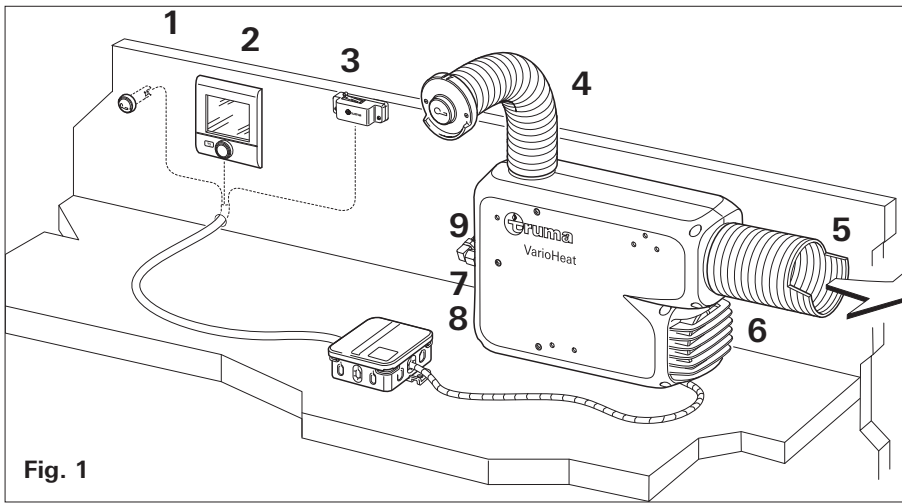




Truma VarioHeat eco AU



Installation example

- 1 Room temperature sensor
- 2 Control panel
Truma CP plus VarioHeat
- 3 Electric window switch (optional)
- 4 Exhaust duct
- 5 Warm air
- 6 Circulating air
- 7 Gas inlet connection
with gas pressure test point
- 8 Type plate
- 9 VarioHeat pre-pressure regulator

