

Air-conditioning control “Webasto Standard”

Installation Documentation

Toyota Prius / Lexus RX Toyota Prius / Lexus RX

Validity

| Manufacturer | Model | Type | EG BE No. / ABE |
|--------------|--------|------|----------------------------|
| Toyota | Prius | XW5 | e11 * 2007 / 46 * 2971 *.. |
| Lexus | RX200t | AL2 | e6 * 2007 / 46 * 0163 *.. |
| Lexus | RX450h | AL2 | e6 * 2007 / 46 * 0163 *.. |

From model year 2016

Left-hand drive vehicle

Verified equipment variants: 2 zone automatic air-conditioning
Lexus RX passenger compartment monitoring

Not verified: Toyota Prius passenger compartment monitoring

Exclusion: Manual air-conditioning

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Necessary Components

- Additional kit 'Webasto Standard' A/C control for Toyota / Lexus with automatic air-conditioning: **1324414C**

Information on Validity

This installation documentation applies only in combination with:

- Installation kit for Toyota Prius 2016 Petrol: **1324892_**
and installation documentation for Toyota Prius Petrol: **1324893_**
or
- Installation kit for Lexus RX 200T Petrol: **1324889_**
and installation documentation for Lexus RX 200T Petrol: **1324890_**
or
- Installation kit for Lexus RX 450H Petrol: **1324886_**
and installation documentation for Lexus RX 450H Petrol: **1324887_**

Installation Overview

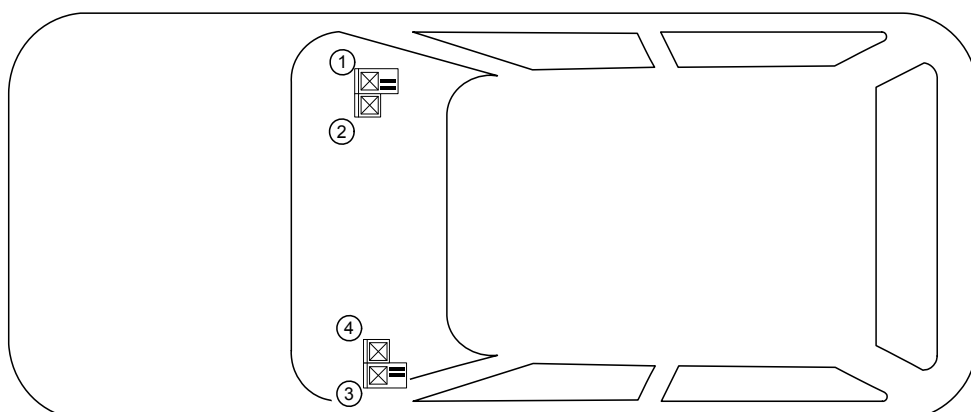
Legend:

Toyota Prius

1. Passenger compartment relay and fuse holder
2. PWM GW

Lexus RX

3. Passenger compartment relay and fuse holder
4. PWM GW



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 have to audibly click into place during installation.

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 | Thermo Top Evo |
|----------------------------|----------------|
| Heating Directive ECE R122 | E1 00 0258 |
| EMC Directive ECE R10 | E1 04 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

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. 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.

Information on Validity

This installation documentation applies to Toyota Prius / Lexus RX Toyota Prius / Lexus RX Petrol and hybrid vehicles - for validity, see page 1 - from model year 2016 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

- Automatic wire stripper, 0.2 - 6mm²
- Crimping pliers for cable lug / tab connector, 0.5 - 6mm²
- Torque wrench for 2.0 - 10 Nm
- Webasto Thermo Test Diagnosis with current software

Dimensions

- All dimensions are in mm.

Tightening torque values

Tighten 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



Software



Special features are highlighted using the following symbols:

Specific risk of damage to components.



Specific risk due to electrical voltage.



Specific risk of injury or fatal accidents.



Specific risk of fire or explosion.



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



Reference to a special technical feature.



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



Tightening torque according to the manufacturer's vehicle-specific documents.



Preliminary Work

Vehicle



Toyota Prius

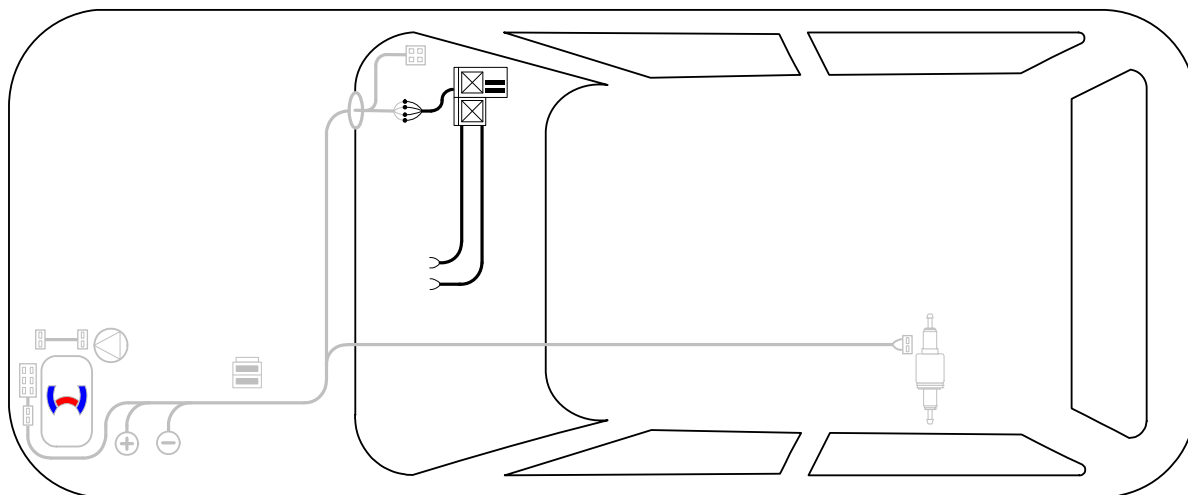
- Disconnect the battery.
- Remove the upper footwell trim on the right and left.
- Remove the lower A-pillar trim on the front right side.
- Remove the entrance strip on the front right side.
- Remove the lateral instrument panel trim on the right side.
- Remove the glove box.
- Remove the footwell trim of the centre tunnel on the right and left.
- Remove the AC booster.

Lexus RX

- Disconnect the battery.
- Loosen the shift lever trim of the centre console.
- Remove the lower A-pillar trim on the left.
- Remove the upper footwell trim.
- Remove the rear air outlet trim.
- Detach the rear centre tunnel storage compartment.
- Remove the centre tunnel trim on the right and left.
- Remove the 'Remote Touch controller' operating console.
- Remove the air outlet strip in the middle.
- Detach the shift gate trim and cup holder.
- Remove the footwell trim of the centre tunnel on the left.
- Remove the door sill trim on the left.
- Remove the lateral instrument panel trim on the left side.

