Water Heater



Thermo Top C Parking Heater

e1 00 0002

Installation documentation

VW Passat

2.0 FSI from Model Year 2005 For left-hand drive vehicles only



WARNING!

Hazard warning:

Incorrect installation or repair of Webasto heating systems may cause a fire or result in the emission of carbon monoxide, which can be fatal. Serious or fatal injuries can be caused as a result.



Specialist company training, technical documentation, specialised tools and equipment are required to install and repair Webasto heating and cooling systems.

Only original Webasto parts must be used. For this, also see the catalog of air and water heater accessories from Webasto.

NEVER attempt to install or repair Webasto heating or cooling systems if you have not successfully completed the company training and thereby acquired the required technical skills, or if you do not have access to the required technical documentation, tools and equipment needed to carry out correct installation and repairs.

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

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

Webasto does not accept any liability for defects and damage that are attributable to installation by untrained staff.

Table of Contents

Validity	2	Preparing installation location	13
Heater/Installation Kit	3	Installing heater	14
Foreword	3	Wiring harness of heater	15
General Instructions	3	Fuel	16
Special Tools	3	Coolant circuit	21
Explanatory Notes on Document	4	Combustion air	26
Preliminary Work	5	Exhaust gas	27
Heater installation location	5	Final Work	28
Electrical system	6	Adjusting passenger compartment monitoring	28
Fan controller without Climatronic	8	Template for Fuel Standpipe	29
Climatronic fan control	9	Operating Instructions for End Customer	30
Digital timer option	10		
Summer/winter switch option	11		
Remote option (Telestart)	11		
Premounting heater	12		

Validity

Manufacturer	Model	Туре	EG-BE No./ABE
Volkswagen	Passat	3C	e1 * 2001/116 * 0307 *

Engine type	Engine model	Output in kW	Displacement in cm ³
BLR	Petrol	110	1984

Vehicle and engine types and equipment variants not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible. The installation location of a digital timer and summer/winter switch should be confirmed with the end customer before installation.

Heater/Installation Kit

Quantity	Description	Order No.:
1	Retail accessories Thermo Top C	See price list
1	Kit VW Passat 2.0 FSI	9014046A
1	Heater control	See Price list

Also required with Climatronic:

Quantity	Description	Order No.:
1	Kit for Climatronic with IPCU	9013645A

Foreword

This installation documentation applies to VW Passat vehicles with a 2.0 FSI engine - for validity, see page 2 - from model year 2005 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.

However, the stipulations in the "installation documentation", the "operating instructions" and the "installation instructions" for the *Thermo Top C* must always be observed.

The corresponding rules of technology and any information from the vehicle manufacturer should be observed during the installation work.

General Instructions

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.

Sharp edges should be fitted with rub protection (split-open plastic hose).

Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329). When installing an IPCU, check or adjust the corresponding settings before installation.

Special Tools

- Torque wrench for 2.0 10 Nm
- Hose clamping pliers
- Rivet-down tool for steel M10 rivet nuts (e.g., Würth Order No. 0964948900)
- Deburring tool

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

Fuel

Exhaust gas

Combustion air











Special features are highlighted using the following symbols:



!



i

Specific risk of injury or fatal accidents.

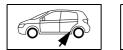
Specific risk of damage to components.

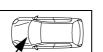
Specific risk of fire or explosion.

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



Reference to a special technical feature.



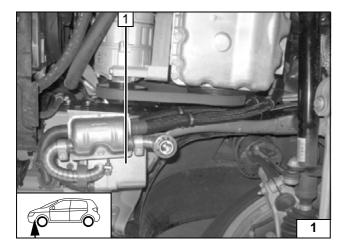


The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary Work

WARNING!

- Open the fuel tank cap, ventilate the tank.
- Close the fuel tank cap again.
- Disconnect and remove the battery.
- Remove air filter
- Remove the battery carrier.
- Remove the engine cover.
- Depressurise the cooling system.
- Copy the factory number from the original type label to the duplicate type label.
- Remove years that do not apply from the duplicate label.
- Attach the duplicate label (type label) in the appropriate place.
- Remove the right front wheel.
- Remove the front section of the right front wheel well trim.
- Remove the underride protection
- Remove the right-hand front fog light or, on vehicles without front fog lights, the right-hand cover.
- Remove the right-hand underbody trim.
- Open the right-hand tank-fitting service lid.
- Remove the footwell trim on the driver's side
- Remove the lower instrument panel trim on the driver's side.
- Only vehicles with Climatronic: Detach the A/C control panel.



Heater installation location

1 Heater

Installation location

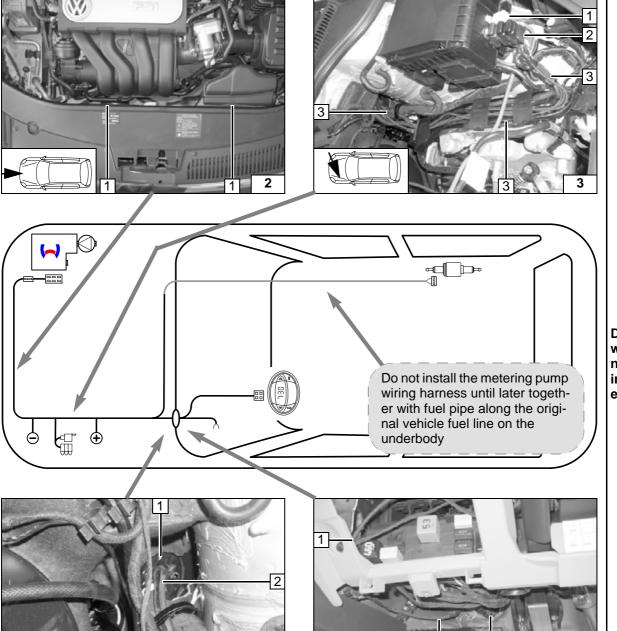
Electrical system

Wiring harness of heater

Route wiring harness of heater (1) over the radiator to the right. Fastening is not carried out until after heater is installed.