Fig. 1

Installation variants

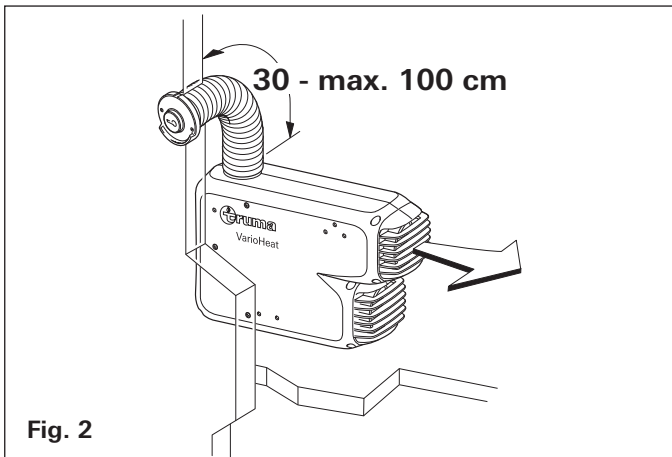


Fig. 2

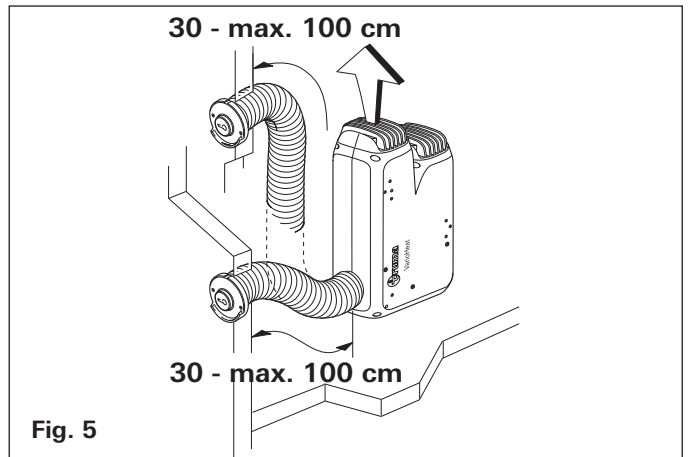


Fig. 5

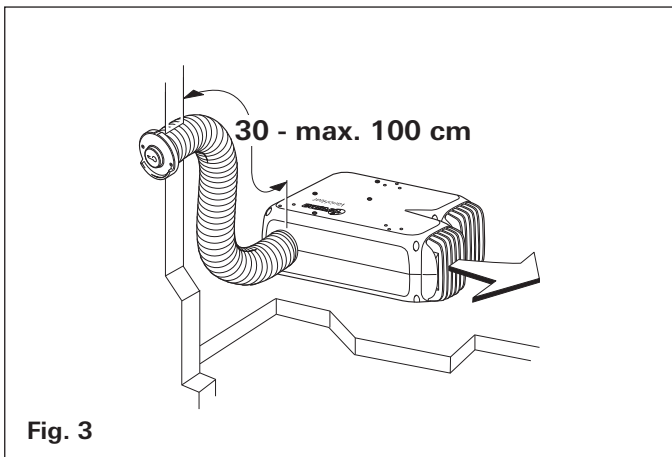


Fig. 3

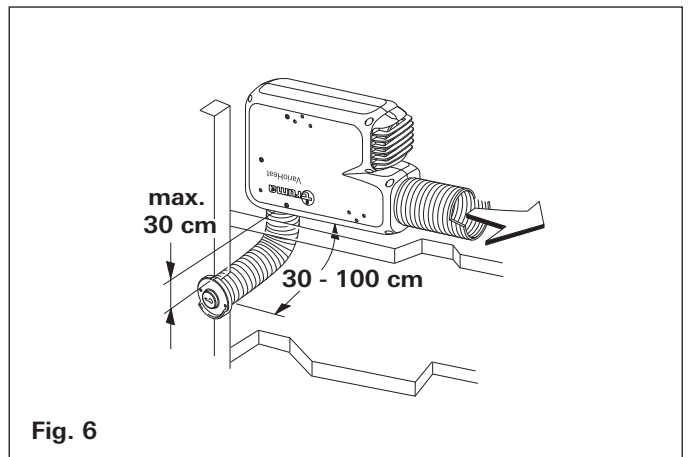


Fig. 6

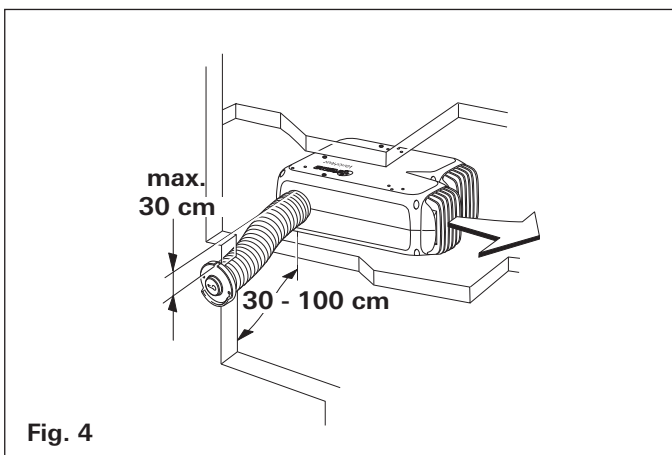


Fig. 4

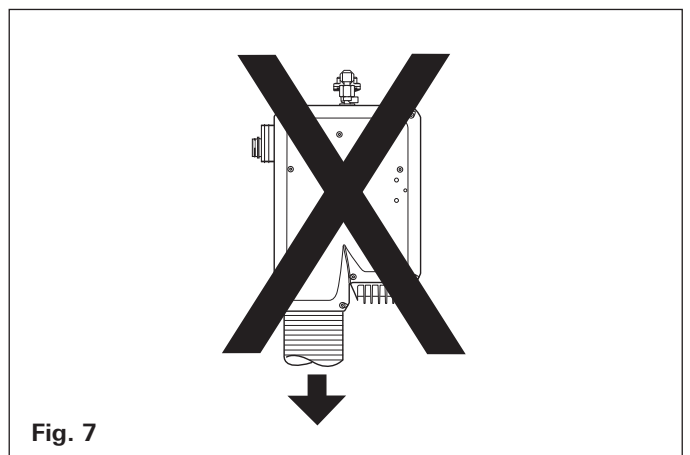


Fig. 7

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Trademark information

Truma VarioHeat eco AU referred to as VarioHeat below.

Symbols used



Symbol indicates a possible hazard.



Comment including information and tips.



Observe the ESD regulations! An electrostatic charge can destroy the electronics. Ensure potential equalisation before touching the electronics.

Installation instructions

Read the installation instructions carefully prior to starting work and observe the instructions!

Intended use

The VarioHeat liquefied gas heater is a warm-air heater for installation in recreational vehicles (RVs) only.

RVs are recreational vehicles designed as temporary living quarters for recreation, camping or travel use. Such vehicles have their own power or are towed by another vehicle.

