EN

K

Installation documentation

for conversion coolant circuit of Inline on Island

Jeep Wrangler

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Jeep	Wrangler	JL	from 2018	e4* 2001/116* 0116*…

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displace-ment [cm³]	Engine code
2.2 CRDi	Diesel	Euro 6;WLTP;BG;…	8-speed AG	147	2143	N-S14

Validity	Equipment variants	Model
		Wrangler
Verified equipment variants	2 zone automatic A/C	x
	LED main headlights	x
	LED front fog lights	x
	Long wheelbase	x
	Short wheelbase	x
	4 WD	x
Unverified equipment variants	Alarm system	x
	Halogen main headlights	x

Total installation time	Note
4 hours	

Contents

1 List of abbreviations

AG	Automatic transmission
CL	CL GW
MV	Solenoid valve
Veh.	Vehicle

2 Installation notes

2.1 Information on Validity

This installation documentation applies to vehicles listed on page 1, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded.

Vehicle and engine types, equipment variants and other specifications not listed in this installation documentation have not been tested. The installation is not permitted.

2.2 Components used

Designation	Order number
Conversion kit for Jeep Wrangler diesel	1327845A

2.3 Validity notes

This installation documentation applies only in combination with:

Designation	Order number
Installation kit for Jeep Wrangler diesel TT-Evo	1327159_
Additional 'Webasto Comfort' A/C control kit for Jeep	1325260_
Installation documentation for Jeep Wrangler diesel TT-Evo	1327160_

2.4 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.

3 About this document

3.1 Purpose of the document

This installation documentation is part of the product and contains all the information required to ensure professional vehicle specific installation of the:

Thermo Top Evo heater

3.2 Warranty and liability

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 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.

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 start-up 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.

3.2.1 Statutory regulations governing installation

The Thermo Top Evo heater has been type-tested and approved in accordance with ECE-R 10 (EMC) and ECE-R 122 (heater). 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.

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

3.3 Safety

Qualifications of installation personnel

The installation personnel must have the following qualifications:

- Successful completion of Webasto training
- Corresponding qualification for working on technical systems

Regulations and legal requirements

The regulations from the heater's general installation and operating instructions must be observed.

3.3.1 Safety information on installation

Danger posed by live parts

▶ Prior to installation, disconnect the vehicle from the voltage supply.

▶ Make sure the electrical system is earthed correctly.

▶ Always comply with legal requirements.

▶ Observe data on type label.

Danger of fire and leaking toxic gases due to improper installation

▶ Vehicle parts in the vicinity of the heater must be protected against excessive heating by the following measures:

  ⇨ Maintain minimum safety distances.

  ⇨ Ensure adequate ventilation.

  ⇨ Use fire-resistant materials or heat shields.

Danger due to sharp edges

- Lacerations
- Short circuit due to electrical wire damage

▶ Fit protectors on sharp edges.

3.4 Using this document

Before installing and operating the heater, read this installation documentation, the installation instructions of the heater, the operating instructions and supplementary sheets provided.

3.4.1 Explanatory Notes on the Document

There is an identification mark near the respective work step to allow you to quickly allocate the other applicable documents to the Webasto components to be installed:

Generally valid Webasto documentation	
Vehicle-specific installation documentation	K
Vehicle-specific installation documentation of the cold start kit	M
Webasto Comfort A/C control	H
Webasto Standard A/C control	G
Tank extracting device (e.g. FuelFix)	F
Exhaust end fastener (EFIX)	E
Combustion air intake silencer	L
Spacer bracket (ASH)	S

3.4.2 Use of symbols

DANGER

Type and source of the risk

Consequences: Failure to follow the instructions can result in death

▶ Actions to protect yourself against risks.

WARNING

Type and source of the risk

Consequences: Failure to follow the instructions can lead to serious or even fatal injuries

▶ Actions to protect yourself against risks.

CAUTION

Type and source of the risk

Consequences: Failure to follow the instructions can lead to minor injuries

▶ Actions to protect yourself against risks.

Type and source of the risk

Consequences: Failure to follow the instructions can lead to material damage

▶ Actions to protect yourself against risks.

Reference to the vehicle manufacturer's specific documents.

Note on a special technical feature

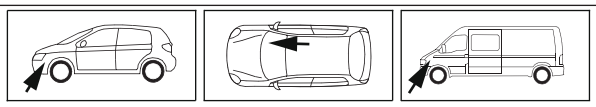
3.4.3 Work step identification marks

The ongoing work step is indicated on the outside top corner of the page:

Mechanical system	Electrical system	High-voltage	Coolant

Combustion air	Fuel	Exhaust	Software

3.4.4 Orientation aid



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

3.4.5 Use of highlighting

Highlight	Explanation
✓	Action
▶	Necessary action
⇨	Result of an action
1 / 12 / a1	Position numbers for the image descriptions
① / ⑫ / Ⓐ	Position numbers for the image descriptions for electrical wires and components as well as coolant hose sections

4 Technical Information

Dimension specifications
– All dimensions specified in mm
– Perforated brackets and mounting angles are shown to scale
– Observe data regarding scale on the templates

Tightening torque specifications
– Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm
– Tightening torque values of 5x15 retaining plate of water connection piece bolts = 7Nm
– 5x12 bolt tightening torque of 2-part heater bracket = 6Nm
– Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology

Temperature specification for heat shrink plastic tubings
– Fabric heat shrink tubing: shrink temperature max. 230°C
– Standard heat shrink plastic tubing: shrink temperature max. 300°C

Necessary special tools
– Hose clamp pliers for auto-tightening hose clamps
– Hose clamp pliers for Clic hose clamps of type W
– Hose clamping pliers
– Hose cutter
– Automatic wire stripper 0.2 - 6 mm²
– Crimping pliers for cable lugs 0.5 – 10 mm²
– Crimping pliers for male connector 0.14 – 6 mm²
– Crimping pliers for connector 0.25 – 6 mm²
– Torque wrench for 2.0 - 10 Nm
– Deep-hole marker
– Metric thread-setter kit
– Webasto Thermo Test Diagnosis with current software

5 Preparations

5.1 Vehicle preparation

Further information can be found in the vehicle manufacturer's technical documentation.

Vehicle area	Components to be removed	Other applicable documents
General	▶ Depressurise the cooling system	
Engine compartment and body	▶ Disconnect the battery ▶ Engine design cover ▶ big coolant expansion tank with bracket	
Passenger compartment	▶ Carpet on the driver's side, folded back ▶ Inside door sill trim on the driver's side	

