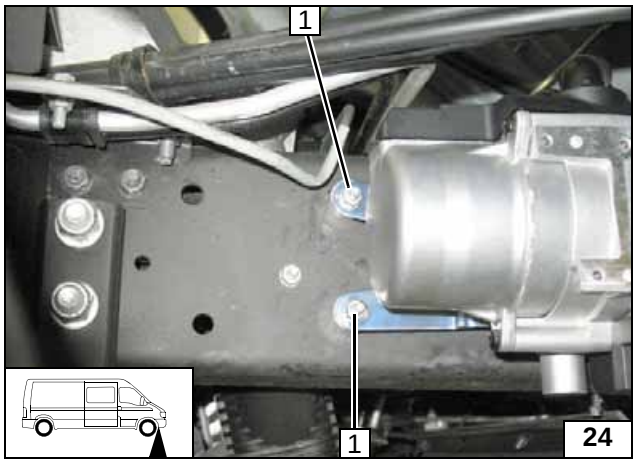
Installing bracket



Installing Heater

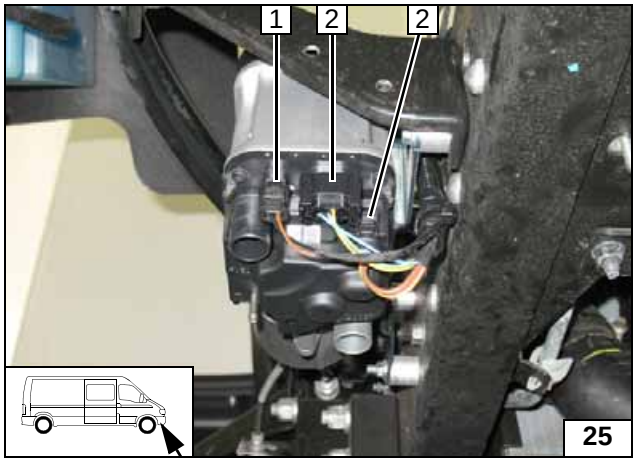
1 M6 flanged nut [2x]

Mounting heater



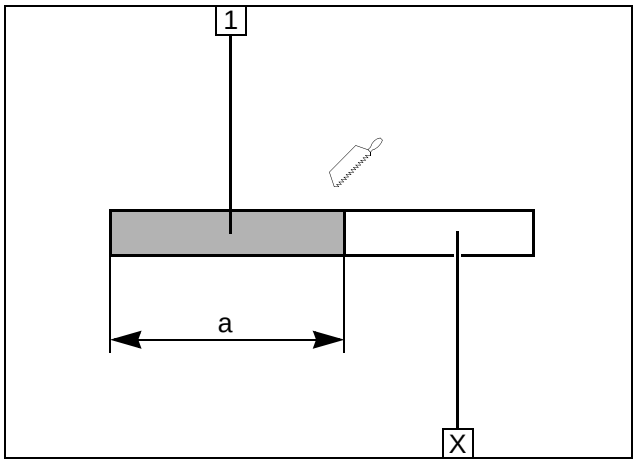
1 M6 flanged nut [2x]

