

# **Air Heater**

Air Top Evo 40 Air Heater



# Installation Documentation Ford Transit Custom

# Validity

Manufacturer	Μ	lodel	Туре	EG BE No. / ABE	
Ford Transit	Т	ransit Custom van	FCC	e1 * 2007 / 46 * 1005	*
Ford Transit	Т	ransit Custom	FAC	e11 * 2007 / 46 * 067	6 *
Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm <sup>3</sup>	Engine code
2.2 TDCi	Diesel	6-speed SG	74	2198	DRFA

2.2 TDCi	Diesel	6-speed SG	74	2198	DRFA
2.2 TDCi	Diesel	6-speed SG	74	2198	DRFB
2.2 TDCi	Diesel	6-speed SG	74	2198	DRFC
2.2 TDCi	Diesel	6-speed SG	74	2198	DRFD
2.2 TDCi	Diesel	6-speed SG	74	2198	DRFF
2.2 TDCi	Diesel	6-speed SG	92	2198	CYFA
2.2 TDCi	Diesel	6-speed SG	92	2198	CYFB
2.2 TDCi	Diesel	6-speed SG	92	2198	CYFC
2.2 TDCi	Diesel	6-speed SG	92	2198	CYFD
2.2 TDCi	Diesel	6-speed SG	92	2198	CYFF
2.2 TDCi	Diesel	6-speed SG	114	2198	CVR5

From model year 2010 Left-hand drive vehicle

Verified equipment variants:	Van with partition wall Front passenger twin seat
Not verified:	Passenger compartment monitoring Single front passenger's seat
Total installation time:	approx. 9 hours

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# **Necessary Components**

- · Basic delivery scope of Air Top Evo 40 in accordance with price list
- Installation kit for Ford Transit Custom 2010 Air Top Evo 40 Diesel: 1324768A
- Additional heater control required, choice of control in consultation with the end customer in accordance with price list :
  - Heater control Smart-/ MultiControl HD: see price list
  - In case of Smart-/ MultiControl HD installation: MultiControl installation frame: 9030077\_
  - Heater control ThermoCall: see price list
  - Bag for external temperature sensor (for temperature control in cargo space): 93205\_

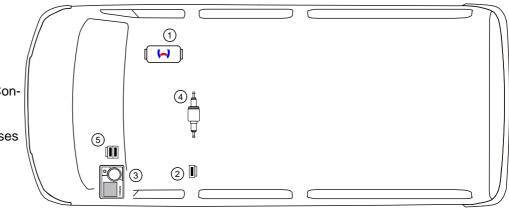
# Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about 1/4 full.
- The installation location of the push button should be confirmed with the end customer in case of ThermoCall.
- The installation location of the external temperature sensor for the cargo space temperature

# **Installation Overview**

# Legend:

- 1. Heater
- 2. Main fuse
- 3. SmartControl HD/ MultiControl HD
- 4. Metering pump
- 5. Heater, heater control fuses



# Information on Total Installation Time

The total installation time includes the time needed for mounting and demounting 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 228).

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. Connectors on electronic components must audibly snap into place during assembly.

Sharp edges should be fitted with rub protection. Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K).

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 a programmable control module (e.g. a PWM Gateway), the corresponding settings must be checked or adjusted.

#### 2 Statutory regulations governing installation

Guidelines	AT 40
Heating Directive ECE R122	E1 00 0385
EMC Directive ECE R10	E1 03 5529

#### 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

The heater is licensed in accordance with paragraph 19, section 3, No. 2b of the StVZO (German Road Traffic Licensing Authority).

2.1 Excerpt from ECE regulation 122 (heating system) paragraph 5 for the installation of the heater

Beginning of excerpt.

#### ANNEX VII

#### REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

#### 1. GENERAL REQUIREMENTS

1.7.1./7.1. (Annex 7) A clearly visible tell-tale in the operator's field of view shall inform when the combustion heater is switched on or off.

#### 2. / 5.3. VEHICLE INSTALLATION REQUIREMENTS

#### 2.1. / 5.3.1. (Part I) Scope

- 2.1.1. / 5.3.1.1 (Part I) Subject to paragraph 2.1.2. combustion heaters shall be installed according to the requirements of this Annex.
- 2.1.2. / 5.3.1.2 (Part I) Vehicles of category O having liquid fuel heaters are deemed to comply with the requirements of this Annex.

#### 2.2. / 5.3.2. (Part I) Positioning of heater

- 2.2.1. / 5.3.2.1. (Part I) 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. / 5.3.2.2. (Part I) 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. / 5.3.2.3. (Part I) 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 / Subsection 5.3.2.2. (Part I) may be used.
- 2.2.4. / 5.3.2.4. (Part I)The label referred to in paragraph 1.4 / Annex 7 Subsection 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. / 5.3.2.5. (Part I)Every reasonable precaution should be taken in positioning the heater to minimise the risk of injury and damage to personal property.

#### 2.3. / 5.3.3. (Part I) Fuel supply

- 2.3.1. / 5.3.3.1. (Part I)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. / 5.3.3.2. (Part I)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. / 5.3.3.3. (Part I) 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. / 5.3.4. (Part I) Exhaust system

2.4.1. / 5.3.4.1. (Part I)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. / 5.3.5. (Part I)Combustion air inlet

- 2.5.1. / 5.3.4.1. (Part I) The air for the combustion chamber of the heater must not be drawn from the passenger compartment of the vehicle.
- 2.5.2. / 5.3.5.2. (Part I) The air inlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

#### 2.6. / 5.3.6. (Part I) Heating air inlet

- 2.6.1. / 5.3.6.1. (Part I) 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. / 5.3.6.2. (Part I) The inlet duct must be protected by mesh or other suitable means.

#### 2.7. / 5.3.7. (Part I) Heating air outlet

- 2.7.1. / 5.3.7.1. (Part I) 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. / 5.3.7.2. (Part I) 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.

# Information on Validity

This installation documentation applies to Ford Transit Custom Diesel vehicles - for validity, see page 1 - from model year 2010 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 Information**

## **Special Tools**

- Torque wrench for 2.0 10 Nm
- Webasto flattening tool, Ident. No.: 1319729A
- 81mm dia., 84mm dia. circle bit
- Automatic wire stripper, 0.2 6mm<sup>2</sup>
- Crimping pliers for cable lug / tab connector, 0.5 6mm<sup>2</sup>
- Metric thread-setter kit
- Deep-hole marker
- Webasto Thermo Test Diagnosis with current software

## Dimensions

• All dimensions are in mm.

## **Tightening torque values**

- Tightening torque of M6 heater nuts = 6 Nm +1 Nm!
- Tighten bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.