6 Installation Overview

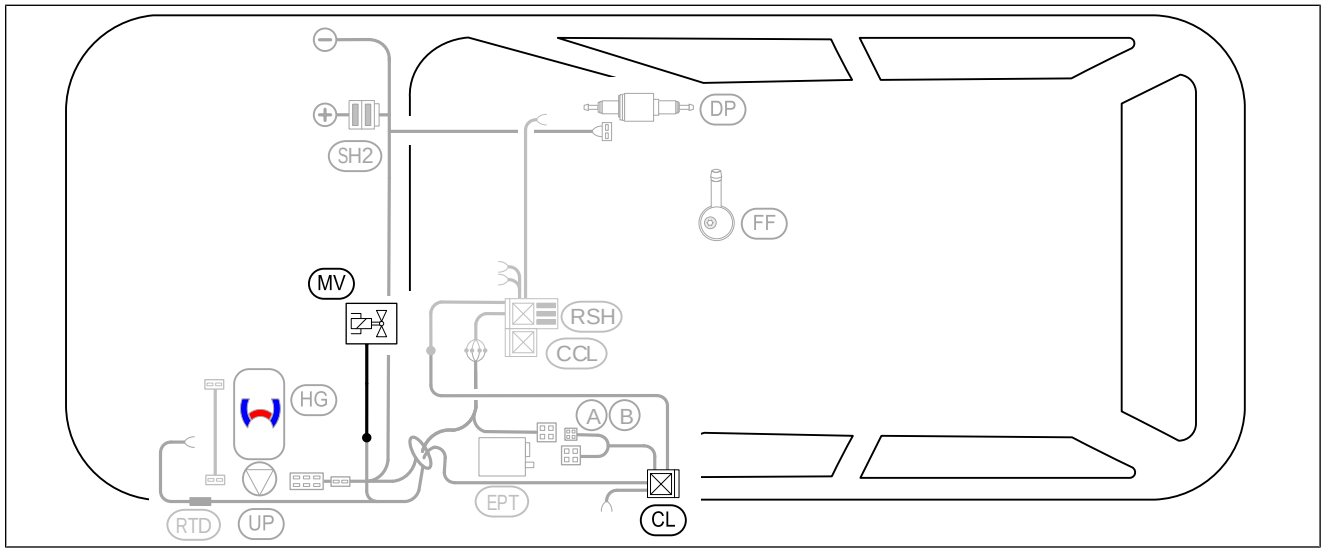


Fig. 1

Legend to installation overview

Abbreviation	Component
MV	Solenoid valve
CL	CL GW

7 Coolant

7.1 Hose routing diagram

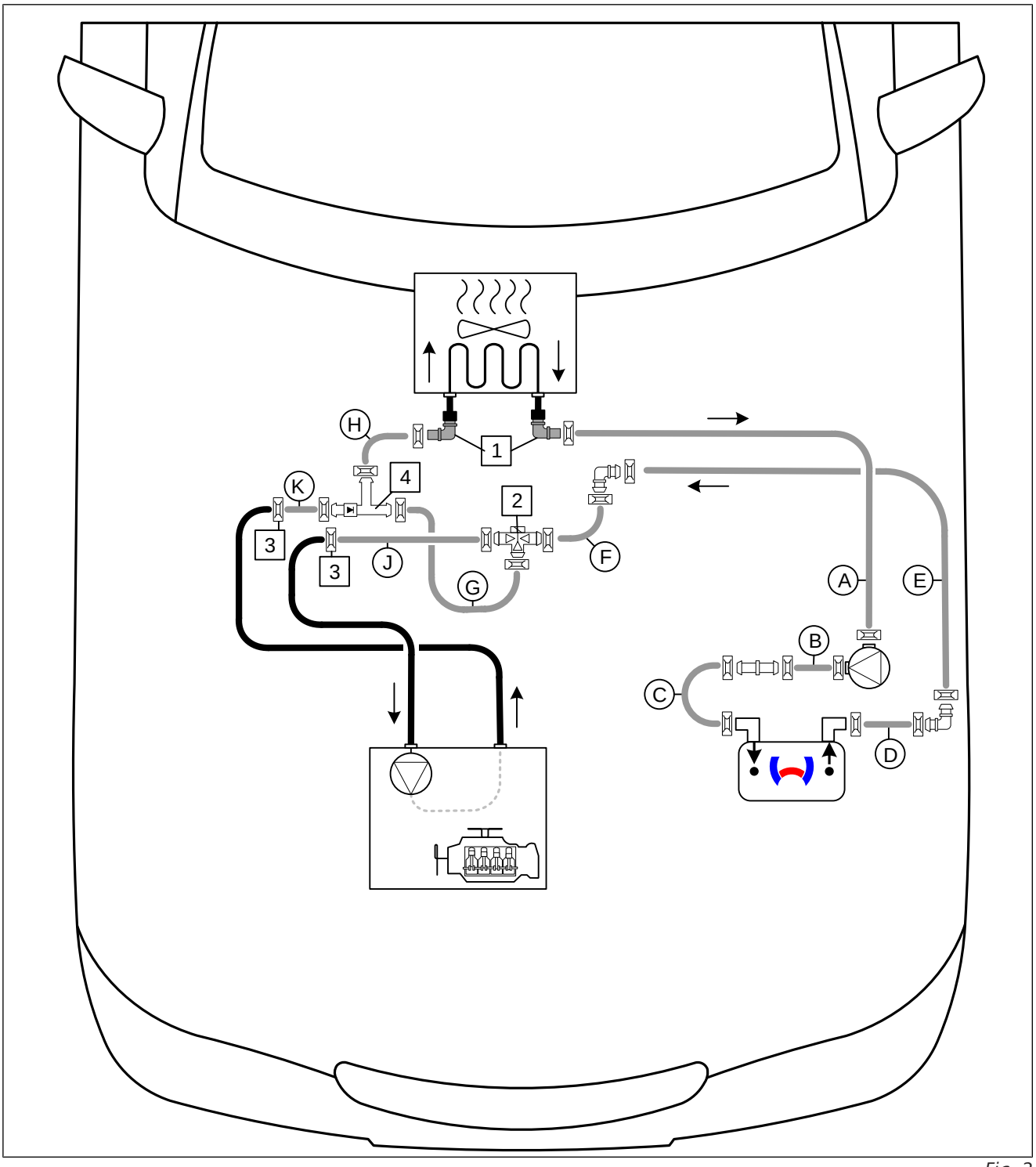


Fig. 2

All spring clips without a specific designation = Ø25

All connecting pipes without a specific designation or = Ø18x18

1 Quick-release coupling; 2 Solenoid valve; 3 Original vehicle spring clip; 4 Non-return valve

7.2 Coolant circuit conversion

Removing fuse holder SH2

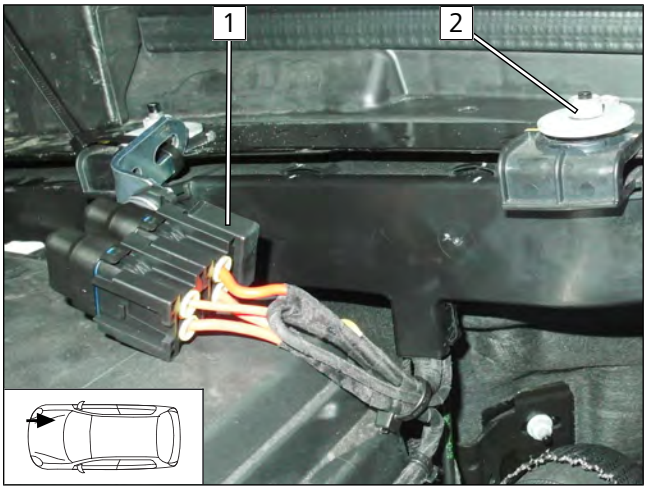


Fig. 3

▶ Remove fuse holder SH2 [1] at pos. [2].

Dismantling hoses

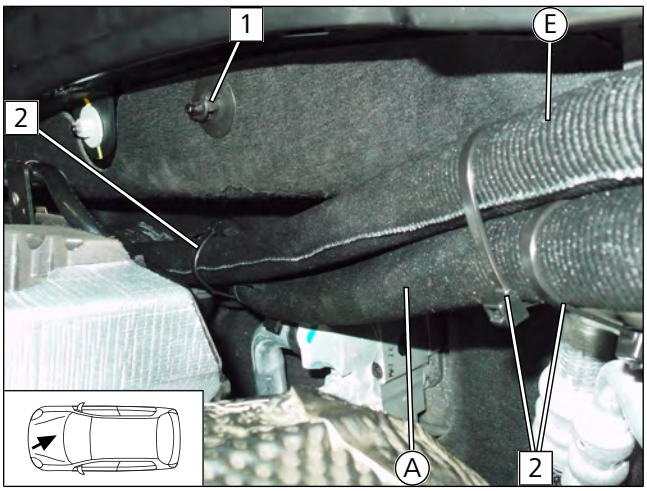


Fig. 4

▶ Remove and discard plastic nut [1].

▶ Cut cable tie [2].

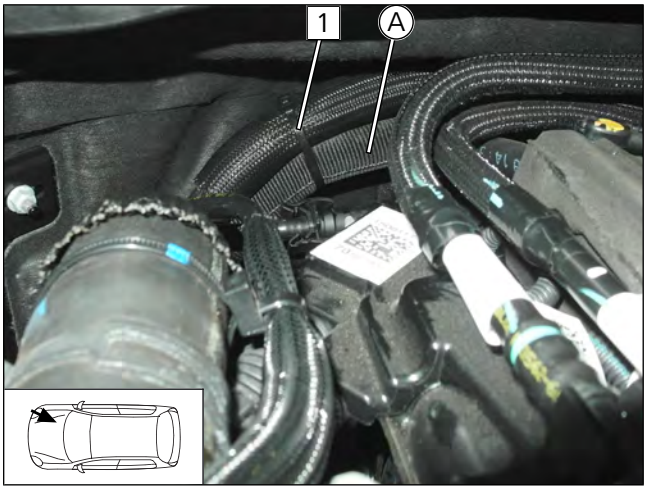


Fig. 5

▶ Cut cable tie [1].

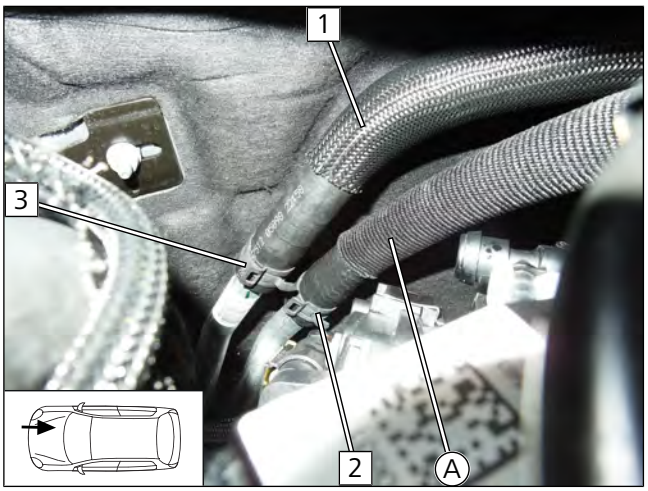


Fig. 6

- Disconnect heat exchanger outlet/engine inlet hose 1 from engine inlet connection piece. Spring clip 3 will be reused.
- Disconnect hose (A) from engine outlet connection piece. Spring clip 2 will be reused

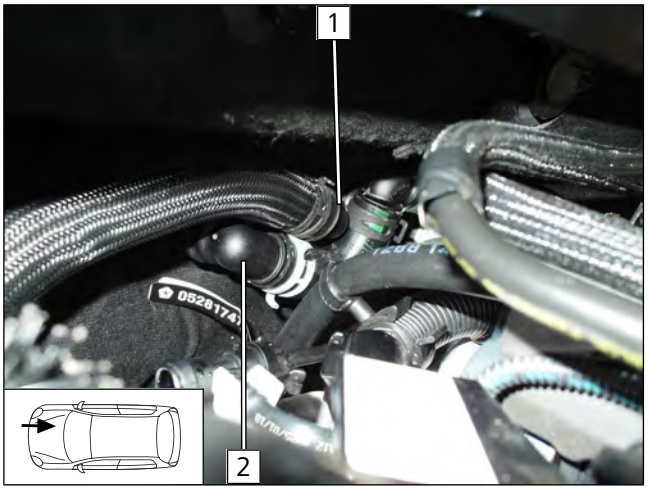


Fig. 7

- Pull quick-release coupling 1 from heat exchanger outlet. Remove the hose from the engine compartment.
- Pull quick-release coupling 2 from heat exchanger inlet.