Mounting heater



1 Wiring harness of circulating pump
2 Wiring harness of heater [2x]

Mounting wiring harnesses

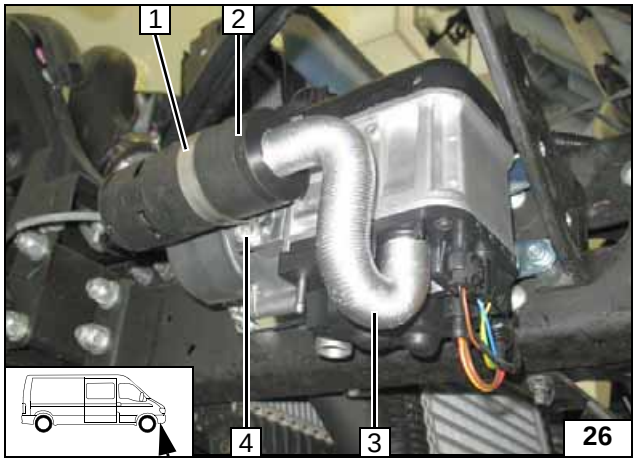


Combustion Air

Discard section **X**

1 Combustion air pipe
a = 200

Cutting combustion air pipe to length

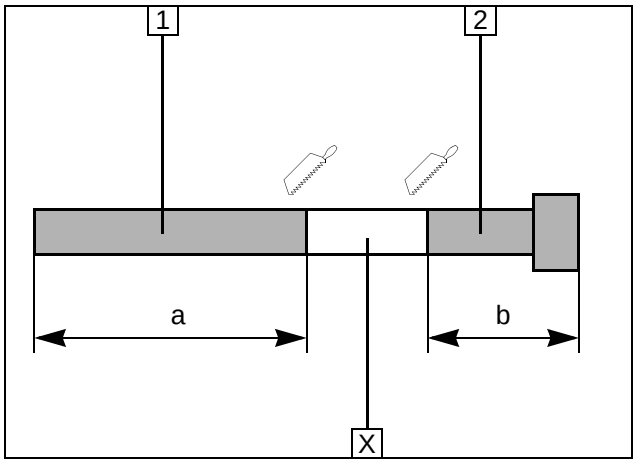


1 51 mm dia. clamp
2 Silencer
3 Combustion air pipe
4 5x13 self-tapping bolt

Mounting silencer

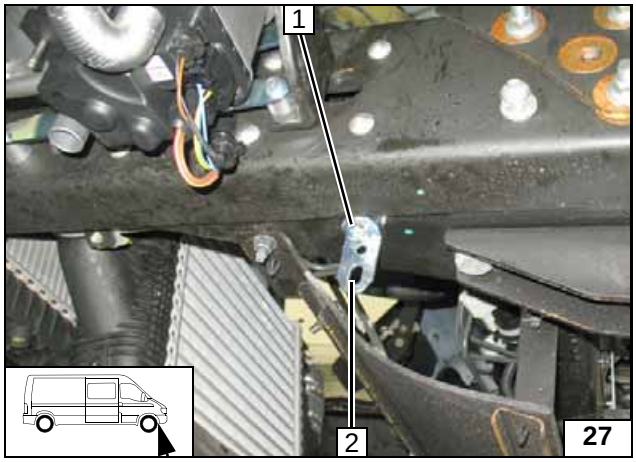
Exhaust Gas

Discard section **X**



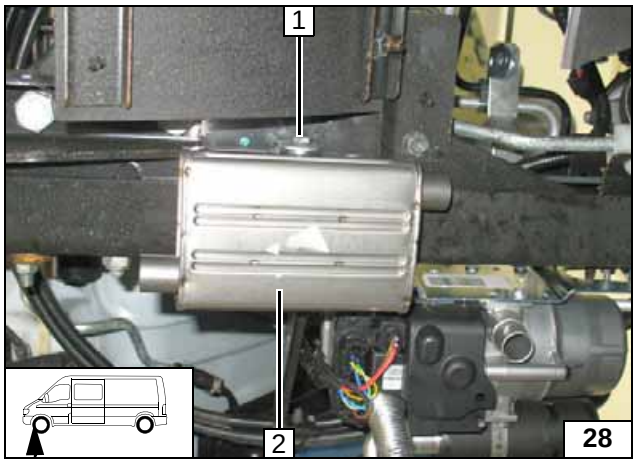
1 Exhaust pipe
a = 210
2 Exhaust end section
b = 100

Preparing exhaust pipe



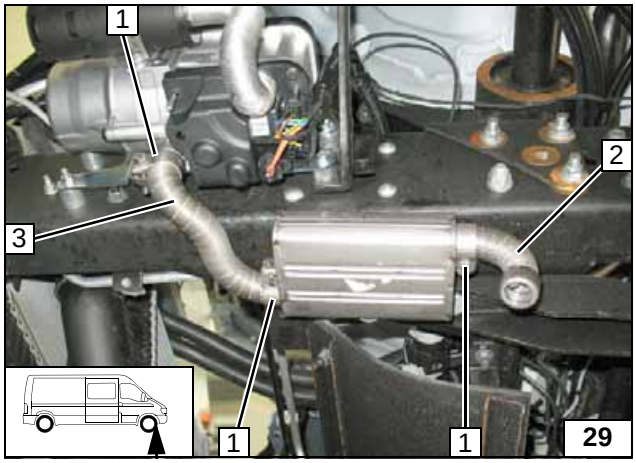
1 M6x20 bolt, large diameter washer, flanged nut, existing hole
2 Angle bracket

Installing angle bracket



1 M6x16 bolt, spring lockwasher, large diameter washer
2 Silencer

Mounting silencer



1 Hose clamp [3x]
2 Exhaust end section
3 Exhaust pipe

Installing exhaust pipe and end section

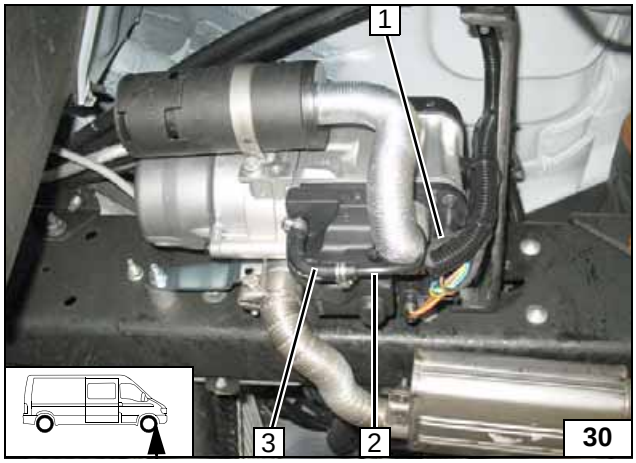
Fuel

CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off in an appropriate container.