#### Installing heater

• A seal must be fitted between heater and body and replaced prior to every installation.

# **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.

Specific risk of damage to components. **Mechanical System** Specific risk due to electrical voltage. **Electrical System** Specific risk of injury or fatal accidents. **Heating Air** Specific risk of fire or explosion. Reference to manufacturer's vehicle-**Combustion Air** specific documents or to the installation i instructions of Webasto components Reference to a special technical feature. Fuel The arrow in the vehicle icon indicates the position on the vehicle **Exhaust Gas** and the viewing angle. Tightening torque according to the manufacturer's vehicle-specific documents. Software

Ident. No.: 1324767A\_EN

# **Preliminary Work**

# Vehicle

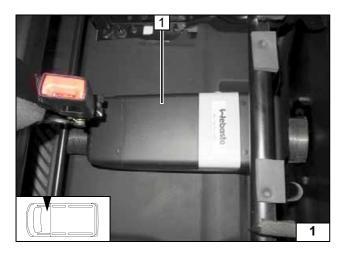
- Open the fuel tank cap, ventilate the fuel tank.
- Close the fuel tank cap again.
- Disconnect the battery.
- Remove the driver's seat.
- Expose the battery.
- Fold up or remove the seating surface of the front passenger's seat (depends on the vehicle equipment).
- Remove the front passenger's seat trim on the left (only on vehicles with a partition wall).
- Remove the heat guard plate of the exhaust system.
- Remove the lateral instrument panel trim on the left side.
- Remove the trim / bottle holder on the left.
- Remove the B-pillar trim on the left.
- Remove the entrance trim on the left.

Only carry out the following steps during the corresponding installation sequence:

• Remove the fuel tank according to the manufacturer's instructions.

## Heater

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



# **Heater Installation Location**



The figure shows a vehicle without a partition wall!

1 Heater

Installation location



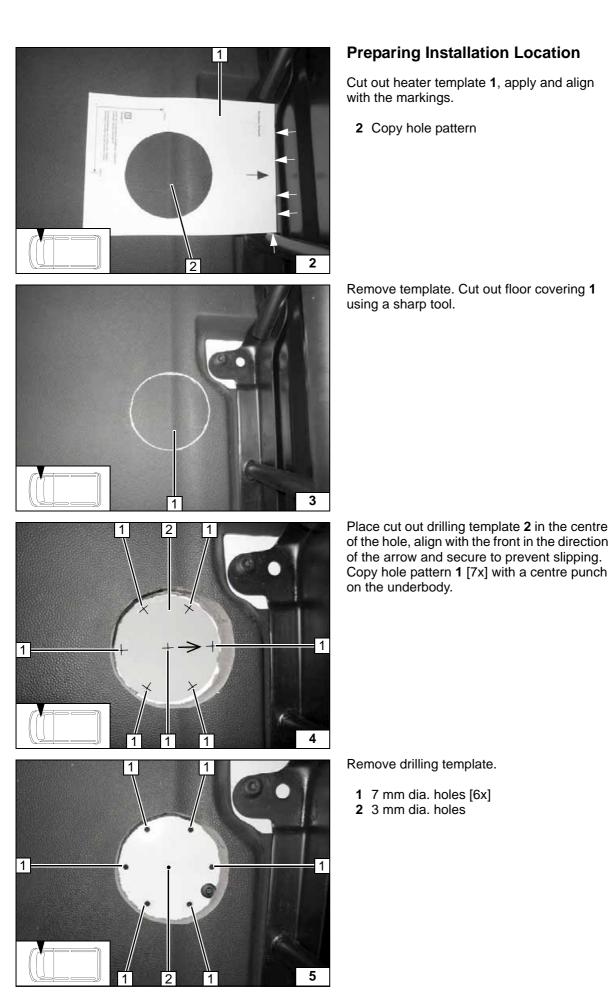
Copying hole pattern

Cutting out floor cover-

Copying hole pattern

Holes in underbody

ing



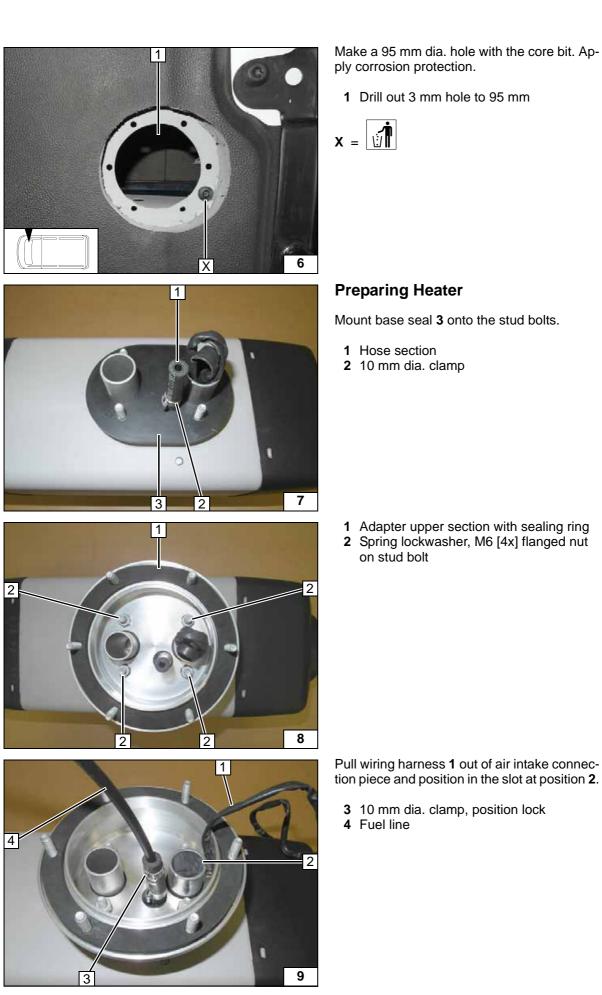


Hole in underbody

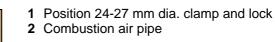
Preparing Heater

Assembling adapter upper section

Installing fuel line







Installing combustion air pipe

Installing exhaust pipe

# 1 Exhaust pipe

2 Position hose clamp and lock

# Preparing Air Intake

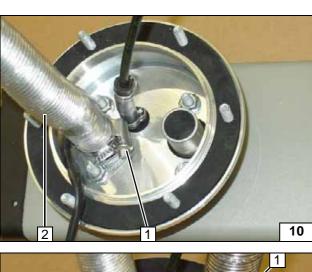
- 1 Front passenger's seat trim on the right
- 2 95 mm dia. hole

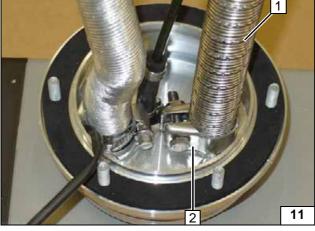
Hole in front passenger's seat trim on the right

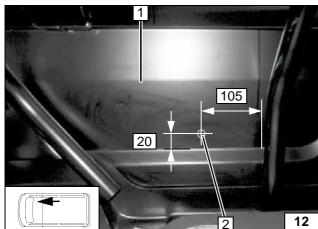
# **Installing Heater**

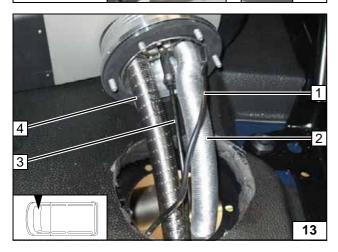
Route wiring harness for metering pump 1, combustion air pipe 2, fuel line 3 and exhaust pipe 4 down through 95 mm dia. hole.