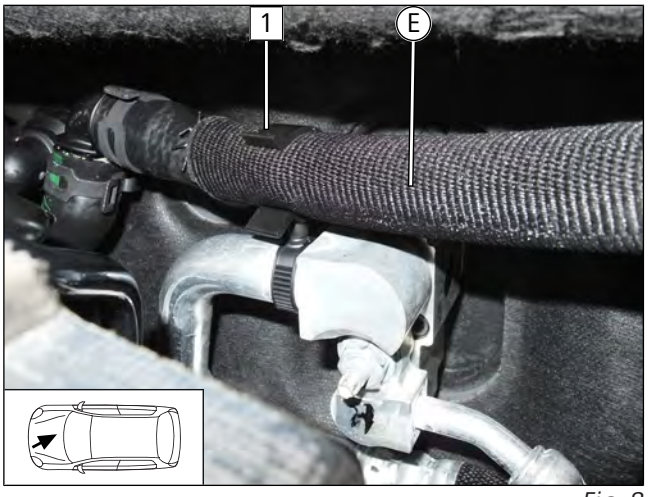


Fig. 8

- Detach hose (E) from hose bracket 1.

Removing quick-release coupling

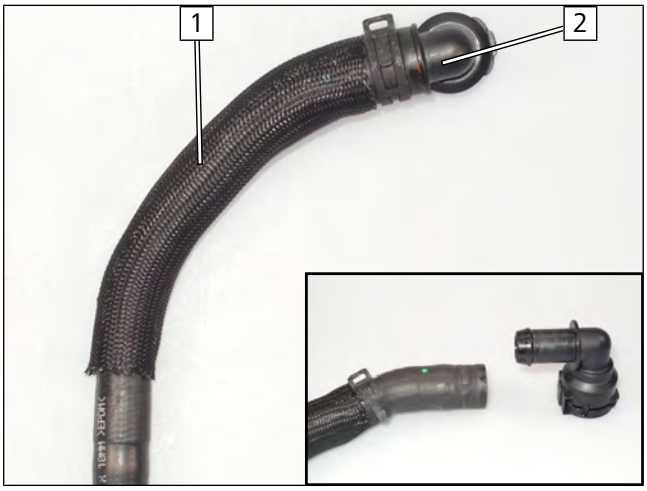


Fig. 9

▶ Remove quick-release coupling [2] from heat exchanger outlet/engine inlet hose [1]. Discard hose.

Shortening hose Ⓐ

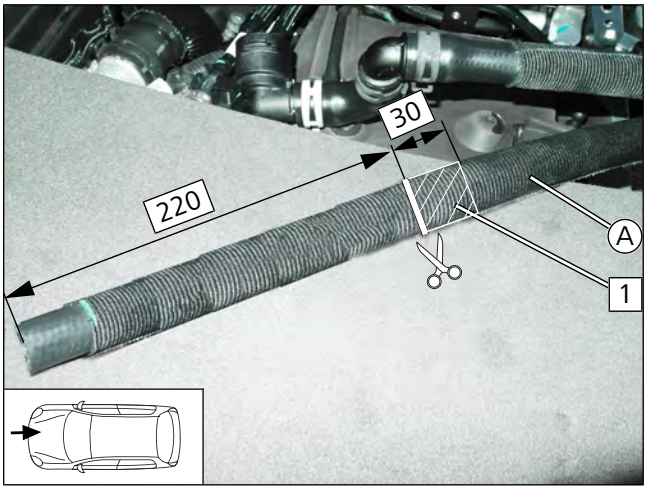


Fig. 10

▶ Shorten hose Ⓐ as shown and remove fabric protective hose in marked area [1].

Mounting quick-release coupling on hose Ⓐ

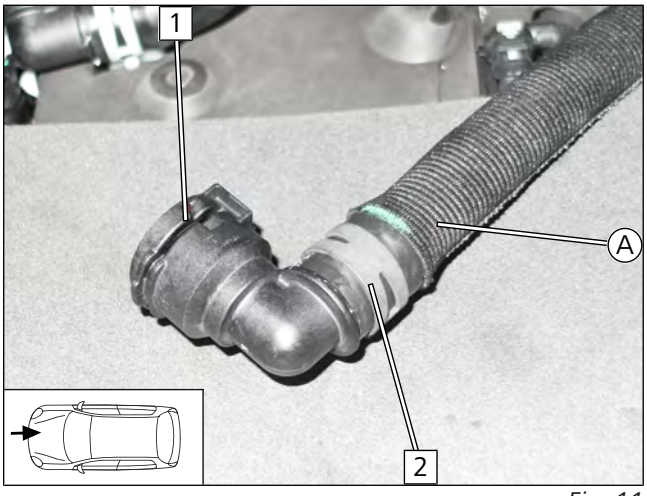


Fig. 11

[1] Quick-release coupling
[2] Ø25 spring clip, fastener turned downwards

Connection at heat exchanger outlet

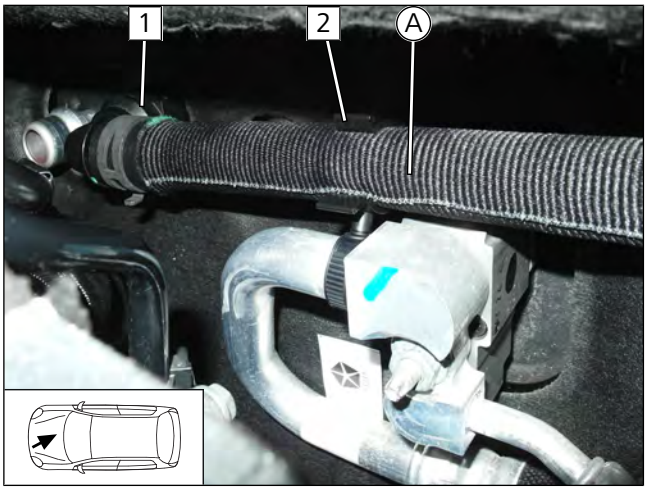


Fig. 12

- ▶ Mount quick-release coupling [1] onto heat exchanger outlet.
- ▶ Insert hose Ⓐ in hose bracket [2].

Fastening hose Ⓐ

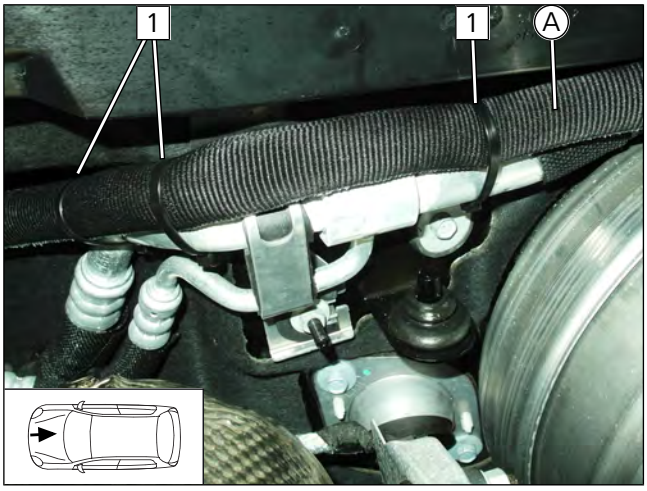


Fig. 13

[1] Cable tie around hose Ⓐ and A/C line

Installing protective hose

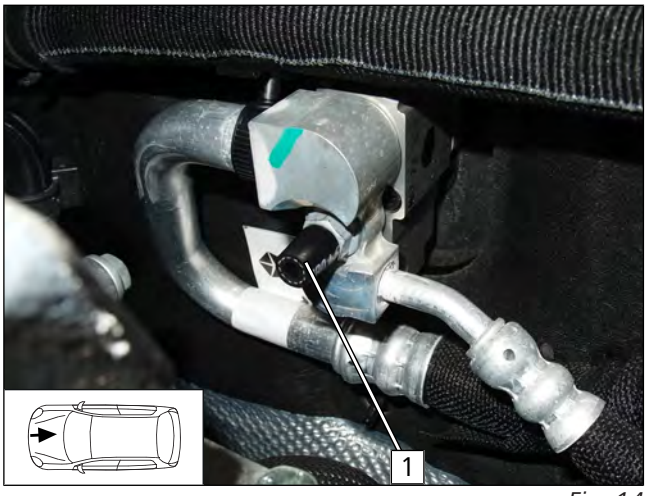


Fig. 14

- ▶ Mount 20mm fuel hose [1] for protection on original vehicle stud bolt.