Safety behaviour and practices

- Installation must be performed by an authorised Service Australia recommended installer, service agency, or OEM. Improper installation, alteration, service, or maintenance can cause property damage, personal injury, or loss of life.
- This heater must be installed in accordance with:
 - these installation instructions,
 - local gas fitting regulations,
 - municipal building codes,
 - electrical wiring regulations,
 - AS/NZS 5601.2 – LP Gas installations in caravans and boats for non-propulsive purposes (“LP Gas installations”).
 - and any other statutory regulations.
- Use with liquefied petroleum gas (LP Gas) in the vapour phase—propane gas only. Butane or any mixtures containing more than 10 % butane must not be used.
- The nominal gas system pressure must be 2.75 kPa (see type plate on heater).
- Switch off the vehicle’s on-board power supply during installation and when connecting the heater.
- Close the vehicle’s gas supply during installation and when connecting the heater.
- Always wear protective gloves to avoid injuries from sharp edges during installation and maintenance work.
- **Do not** draw air for combustion from occupied spaces or downstream from evaporative coolers, air washers or cooling units of refrigerating systems. Make sure that all combustion air is supplied from outside the RV.
- Make sure that all exhaust gases are directed outside of the RV.
 - Protect building materials from exhaust gases.
 - Never direct the exhaust gases to any outdoor enclosed spaces, such as a porch.
- **Do not** modify this heater or its controls. This can cause unforeseen serious hazards and will void the warranty.
- **Do not** perform a hi-pot test on the heater unless the electronic ignition system (circuit board) has been disconnected. A hi-pot test applies a very high voltage between two conductors.
- If the vehicle requires welding **do not** connect the 12 V = power to the heater. Electrical welding will cause serious damage to the heater controller.
- Never fix cables or water pipes to the housing of the heater, otherwise components inside the heater can be damaged.



Pay attention to the ESD regulations!

Scope of delivery

- Truma VarioHeat® eco AU
- Truma CP plus VarioHeat
 - 12 V connector cable 30 cm (+ = red , - = red/black)
 - fuse holder with 1 A fuse (depending on model)
 - Control panel cable 6 m
- VarioHeat pre-pressure regulator
- Installation material
- Operating instructions
- Installation instructions

Required accessories

- Wall cowl kit or warm air basic kit (incl. wall cowl kit)

Optional accessories

- Warm air additional kit
- Window switch
- Accessories for Truma heating systems
- On-surface frame for Truma CP plus VarioHeat
- Control panel cable (available in different lengths)
- Cowl cover

Approval

Declaration of conformity

The heater is approved according AS/NZS 5263.1.6 and fulfils the standard.

AGA approval number 8443

RCM (Regulatory Compliance Mark)



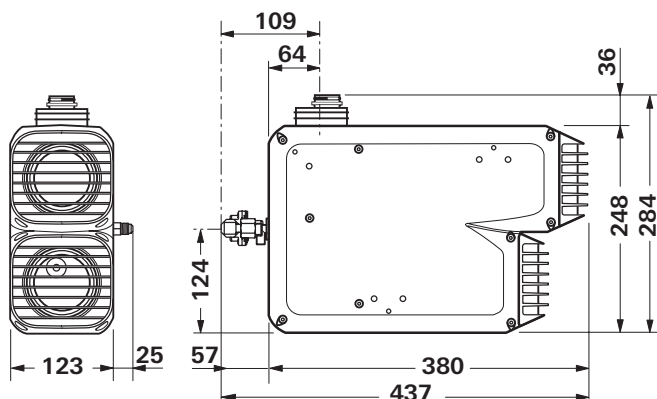
The year when the heater was first put into operation must be indicated with a check on the type plate.

Installation instructions for water supply

- When installing a water supply in the vehicle, it is important to ensure that there is sufficient space between the water pipes and the heat source (e.g. heater, warm air duct).
- A water pipe may be placed on the warm air duct only if there is a gap of at least 1.5 m to the heater. The Truma hose clip SC (part no.: 40712-01) can be used from this distance. In case of parallel installation, such as through a wall, a spacer (e.g. insulation) must be used to prevent contact.

Selecting a suitable location

Dimensions



All dimensions are in mm

Fig. 8

Accessibility and suitability

- Always install the heater and its exhaust duct in such a way that it is always easily accessible for service work and can be removed and installed easily.
- For evenly distributed heating, the installation of the heater should be as close to the **centre** of the vehicle as possible, and in such a way that the air distribution ducts can be routed with approximately the same length.
- Depending on the installation situation, additional space may be required for connections (gas, exhaust duct, warm and circulation air ducts).
- Install the heater in the directions shown (Fig. 2 – Fig 7 on page 2).
- The functions of parts of the vehicle that are important for operation must not be adversely affected.

Clearance from combustible materials


- This heater can be installed without any clearance from combustible materials, provided that the surrounding materials will withstand temperatures of up to 85 °C.
- Make sure that there is at least **6 mm** clearance from combustible materials around the warm air discharge vent and 500 mm in front of the vent.
 - Use the supplied mounting brackets to install the heater (see „Fig. 10“ page 5). This ensures the required gap to the installation surface.
- Locate the vent so that curtains, bedding, etc. cannot be blown directly in front of or in contact with the warm air vent.
- The cowl and the warm air ducts can also be installed without clearance providing only Truma components supplied with the heater are fitted.

Warm air distribution / circulating air return

- Steps must be taken to ensure that the warm air outlet of the heater is never obstructed (see „Warm air distribution“ page 6).
- The installation space must have appropriate openings for the circulating air return (see „Circulated air intake“ page 7).

Location of the wall cowl

 Wall cowls are flue terminals (as defined in AS 5263.0).