Install fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

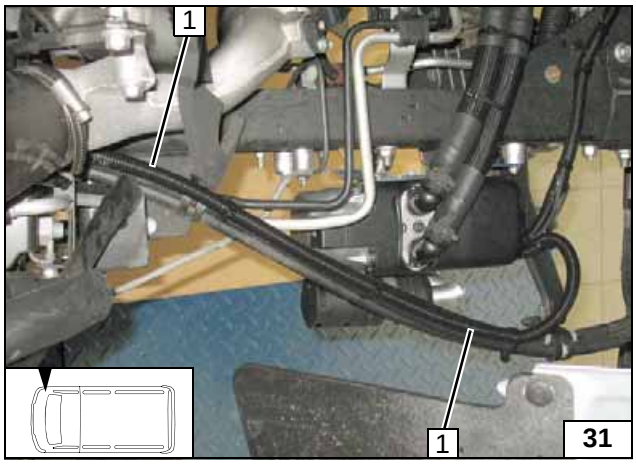
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Pull wiring harness of metering pump **1** and fuel line **2** into 2100mm long, 10mm dia. corrugated tube and route it upwards.

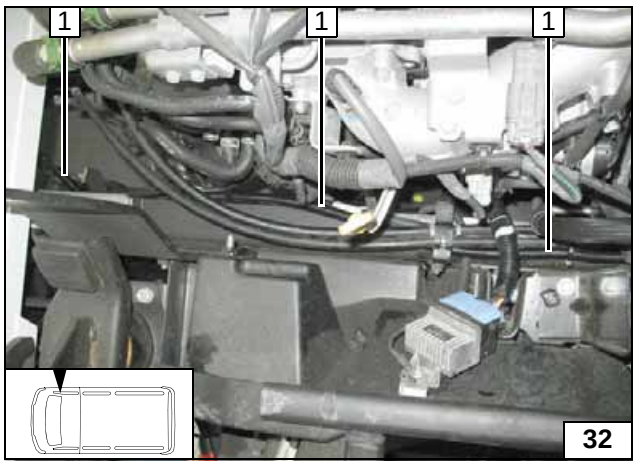
3 Hose section, 10 mm dia. clamp [2x]

Connecting heater



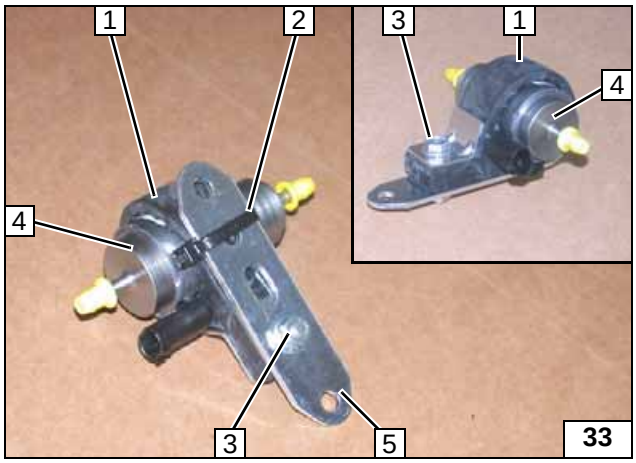
Route wiring harness of metering pump and fuel line in 10mm dia. corrugated tube **1** to the rear on original vehicle lines.

Routing lines



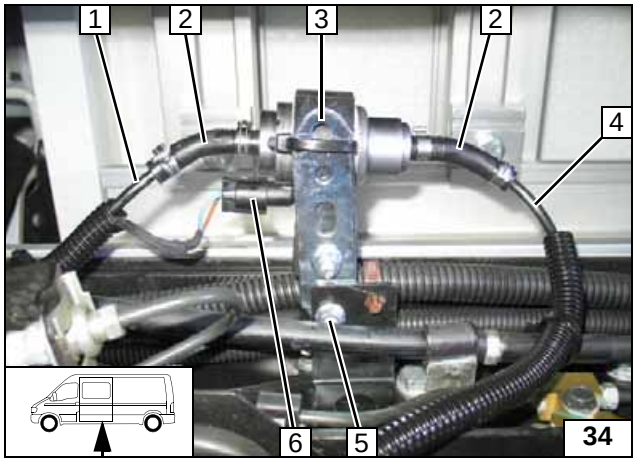
Route fuel line and wiring harness of metering pump in 10mm dia. corrugated tube **1** to the installation location of the metering pump.