Removing and shortening hose Ⓔ

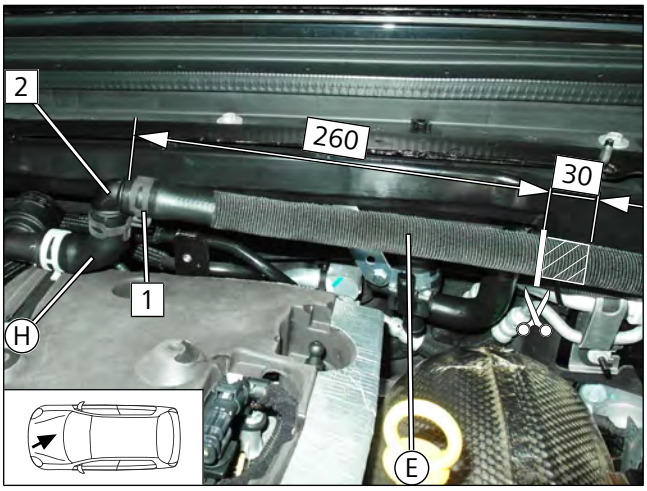


Fig. 15

1 Remove spring clip, it will be reused

2 Remove 90° connecting pipe, it will be reused

▶ Shorten hose Ⓔ as shown and remove fabric protective hose in marked area.

Mounting connecting pipe on hose Ⓔ

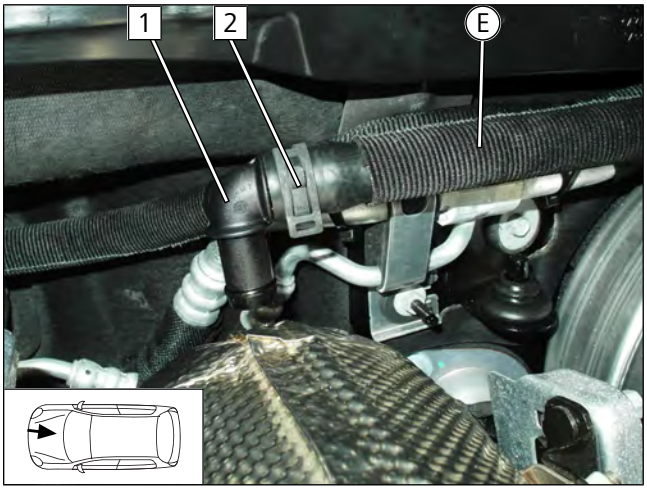


Fig. 16

1 Spring clip

2 90° connecting pipe

Preparing hoses

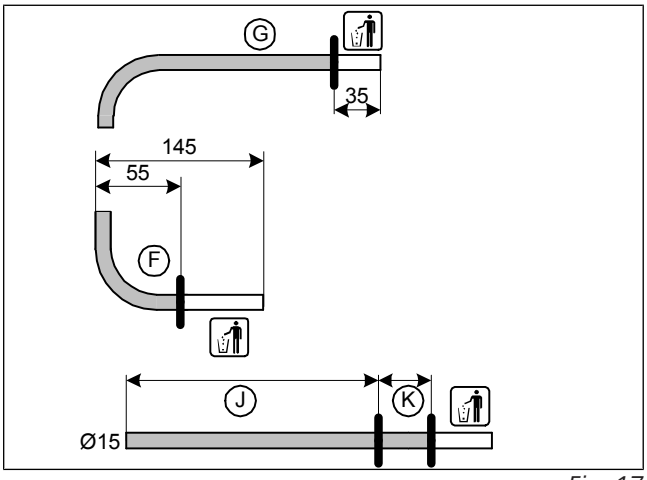


Fig. 17

Ⓕ 90° moulded hose

Ⓖ 90° moulded hose

Ⓙ 410

Ⓚ 80

Mounting hose (F) onto hose (E)

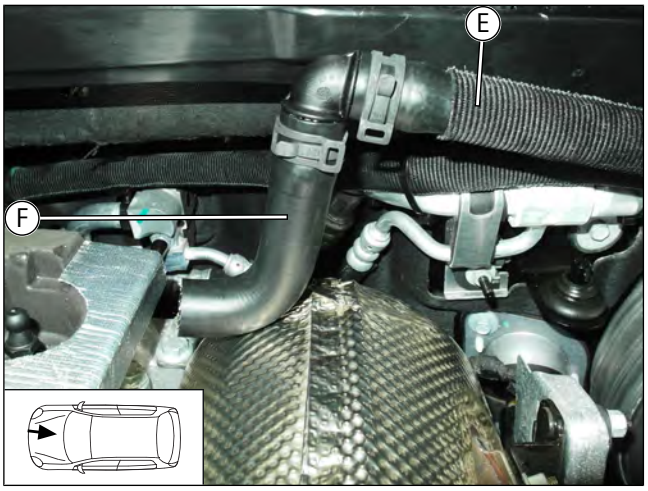


Fig. 18

Premounting non-return valve hose group

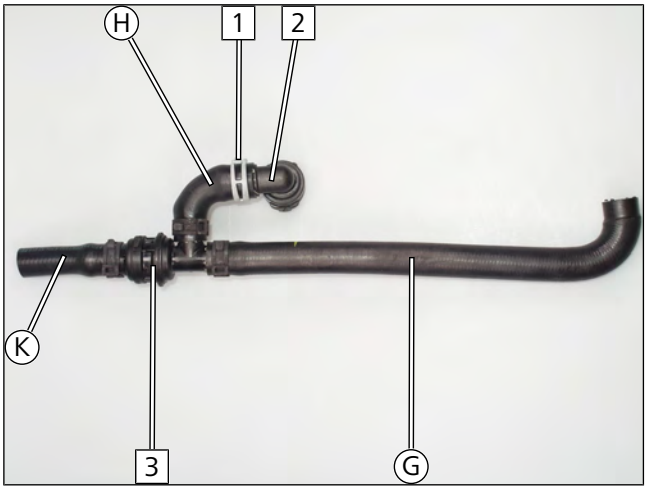


Fig. 19

1 Original vehicle spring clip
2 Quick-release coupling
3 Non-return valve

Preparing perforated bracket

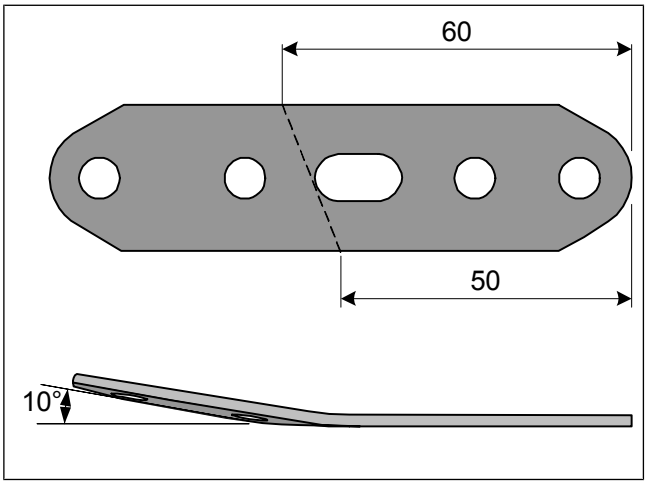


Fig. 20

Preparing solenoid valve

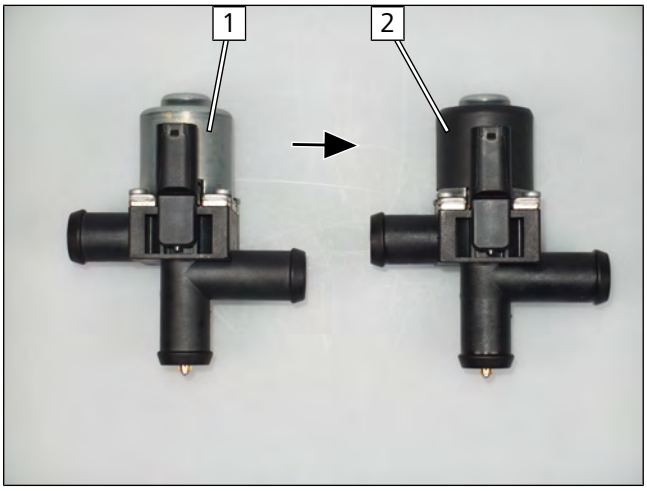


Fig. 21

1 Solenoid valve
2 30mm heat shrink plastic tubing

Preparing Ø34 rubber-coated p-clamp

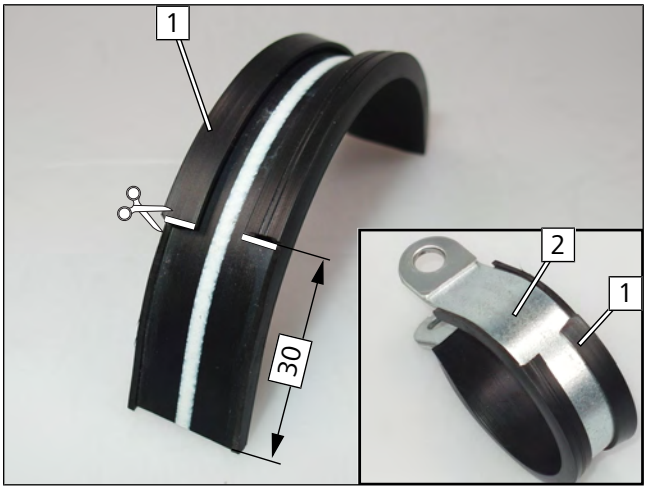


Fig. 22

▶ Remove rubber insert **1** from pipe clamp **2**, adapt it as shown, then mount it again.