 The wall cowl must always vent to outdoors and not into any annex or other enclosed area.

- The wall cowl must be placed in such a way that the exhaust gas cannot find its way into the vehicle interior. **The wall cowl can only be installed through a vertical wall to the outside, never through a horizontal surface.**
- Locate the heater in such a way that the wall cowl can be mounted on the outside on a surface which is as straight and smooth as possible
- Never mount the wall cowl on a slide-out.
- This outside surface must be exposed to wind from all directions and, if possible, there should be no trim strips or covers in this area, mount the heater on an appropriate base if necessary.
- The wall cowl is to be fitted in such a way that no tank nozzles or tank ventilation apertures are located within 500 mm (Fig. 9 - R) of it. In addition, no air discharge apertures for the living area or window openings may be located with 300 mm of it.

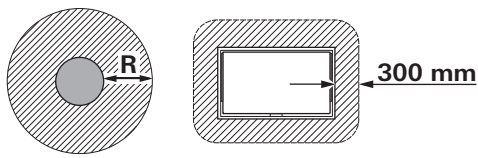


Fig.9

i If the cowl is being installed directly underneath a window that will be opened, installation of an electric window switch (part no. 34030-34700) is recommended.

i Refer to AS/NZS 5601.2 – LP Gas installations, for location requirements of the flue terminal.

Visibility of the type plate

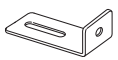
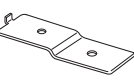
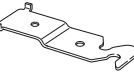
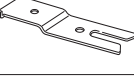
- The scope of delivery includes a second type plate (duplicate) with removable bar code.
 - If the type plate on the heater is not visible after installation, the second type plate (duplicate) must be affixed to the heater in a clearly visible location.
 - The duplicate must only be used in conjunction with the original.

Fastening the heater

Check whether the RV has a load-bearing floor or an access or intermediate floor to fix the heater – if this is unsuitable – create a load-bearing surface (e.g. glue a sheet of plywood on to the floor).

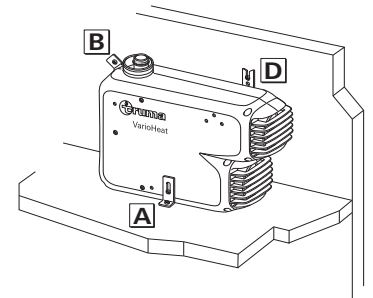
To fix the heater, use only the supplied mounting brackets (Fig. 11 – A, B, C, D), which must be fixed in the respective hole pattern ①, ②, ③.

Mounting bracket / hole pattern arrangement

Hole pattern	①		②		③	
	①		②		③	
Mounting bracket	①		②		③	
A 	Not permitted		✓*		✓*	
B 	✓		Not permitted		Not permitted	
C 	Not permitted		✓		✓	
D 	Not permitted		✓		✓	
	* only in combination with 2 additional mounting brackets B , C , D					

Installation examples

Vertical installation



Horizontal installation

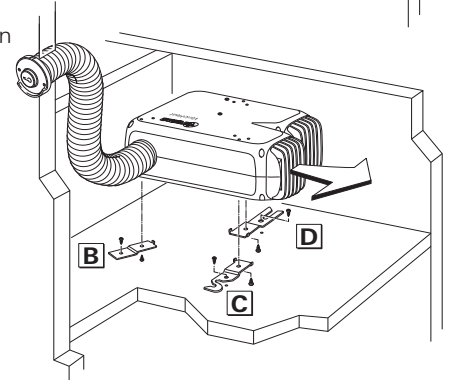


Fig. 10

- Use only the supplied PT bolts (torque 1.5 Nm) to fix the mounting brackets to the housing of the heater (in the respective hole pattern).
- Fix the heater with the mounting brackets and the supplied bolts B 5.5 x 25 mm.

! The heater must be screwed to the floor of the RV or the false floor in order to prevent the gas system from becoming damaged because of movement while driving!

Exhaust duct

With the VarioHeat you must use Truma accessories (e. g. the Truma “Warm air basic kit” with

- wall cowl kit, EW 24
- exhaust duct AA 24 (1m) and
- combustion air supply duct ZR 24 (1 m)

for the installation, as the heater has only been tested and approved with these ducts.

! If the exhaust duct is beneath the floor, the vehicle floor must be leakproof. In addition, at least three sides beneath the vehicle floor must be free to ensure that the exhaust gas can be extracted without any obstruction (spoilers, snow, etc.).

Permissible duct lengths

Duct lengths from 30 cm to maximal 100 cm are permitted.

i Refer to installation variants, Fig 2 – Fig. 6 (page 2).

- **Do not** crush or kink these ducts during installation.