Routing lines



1 Metering pump intake
2 Cable tie
3 M6x25 bolt, support angle, flanged nut
4 Metering pump
5 Perforated bracket

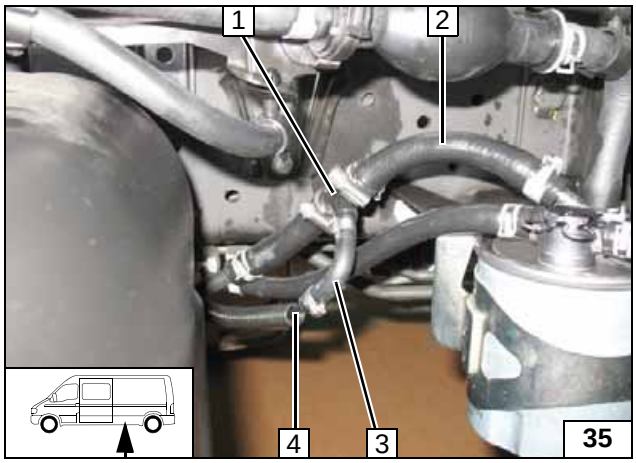
Premounting metering pump



Push section of 10mm dia. corrugated tube onto fuel line of fuel standpipe **4** and route it to the extraction point.

1 Fuel line of heater
2 Hose section [2x], 10mm dia. clamp [4x]
3 Perforated bracket
5 M6x12 bolt, flanged nut, existing hole
6 Wiring harness of metering pump, connector mounted

Installing metering pump



Separate fuel supply line **2** from filter to engine at position **1**. Check the position of the components; adjust if necessary. Check that they have freedom of movement.

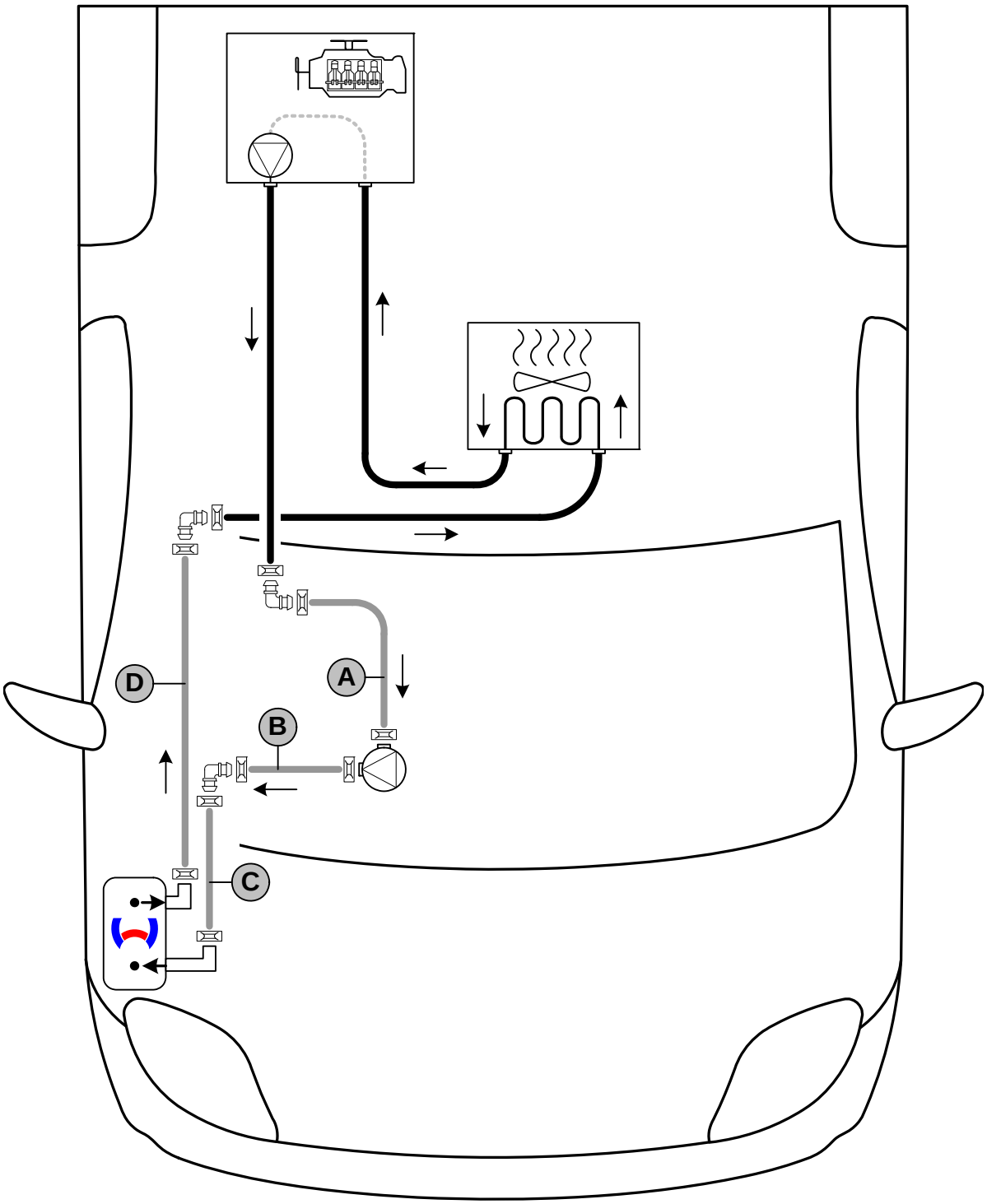
1 10x5x10mm fuel standpipe, 16-24mm hose clamp [2x]
2 90° moulded hose, 10mm dia. clamp [2x]
3 Fuel line of fuel standpipe