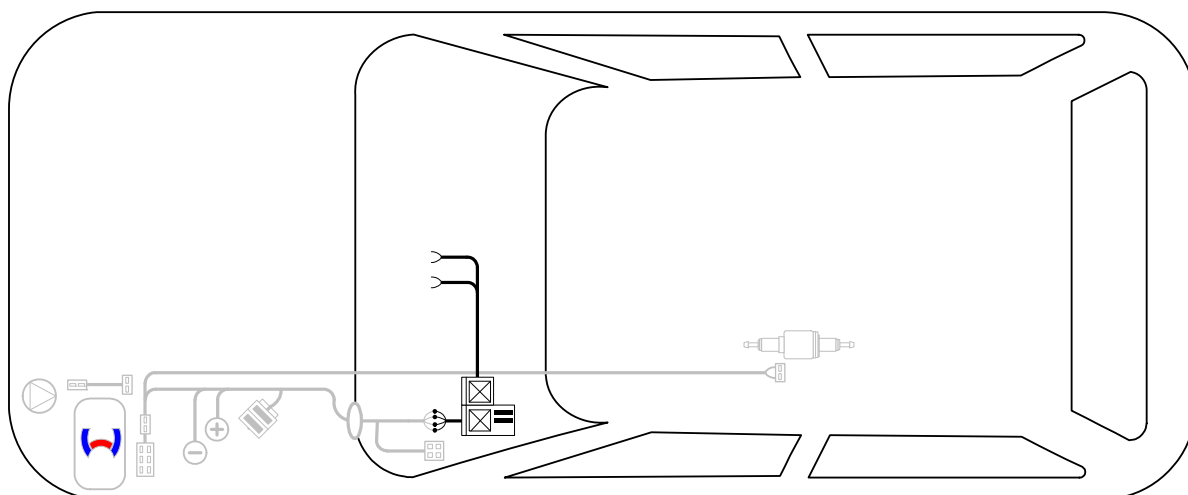


Electrical System



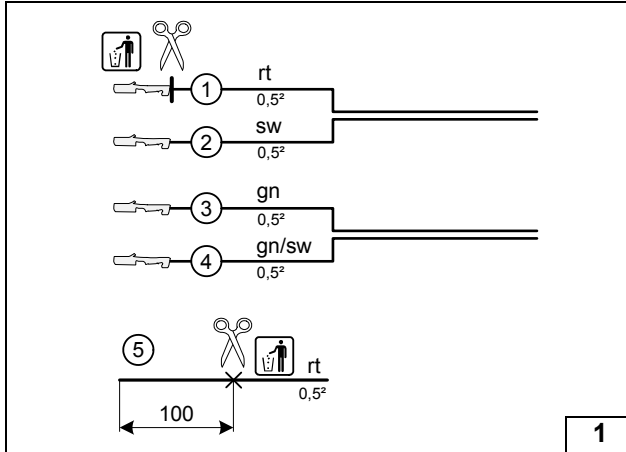
Toyota Prius

Wiring harness routing diagram for passenger compartment



Lexus RX

Wiring harness routing diagram for passenger compartment

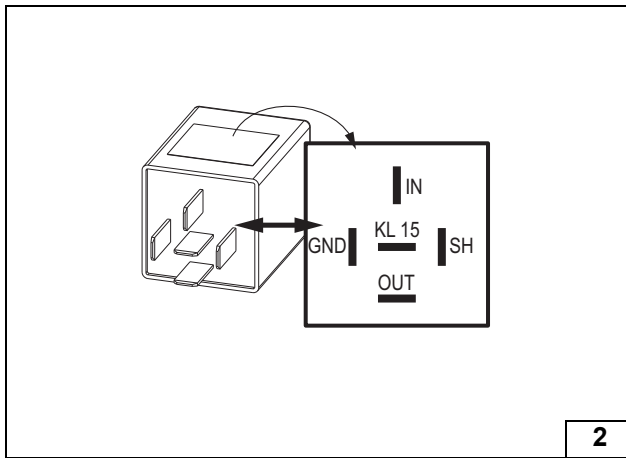


Preparing Electrical System

Wire sections retain their numbering in the entire document.

- ① Red (rt) wire of AC booster wiring harness
- ② Black (sw) wire of AC booster wiring harness
- ③ Green (gn) wire of PWM control system wiring harness
- ④ Green/black (gn/sw) wire of PWM control system wiring harness