Installing perforated bracket on solenoid valve

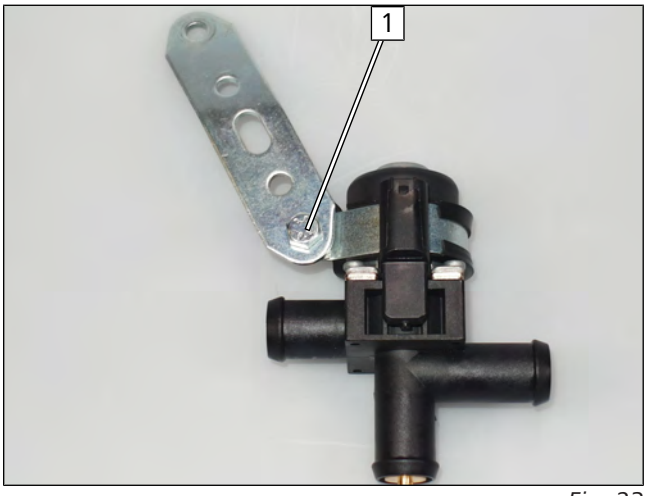


Fig. 23

1 M6x20 bolt, perforated bracket, rubber-coated p-clamp, pipe clamp, flanged nut

Mounting hoses (J) and (G) on solenoid valve

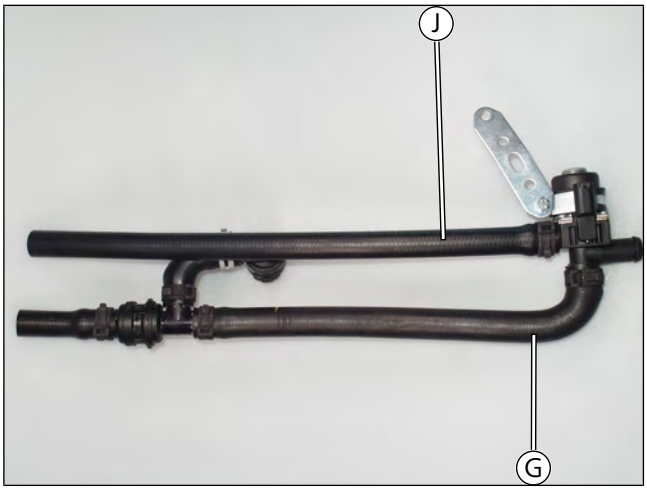


Fig. 24

Installing hose group in engine compartment

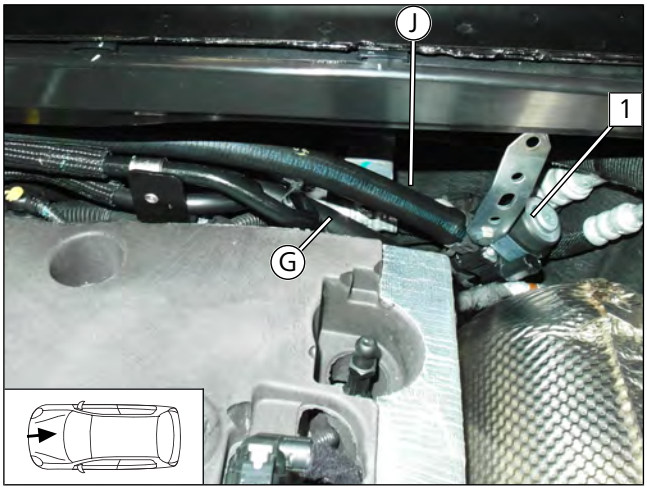


Fig. 25

1 Solenoid valve

Connection of hose (K) to engine outlet

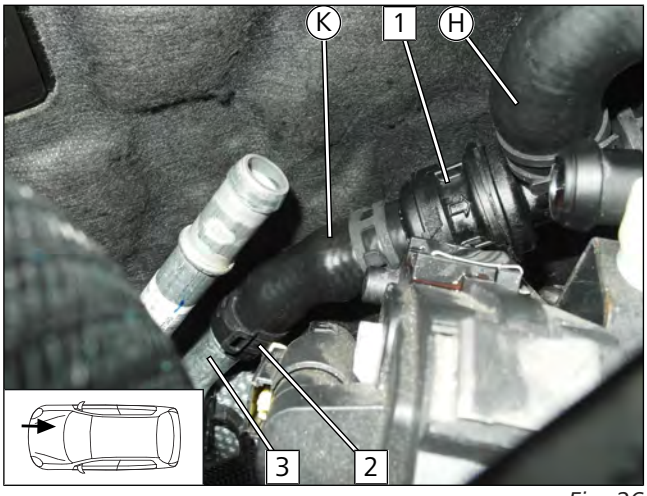


Fig. 26

1 Non-return valve
2 Original vehicle spring clip
3 Engine outlet connection piece

Connection of hose Ⓗ to heat exchanger inlet

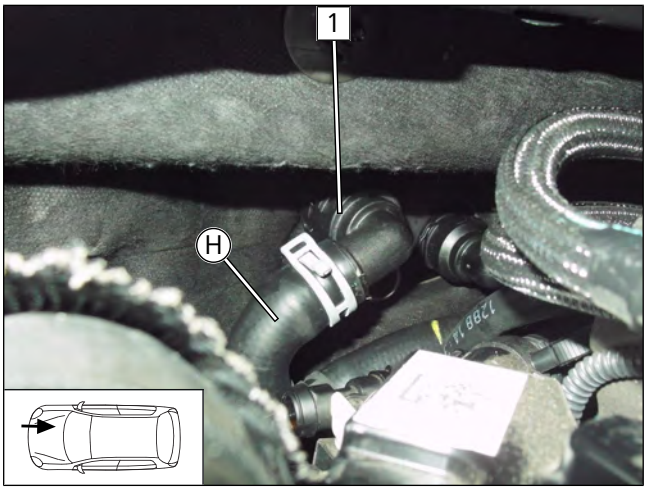


Fig. 27

1 Quick-release coupling on heat exchanger inlet

Connection of hose Ⓙ to engine inlet

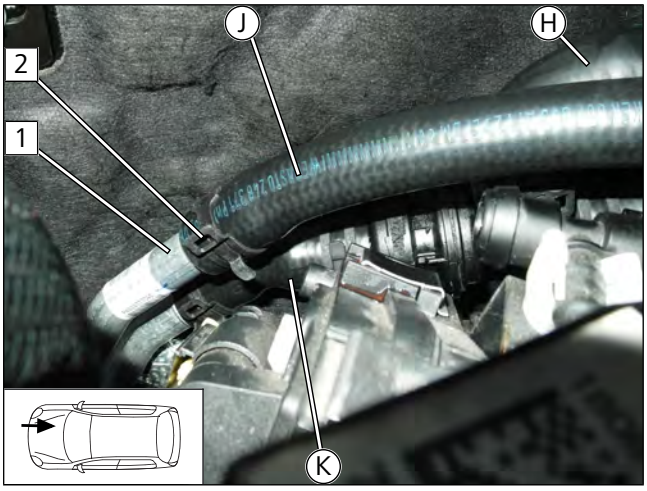


Fig. 28

1 Engine inlet connection piece
2 Original vehicle spring clip

Mounting solenoid valve

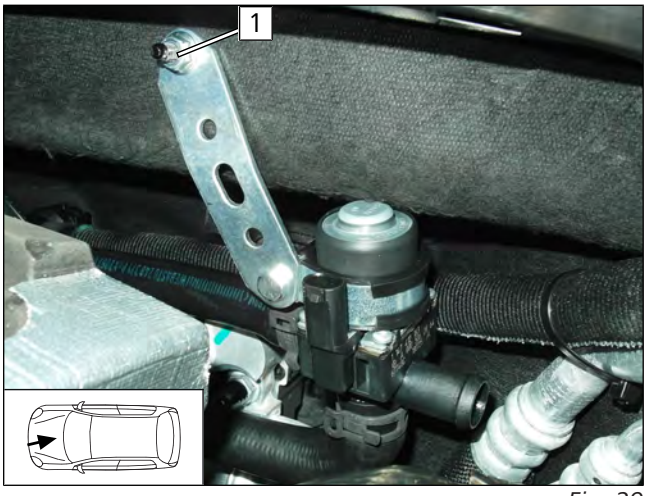


Fig. 29

1 Original vehicle stud bolt, perforated bracket, M6 flanged nut

Aligning hose Ⓖ

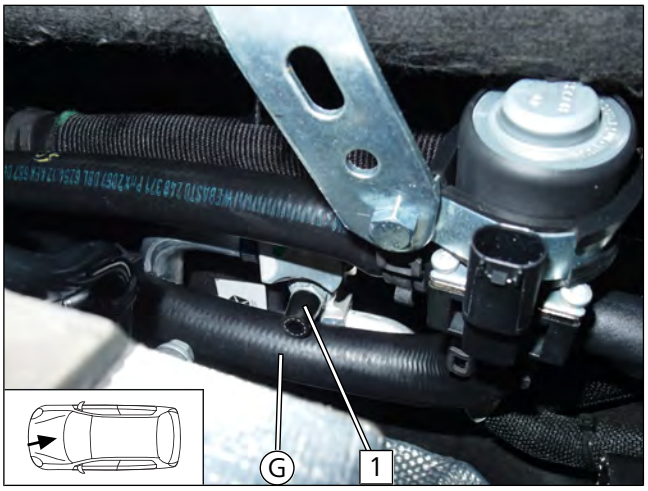


Fig. 30

▶ Route hose Ⓖ below protective hose 1 as shown.