Installing the wall cowl

- Select a suitable location for the wall cowl. Refer to „Location of the wall cowl“ page 4.
- Drill a Ø 70 mm hole (8) (fill cavities near the cowl hole with wood).
- Seal with the supplied rubber seal (10). In case of structured surfaces, use plastic automotive sealant – not silicone.
- Slide the rubber seal (10 – **smooth side facing the wall**) and the clamp (4) on to the wall cowl inner part (11).
- Before you push the exhaust double duct through the hole, slide the clamp (7) over the pipes.

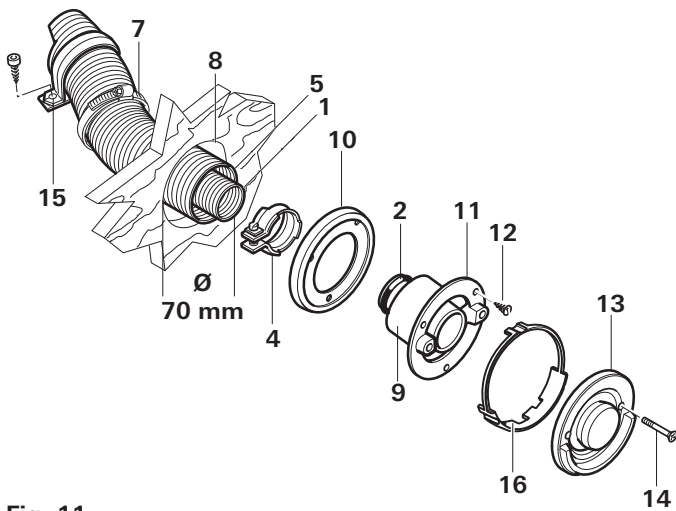


Fig. 11

- Cut the pipes so that they project outside the hole for the cowl during installation. The exhaust duct (1) must be 10 % longer than the combustion air intake duct (5). This prevents expansion and tensile loading of the exhaust duct.
- Compress the exhaust duct (1) at the start – to approx. 2 cm – so that coil sits on coil.
- Slide the exhaust duct (1) over the O-ring (2a) on to the connection (2) as far as the collar (3) (the wall cowl is angled upward).
- Position the clamp (4) so that the flange edge of the clamp catches around the collar.
- Tighten the clamp (4) (tightening torque 1 Nm).

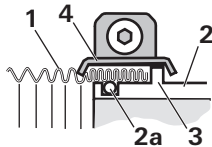


Fig. 12

- Fix the cowl inner part (11) with 3 screws (12) (pay attention to the installation position. The Truma logo must be at the bottom).
- Slide the combustion air intake duct (5) on to the serrated connection (9) and fix with the clamp (7) (3 Nm).
- Place cowl insert part (16) into cowl outer part (13).
- Place the cowl outer part (13) on top and fix with 2 screws (14).

! A new O-ring (2a) must be installed every time the system is dismantled.

Connecting the exhaust double duct to the appliance

- Slide the clamp (7) over the pipes.
- Compress the exhaust duct (1) at the start so that coil sits on coil.
- Slide the clamp (4) over the exhaust duct (1).
- Slide the exhaust duct (1) over the O-ring (2a) on to the connection (2) as far as the collar (3).
- Hook in the clamp (4) and tighten it (tightening torque 1 Nm).
- Fix the combustion air infeed pipe (5) on the connection (6) with the clamp (7) (tightening torque 3 Nm).

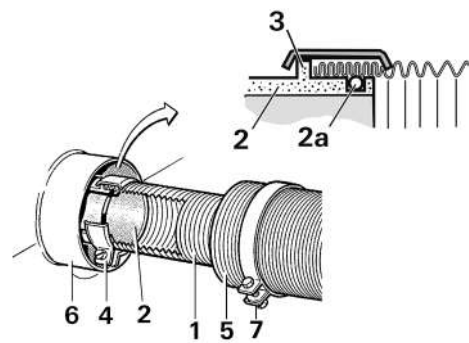


Fig. 13

Warm air distribution

The warm air is fed from the heater mainly to the floor area of the living room either directly or through flexible pipes (warm air distribution).

Use only Truma accessories to distribute warm air in the RV.

A selection of Truma accessories for warm air distribution

Accessory	Symbol	Description
	VR 80	Air duct VR 80, (Ø 80 mm)
	ÜR	Air duct ÜR, (Ø 65 mm)
	SCW 2	Swivelling air outlet SCW 2
	EN	End outlet EN with air throttle
	EN-0	End outlet EN-O without air throttle, for lamella inset LA
	EM	End outlet nut EM
	LA	Lamella inset LA for attaching to end outlet EN-O, direction of air flow can be adjusted by turning
	Y 80	Y-piece 80, Inlet Ø 80 mm, Outlet 2 x Ø 65 / 72 mm
	ZRS	Clamp ZRS, Ø 80 mm
	Clamp ÜS	Clamp ÜS, Ø 65 mm

1. If warm air distribution is used, the grid on the warm air outlet of the heater must be removed.

2. Only the VR 80 pipe may be connected to the heater.

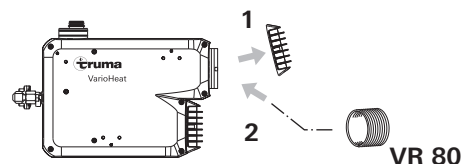


Fig. 14

Examples of warm air distribution with Truma accessories

i It must be ensured that if a closable end outlet is being used (e.g. bathroom), at least one non-closable nozzle is installed in the warm air branch.

i If the warm air distribution or circulated air intake is partially or completely blocked, the VarioHeat switches off prematurely and full power is not available.