Fuel extraction

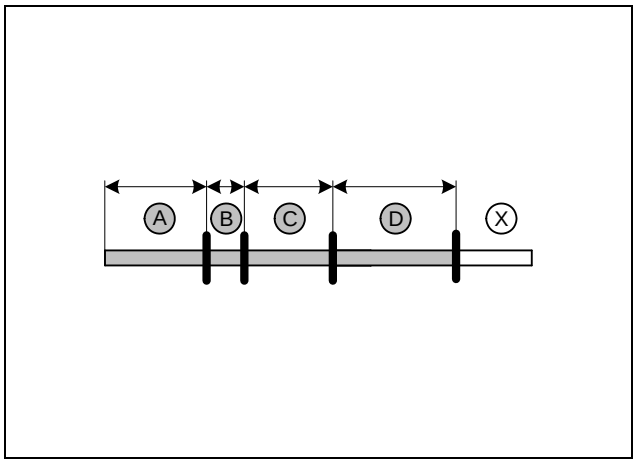
Coolant Circuit

WARNING!
Any coolant running off should be collected in an appropriate container. Route hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the coolant hose.
The connection should be "inline" based on the following diagram:

Hose routing diagram



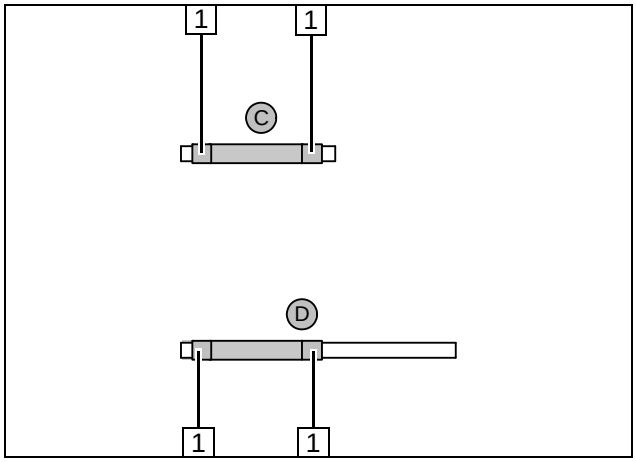
All connecting pipes without a specific designation = 25 mm dia.
All connecting pipes and = 18x18mm dia.



Discard section **X**
Hose **D** = 180°, 18mm moulded hose

A = 270
B = 60
C = 220
D = 600

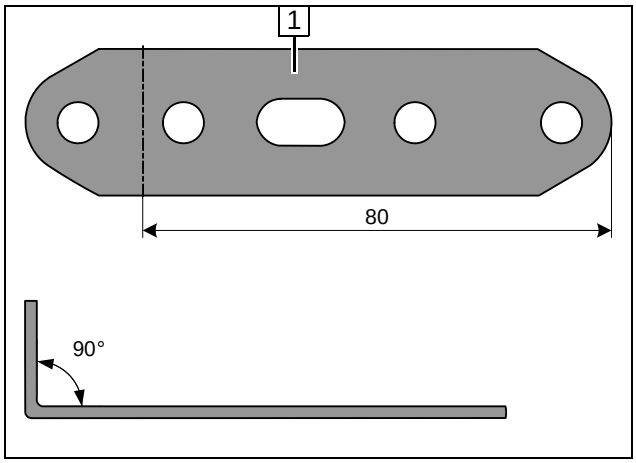
Cutting hoses to length



Push braided protection hoses onto hoses **C** and **D**. Cut heat shrink plastic tubing to length.

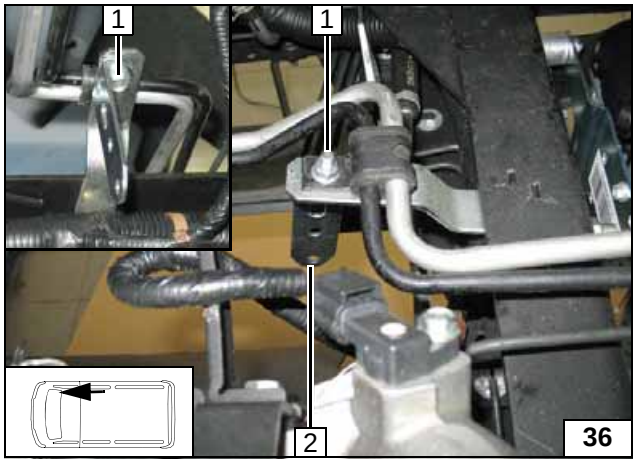
1 60mm long heat shrink plastic tubing [4x]