Fuse holder

- **1** K3 relay (for installation instructions, see page 7)
- 2 Fuse holder (for installation instructions, see page 7)
- **3** Route wiring harness of heater control, fan control and metering pump in cable duct to firewall

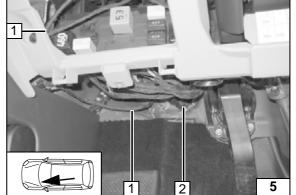


4

TE.

Diagram of wiring harness routing for all equipment

- 1 Original vehicle wiring harness pass through
- 2 Wiring harnesses for fan control and heater control



Wiring harness pass through, internal view

- 2 Original vehicle wiring harness pass through
- 1 Wiring harnesses for fan control and heater control

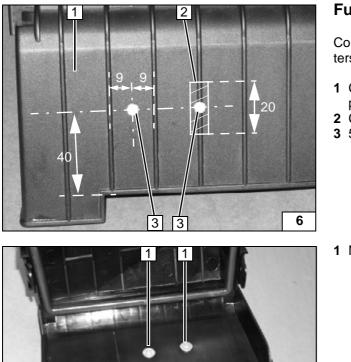


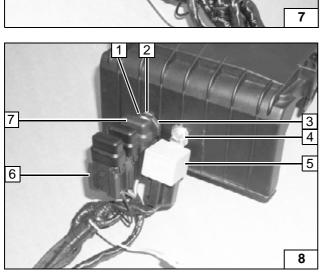
Holes for

fuse holder

and K3 re-

lay





Fuse holder and K3 relay

Countersink holes **3** from behind for M5 countersunk head screws.

- 1 Cover of fuse/relay carrier in engine compartment
- 2 Cut away bar in shaded area
- **3** 5.0mm dia. hole [2x]
- 1 M5x12 countersunk head screw [2x]

Installing fuse holder and K3 relay

On vehicles with Climatronic, replace 25 A fuse F3 **7** with 3 A fuse provided.

- 2 Large diameter washer (between cover and retaining plate)
- 3 Retaining plate
- 1 M5 flanged nut
- 6 Fuse holder
- 7 F3 fuse
- 5 K3 relay
- 4 M5 flanged nut

Route brown (br) earth wire to original vehicle earth support point below headlight and connect.

- 1 Fuse/relay carrier
- 3 Red (rt) positive wire
- 2 Original main vehicle fuse

₩¢

Installing

fuse holder

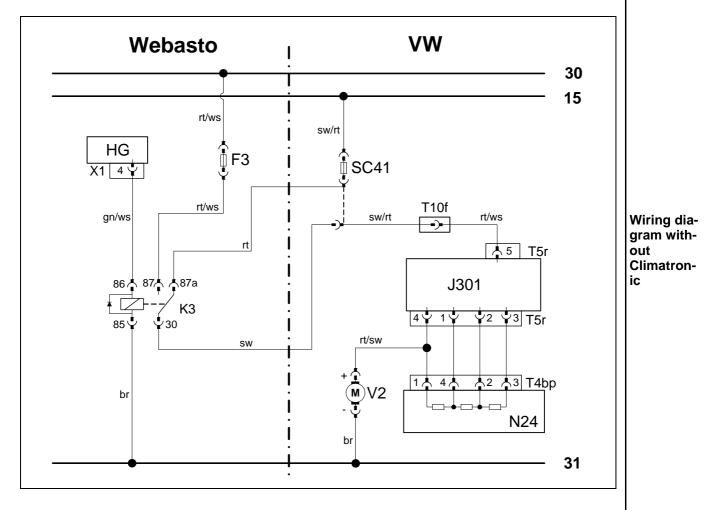
and K3 re-

lay

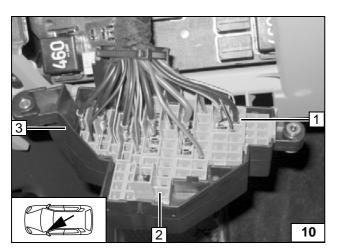
Connecting positive and earth wire



Fan controller without Climatronic



Webasto components		Vehicle components		Colours and symbols			
HG	Heater TT-C/E	SC41	40 A fan-fuse	rt	red		
X1	6-pin heater connec-	J301	Control unit of air conditioning	WS	white		
	tor	N24	Resistor group	SW	black		
F3	25 A fuse	V2	Fan motor	br	brown	Leg	gend
K3	Fan relay	Т	Connector	gn	green		
				Wirin	g colours may vary.		



Detach original vehicle fuse carrier 3 (instrument panel at upper left) and unlock contact lock 2.

Unlatch black/red (sw/rt) wire, 4mm², 1 on fuse output SC41

- 3 Fuse carrier
- 2 Contact lock
- 1 Black/red (sw/rt) wire, 4 mm²

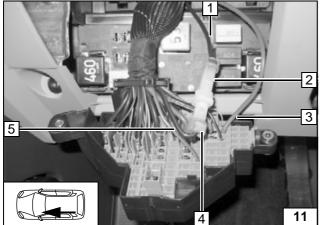


Removing wire



Connect-

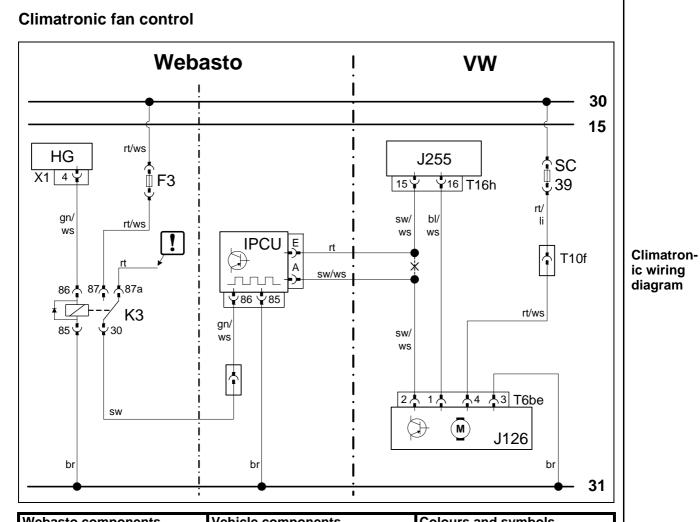
ing wires



Produce connections as shown in wiring diagram.