Installing heater











Insert heater **1** with stud bolts in 7 mm dia. **Position**ing heater

- Installing heater
- 1 M6 [6x] flanged nut on original vehicle stud bolt 2 Adapter lower section

holes.

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1 2 1 1 1 1 Ô 15

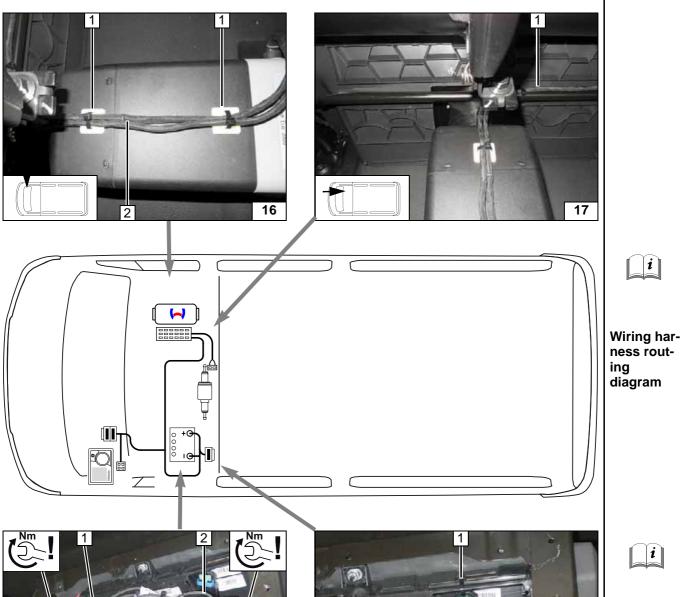
# **Electrical System**

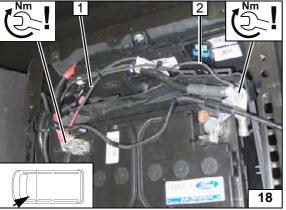
# Wiring harness routing

- 1 Adhesive base, cable tie [2x]
- 2 Wiring harnesses of heater control and power supply

# Wiring harness routing

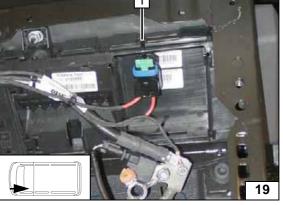
1 Route the wiring harness for the heater control up along the left B-pillar and on to the heater control installation location; route the power supply wiring harness to the battery.





Positive and earth wire

- 1 Positive wire, cable lug on positive battery terminal
- 2 Earth wire, cable lug to negative battery terminal