Preparing hoses



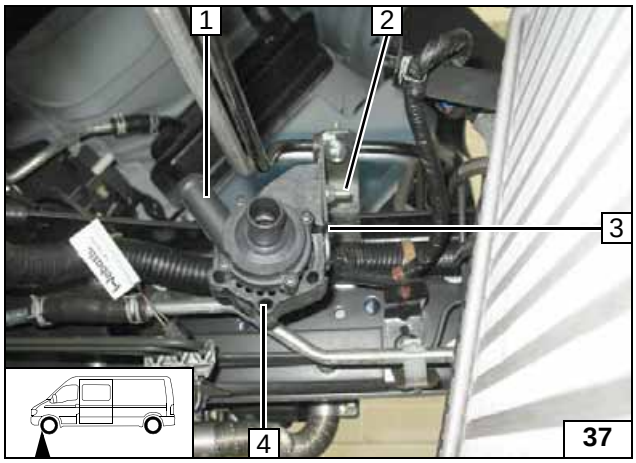
1 Angle down perforated bracket

Angling down perforated bracket



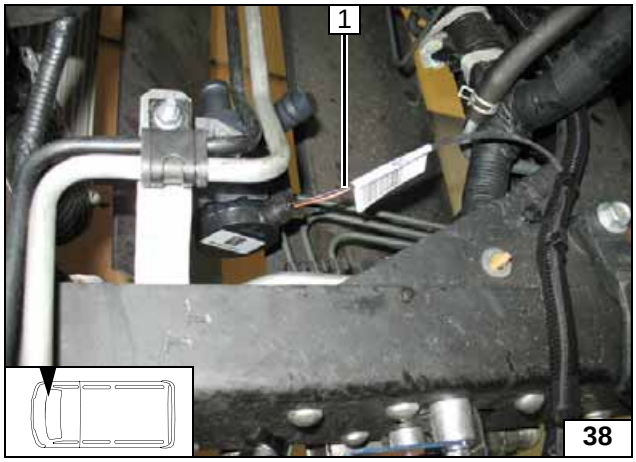
1 Original vehicle bolt
2 Perforated bracket

Installing perforated bracket



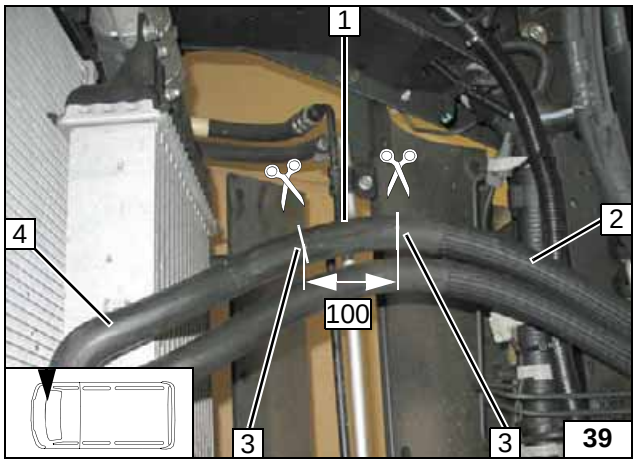
1 Circulating pump
2 M6x25 bolt, flanged nut
3 Cable tie
4 Circulating pump intake

Installing circulating pump



1 Wiring harness of circulating pump, connector attached

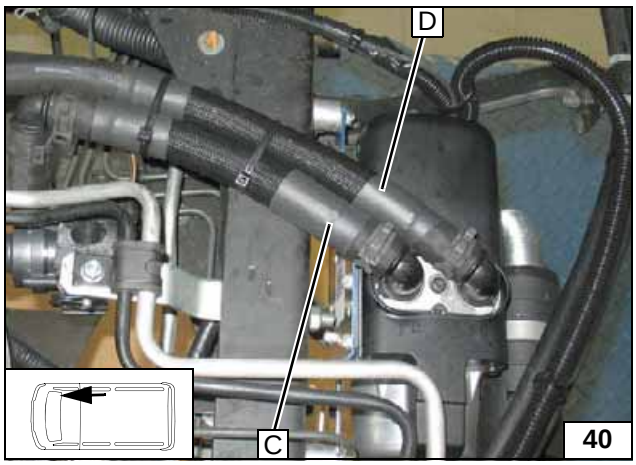
Attaching connector



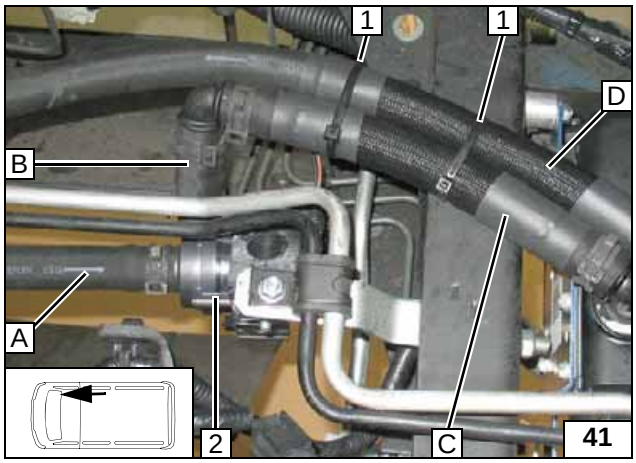
Separate engine outlet / heat exchanger inlet hose at marking **3**. Discard hose section **1**.