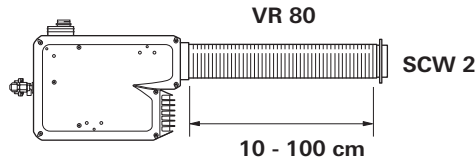


Fig. 15-1 – Truma “Warm air basic kit”

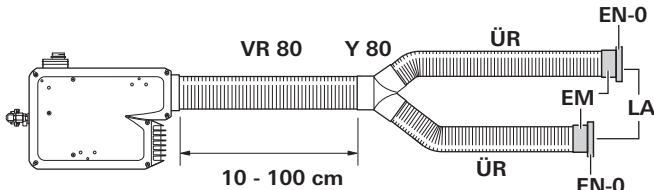


Fig. 15-2 – Truma “Warm air basic kit”+ “Warm air additional kit”

3. Secure all pipe connections with clips / tapping screws. Fix pipes with ZRS / ÜS clamps.

Circulated air intake

The circulated air (U) is sucked in again by the heater. This must take place from the living room (not the rear storage locker) to the installation space via one large or several smaller openings with an overall area of at least 150 cm².

Circulated air intake with grid

If a grid (not supplied) is installed, the same requirements regarding the cross section through which the air is sucked in (150 cm²) must be observed.

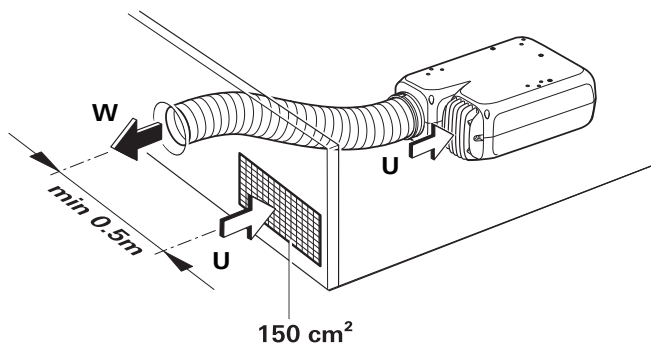


Fig. 16 – Example of circulated air intake through a grid

Installing the room temperature sensor

! The supplied room temperature sensor must always be connected, otherwise the heater will indicate an error.

Choosing a location

When choosing a location, remember that the room temperature sensor must not be exposed to direct heat radiation. For optimum room temperature control, we recommend that you install the room temperature sensor above the entrance doors.

i Make sure that the sensor is always installed on a **vertical** wall. The room air must be allowed to flow around it freely.

Installation

- Drill a Ø 10 mm hole.
- Feed the connector cable through the hole from behind and connect the end of the cable to the sensor with an insulated connection plug (polarity is unimportant).
- Insert the room temperature sensor and lay the cable end with bushing X7 to the heater (if necessary, extend to a maximum length of 10 m with 2 x 0.5 mm² cables).
- Plug the room temperature sensor on to the cable harness of the heater (refer to „Electrical connections“ page 8).

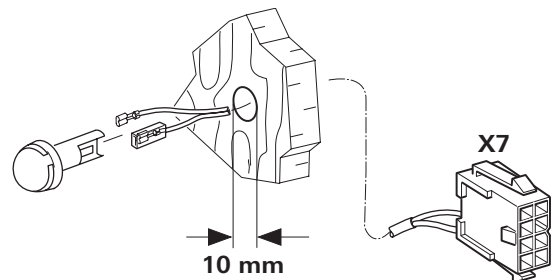


Fig. 17

Electrical connections

Lay the connector cables so that they cannot chafe. Also use edge protection or leadthrough bushing on sharp edges, such as holes on metal walls. The connector cables must not be fixed to or touch metallic equipment surfaces, the exhaust duct or the warm air ducts.

The electrical connection is made via an external cable harness.

Take care with the connector cables so that they are not pulled out or squashed.