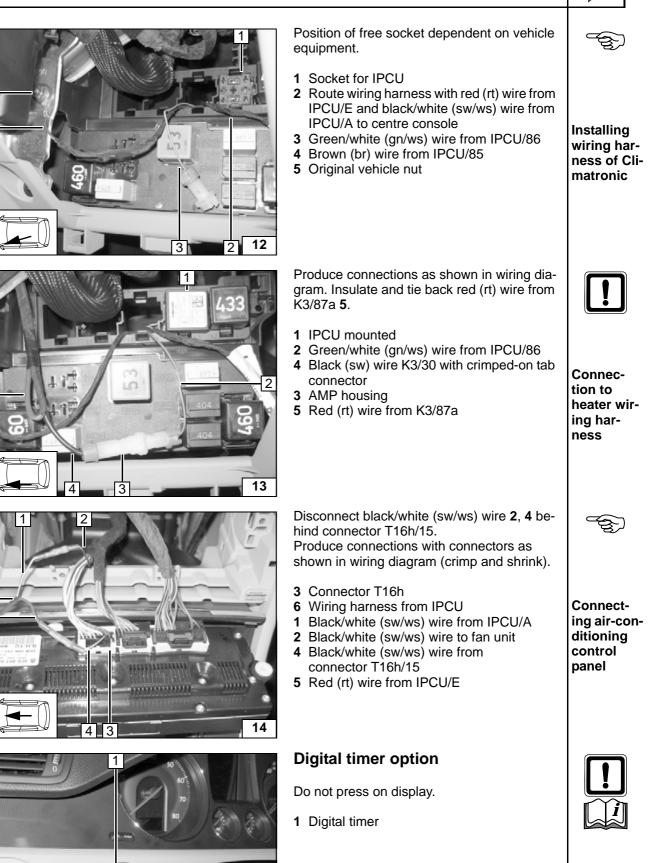
- 1 Black (sw) wire K3/30 with crimped-on tab connector
- 2 AMP housing
- 5 Black/red (sw/rt) wire with original standard power timer
- 4 AMP housing
- Red (rt) wire from K3/87a with crimped-on standard power timer engaged in fuse output SC41

Lock contact lock again.



Weba	sto components	Vehicle	e components	Colou	rs and symbols	
HG	Heater TT-C/E	SC 39	40 A fan-fuse	rt	red	
F3	Fuse (25 A replaced	J255	Climatronic control unit	WS	white	
	with 3 A)	J126	Fan control unit	SW	black	
K3	Fan relay	V2	Fan motor	br	brown	
IPCU	Pulse width modulator	Т	Plug connections	gn	green	Legend
				li	purple	
IPCU a	adjustment values			bl	blue	
Voltag	e: 8 V				Insulate wire end and tie	
Freque	ency: 400 Hz				back	
Duty c	ycle: 30 %			Х	Cutting point	
Functi	on: High-side			Wiring	colours may vary.	