3 Hose section of heat exchanger inlet
4 Engine outlet hose section

Cutting point

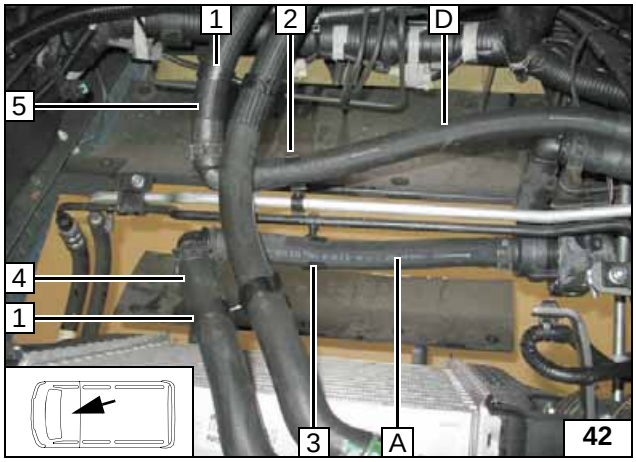


Connecting heater



1 Cable tie [2x]
2 Circulating pump

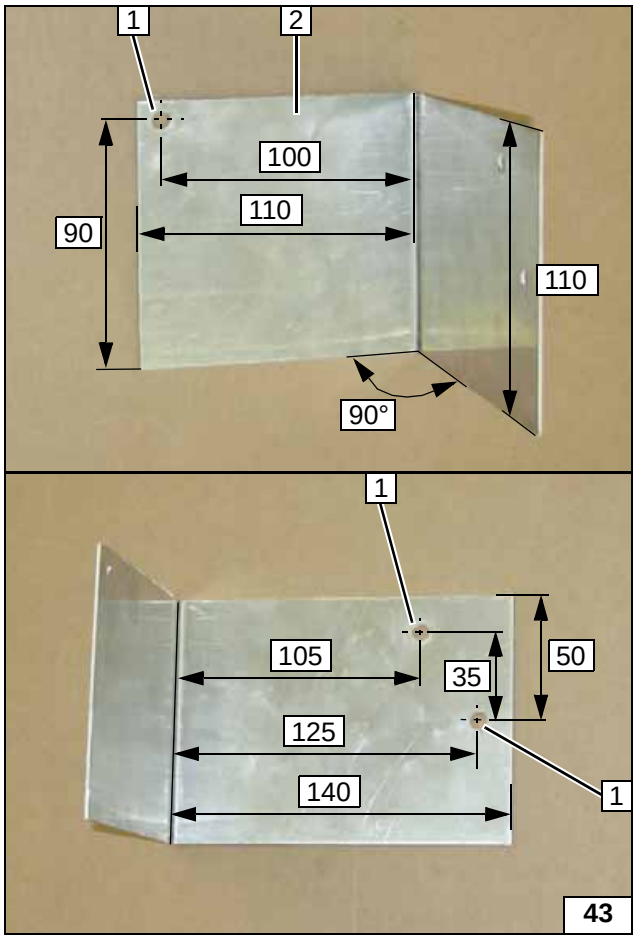
Connecting circulating pump



Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

1 Hose bracket [2x]
2 9x19 hose bracket
3 8x22 hose bracket
4 Hose of engine outlet
5 Hose on heat exchanger inlet

Connection of engine outlet and heat exchanger inlet

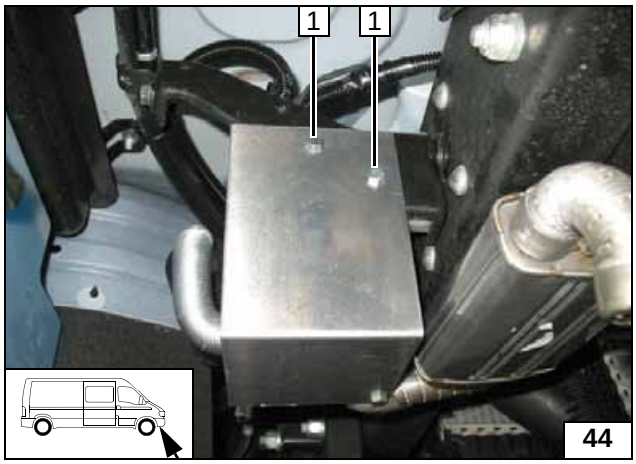


Final Work

Drill 1.5mm aluminium plate **2** (250 x 100) as shown and angle down by 90°.