Fuse holder assembly

1 Affix main fuse holder retaining plate to the battery box using a cable tie





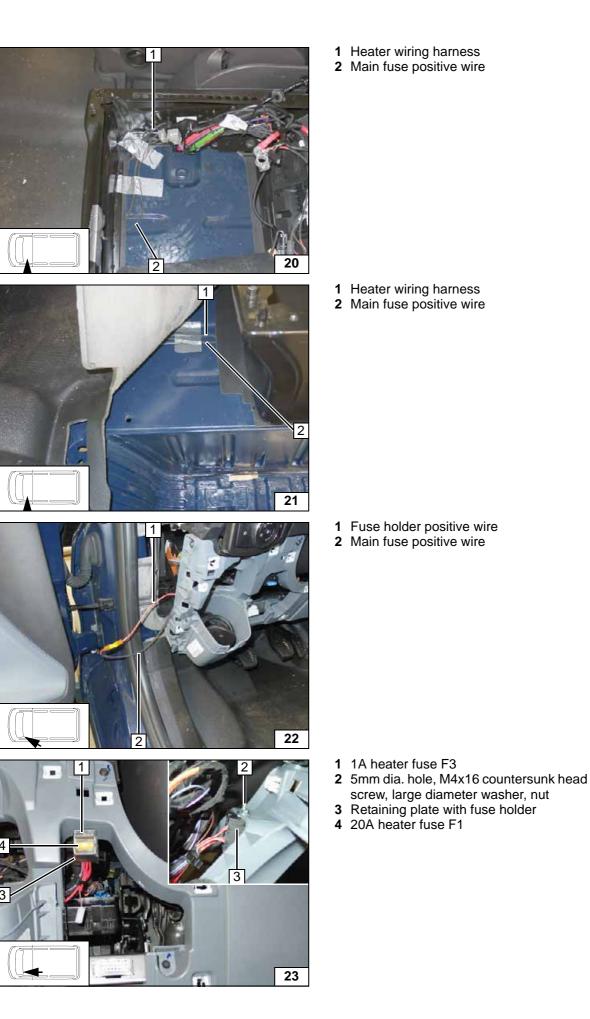
Routing wiring har-

ness

Routing wiring harnesses

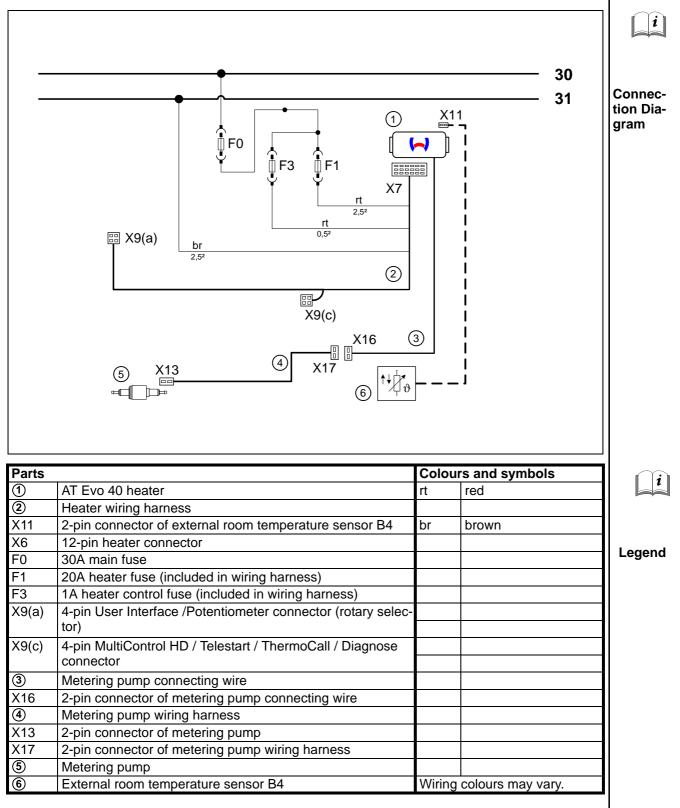
Connecting positive wire

Installing fuse holder

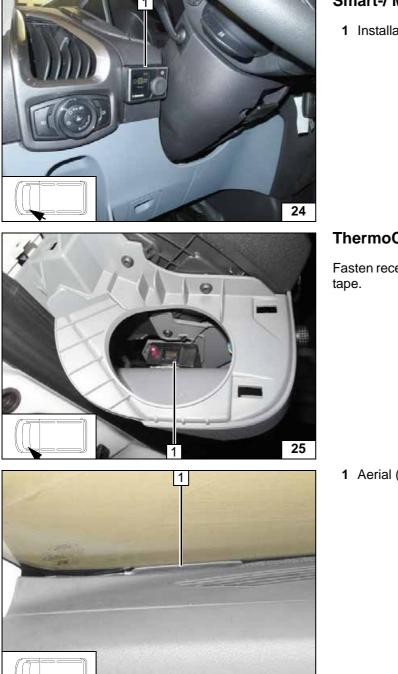




# **Heater Control Connection Diagram**







# Smart-/ MultiControl HD

1 Installation frame



Installing SmartControl/ **MultiControl HD** 

i

Installing receiver

# **ThermoCall Option**

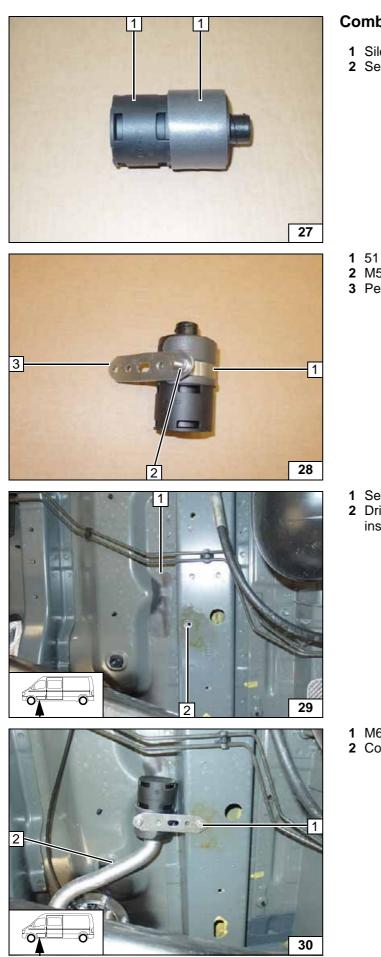
Fasten receiver 1 with double-sided adhesive

1 Aerial (optional)

Installing aerial

26





- 1 Silencer
- 2 Self-adhesive foam

Preparing silencer

Premounting silencer

- 51 mm dia. clamp
  M5x16 bolt, flanged nut
- 3 Perforated bracket

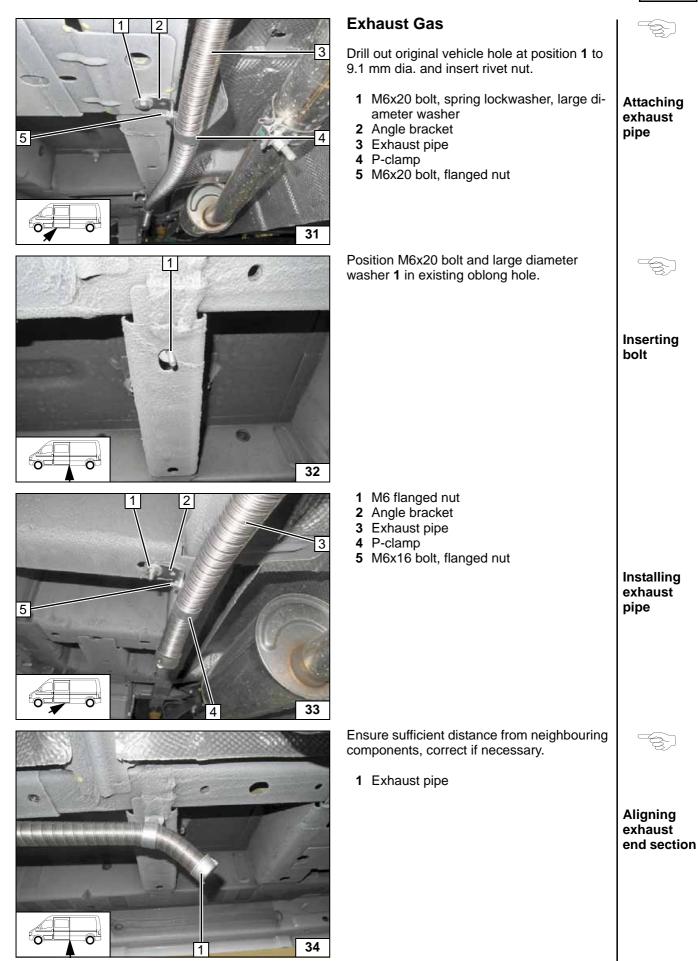
- 1 Self-adhesive foam
- 2 Drill out original vehicle hole to 9mm dia.; insert rivet nut

Installing rivet nut

- 1 M6x20 bolt, spring lockwasher
- 2 Combustion air pipe

Installing combustion air pipe





# Fuel

# **CAUTION!**

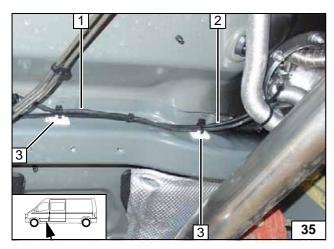
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

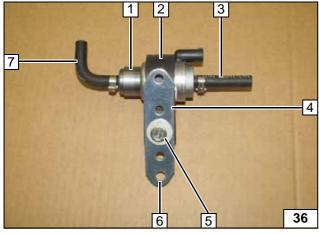
Catch any fuel running off in an appropriate container.