Mounting hose Ⓕ on solenoid valve

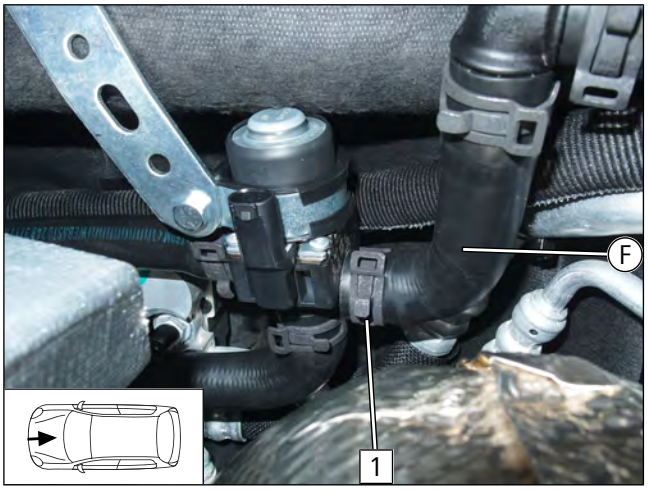


Fig. 31

1 Spring clip

Fastening hoses

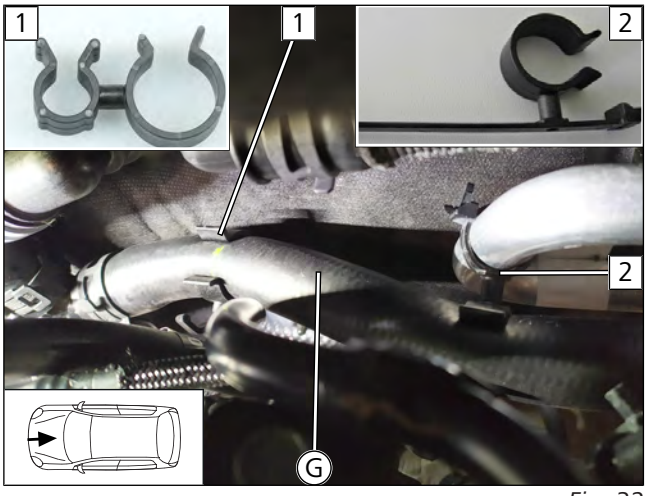


Fig. 32

1 Hose bracket around hose Ⓖ and original vehicle line

2 Hose bracket around hose Ⓖ and A/C line

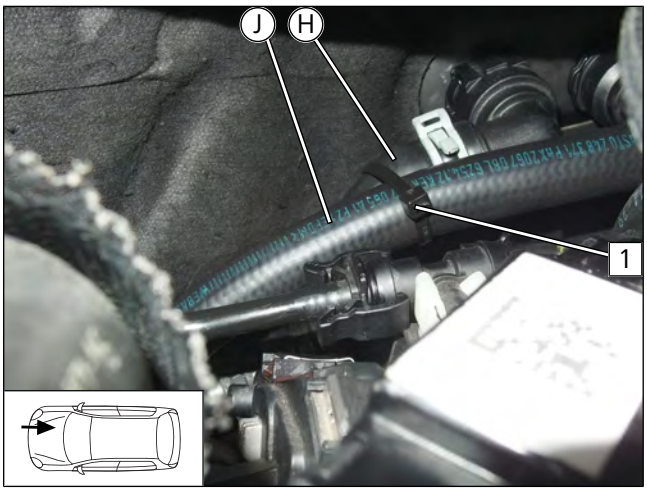


Fig. 33

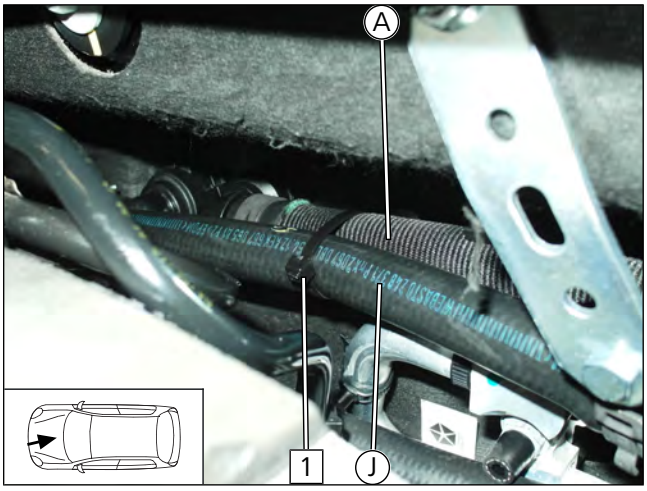


Fig. 34

Danger of damage to components

▶ Ensure sufficient distance between spring clip fastener and hose (J), correct if necessary.

1 Cable tie around hoses (J) and (H)

1 Cable tie around hoses (A) and (J)

8 Electrical system

8.1 Wiring diagram

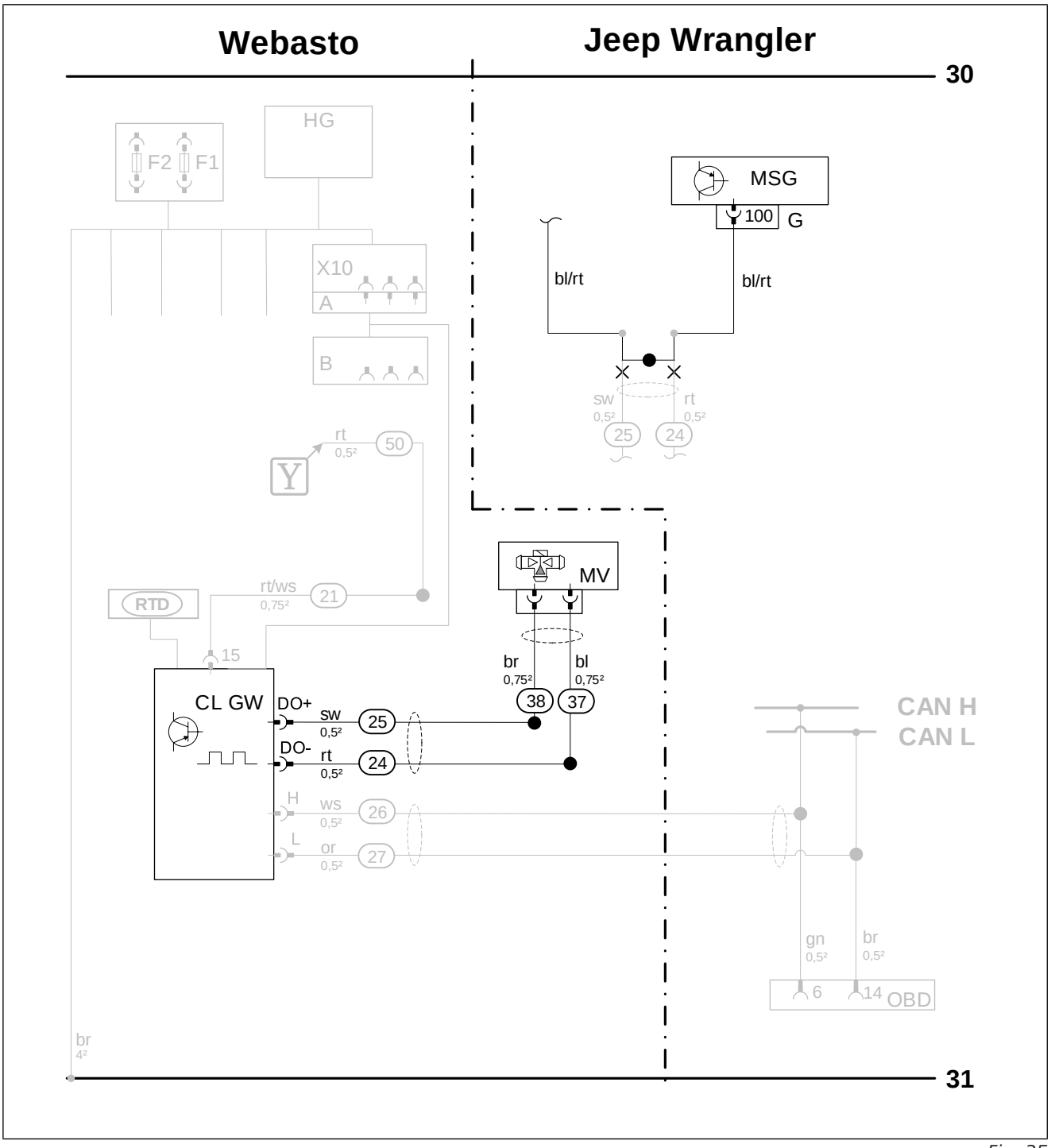


Fig. 35

Legend to wiring diagram

The vehicle connector and component designations are freely chosen by Webasto.
Cable colours may vary.