Cutting to length / assigning wires

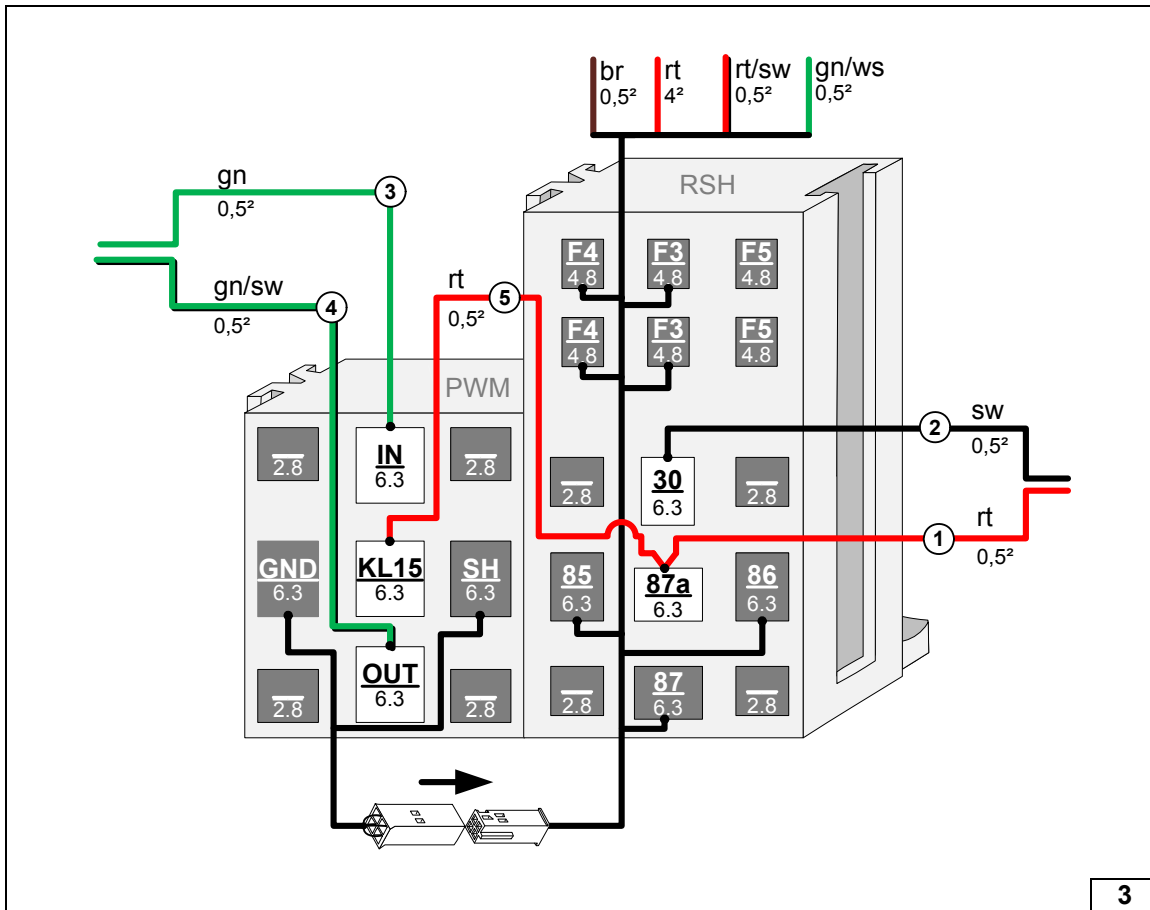


Check the PWM Gateway settings before starting up the heater and adjust if necessary.

Settings:

Duty cycle: 60%
 Frequency: 500Hz
 Voltage: not relevant
 Function: Low side

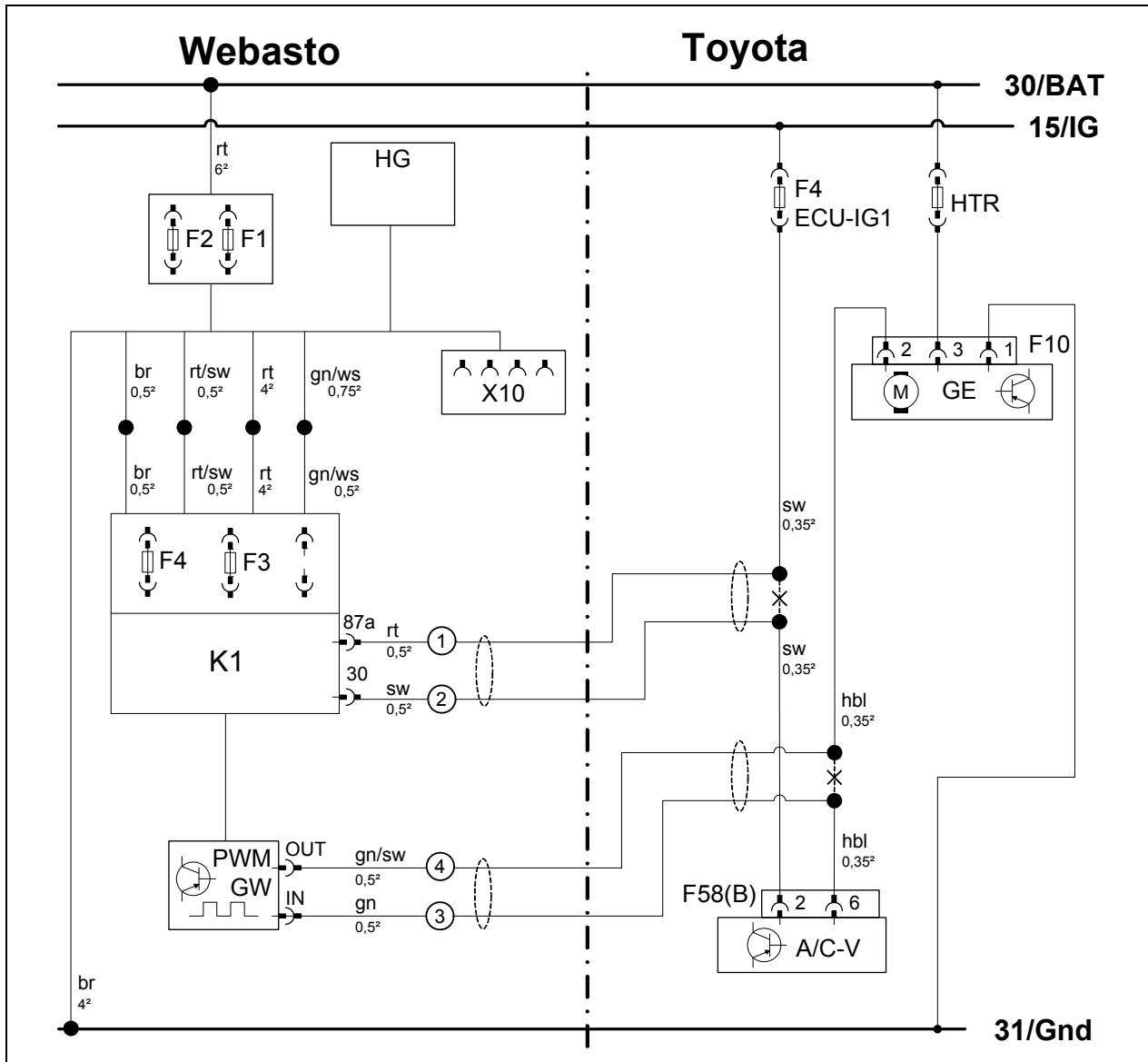
View of PWM GW



Interlocking PWM GW and passenger compartment relay and fuse holder sockets, inserting connector in socket/ connecting wires



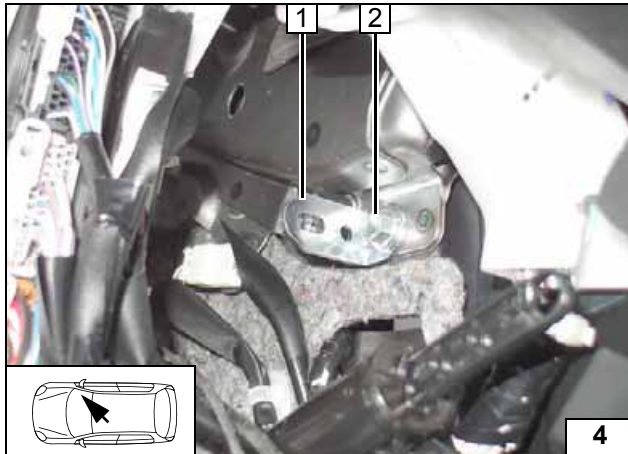
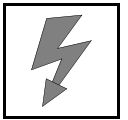
Toyota Prius Fan Controller