Wiring diagram

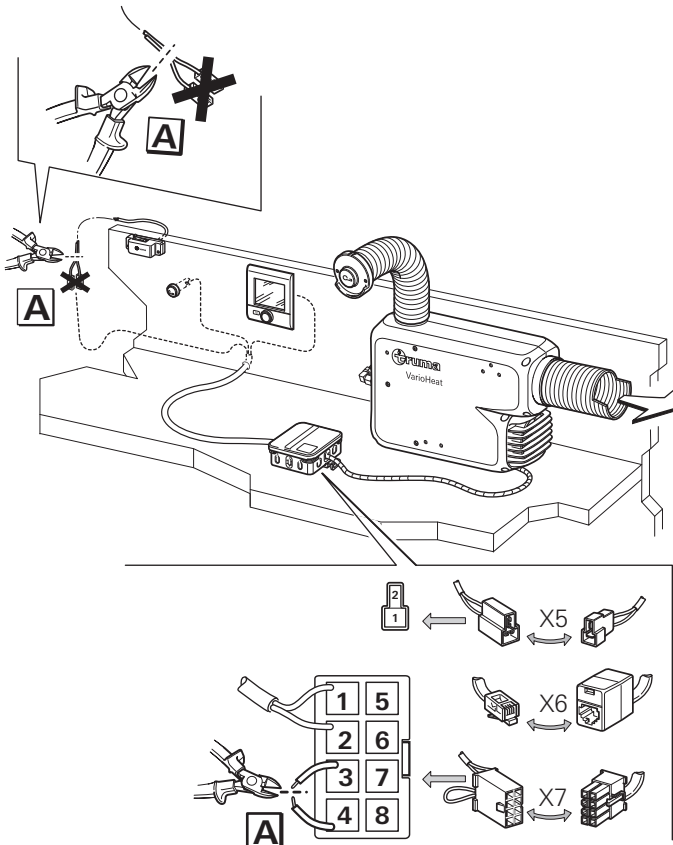


Fig. 23 – Wiring diagram

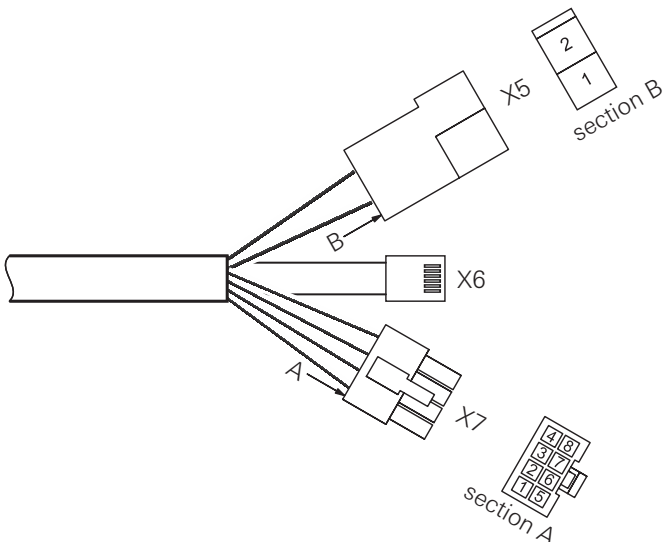


Fig. 24 – Cable harness

Plug / contact	Description
X7-1	Room temperature sensor
X7-2	Room temperature sensor
X7-3	Window switch or wire bridge
X7-4	Window switch or wire bridge
X7-5	—
X7-6	—
X5-1	+ Battery
X5-2	- Battery
X6	TIN Bus / Truma CP plus VarioHeat

Power supply 12 V =

Electric cables, switching and control devices for heaters must be arranged in the vehicle so that they function perfectly under normal operating conditions. All cables that lead outside must be laid so that they are protected against spray water at the hole.

Before starting work on electrical parts, you must disconnect the heater from the power supply. It is not sufficient to switch it off on the control panel!

To ensure an optimum power supply, the heater **must** be connected to the fused on-board power supply (central electricity system 10 A) **with 2 x 2.5 mm² cables** (for lengths in excess of 6 m, with 2 x 4 mm² cables). Potential drops in the supply line may have to be considered. Connect the negative cable to the central earthing system.

None of the electrical connector cables can be longer than 10 m.

If parts are connected directly to the battery, the positive and negative cables must be fused.

No other equipment may be connected to the supply cable.

- i • In case of voltage reversal, fuse F1 is triggered.
 - If connected to a battery.
 - If connected to a power supply unit with at least 25 A.
- If grid or power supply equipment is used, they must supply a controlled output voltage between 11 V = and 15 V = (AC voltage ripple < 1.2 Vpp).

Power supply with power supply unit without battery

- The controlled output voltage of the power supply unit must be between 11 V and 15 V.
- The AC voltage ripple must be < 1.2 Vss.
- The power supply unit must constantly provide the heater with at least 25 A. If this is not guaranteed when additional consumers are connected to and operated on the power supply unit, the heater requires its own power supply unit.

Alternatively, a power supply unit can be used that constantly provides the heater with at least 10 A. This must have short-circuit protection on the output side for each outgoing circuit. The short circuit protection must switch off the voltage supply to the heater within 1 s. Following a shutdown due to a short circuit, the voltage supply must not be restored until after the heater has been inspected and additional manual action has been taken (e.g. engaging a circuit breaker or replacement of a meltable fuse).