1 7mm dia. hole [3x]

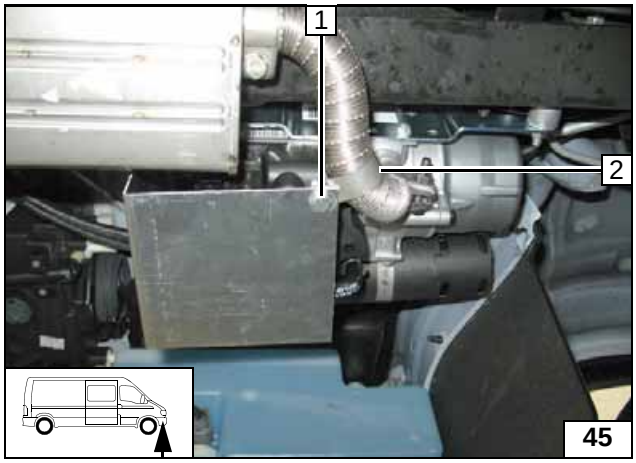
Producing splash guard plate



Align splash guard plate and copy hole pattern at position **1** [2x]. Drill 7mm dia. hole [2x].

1 M6x20 bolt, flanged nut [2x each]

Installing splash guard plate



1 M6x20 bolt, flanged nut
2 P-clamp

Installing splash guard plate

WARNING!
Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate all loose lines and tie back.
Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Adjust digital timer, teach Telestart transmitter.**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Apply the signboard "Switch off parking heater before refilling" in the area of the filler neck.**
- **See installation instructions for initial start-up and function check.**

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Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

Operating Instructions for End Customer

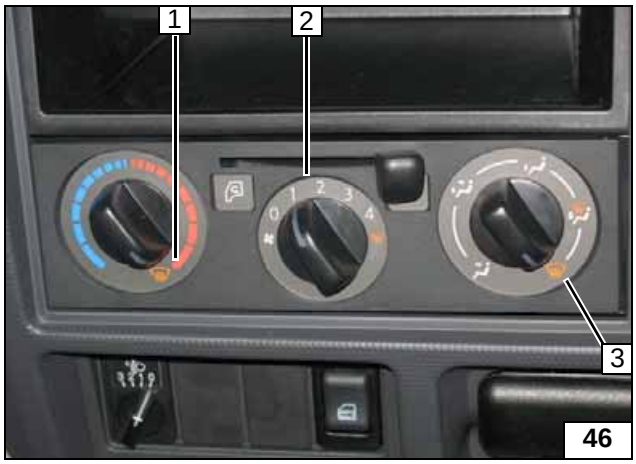
Please remove page in case of manual air-conditioning and add it to the vehicle operating instructions.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating cycle.
Deactivation instructions can be taken from the operating instructions of the vehicle.

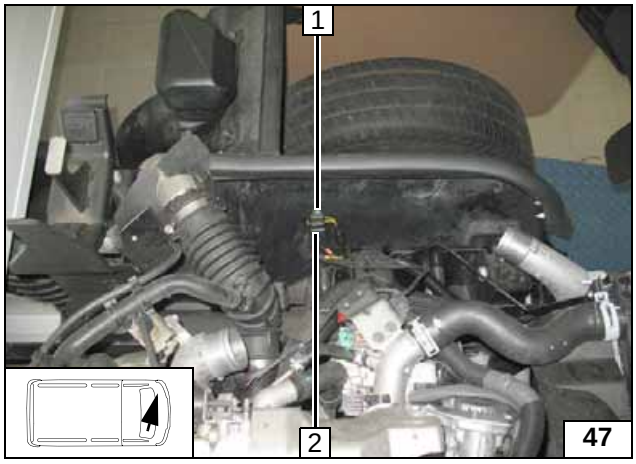
Before parking the vehicle, make the following settings:

A/C control panel



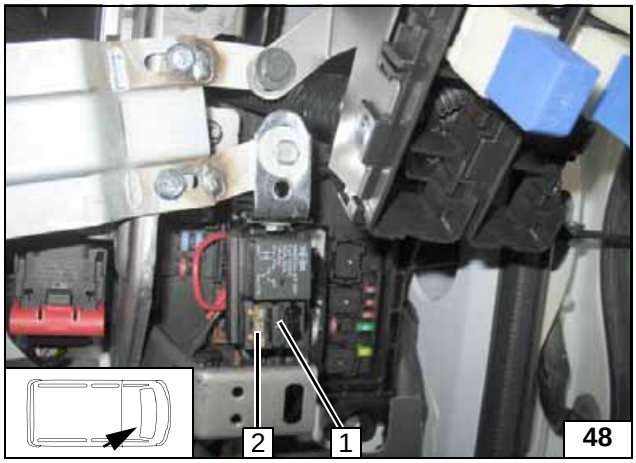
1 Set temperature to "max."
2 Set fan to level "1" or max. "2"
3 Air outlet to windscreen

Fuses of engine compartment



1 30A heater fuse F2
2 20A main fuse F1 of passenger compartment

Fuses of passenger compartment



1 1A fuse F3 of heater control
2 25A fan fuse F4