9



15

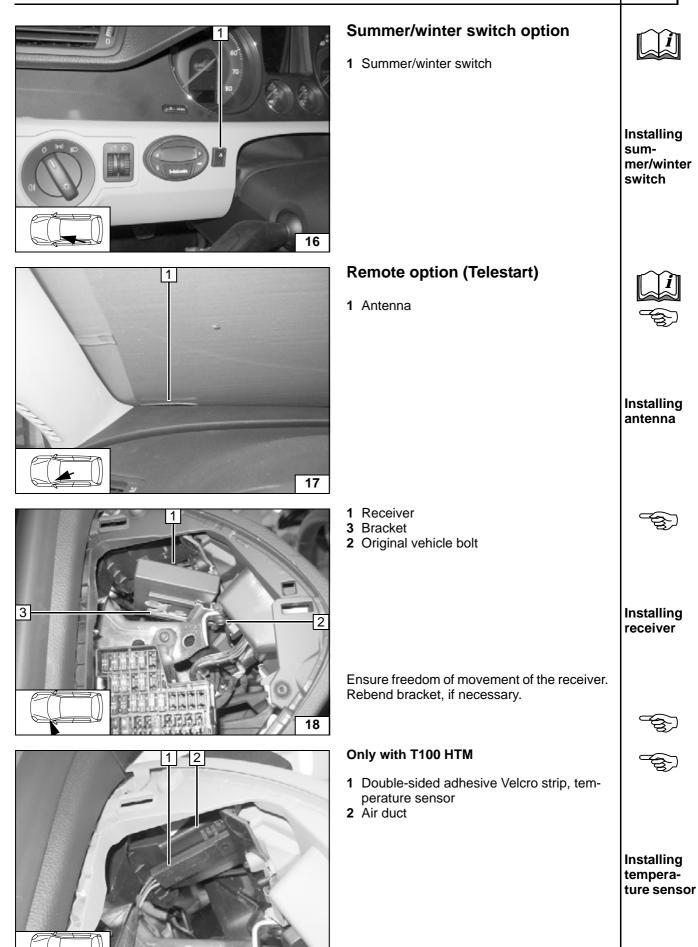
4

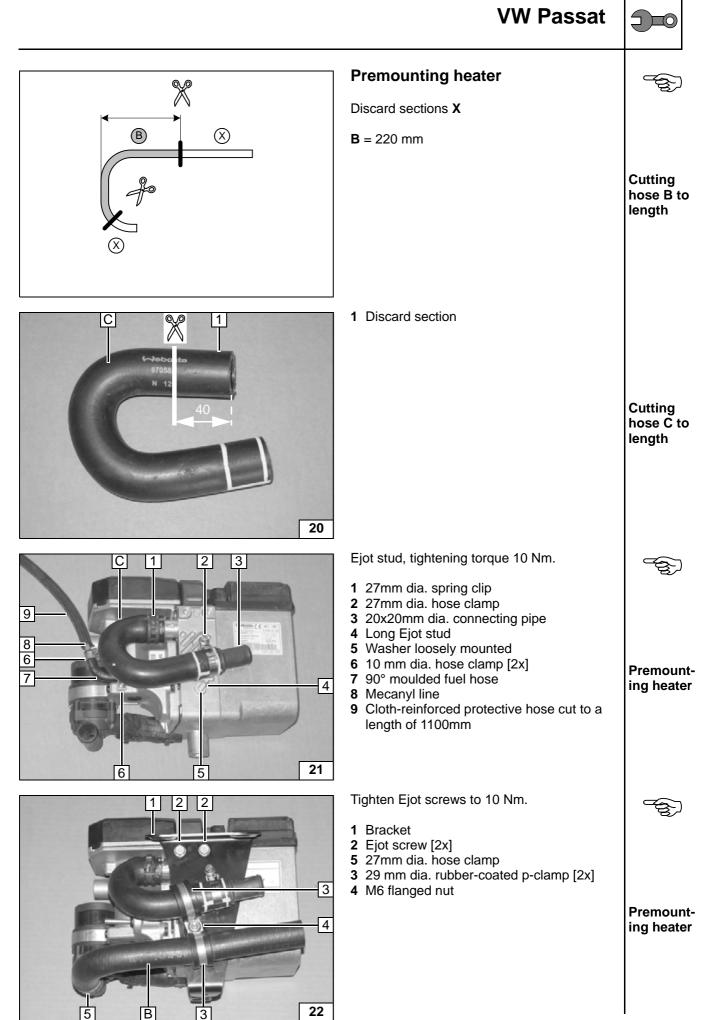
6

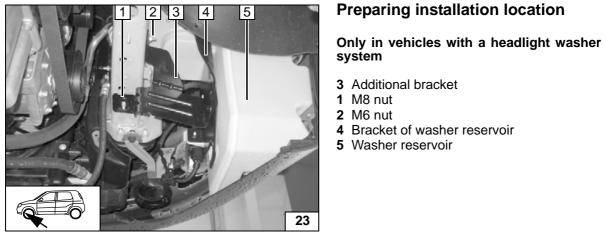
5

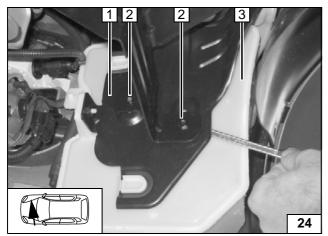
Installing digital timer











Detach bolts **2** as shown with an open-end spanner or a rachet spanner. Press away washer reservoir **3** carefully with plastic wedge from bracket **1**.

- 1 Bracket of washer reservoir
- 3 Washer reservoir
- 2 M5 bolt [2x]

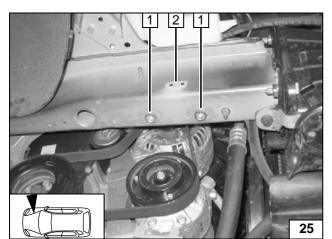
Removing additional bracket

ťS

 $\overline{)}$

Removing additional

bracket



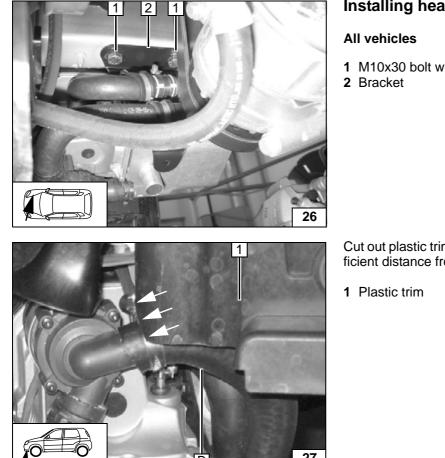
All vehicles

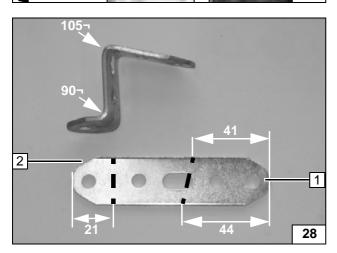
Use special rivet-down tool as described on Page 3.