Wiring diagram

| Webasto components | | Vehicle components | | Colours and symbols | |
|-------------------------|--------------------------------|--------------------|---------------------------|--------------------------|---------------|
| HG | TT-Evo heater | F4 ECU-IG1 | 10A fuse | rt | red |
| F1 | 20A fuse | HTR | 40A fuse | sw | black |
| F2 | 30A fuse | GE | Fan unit | ge | yellow |
| X10 | 4-pin socket of heater control | F10 | 3-pin connector of GE | gn | green |
| F3 | 1A fuse | A/C-V | A/C booster | ws | white |
| F4 | 10A fuse | F58(B) | 28-pin connector of A/C V | br | brown |
| PWM GW | Pulse width modulator | | | hbl | light blue |
| K1 | Fan relay | | | | |
| PWM GW settings: | | | | | |
| Duty cycle: 60% | | | | | |
| Frequency: 500Hz | | | | | |
| Voltage: not relevant | | | | | |
| Function: Low side | | | | | |
| | | | | X | Cutting point |
| | | | | Wiring colours may vary. | |

Legend



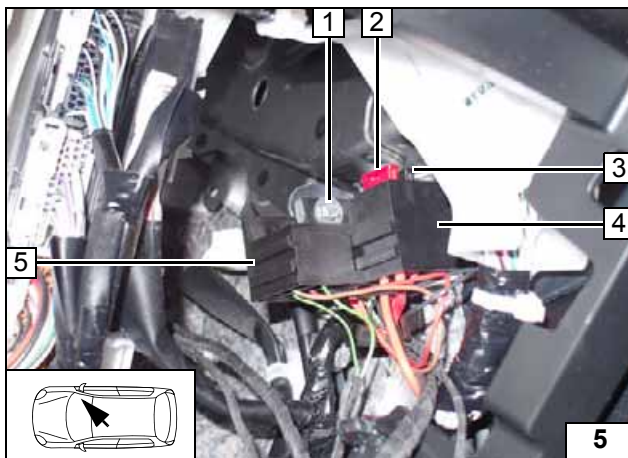
Toyota Prius fan controller

Produce all following electrical connections as shown in the wiring diagram.

Drill out angle bracket **1** at position **2** to 8.5mm dia.

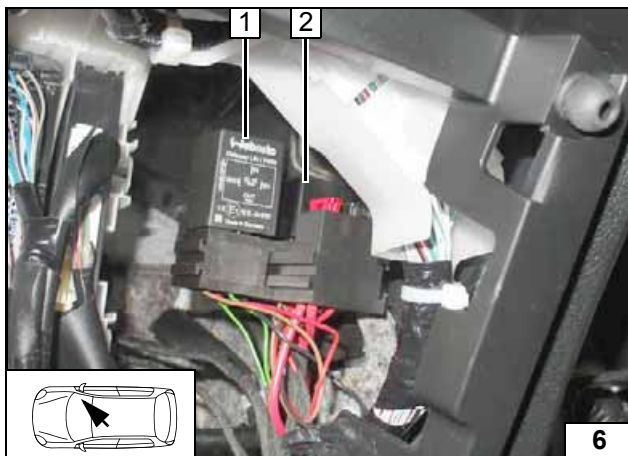
- 2** Original vehicle bolt

Installing angle bracket



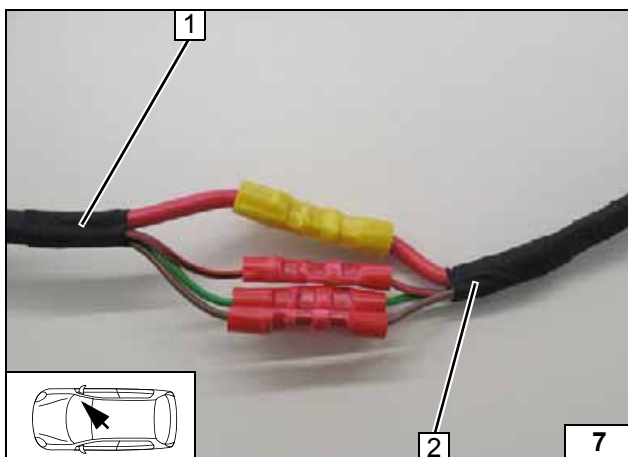
- 1** M5x16 bolt, large diameter washer [2x], nut
- 2** 10A fuse F4
- 3** 1A fuse F3
- 4** Passenger compartment relay and fuse holder
- 5** PWM GW socket

Installing passenger compartment relay and fuse holder



- 1** PWM Gateway
- 2** Relay K1

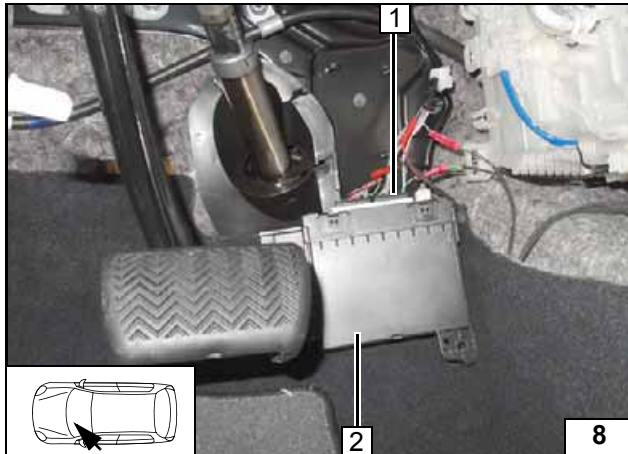
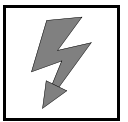
Installing relay K1 and PWM GW



- 1** Passenger compartment relay and fuse holder wiring harness
- 2** Heater wiring harness