Vehicle components		Symbols	
Abbreviation	Component	Abbreviation	Designation
MSG	Engine control unit	X	Cutting point
G	105-pin connector of MSG		
OBD	ON-Board Diagnosis		

Webasto components		Cable colours	
Abbreviation	Component	Abbreviation	Colour
A	Male plug for CLR module wiring harness	bg	beige
B	Female plug for CLR module wiring harness	bl	blue
C	Male plug for adapter wiring harness	br	brown
D	Female plug for adapter wiring harness	dbl	dark blue
E	Male plug for Plug&Play wiring harness	dgn	dark green
F	Female plug for Plug&Play wiring harness	ge	yellow
CCL GW	Micro Gateway CAN CAN LIN	gn	green
CL GW	Micro SPS CAN / WBus (Gateway CAN LIN)	gr	grey
CLR	CAN LIN Rxx (cold start module)	hbl	light blue
D1	Diode	hgn	light green
D2	Diode group	la	salmon
F0	Additional fuse for power supply	or	orange
F1	Heater main fuse	pk	pink
F2	Passenger compartment fan controller main fuse	rt	red
F3	Control element fuse	sw	black
F4	Fan controller fuse	vi	violet
F5	Additional fuse	ws	white
HG	Heater TT-Evo		
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LA	Power adapter		
LIN GW	LIN Gateway		
MV	Solenoid valve		
PWM GW	LIN Gateway / PWM (pulse width modulator)		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	Female plug for control element		

8.2 Solenoid valve control

Mounting connector, routing wiring harness

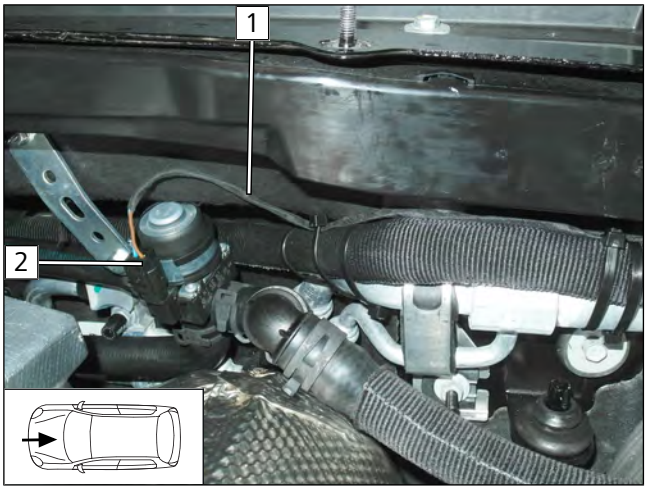


Fig. 36

- ▶ Mount solenoid valve connector [2].
- ▶ Route solenoid valve wiring harness [1] (blue (bl) wire (37) and brown (br) wire (38)) to the driver's side and fasten with cable ties.

Detaching engine control unit connector G

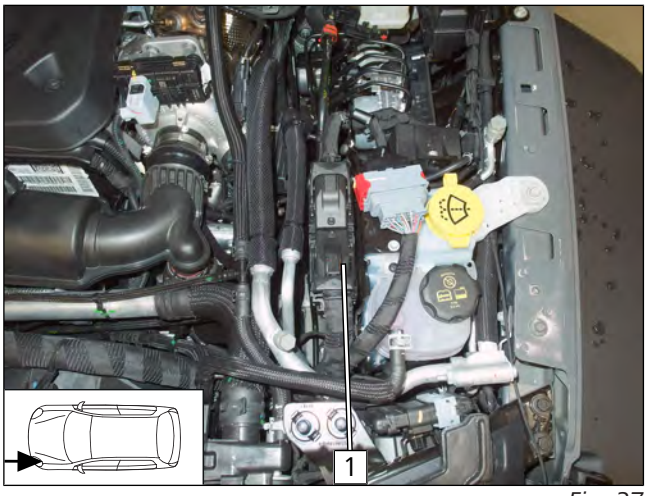


Fig. 37

- ▶ Remove the upper cover from connector G and detach part of the wiring harness wrapping. Insulate and reinstall after completion.

[1] 105-pin connector G

Connecting engine control unit wire

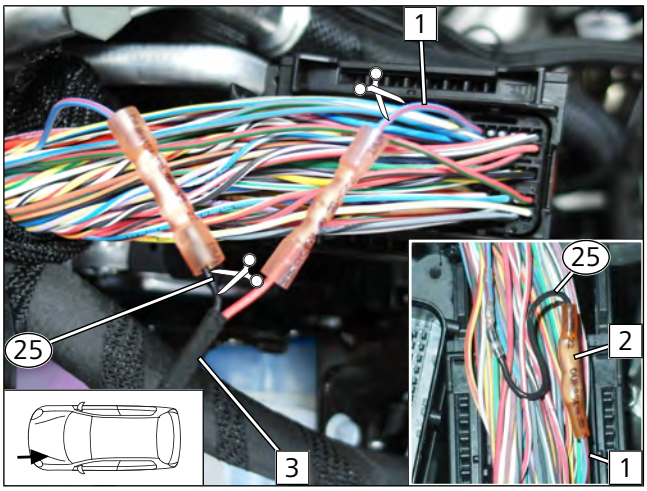


Fig. 38

- ▶ Carefully remove insulation from wiring harness [3].
- ▶ Cut black (sw) wire (25), ensure that there remains a sufficient length for the new connection.
- ▶ Cut blue/red (bl/rt) wire of connector G, pin 100 [1].
- ▶ Using butt connector [2], connect black (sw) wire (25) and blue/red (bl/rt) wire [1]. Crimp and shrink butt connector.

Pulling back cold start wiring harness red (rt) and black (sw) wires

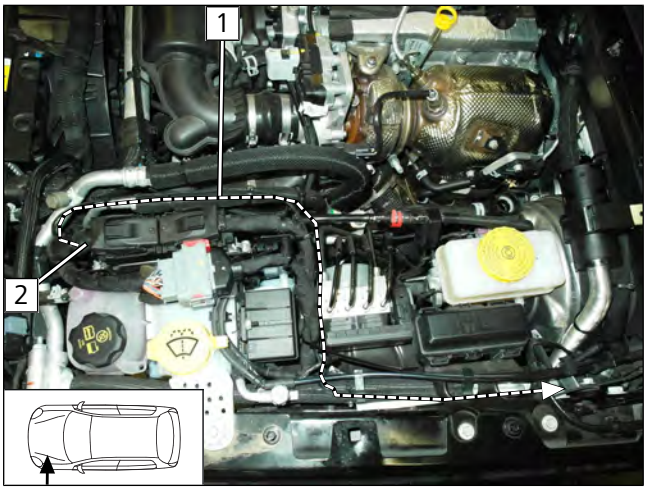


Fig. 39

▶ Pull back cold start wiring harness [1] (red (rt) wire (24) and black (sw) wire (25)) from engine control unit [2].

Connecting cold start wiring harness and solenoid valve wiring harness

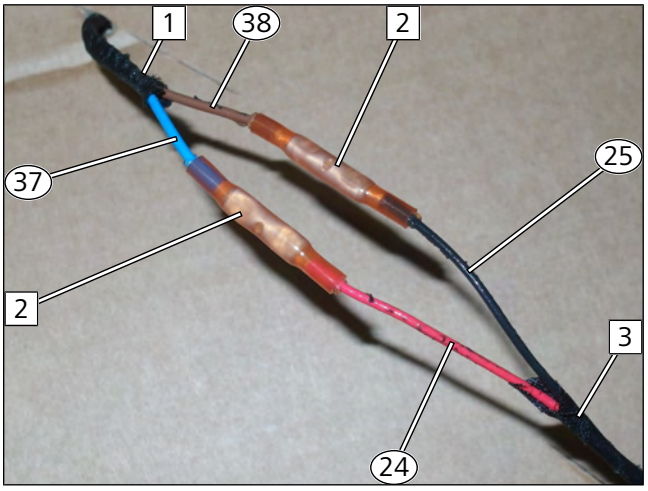


Fig. 40

[1] Solenoid valve wiring harness
[2] Crimp and shrink butt connector
[3] Cold start wiring harness
(24) Red (rt) wire of cold start wiring harness
(25) Black (sw) wire of cold start wiring harness
(37) Blue (bl) wire of solenoid valve wiring harness
(38) Brown (br) wire of solenoid valve wiring harness

Replacing cold start module with CAN LIN module

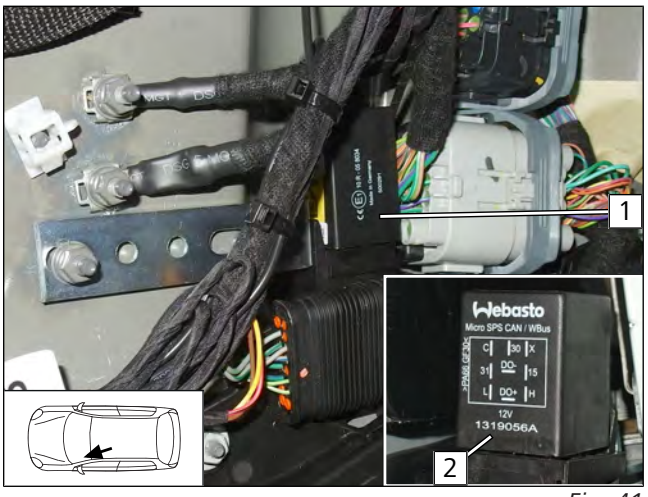
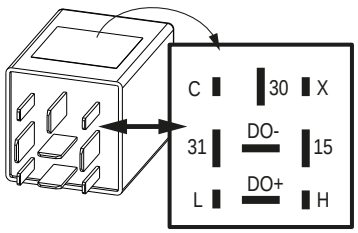


Fig. 41

[1] Cold start CLR module
[2] Solenoid valve CL GW module

View of CL GW:



9 Final work in engine compartment

Fastening hoses

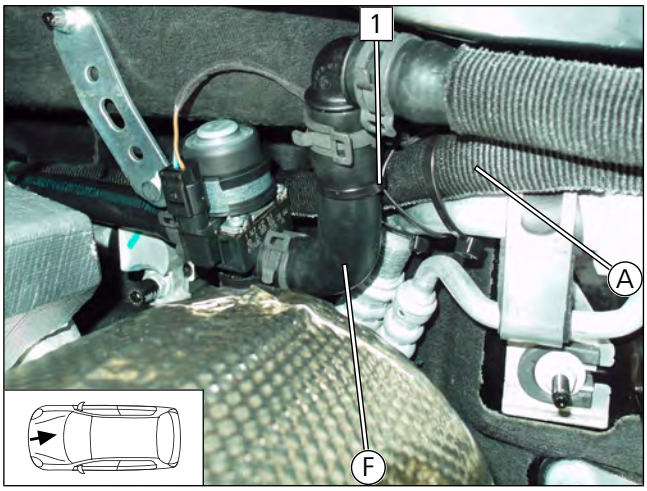


Fig. 42

▶ Interlace two cable ties 1, wrap one cable tie around hose Ⓐ and A/C line and one around hose Ⓕ.