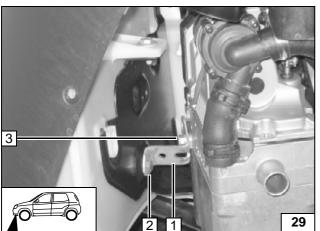
- 1 Existing hexagonal holes, M10 hex. steel rivet nuts [2x]
- 2 Plate removed



Preparing installation location



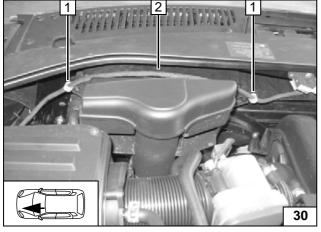


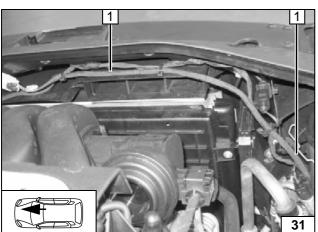


Installing heater	- 3
All vehicles	_
1 M10x30 bolt with locking teeth [2x]2 Bracket	
	Installing heater
Cut out plastic trim 1 as shown, to ensure sufficient distance from hose B . 1 Plastic trim	
	Cutting out trim
Only in vehicles with a headlight washer system	- fig-
Watch bending direction.	
 Bend long side downwards Bend short side upwards 	Angling down per- forated bracket
 Ejot screw bolt, tightening torque 10 Nm. 1 Perforated bracket 2 M6x12 bolt, flanged nut 3 Ejot screw 	- Egg
	Installing perforat- ed bracket



 $\int \Box = 0$





Wiring harness of heater

Watch routing of wiring harness. Danger of rubbing!

- 2 Wiring harness of heater
- 1 Plastic clamps on original vehicle bolt [2x]

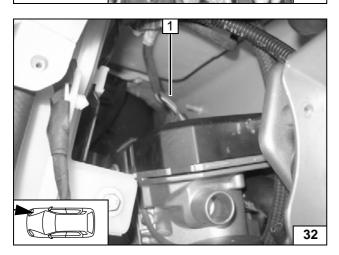
Routing wiring harness

Watch routing of wiring harness. Danger of rubbing! Fasten wiring harness with cable ties to original vehicle lines.

1 Wiring harness of heater



Routing wiring harness



Watch routing of wiring harness. Danger of rubbing!

Fasten wiring harness with cable ties to original vehicle lines.

1 Wiring harness of heater



Connecting wiring harness

Fuel

CAUTION!

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

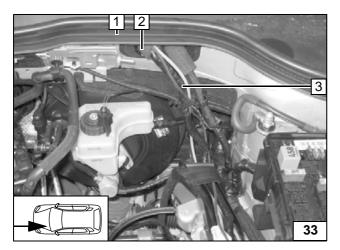
Catch any fuel running off in an appropriate container.

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.

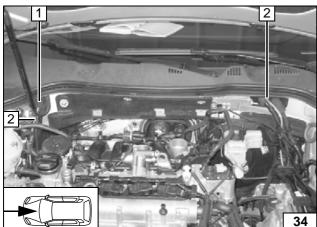
WARNING!

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



- 1 Coolant reservoir cap detached
- **2** Existing pass through
- 3 Metering pump wiring harness

Routing wiring harness of metering pump in coolant reservoir



Fasten wiring harness of metering pump in coolant reservoir on original vehicle lines with cable ties.

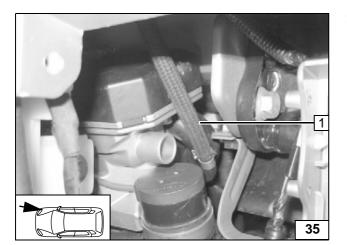
Pay particular attention to freedom of movement of wiper linkage.

- 1 Existing pass through
- 2 Metering pump wiring harness



Routing wiring harness of metering pump to the right

Routing Mecanyl line

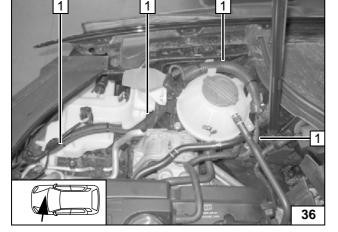


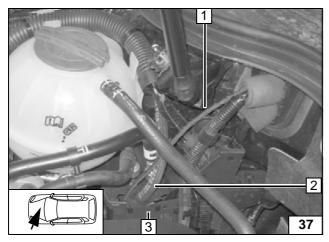
1 Mecanyl line in protective hose



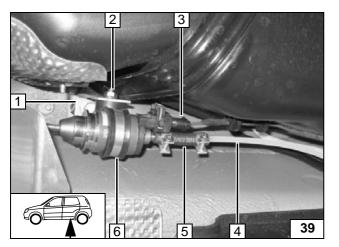
16

1 Mecanyl line in protective hose





2 3 38



Routing Mecanyl line Route mecanyl line 2 and wiring harness of \$ metering pump 1 into original vehicle line duct and then to underbody. 1 Metering pump wiring harness 2 Mecanyl line in protective hose Routing 3 Original vehicle line duct mecanyl line and wiring harness of metering pump Route mecanyl line and wiring harness of metering pump along original vehicle fuel lines to fuel tank. 3 Line duct Routing 1 Mecanyl line

2 Metering pump wiring harness

mecanyl line and wiring harness of metering pump

Ensure proper installation position of metering pump, see "Installation Instructions". Installation location on right in front of vehicle fuel tank!

Fuel line from heater on pressure side of metering pump [side with connector].

- 1 Bracket of metering pump, original vehicle bolt
- 2 Flanged nut [2x], silent block
- 6 Rubber-coated p-clamp
- ing pres-Wiring harness of metering pump, connec-3 tor housing completed
- 4 Mecanyl line
- 5 10mm dia. hose clamp [2x], hose section

i

Installing

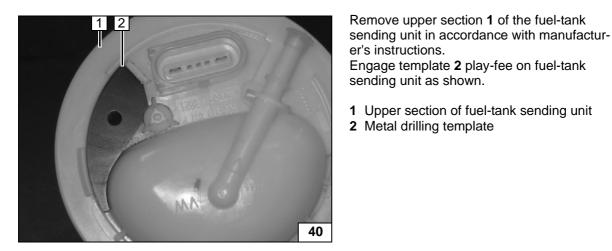
metering

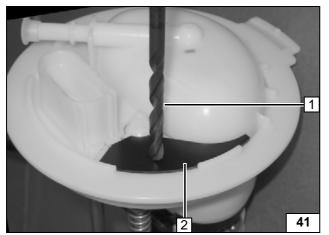
connect-

sure side

pump and







Ensure firm seating of template **2**. Guide drill bit **1** exactly perpendicular to surface of fuel-tank sending unit. Carefully drill at low speed and only with light pressure as shown below.