Connecting same colour wires of wiring harnesses



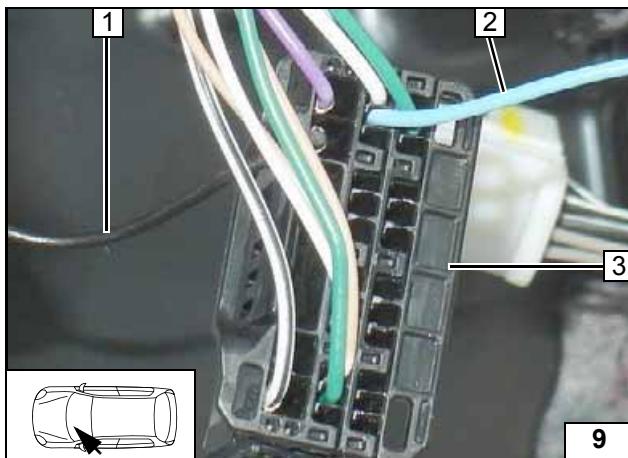


Toyota Prius fan controller

- 1 28-pin connector F 58(B)
- 2 A/C booster

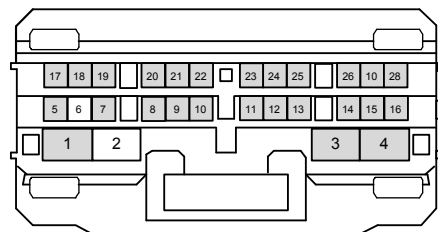


**Detaching
A/C booster
connector**

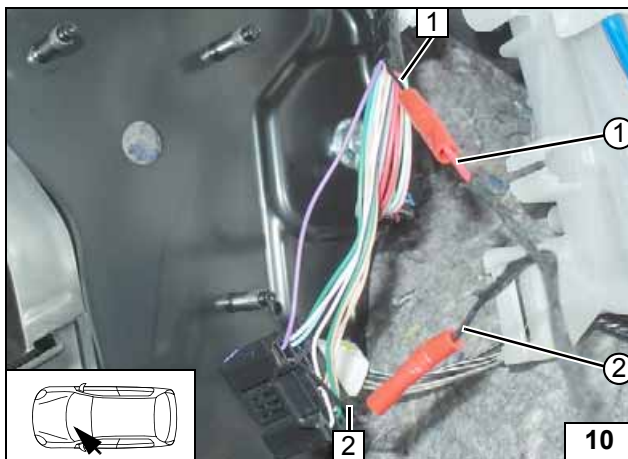


- 1 Black (sw) wire of F 58(B), pin 2
- 2 Light blue (hbl) wire of F 58(B), pin 6
- 3 28-pin connector F 58(B)

Connector F 58(B), wiring side:

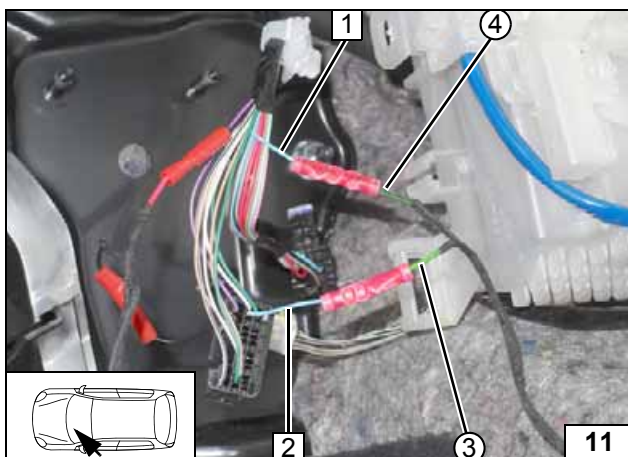


**View from
A/C booster
connector**



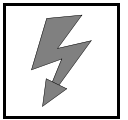
- 1 Black (sw) wire of fuse F4 ECU-IG1
- 2 Black (sw) wire of connector F58(B)/ pin 2 A/C-V
- ① Red (rt) wire of K1/87a from AC booster wiring harness
- ② Black (sw) wire of K1/30 from AC booster wiring harness

**Connec-
tion to A/C
booster
connector**



- 1 Light blue (hbl) wire of connector F10/ pin 2 GE
- 2 Light blue (hbl) wire of connector F 58(B) / pin 6 A/C-V
- ③ Green (gn) wire from PWM GW/IN of PWM control system wiring harness
- ④ Green/black (gn/sw) wire from PWM GW/OUT of PWM control system wiring harness

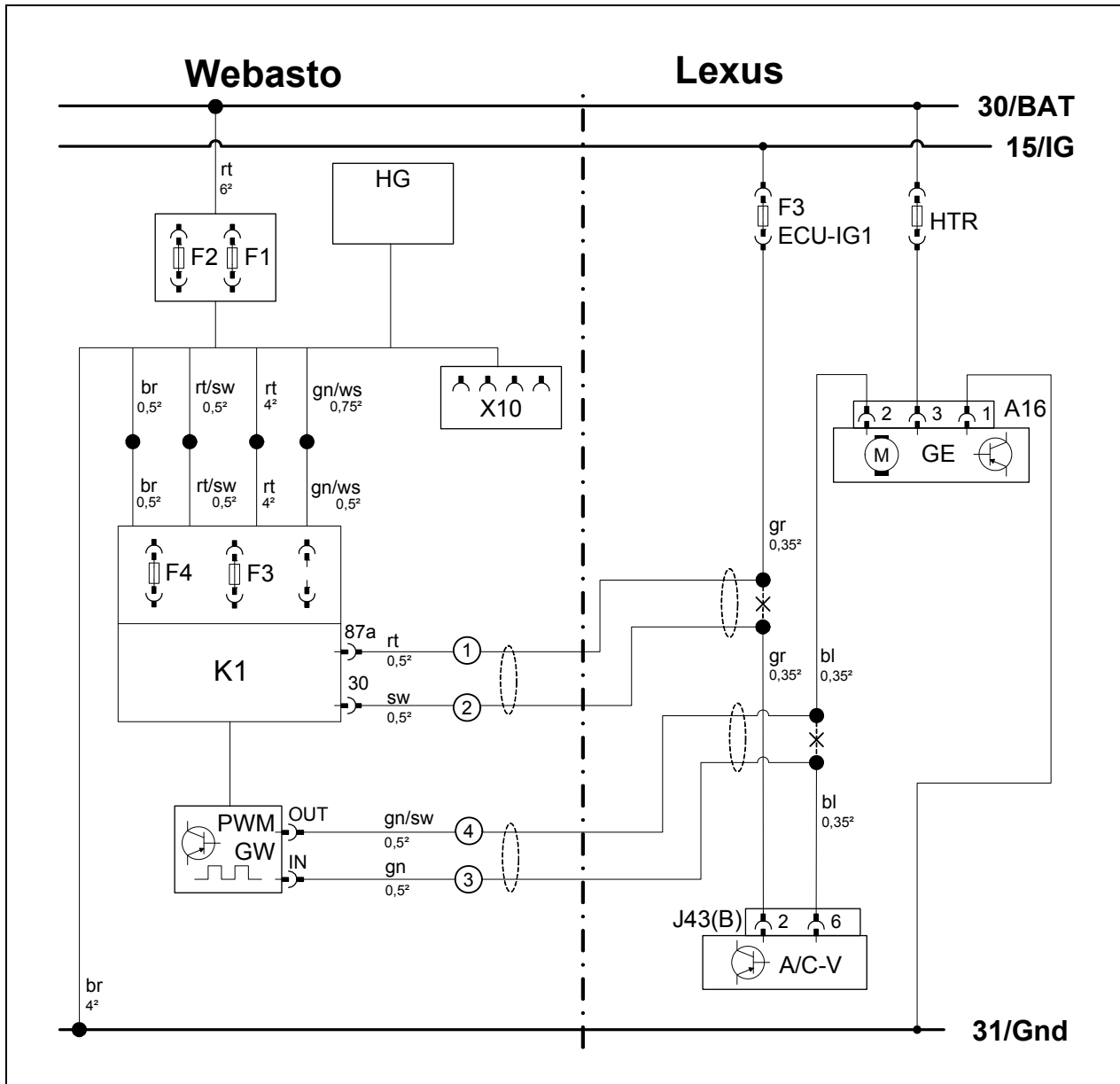
**Connec-
tion to A/C
booster
connector**