Checking distance

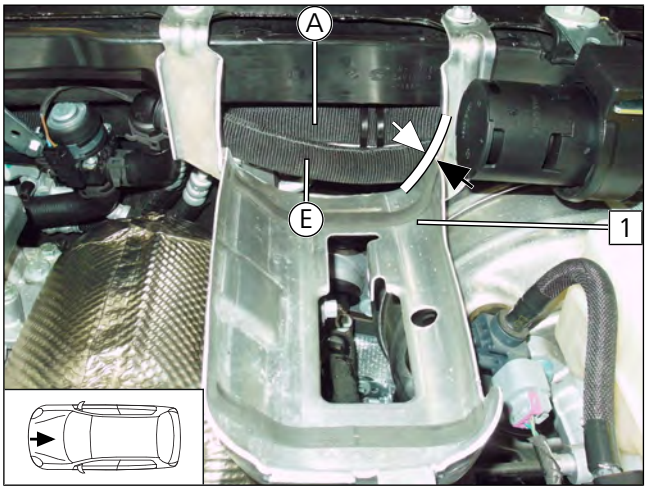


Fig. 43

▶ Ensure hoses Ⓐ and Ⓔ are not crushed at bracket of coolant expansion tank 1 when routing them.

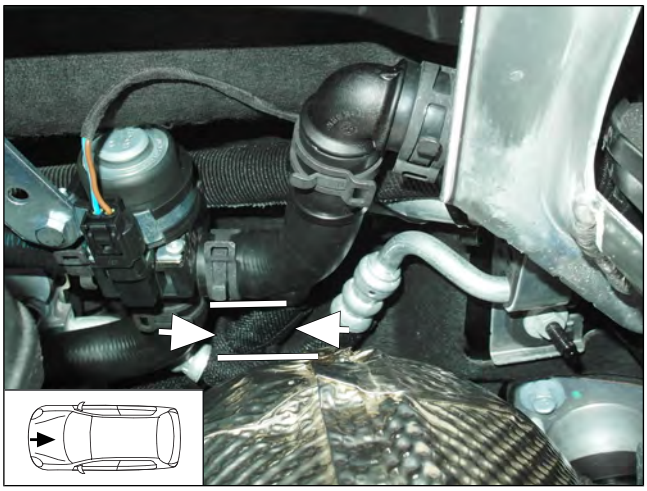


Fig. 44

Danger of damage to components

▶ Ensure sufficient distance from neighbouring components, correct if necessary.

Mounting fuse holder SH2

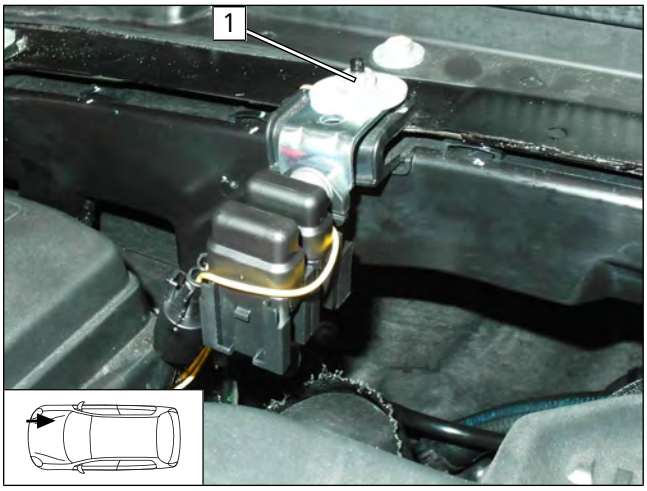


Fig. 45

▶ Mount fuse holder SH2 at pos. **1**.

10 Final Work

Further information can be found in the vehicle manufacturer's technical documentation.

▶ Mount removed parts in reverse order.

▶ Check all hoses, clamps and all electrical connections for firm seating.

▶ Insulate and tie back loose lines

▶ Spray heater and electrical components with anti-corrosion wax (Tectyl 100K).

▶ Connect the battery.

Only use manufacturer-approved coolant.

▶ Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.

Further information can be found in the general installation and operating instructions of the Webasto components.

▶ Initial start-up and function check

Vehicle event log after parking heating mode

✓ Components of the original vehicle air conditioning system are activated during parking heating mode. Other vehicle components remain inactive, which in some circumstances may be interpreted as an error and can be filed as such in the event log. An increased power consumption (quiescent current) may also be registered for some vehicles.

▶ If an incorrect installation can be excluded, these entries are exclusively related to the parking heating mode situation and have no effect on the vehicle functions in driving mode.

These are the original instructions. The German language is binding.
You can request your language if it is missing. The telephone number of each country can be found in the Webasto service centre leaflet or the website of the respective Webasto representative of your country.

Ident No. 1327846A_EN • 12/20 • Errors and omissions excepted • © Webasto Thermo & Comfort SE • 2020

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany

Company address:
Friedrichshafener Str. 9
82205 Gilching
Germany

Technical Extranet: https://dealers.webasto.com

CE

WWW.WEBASTO.COM

11 Operating instructions

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions.

▶ Deactivate passenger compartment monitoring for the heating operation

Information regarding the heating time:

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.

Notes about the A/C control panel presettings

Your vehicle is equipped with a comfort air-conditioning control. As a result, **no** settings are required on the A/C control panel when switching off the vehicle. All necessary presettings, such as fan speed, temperature and flap positions are set automatically.

Notes about the active parking heating mode

The vehicle fan is deactivated when the vehicle is opened and is available again once the ignition is switched on.
After the vehicle is closed again, it can take several minutes for it to be active again.

Note for current consumption in case of parking heating mode

Depending on the vehicle model, there may be an increased quiescent current consumption message in the vehicle information system during or directly after operation in parking heating mode.

▶ This is not an error that can affect the vehicle on a technical level.

Note for parking heater function

Your vehicle is equipped with a passenger compartment preheating unit. There is **no** engine pre-heating.

11.1 Installation location of fuses

Fuses in engine compartment

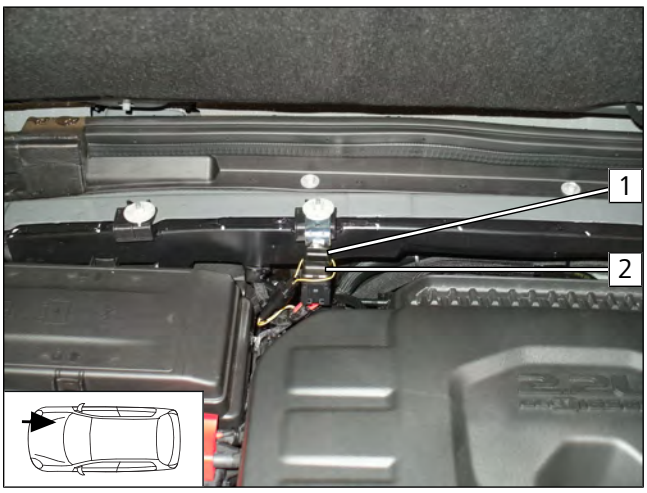


Fig. 46

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

Fuses in passenger compartment

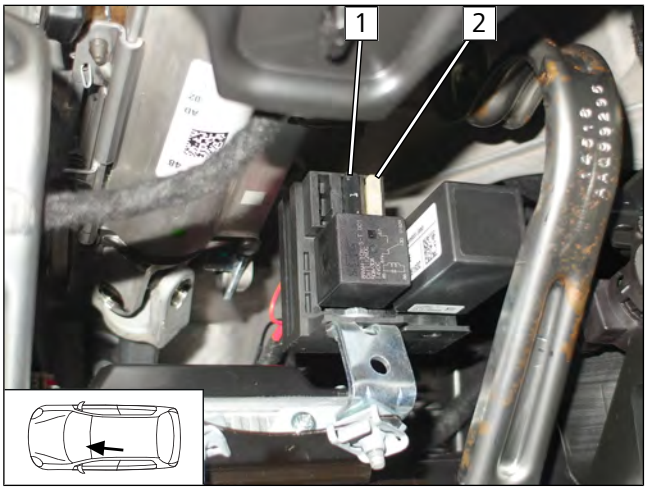


Fig. 47

1 F3 - 1A control element fuse
2 F4 - 25A fan controller fuse