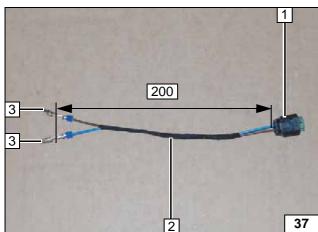
Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties. Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

# WARNING!

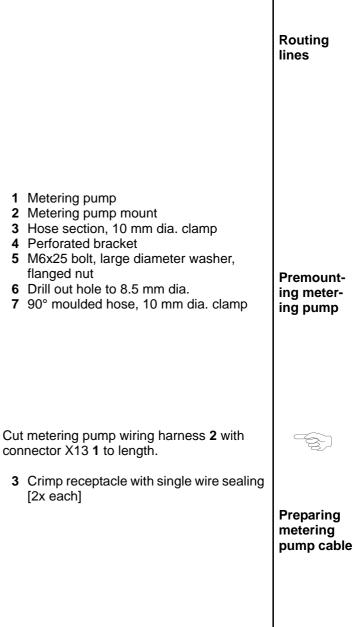
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.







- 1 Wiring harness of metering pump
- 2 Fuel line
- 3 Self-adhesive socket, cable tie [2x each]











1 Install housing of crimp receptacles (X17)

Preparing metering pump cable

- 1 Connector X13
- 2 Connect connectors X16 and X17
- 3 Fuel line of heater
- 4 10 mm dia. clamp
- 5 M8x20 bolt, spring lockwasher, original vehicle thread



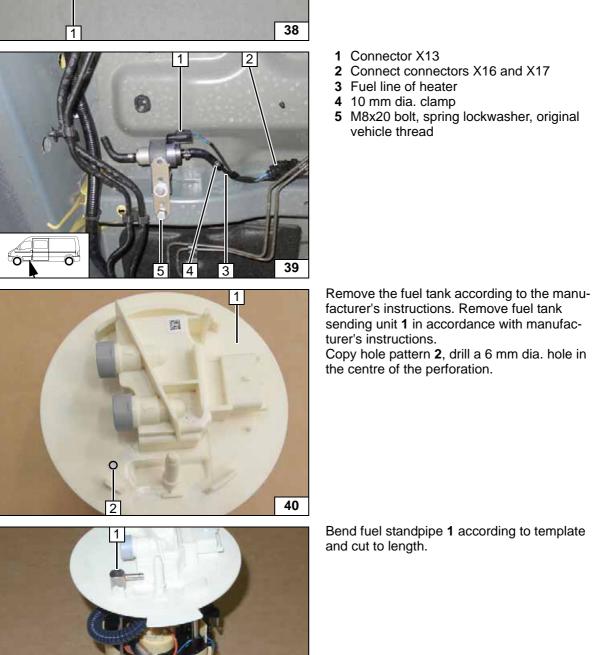
Installing metering pump



Fuel extraction

*i* ]

Installing fuel standpipe



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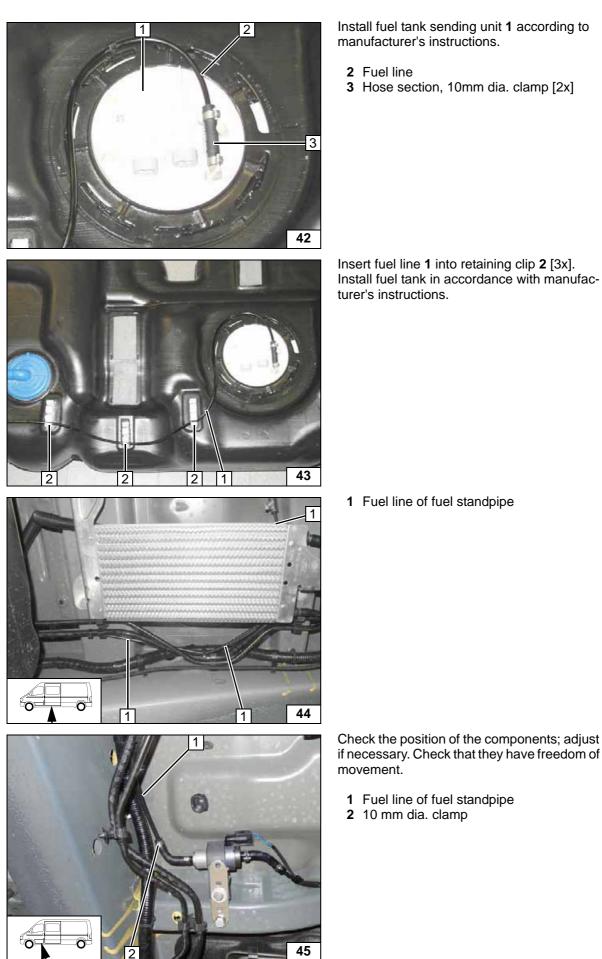
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*i* ]

**Connect**ing fuel line

i



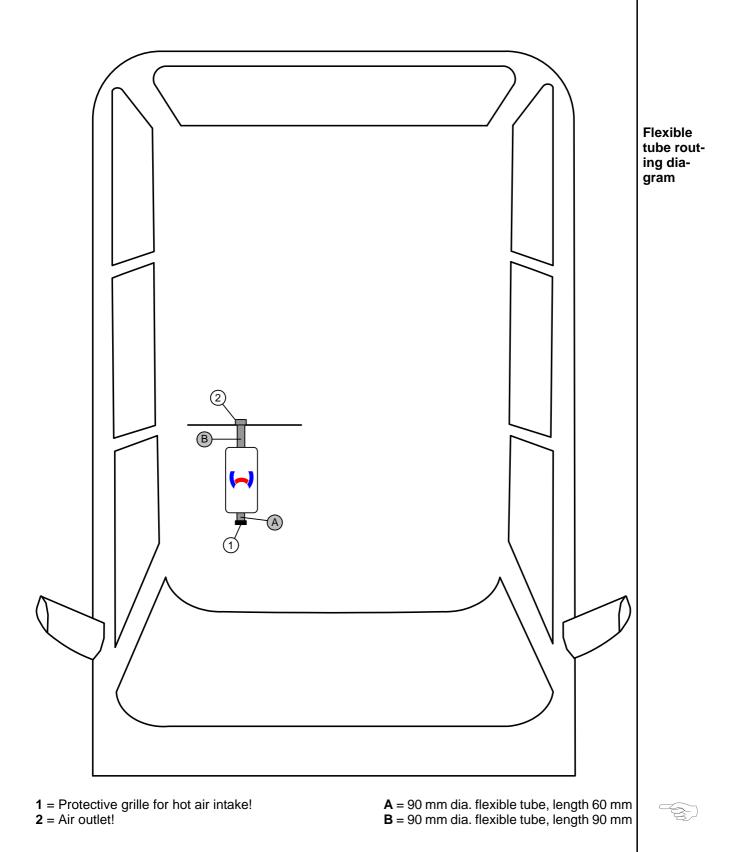
Routing fuel line Routing fuel line **Connect**ing metering pump