Lexus RX Fan Controller

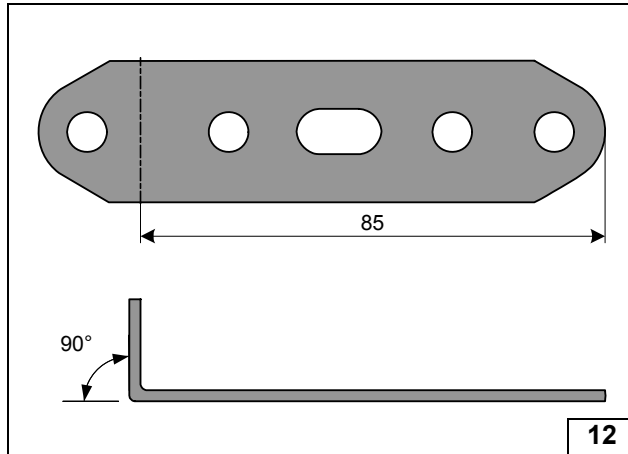
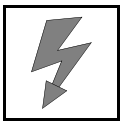


Wiring diagram



| Webasto components | | Vehicle components | | Colours and symbols | |
|--------------------------|--------------------------------|--------------------|---------------------------|---------------------|---------------|
| HG | TT-Evo heater | F4 ECU-IG1 | 7.5A fuse | rt | red |
| X1 | 6-pin heater connector | HTR | 50A fuse | sw | black |
| X2 | 2-pin heater connector | GE | Fan unit | ge | yellow |
| F1 | 20A fuse | A16 | 3-pin connector of GE | gn | green |
| F2 | 30A fuse | A/C-V | A/C booster | br | brown |
| X10 | 4-pin socket of heater control | J43(B) | 28-pin connector of A/C V | ws | white |
| F3 | 1A fuse | | | gr | grey |
| F4 | 10A fuse | | | bl | blue |
| K1 | Fan relay | | | | |
| PWM GW | Pulse width modulator | | | | |
| PWM GW settings: | | | | | |
| Duty cycle: 60% | | | | | |
| Frequency: 500Hz | | | | | |
| Voltage: not relevant | | | | | |
| Function: Low side | | | | | |
| | | | | X | Cutting point |
| Wiring colours may vary. | | | | | |

Legend

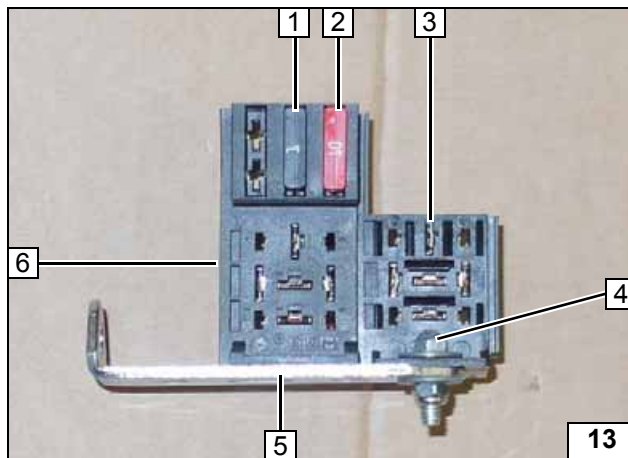


12

Lexus RX fan controller



Bending perforated bracket



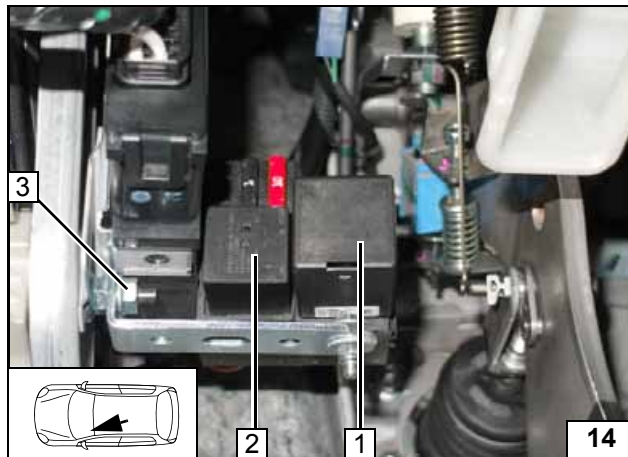
13

Produce all following electrical connections as shown in the wiring diagram.



- 1 1A fuse F3
- 2 10A fuse F4
- 3 PWM GW socket
- 4 M5x16 bolt, large diameter washer [2x], nut
- 5 Perforated bracket
- 6 Passenger compartment relay and fuse holder

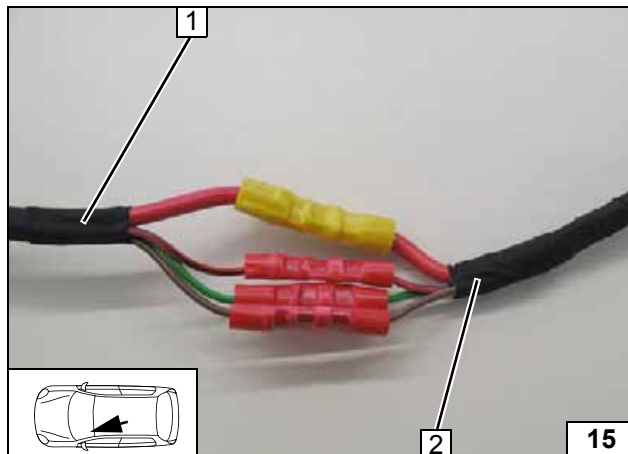
Premounting passenger compartment relay and fuse holder