Battery connection

- Crimp 6.3 x 0.8 mm flat connectors* on to the positive and negative cables.

* The supplied flat connectors are suitable for cable cross-sections from 0.8 to 2.5 mm². Use suitable flat connectors for other cable sizes.

- Insert the positive and negative cables in the plug X5 (contact 1 / 2).

Room temperature sensor connection

- Connect bushing X7 of the room temperature sensor to the X7 plug of the cable harness.


Digital control panel connection

- Connect the X6 connector.

Window switch connection (optional)


- Separate the wire bridge (contact 3 / 4) in the X7 bushing.
- Cut off the two plug contacts from the cable of the window switch and connect with contact 3 / 4. Polarity is unimportant.

Gas connection


 The gas system must accord with the technical and administrative provisions of the individual country of use (in Australia, AS/NZS 5601.2 – LP Gas installations).

- The nominal gas system pressure must be 2.75 kPa.
- For gas pipe sizing refer to AS/NZS 5601.2 – LP Gas installations.
- Install the gas piping so that the heater can be dismantled easily for servicing.
- In the gas piping, limit the number of separation points in rooms used by people to a technically necessary minimum
- Before you connect the gas piping to the Pre-pressure regulator VarioHeat, make sure that it is free of dirt, metal filings, etc.
- The gas connection fitting on the heater must not be shortened or bent.
- When you are tightening the connection, use a second wrench as a brace.

Installing the VarioHeat pre-pressure regulator

 The VarioHeat pre-pressure regulator is adjusted in the factory. During operation, the pressure at the gas pressure test point (3) must be 1.8 – 2.2 kPa. If the VarioHeat pre-pressure regulator cannot be installed to perform correctly, please contact Service Australia.

The VarioHeat pre-pressure regulator must be installed to ensure safe operation of the VarioHeat.

 The VarioHeat pre-pressure regulator can be installed in any direction.

- Connect the VarioHeat pre-pressure regulator (1) to the gas inlet connection (2) in accordance with the installation regulations for olive screw connections (e.g. ISO 8434-1). When you are tightening the connection, use a second wrench as a brace.

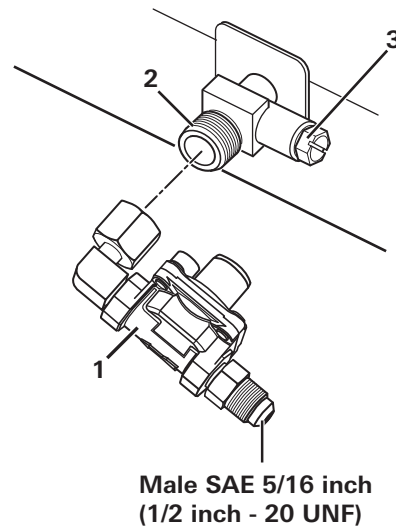



Fig. 25


 **After installation, you must check gas supply line for leaks in accordance with the pressure drop method.**

- **Do not** use matches, candles or other sources of ignition when checking for gas leaks.

Functional check

Always observe the operating instructions prior to starting!

1. Start the appliance
2. Check all functions of the heater in accordance with the operating instructions.


 If faults occurring during operation of the appliance, refer to "Troubleshooting" in the Operating instructions. If the heater cannot be adjusted to perform correctly, please contact Service Australia.

3. To test the warm air distribution, at maximum fan level, the measured duct static pressure must be within the heater specifications (see below).
4. Provide operating instructions to the vehicle owner.
 - The year of initial operation must be marked on the type plate.

The appliance is now ready for normal operation and use.

Warning

- The installer or vehicle owner must attach the yellow sticker with the warning that is supplied with the device at a place in the vehicle that is visible for every user (e.g. on the wardrobe door).

 More stickers can be obtained from Truma.

Technical changes reserved.

Heater specifications

Type of gas

Propane

Test point pressure

2.00 kPa (see type plate)

Operating pressure

2.75 kPa (see type plate)

Rated thermal input (gas consumption)

Min. stage: 4.53 MJ/h (90 g/h) ISA

Max. stage: 9.75 MJ/h (193 g/h) ISA

Thermal efficiency

Min. stage: 86.4%

Max. stage: 84.3%

Air flow rate

85 m³/h - 175 m³/h

Duct static pressure

< 170 Pa (1.7 mbar)

Temperature rise

< 80 °C

Power supply

10.5 - 16 V ==

Power consumption at nominal Voltage 12 V ==

Operating: 0.85 - 3.65 A

Stand-by: 0.004 A

Weight

Heater without periphery:

5.5 kg

Subject to technical changes.



In Australia, always notify the Service Australia if problems are encountered; in other countries the relevant service partners should be contacted (www.truma.com).

Having the equipment model and the serial number ready (see type plate) will speed up processing.