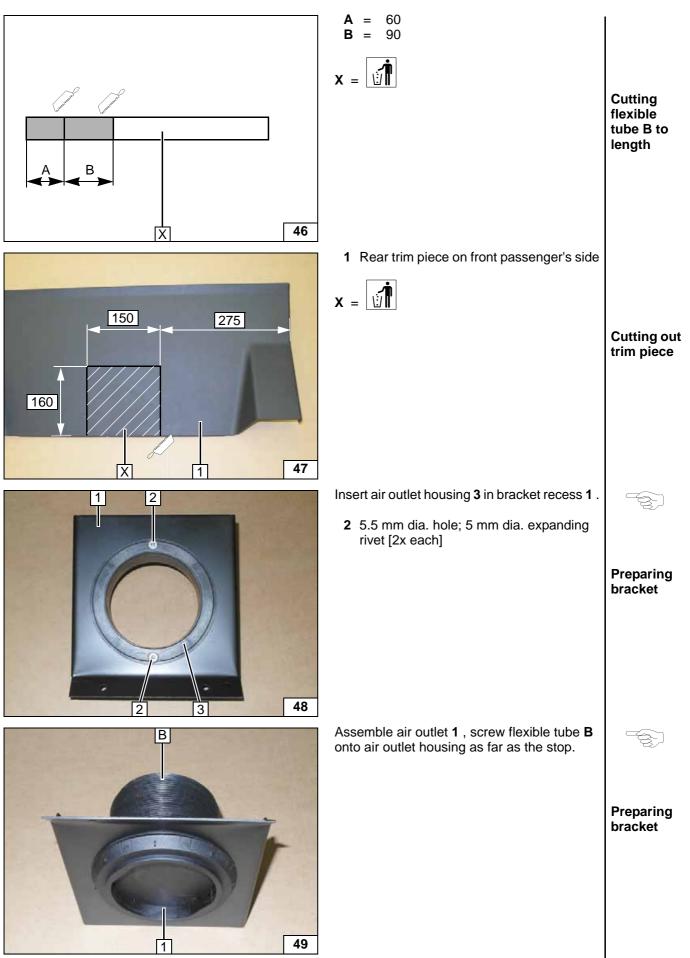
# Hot Air in Vehicles without Partition Wall

Route flexible tubes kink-free.

The following diagram shows the hot air distribution for the entire passenger compartment.







1

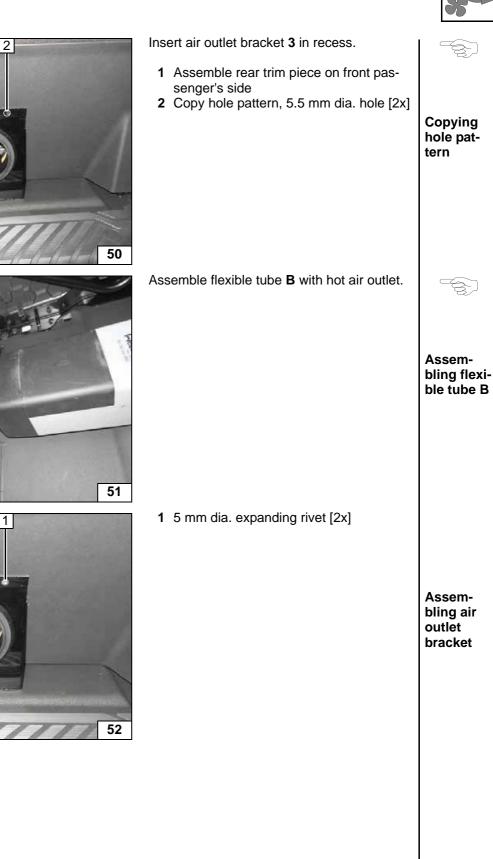
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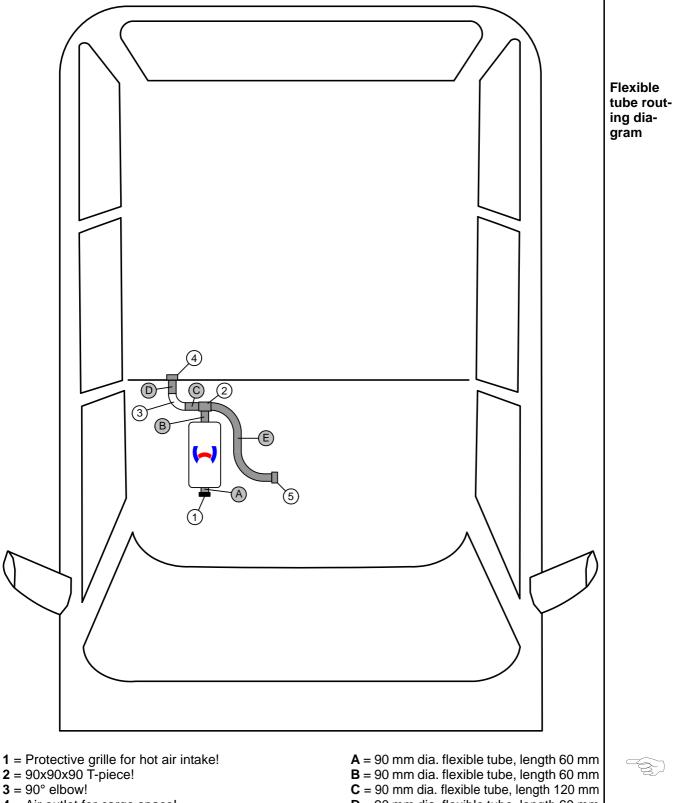
1



# Hot Air in Vehicles with Partition Wall

Route flexible tubes kink-free.

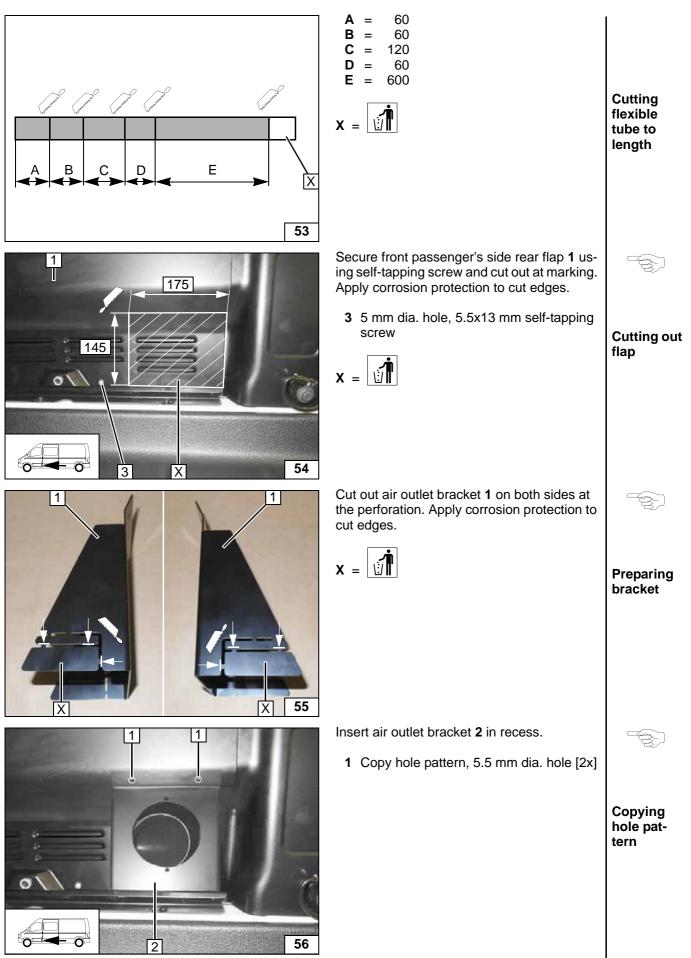
The following diagram shows the hot air distribution for the separate heating of the passenger compartment and / or cargo space. By closing or opening the respective air outlet, the hot air flow is regulated in the passenger compartment and / or cargo space.



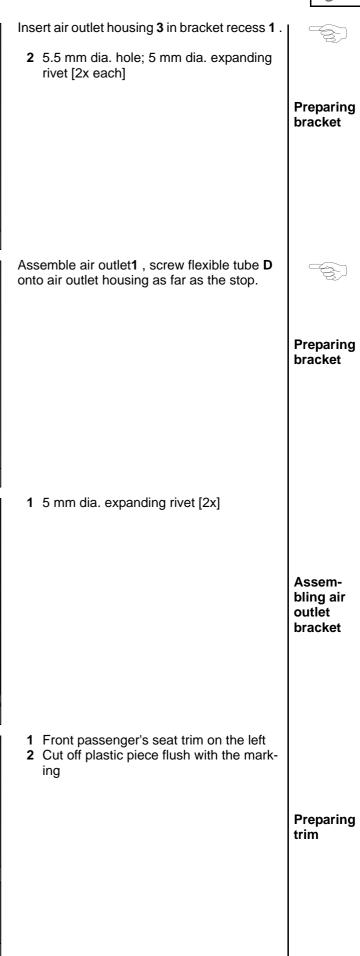
- 4 = Air outlet for cargo space!
- **5** = Air outlet for passenger compartment!

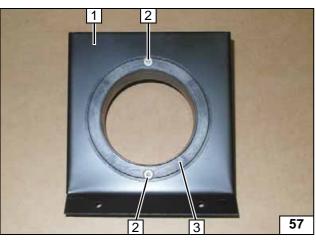
 $\mathbf{D} = 90 \text{ mm}$  dia. flexible tube, length 60 mm  $\mathbf{E} = 90 \text{ mm}$  dia. flexible tube, length 600 mm

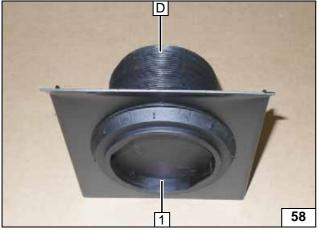


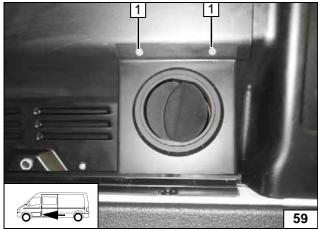








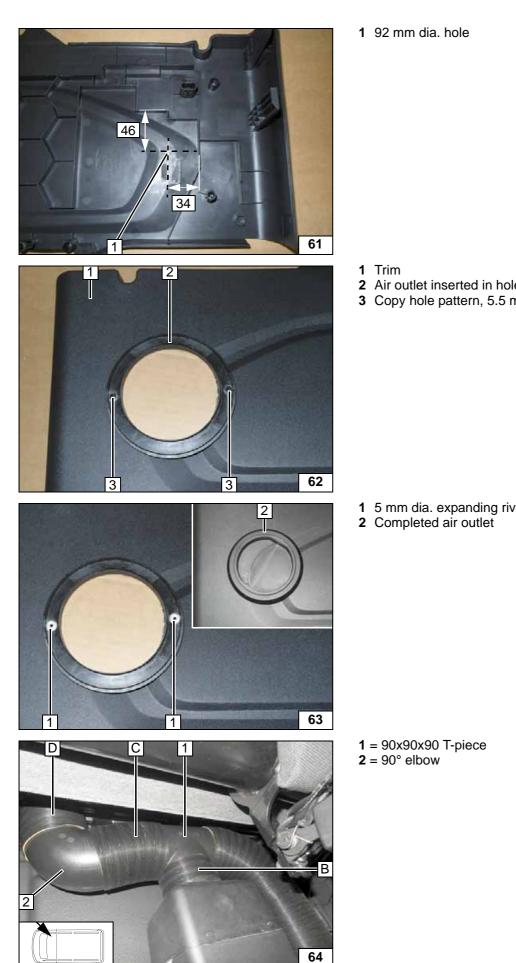






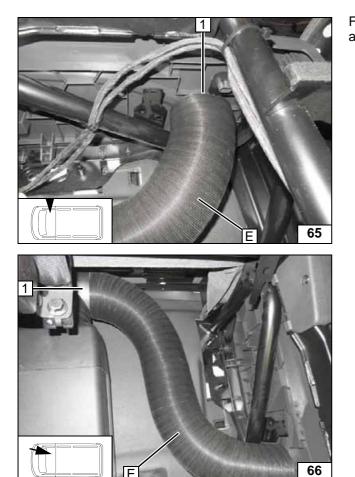
Ident. No.: 1324767A\_EN





2 mm dia. hole	Hole in trim
rim ir outlet inserted in hole opy hole pattern, 5.5mm dia. hole [2x]	Assem- bling air outlet
mm dia. expanding rivet [2x] ompleted air outlet	Assem- bling air outlet
90x90x90 T-piece 90° elbow	Assem- bling flexi- ble tubes B, C and D