14

- 1 PWM Gateway
- 2 Relay K1
- 3 Original vehicle bolts, flanged nut

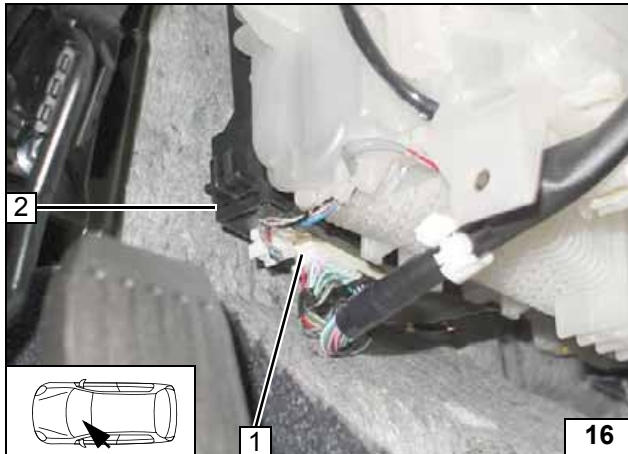
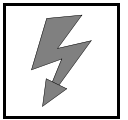
Installing passenger compartment relay and fuse holder



15

- 1 Passenger compartment relay and fuse holder wiring harness
- 2 Heater wiring harness

Connecting same colour wires of wiring harnesses

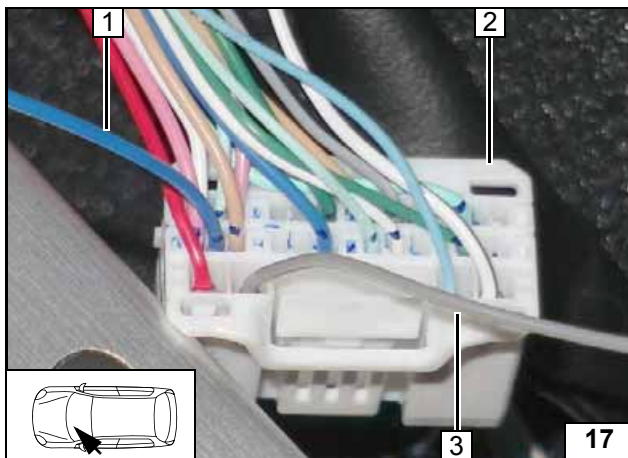


Lexus RX fan controller

- 1 28-pin connector J43(B)
- 2 AC booster



**Detaching
A/C booster
connector**

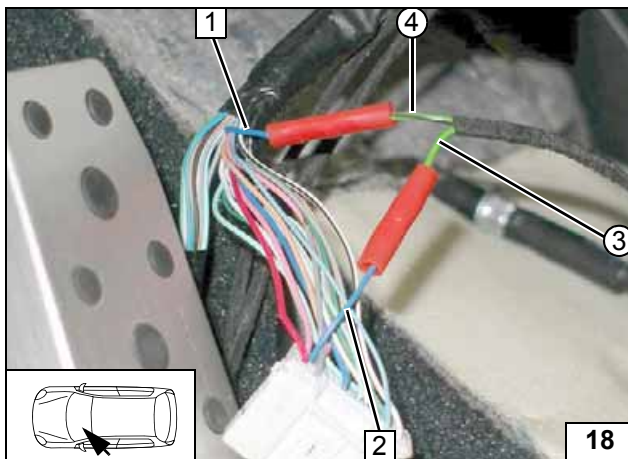
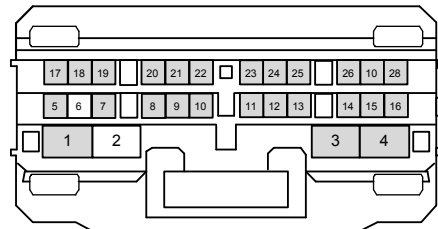


- 1 Blue (bl) wire of connector J43(B)/ pin 6
- 2 28-pin connector J 43
- 3 Grey (gr) wire of connector J43(B)/ pin 2



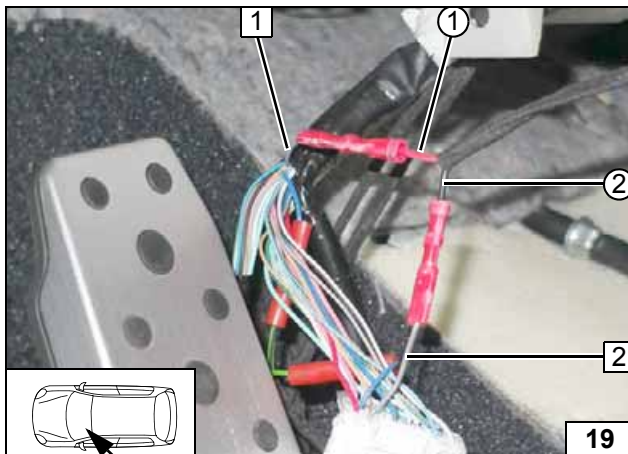
**A/C booster
connector**

Connector J43(B), wiring side:



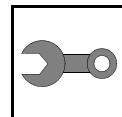
- 1 Blue (bl) wire of connector A16/ pin 2 GE
- 2 Blue (bl) wire of connector J43(B)/ pin 6
- ③ Green (gn) wire from PWM GW/IN of PWM control system wiring harness
- ④ Green/black (gn/sw) wire from PWM GW/OUT of PWM control system wiring harness

**Connect-
ing A/C
booster**



- 1 Grey (gr) wire of fuse F3 ECU-IG1
- 2 Grey (gr) wire of connector J43(B)/ pin 2 A/C-V
- ① Red (rt) wire of K1/87a from AC booster wiring harness
- ② Black (sw) wire of K1/30 from AC booster wiring harness

**Connect-
ing A/C
booster**



Final Work



Warning:

Final work is not carried out until the installation of the heater in the vehicle has been completed. Check all electrical connections for firm seating. Insulate loose wire ends and tie back.



- **Verification of the fan function (PWM Gateway):**
Set the fan speed to max. Then switch off ignition and switch on parking heater. On reaching the fan activation temperature (approx. 50°C), the vehicle fan speed must correspond to the value of approx. 1/3 of the maximum speed specified by the PWM Gateway.
- **Make settings on the A/C control panel according to the 'operating instructions'.**

Operating Instructions for Toyota Prius

Please remove page and add 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 operation.