- 1 6.0 mm dia. drill bit
- 2 Metal drilling template



Engaging drilling template



Hole in fuel-tank sending unit

1 6.0 mm dia. hole

2

3

42

- 2 Overhanging, circumferential edge of approx. 1 mm
- **3** Drilled-out blind connection piece



View of underside of fuel-tank sending unit

Carefully remove overhanging edge with deburring tool.

1 Deburring tool



Removing edge

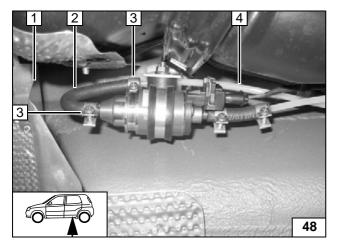


1 4.5 mm dia. moulded hose2 Discard section

1

Shortening hose 44 Cut fuel standpipe to length according to template and install, see "Installation instrucl tions". Align moulded hose as shown. 1 Fuel standpipe 3 4.5 mm dia. moulded hose with shortended side on fuel standpipe Installing 2 10 mm dia. Caillau clamp fuel standpipe 45 Install fuel-tank sending unit 5 in accordance with manufacturer's instructions. Ensure sufficient spacing between moulded 4 hose 1 and edge of locking ring 4 at position 2. 7 5 3 Fuel standpipe 6 5 Fuel-tank sending unit 4 Locking ring 1 Moulded hose Installing 7 10mm dia. Caillau clamp fuel-tank 6 Remaining piece of mecanyl line sending unit 46 1 4.5 mm dia. moulded hose 1 2 Discard section Shortening moulded hose 47 19





Design of guard plate **1** of the exhaust system is vehicle-dependent.

Ensure sufficient spacing between guard plate **1** and moulded hose **2**.

Connect fuel line from fuel standpipe on intake side of metering pump [side without connector].

1 Guard plate

ness with cable ties.

2 Moulded hose with shortened side on metering pump.

Check routing of fuel lines and wiring harness of metering pump over entire length and correct if necessary. Fasten lines and wiring har-

- 3 10 mm dia. hose clamp [2x]
- 4 Mecanyl line from fuel standpipe



Connect-

ing intake

tering

pump

side of me-

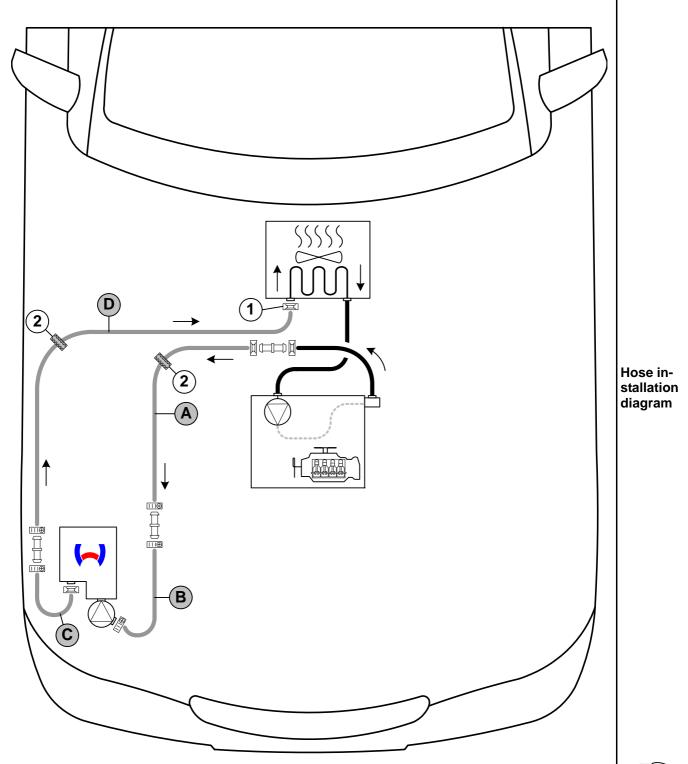


Wiring routing

Coolant circuit

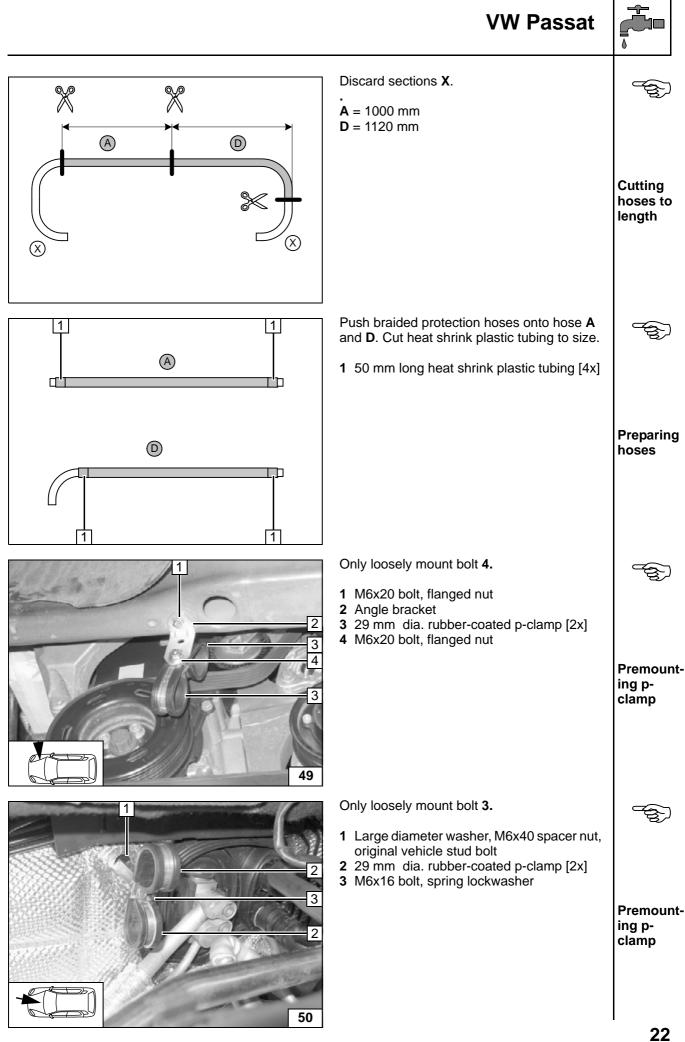
WARNING!