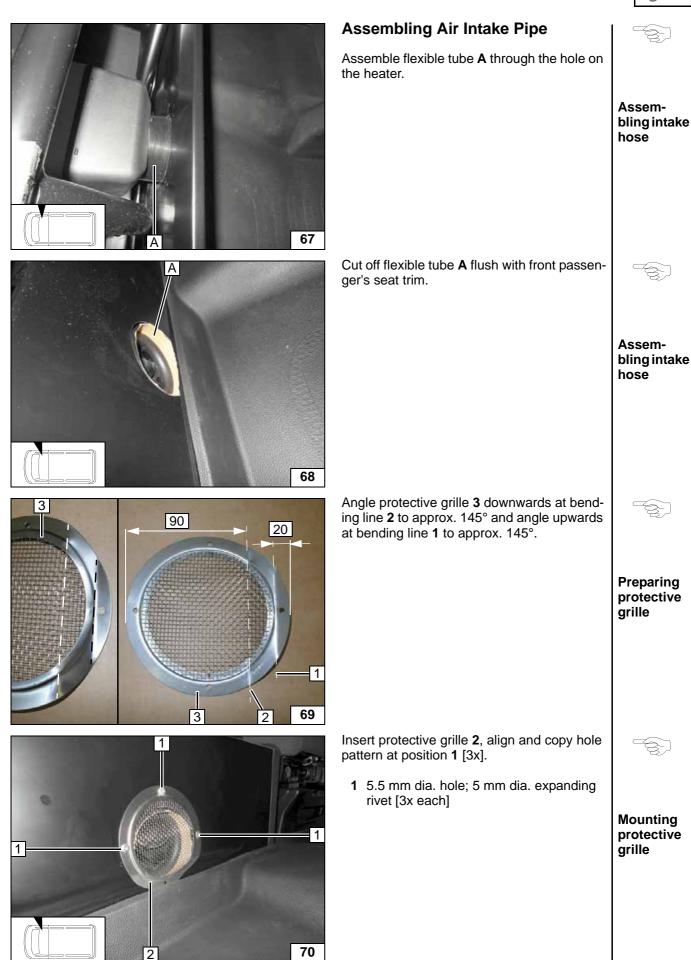
First screw flexible tube **E** onto air outlet **1** and then assemble on T-piece.

Assembling flexible tube E

**1** = 90x90x90 T-piece

Assembling flexible tube E





# 3=0

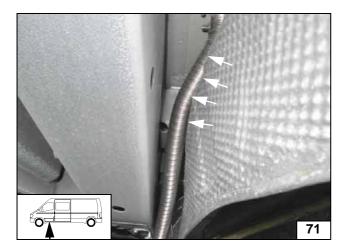
# **Final Work**

# WARNING!

Reassemble the components in reverse order. Check all clamps and all electrical connections for firm seating. Insulate loose wire ends and tie back.

Spray the heater components with anti-corrosion wax (Tectyl 100K).

- Connect the battery.
- Program Smart-/ MultiControl HD, select AT Evo 40 heater
- Place the 'Switch off parking heater before refuelling' caution label near the filler neck.
- For initial startup and function check, please see installation instructions.



Ensure sufficient distance between heat guard plate and exhaust pipe (see marking), correct if necessary.





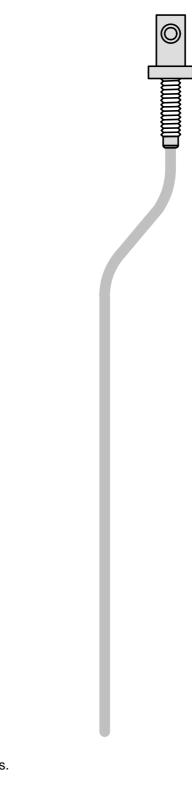


Aligning exhaust pipe

Webasto Thermo & Comfort SE Postfach 1410 82199 Gilching Germany Internet: www.webasto.com Technical Extranet: http://dealers.webasto.com

# **Fuel Standpipe Template**

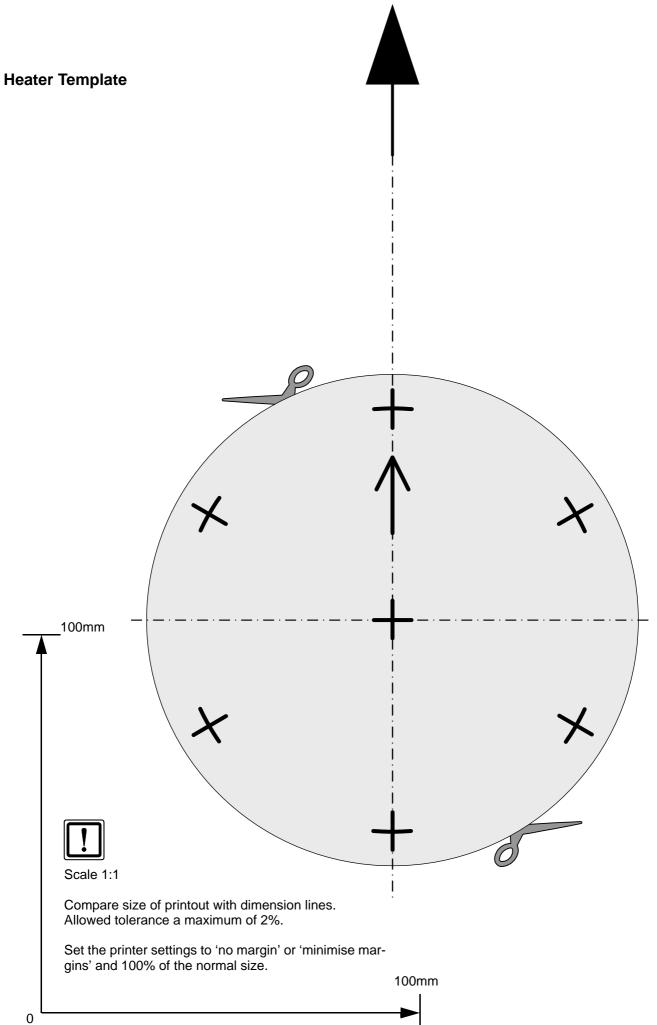




Scale 1:1 Compare size of printout with dimension lines. Allowed tolerance a maximum of 2%. Set the printer settings to 'no margin' or 'minimise margins' and 100% of the normal size.

0

100mm





i

# **Operating Instructions** Please remove page and add to the vehicle operating instructions. Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation. For instructions on deactivation, please refer to the operating instructions of the vehicle. 1

72 -73 ē

1 30A main fuse F0

Fuse

- **1** 1A heater control fuse F3
- 2 20A heater fuse F1

Fuses