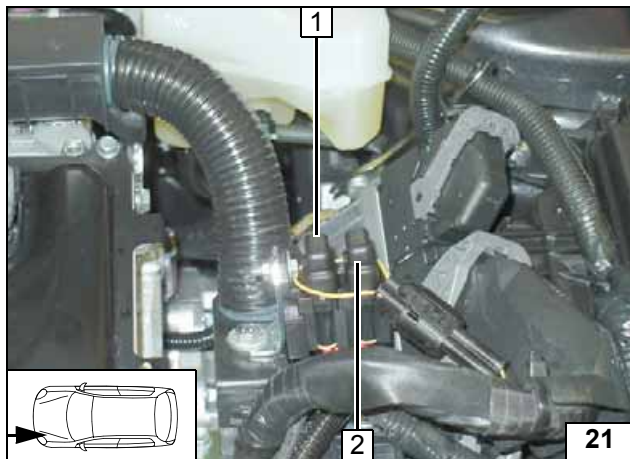
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

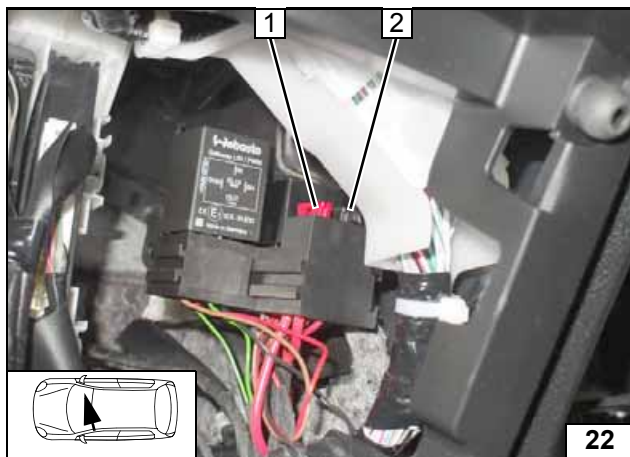


Presetting the fan speed is not necessary!

- 1 Set temperature on both sides to 'HI'
- 2 Air outlet to windscreen



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



- 1 10A fan fuse F4
- 2 1A heater control fuse F3



A/C control panel

Engine compartment fuses

Passenger compartment fuses

Operating Instructions for Lexus 200t

Please remove page and add 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 operation. For instructions on deactivation, please refer to the operating instructions of the vehicle or the alarm system.

Before parking the vehicle, make the following settings:

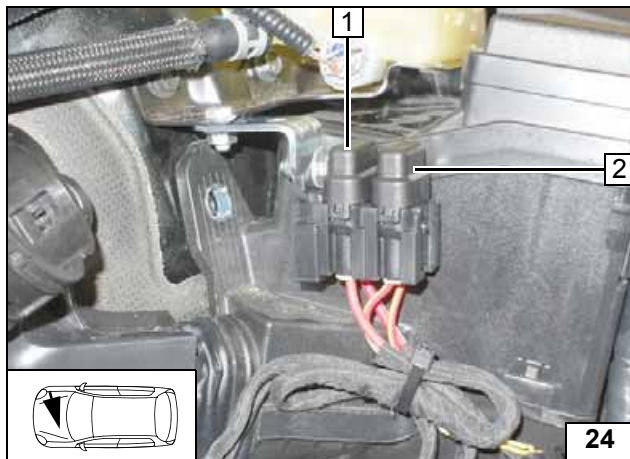


Presetting the fan speed is not necessary!

- 1 Set temperature on both sides to 'HI'
- 2 Air outlet to windscreen

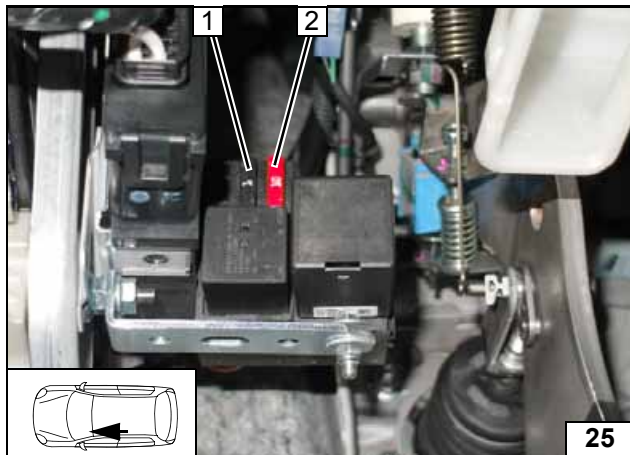


A/C control panel



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

Engine compartment fuses



- 1 1A heater control fuse F3
- 2 10A fan fuse F4

Passenger compartment fuses



Operating Instructions for Lexus 450h

Please remove page and add 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.

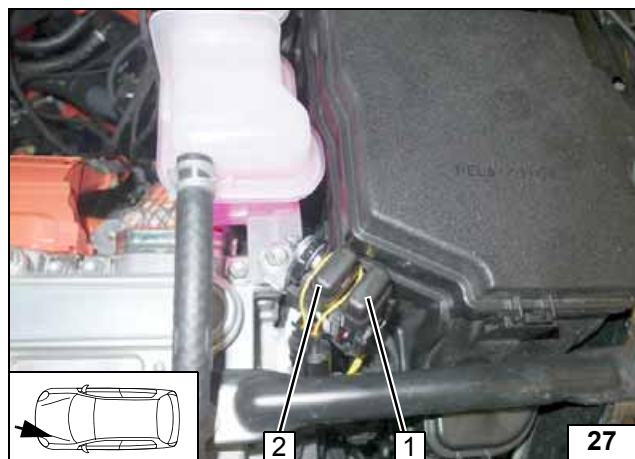
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation. For instructions on deactivation, please refer to the operating instructions of the vehicle or the alarm system.

Before parking the vehicle, make the following settings:

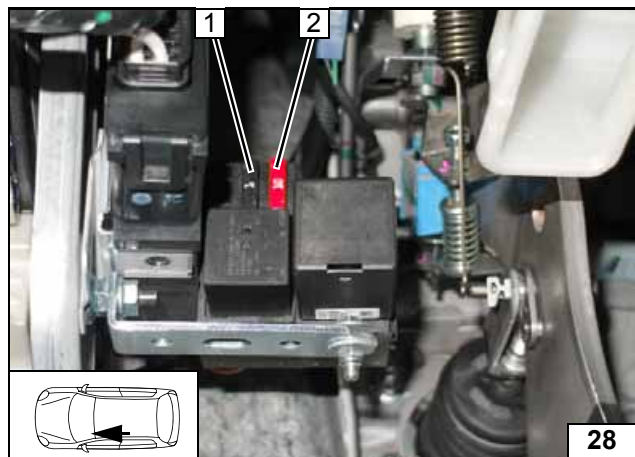


Presetting the fan speed is not necessary!

- 1 Set temperature on both sides to 'HI'
- 2 Air outlet to windscreen



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



- 1 1A heater control fuse F3
- 2 10A fan fuse F4



A/C control panel

Engine compartment fuses

Passenger compartment fuses