Any coolant running off should be collected in an appropriate container. Install 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 hoses. The connection should be "inline" based on the following diagram:

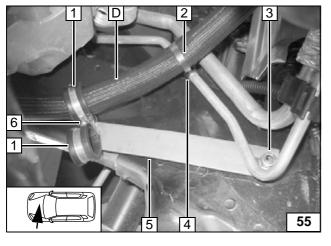


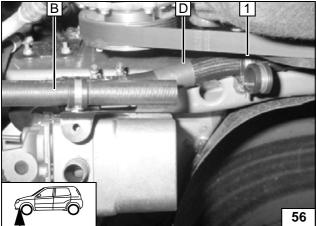
All spring clips without a specific designation $\square = 27 \text{ mm}$ dia. **1** = Original vehicle spring clip $\square = .$ All hose clamps $\bigcirc \square = 20.27 \text{ mm}$ dia. All connecting pipes $\square \square = 20x20 \text{ mm}$ dia. **2** = black (sw) rubber isolator $\blacksquare \square$.

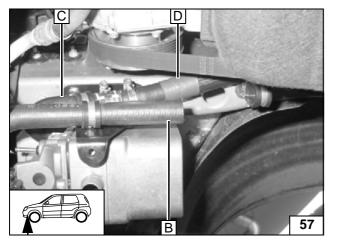
5

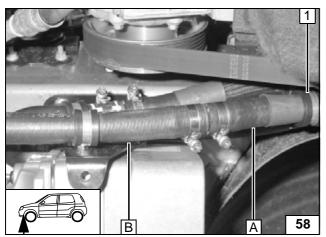


VW Passat 2 Hose section to heat exchanger inlet 3 Hose section from engine outlet 1 Cutting 2 point X Pull off hose section 2 and discard. Spring clip 1 will be reused. 51 3 1 Connection piece of heat exchanger inlet 2 Hose section from engine outlet Installing connecting pipe 52 1 Connection piece of heat exchanger inlet Connection on heat exchanger inlet 53 Route hose **D** through upper p-clamp. D 1 3 1 29 mm dia. rubber-coated p-clamp (premounted) 2 Black (sw) rubber profile Hose routing 54



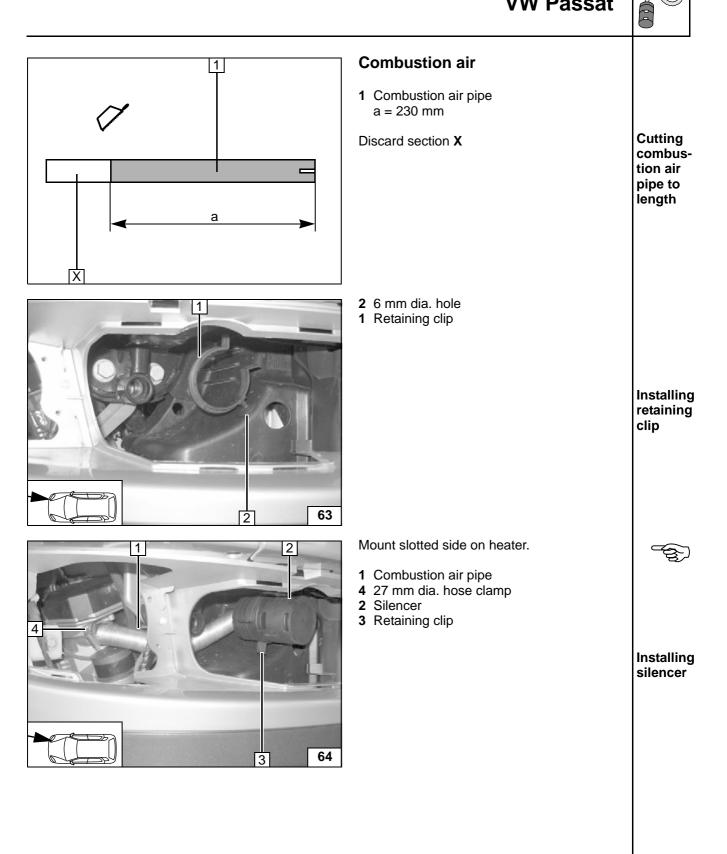






A/ Th fra O R	nsure proper spacing between strut 5 and /C line. ne bending of the strut 5 points towards the ame side member. nly loosely mount bolt 6. pute hose D through upper p-clamp. uide cable tie 4 through cable tie 2 .	
5 6 1 2	Original vehicle M8 nut Strut M6x20 bolt, flanged nut 29 mm dia. rubber-coated p-clamp [2x] Cable tie around hose D Cable tie and air-conditioning line	Hose rout- ing
R	oute hose D through upper p-clamp 1 .	
1	29 mm dia. rubber-coated p-clamp (pre- mounted)	
		Hose rout- ing
		Connec- tion on heater out- let
1	29 mm dia. rubber-coated p-clamp (pre- mounted)	Connec- tion on heater inlet

VW Passat 1 Tighten M6x20 bolt, flanged nut D 1 Hose routing 59 Route hose **A** through lower p-clamp. \$ Guide cable tie 2 through cable tie 1. 3 29 mm dia. rubber-coated p-clamp (premounted) 4 Tighten M6x20 bolt, flanged nut 1 Cable tie around hose A 2 Cable tie and air-conditioning line Hose routing 4 3 60 Route hose **A** through lower p-clamp. 1 D Ś 3 Black (sw) rubber profile 2 29 mm dia. rubber-coated p-clamp (premounted) 1 Tighten M6x16 bolt Hose routing Position rubber isolators 3, 4 on ABS unit. 61 Before connecting, fill hoses with coolant. 1 Hose section from engine outlet Connection on engine outlet Check routing of hoses A, B, C, D along entire length and correct if necessary. 62



Mould exhaust pipe and exhaust end section as shown.

- 1 Silencer 5 M6x40 bolt, large diameter washer, 20mm spacer sleeve, flanged nut
- 4 Exhaust pipe

Exhaust gas

1 Exhaust pipe a = 200 mm 2 Exhaust end section b = 130 mm

Discard section X

2

b

- 3 Red (rt) rubber isolator [2x]
- **2** Hose clamp [3x]
- 6 Exhaust end section

Installing exhaust system

Align exhaust pipe 1 and exhaust end section 2 as shown.

Position rubber isolators 3 as shown. Ensure sufficient distance of exhaust system from other original vehicle components.

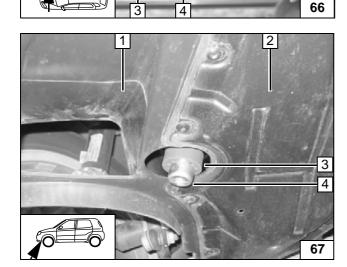
- 4 Wheel well trim
- 1 Exhaust pipe
- 2 Exhaust end section
- 3 Red (rt) rubber isolator [2x]

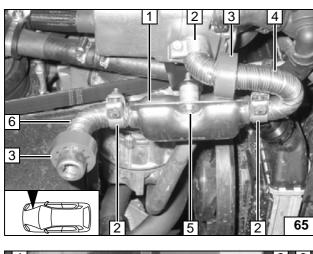
Position rubber isolator 3 and exhaust end section 4 as shown.

- **2** Underride protection
- 1 Wheel well trim
- 3 Red (rt) protective rubber isolator
- 4 Exhaust end section

Installing wheel well trim

Installing underride protection

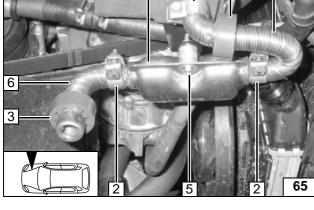


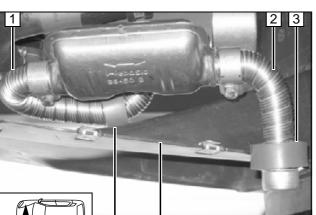


X

1

а









Cutting exhaust pipe

to length

Final Work

WARNING!

Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose lines.

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.
- Set digital timer, teach telestart transmitter
- Make settings on A/C control panel according to the "Operating Instructions for End Customer".
- Place the "Switch off parking heater before refuelling" sticker near the filler neck.
- See installation instructions for initial start-up and function test

Adjusting passenger compartment monitoring

WARNING!

The pass through can only be done at an authorised workshop. Observe the applicable repair manual of the respective vehicle.

- Connect the VAS tester.
- Open Item 46 (Central Module of Comfort System)
- Go to Item 10 (Adjustment)
- Follow the request for the code entry and enter the code 15
- Reduce the sensitivity of the passenger compartment monitoring to 50 %
- Save this setting
- The adjustment of the sensitivity of the passenger compartment monitoring is completed.



Webasto AG Postfach 80 D-82132 Stockdorf / Germany National Hotline: 01805 93 22 78 (14 Cent aus dem deutschen Festnetz) Hotfax: 0395 5592 353 Hotmail: technikcenter@webasto.com http://www.webasto.com

28

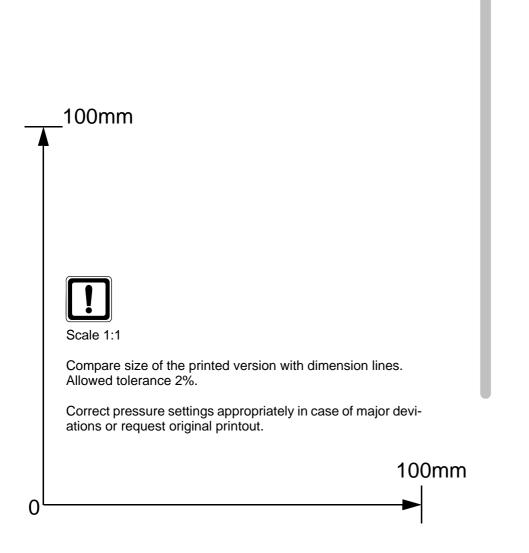
Printed in Germany 10/2011 Printing: Steffen





TL

Template for Fuel Standpipe



Too

Operating Instructions for End Customer

Please remove the page and file it in the vehicle logbook.

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.

If the summer/winter switch option has been installed, this must be switched in accordance with the time of year. The heater will then heat in the position Winter was and in the position Summer it will only switch on the vehicle fan to ventilate the vehicle interior.

Before parking the vehicle, make the following settings:

