



Gas Supplies in Europe

Guidelines for working on liquid gas systems in motor homes and caravans in compliance with European standards and regulations.

Date of issue october 2006

Comfort on the move



European countries are growing more and more together. National standards and regulations are being replaced by uniform regulations for all of Europe.

Since October 1, 2004, gas systems for mobile homes and caravans have also been unified. The purpose of this brochure is to provide you with an overview of the most important changes resulting from the new uniformity.

First let us take a brief look at the regulations that are applicable to gas systems:

EN 1949:2002

EN 12864:2001, exhibit D & A1:2003 (pressure device directive 97/23/EC)

EN 13786:2004 (pressure device directive 97/23/EC)

Heating device directive 2001/56/EC & 2004/78/EC

Type approval process (70/156/EEC)

General product liability and product monitoring obligations

EN 1949

General specifications for installing liquid gas systems in habitable recreational vehicles and in other road vehicles used for living purposes are anchored in the directive EN 1949.

It represents the foundational set of guidelines for equipping caravans and mobile homes with liquid gas systems. It contains, for example, the regulation that gas pressure for consumers must be permanently adjusted to 30 mbar at the pressure regulator. The pressure regulator must exhibit a flow rate that corresponds at least to the maximum consumption of all devices. Furthermore, proper dimensioning of the gas pipe installation requires that each device receive a minimum pressure of 25 mbar when all devices are in operation. In larger gas systems, this has the result that increasingly gas pipes with a diameter of 10 mm must be used between the pressure regulator and the valve block. Depending on the size of the system, it may also be necessary to install a gas pipe of diameter 10 mm from the outlet of the valve block to the individual consumers (like heaters). More extensive regulations may be implemented as EN 1949 is integrated into national laws. For example, German law requires that pressure regulating devices and gas hoses must be replaced every ten years. This regulation does not contain a grandfather clause; in other words, older vehicles are equally affected.

EN 12864:2001, exhibit D

Pressure regulating devices with an outlet pressure up to and including 200 mbar and a flow rate of up to 4 kg/hour (propane, butane, or mixtures thereof) must comply with the requirements of EN 12864:2001, exhibit D. When all devices are in operation, a minimum gas pressure of 25 mbar must be available to every gas consumer. This standard recommends replacing pressure regulating devices every ten years at the latest.

EN 13786

If a gas system is operated with an automatic changeover valve, the changeover valve must comply with the specifications in EN 13786. This standard describes the requirements of automatic changeover valves with a maximum possible outlet pressure of 4 bar and a flow rate of 100 kg/hour for butane, propane, or mixtures thereof. These same requirements apply also to the related safety equipment.

Heating device directive 2001/56/EC & 2004/78/EC

This specifies the safety requirements for combustion heaters and other heating systems that run on liquid gas. Point 1.1.6.2 reads as follows: "If the LPG is supplied in the gaseous phase from the permanently installed LPG container or separate portable LPG cylinder(s), appropriate provisions shall be taken to ensure that no uncontrolled release due to an accident can occur."

The directive continues: "Means shall be provided to stop the flow of LPG by installing a device directly after a cylinder or container mounted regulator. If the regulator is mounted remote from the cylinder or container, a device shall be installed directly before the hose or pipe from the cylinder or container and an additional device shall be installed after the regulator."

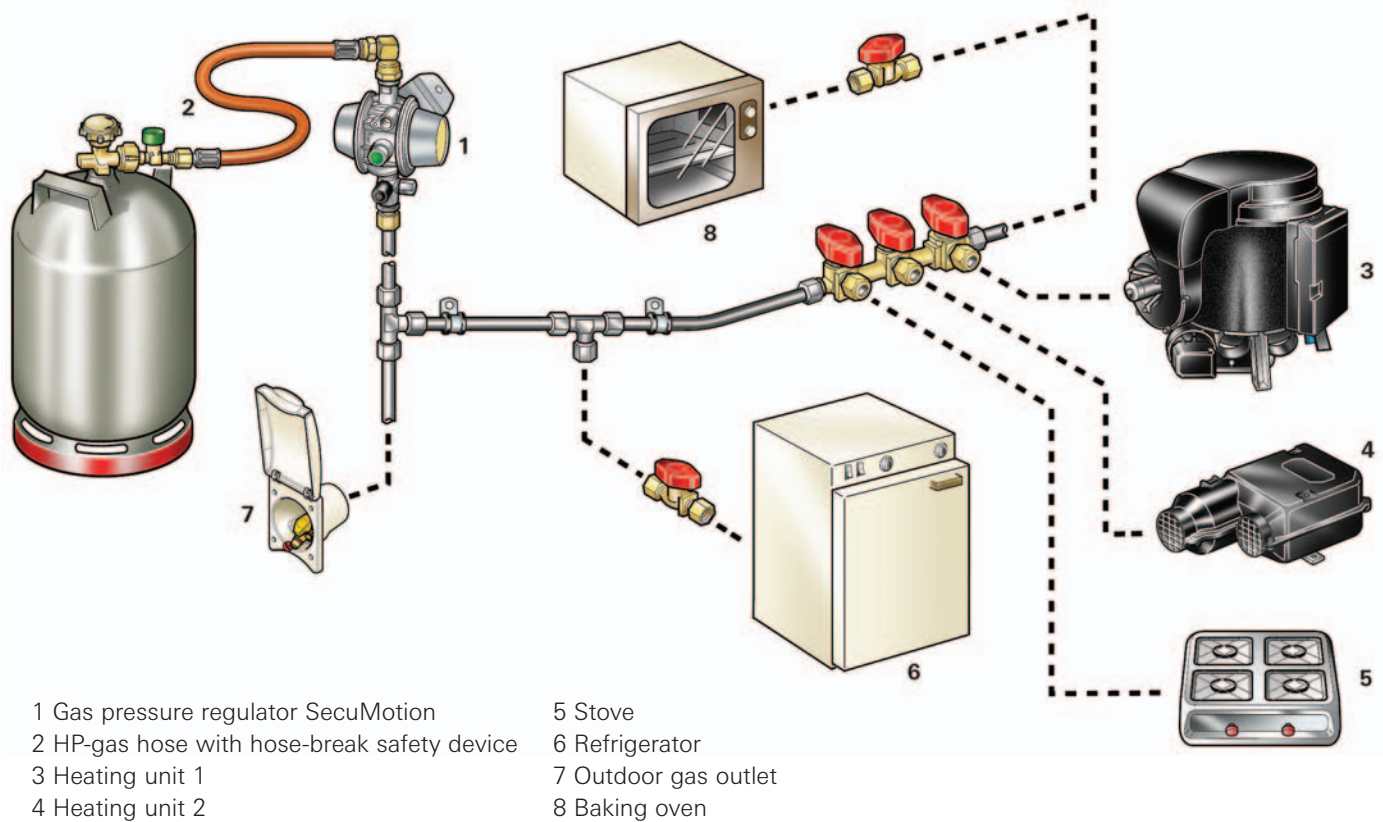
In practical terms, this means:

Starting on January 1, 2006, mobile homes or caravans that will be heated while driving will be granted new vehicle registrations only if the gas system is designed for this purpose and has special safety components. (for example: the Truma SecuMotion pressure regulator)

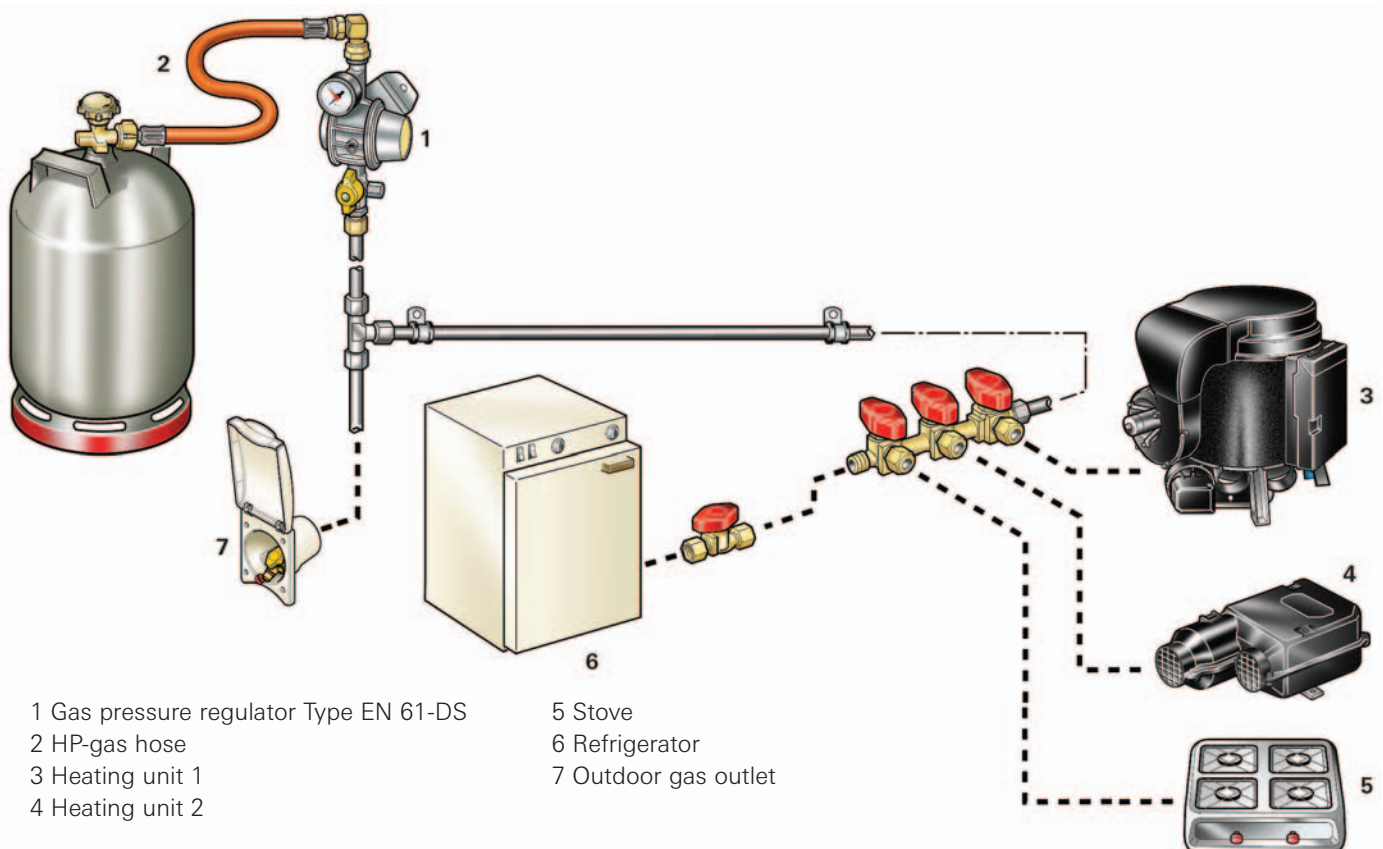
Type approval process (70/156/ECC)

- **Since October 1, 2004** manufacturers of mobile homes and caravans can test their new vehicles according to the new type approval process.
- **Starting on January 1, 2006**, all newly manufactured vehicles must be adapted to the new regulations and the manufacturer must test them accordingly.
- **Starting on January 1, 2007**, new vehicles may be registered for passenger use only if they have been inspected according to the 70/156/EEC type approval process and exhibit corresponding documentation.

European-standard gas system for mobile homes and caravans that are heated with liquid gas while driving.



European-standard gas system for mobile homes and caravans that are **not** heated with liquid gas while driving.



Gas system requirements

The future of uniform gas supply systems in Europe has already begun. The valid regulations as well as campers' desire to have a feasible, uniform system have been fulfilled.

In the near future, there will be two types of gas supply for mobile homes and caravans:

- for vehicles that are configured for heating with a liquid gas heater while driving
- for vehicles that may not be heated with a liquid gas heater while driving

Regardless of whether a vehicle will be heated with a liquid gas heater while driving or not, **the gas system must comply with the current European standards** (EN 1949, see page 2). Due to the changed regulations, some things about the gas systems in new vehicles will be different than what you have seen in the past.

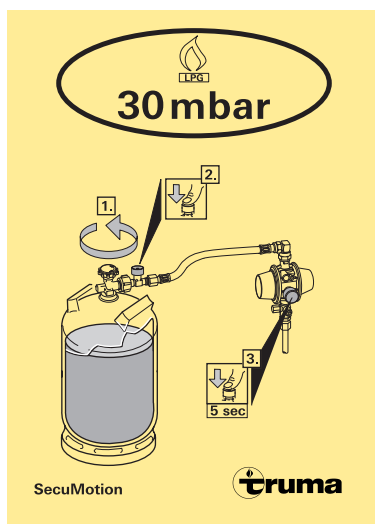
One change has been clearly visible inside gas cylinder boxes for some time. Especially in larger vehicles, gas pipes with a diameter of 10 mm (instead of the previously standard 8 mm) are used here with increasing frequency.

This change began around 1996 with European standardization of gas pressure at 30 mbar in order to provide gas consumers located far away from the pressure regulator with the proper gas pressure.

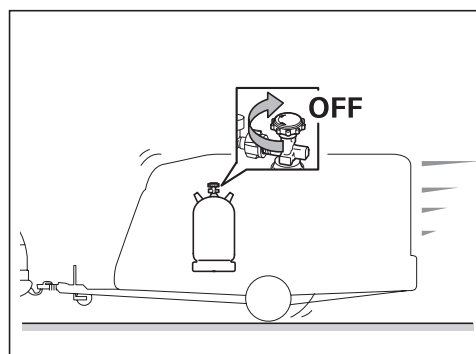
Since EN 1949 came into force, a minimum pressure of 25 mbar at all gas consumers has been mandatory. In some vehicles, this may mean that not only the gas line to the rapid closing valves must have a diameter of 10 mm, but also the line between the valve and the device.

The outlet lines on Truma valve blocks are designed for 8-mm gas pipes. However, a 10-mm gas pipe can be easily installed by using an 8-mm/10-mm reducing adapter.

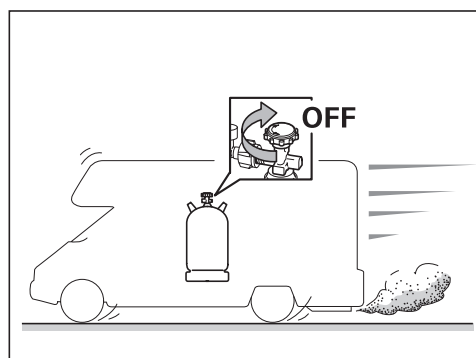
It is readily apparent inside the gas cylinder box whether a vehicle may or may not be heated with a gas heater while driving. The vehicle manufacturer must apply an appropriate sticker to indicate this (applies to new vehicles starting on January 1, 2006).



Sticker for heating with liquid gas while driving



An example of a sticker in a caravan when heating with liquid gas is **not** permitted while driving.



An example of a sticker in a motor home when heating with liquid gas is **not** permitted while driving.

Pressure regulator and high pressure hose for mobile homes and caravans that are heated with liquid gas while driving

- In this case, a Truma SecuMotion (1) should be used - a wall-mounted pressure regulator with an integrated inspection connection (2) and a gas flow monitor (3).

The gas flow monitor integrated into Truma's SecuMotion ensures that the gas supply will be shut off immediately (assuming the pressure regulator and the gas system are properly configured) if there is a break in the gas supply line leading to the heating device.

Truma SecuMotion is available in three versions:

0.8 kg/hour (gas pipe outlet 8 or 10 mm)

1.2 kg/hour (gas pipe outlet 10 mm)

1.5 kg/hour (gas pipe outlet 10 mm)

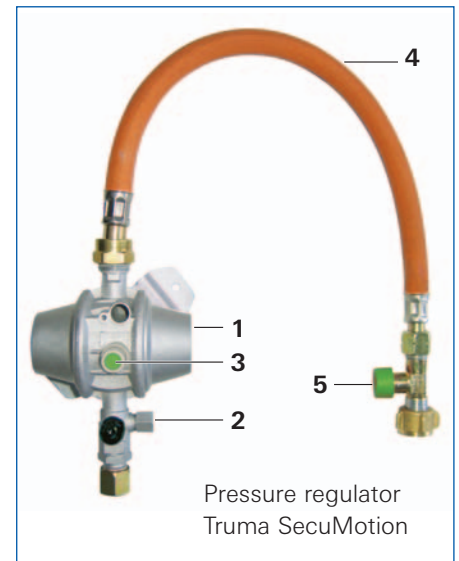
- A special high pressure hose (4) with a hose-break safety device (5) provides the connection between pressure regulator and gas cylinder.

The high pressure hose also has a safety device.

If there is a leak in the hose, the hose-break safety stops the gas supply.

- This configuration enables use throughout Europe.
(see page 12 - Overview of country-specific high pressure hoses)

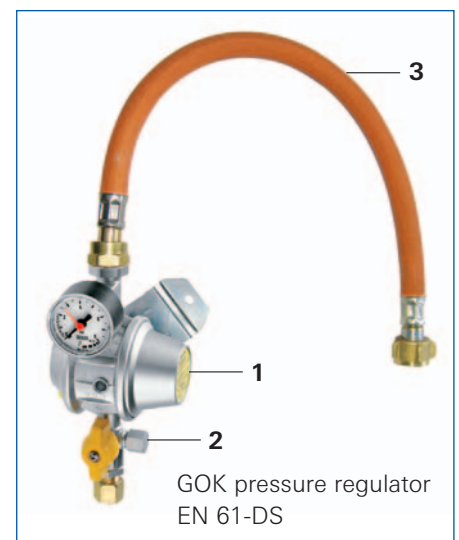
In the future, when the gas pressure regulator SecuMotion is used in conjunction with secure high pressure hoses, it will also be possible to use a liquid gas heater while driving in France. In the past this was not possible because the gas cylinders had to be closed while driving.



Truma SecuMotion is approved for use throughout Europe and fulfills all safety criteria that are required for heating the vehicle with liquid gas while driving.

Pressure regulator and high pressure hose for mobile homes and caravans that are **not** heated with liquid gas while driving

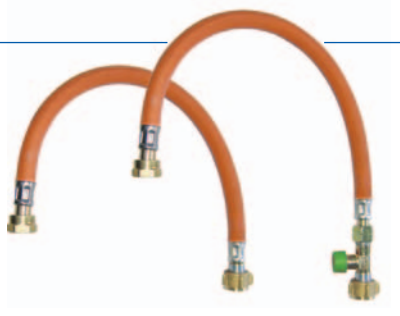
- In this case we recommend using a wall-mounted pressure regulator (1) with an integrated inspection connection (2) such as pressure regulator model EN 61-DS from the company GOK.
- A high pressure hose (3) connects the pressure regulator to the gas cylinder.
- This configuration enables use throughout Europe.
(country-specific high-pressure hoses without hose break safety device can be purchased at GOK, see p. 13)



General information

The caravaner must no longer replace the pressure regulator when he discovers a different gas cylinder valve. As a result, the customer is no longer forced to make changes to the leak-tested gas system.

Accessories and add-ons



High pressure gas hoses

Suitable high pressure gas hoses (with and without hose-break safety devices) are available in six different country-specific variations. The standard length is 45 cm; gas hoses with a length of 75 cm are also available for gas cylinder boxes with a pull-out mechanism for gas cylinders.

Refer to page 12 for an overview of high pressure hoses with hose-break safety.

A high pressure hose with a length of 1.5 m (only for Germany, see page 13) is available for external gas cylinders up to 33 kg.



A **screwing tool** for exchanging the country-specific high pressure hoses is included with every Truma SecuMotion or can be ordered individually from Truma.



Automatic changeover valve "DuoComfort"

The DuoComfort automatic changeover valve is available as an addition to the SecuMotion pressure regulator. This supplemental module is easy to install and provides for automatic changeover from the empty to the full gas cylinder; it also includes a sight gauge that provides immediate indication of whether the system is still removing gas from the operating cylinder or has already changed over to the reserve cylinder. The user selects the operating/reserve cylinder by turning a control knob on the changeover valve.

The changeover valve is approved for use with the Truma SecuMotion gas pressure regulator or the regulator model EN 61-DS from the company GOK. Use in conjunction with other pressure regulators is not permissible.



EisEx

An optional small heating cartridge (2 Watt) can be inserted into the pressure regulator in order to prevent possible freezing of the regulator, which can occur around the freezing point. With a single-cylinder gas system, EisEx is inserted into the SecuMotion pressure regulator; with a two-cylinder gas system, it is inserted into the DuoComfort changeover valve.



Remote display with EisEx

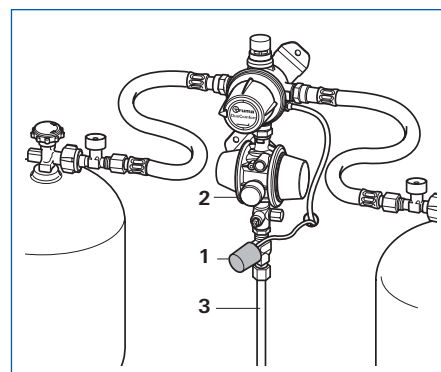
A remote display can be added in order to provide the user with information about the current condition of the gas supply from inside the vehicle. It uses red and green LEDs to indicate whether the gas supply is still coming from the selected operating cylinder (green LED) or if it has already switched over to the selected reserve cylinder (red LED).

A plug contact for the EisEx regulator heating is located on the cable harness; the regulator heating can be switched on or off at the control panel. The operating panel is equipped with an orange LED that enables visual inspection of the heater's status.



GS 8 and GS 10 gas remote switch

Truma offers the gas remote switch (1) as yet another supplementary product to make the gas system safe and comfortable to operate. The gas remote switch located on an operating panel provides an easy way to block the gas supply from inside the vehicle. The gas remote switch, which is installed directly between the wall-mounted gas pressure regulator (2) and gas pipe (3), is available for gas pipes of the diameters 8 mm and 10 mm.

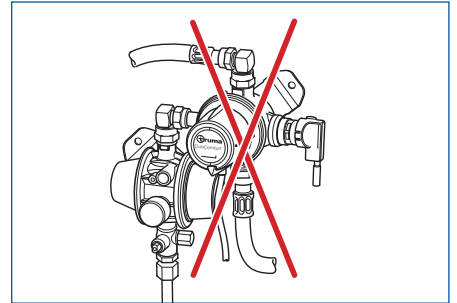
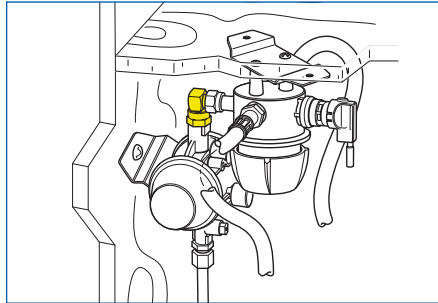
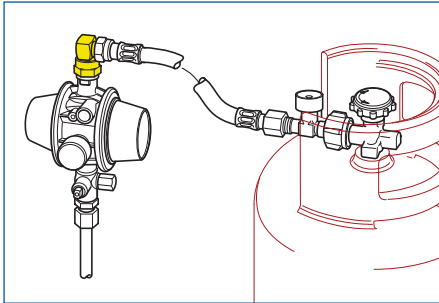


Installation in narrow or special gas cylinder boxes

Angle union 90°

An optional 90° angle union enables installing the new regulator system in small gas-cylinder boxes. This connecting element is screwed between SecuMotion and DuoComfort, which permits flexible installation positions.

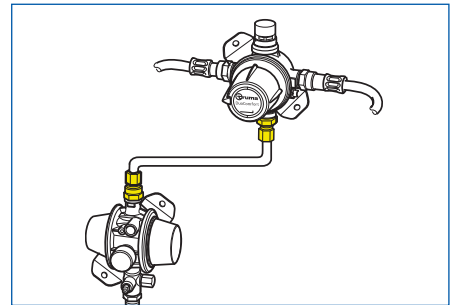
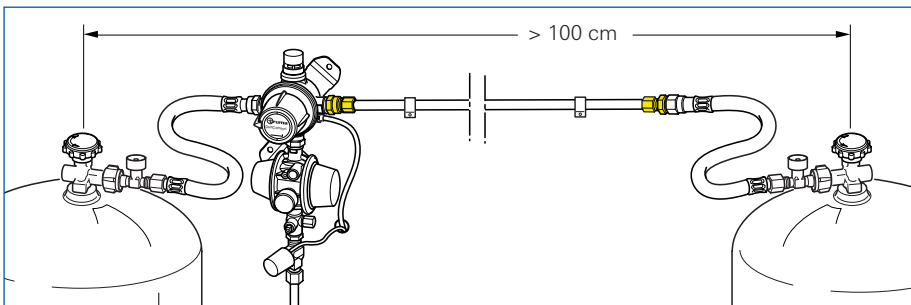
The 90° angle union can also be used between the pressure-regulating device and high pressure hose. In this case, it serves as a way to avoid kinks in the high pressure hose.



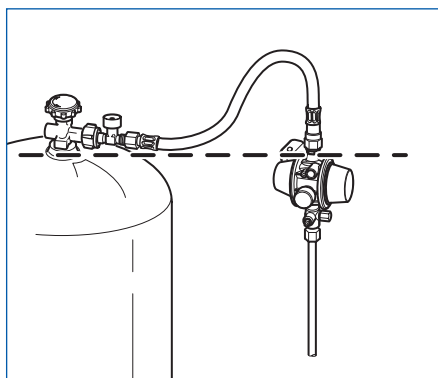
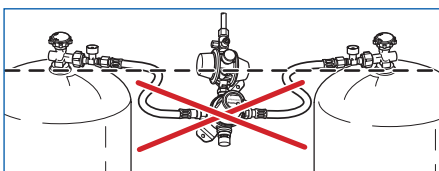
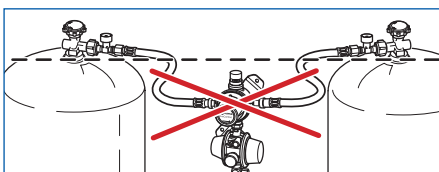
Attention: The changeover valve DuoComfort must be placed in such a way that the high pressure hose connections are in horizontal position.

Extension kit

The extension kit consists of two screw joints. It is needed with the DuoComfort changeover system when the distance between the gas cylinder valves is greater than one meter. Up to a distance of one meter, the high pressure hoses will be long enough to connect both cylinders to the gas pressure regulating set. The extension kit may also be used between Truma SecuMotion and DuoComfort up to a length of 0.5 meter.



Fitting position



Note:

In order to avoid the permeation of liquid gas into the regulator units, the installation shall always be conducted in the highest possible position, at least above the bottle valve level (dashed line).

Adding a Truma SecuMotion to an existing gas system with defined consumers and gas pipes

- Add up the total gas consumption of all installed gas devices under full load; the new SecuMotion pressure regulator must provide a gas throughput equal to at least the maximum consumption of all installed devices.

If the result of your calculation falls between two control variables, choose the larger of the two.

- Next, screw the SecuMotion pressure regulator onto the gas pipe in the cylinder box and check the functionality of the gas flow monitor.
- It is necessary to inspect every gas heating device individually. This is done by screwing off the gas pipe at the heater in order to simulate a line break.

Procedure:

1. Completely screw off the gas pipe at the heater's valve.
2. Temporarily seal the gas pipe (using a second person's finger or a rubber stopper, for example).
3. Open the gas cylinder.
4. Open all rapid closing valves.
5. Actuate (open) the hose-break safety device(s).
6. Actuate (open) the gas flow monitor.
7. Simulate line break by opening the sealed gas line.
8. Check if the gas flow monitor closes.
9. Repeat this process for every gas heater individually.
10. Properly re-attach the gas system.
11. Perform leak check.

Warning:

Some gas will always exit the open line during this experiment. For this reason, observe the safety regulations appropriate for handling gas.

If the gas feed is not interrupted, a 10-mm gas pipe must be installed (if not already used) between Truma SecuMotion and the vehicle's gas valve block.

If the vehicle already has a 10-mm gas line between the cylinder box and the valve block but the gas flow monitor still does not interrupt the gas feed, then a gas pipe of 10-mm diameter must be laid between the valve block and the affected heater as well.

It will be necessary to use a 10/8 mm reducer union for this.

Before attempting to convert the gas system, please contact Truma's customer service or our national importer in order to calculate the theoretical feasibility of such a conversion.

Note:

If the system contains a gas socket, do not include any consumers that can be connected to it when calculating the SecuMotion capacity!

If the aforementioned practical test assures that the gas flow monitor is working flawlessly, then you can permanently attach the SecuMotion pressure regulator and, if appropriate, add the DuoComfort automatic changeover valve.

Adding a gas device to an existing gas system

When adding a new device, such as a baking oven, you must check whether the existing pressure regulator has sufficient capacity for the expanded gas system (at least the maximum consumption of all consumers).

In this example, we will retrofit an existing gas system with a baking oven that consumes gas at a rate of 200 gm/hour.

The following devices are already installed:

Heater 1: 490 gm/hour

Heater 2: 200 gm/hour

Refrigerator: 80 gm/hour

Hotplate: 330 gm/hour

Total: 1100 gm/hour

This example uses a Truma SecuMotion gas pressure regulator with a **nominal flow rate of 1.2 kg/hour**.

If we now add a baking oven, the maximum gas consumption will rise to **1300 gm/hour**.

Accordingly, the existing pressure regulator is too small and must be **replaced by a pressure regulator with a nominal flow rate of 1.5 kg/hour**.

Choose the proper pressure regulator (such as the Truma SecuMotion) based on whether the liquid gas heater(s) will be operated while driving or not.

If using Truma SecuMotion, check the functionality of the gas flow monitor after completing the conversion work.

It is **essential** that you **check the functionality** of the altered gas system as described on page 10 because there may be other conversion measures affecting the gas pipes (8 mm or 10 mm).

If there are multiple heating devices (as in this example), repeat the process separately for each heating device!

After successfully checking the gas flow monitor, you must **check the gas system according to the pressure drop method!** (see page 10 - Checking the gas system)

Conversion work done on the gas system must be recorded in the vehicle's documentation. (in Germany use worksheet G 607)

We are ready to help you!

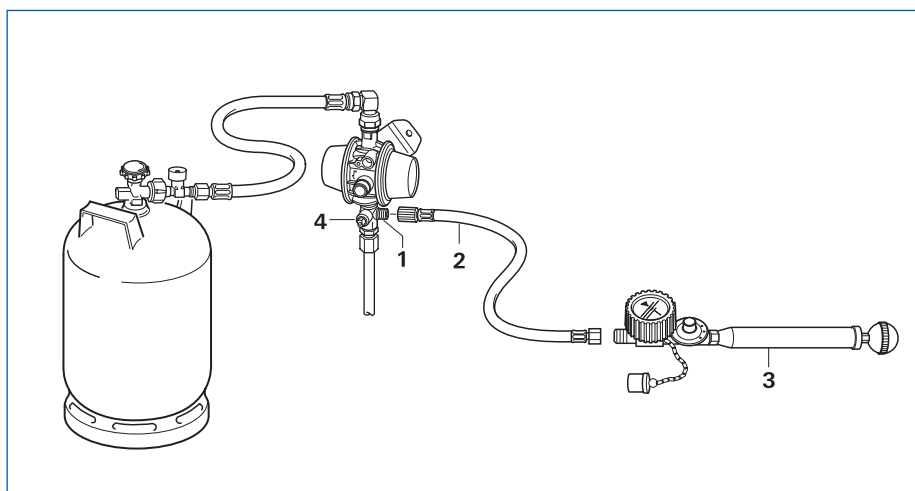
Our trained technical staff is ready to offer assistance if you are unsure or have questions related to gas supplies. To obtain assistance, please contact one of our partner companies or Truma customer service directly.

Checking the gas system

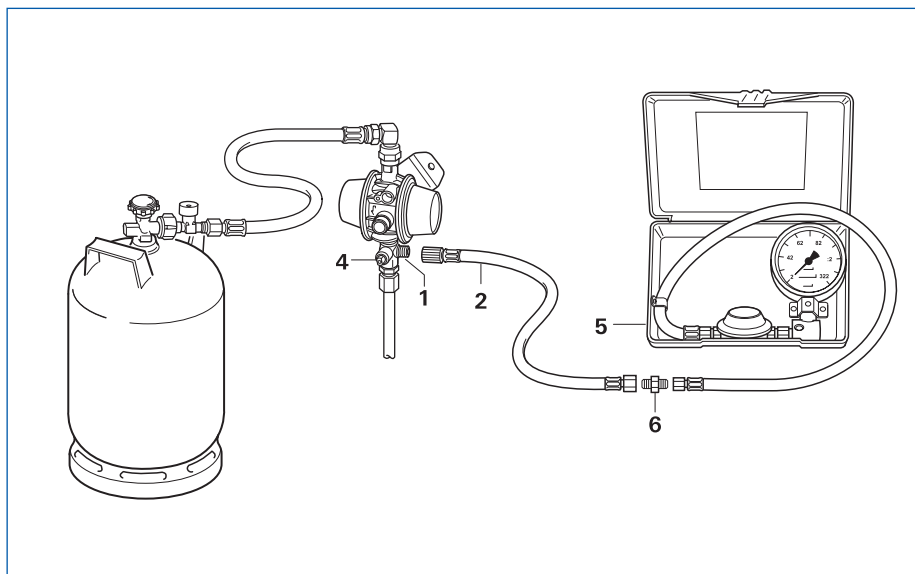
It is very easy to check for leaks if you have a Truma-recommended gas system equipped with Truma SecuMotion (or GOK EN 61-DS). Use a leak-finder spray to check the high pressure section. Spray all system parts like DuoComfort, high pressure hoses, and threaded connections and then check for formation of bubbles.

The low pressure section (gas pipes and valves on the installed gas devices) is checked at a test connection (1) on the Truma SecuMotion or GOK EN 61-DS pressure regulator. This requires a special test hose (2), one end of which is connected to the test connection and the other end of which is connected to the leak testing kit (3).

A shut-off valve (4) next to the test connection enables separation of SecuMotion from the gas system during the test procedure.



A regulator testing kit (5) is needed to inspect the initial pressure at the pressure regulator. The kit is attached to the test hose (2) with a threaded adapter (6); it enables reliable testing of a pressure regulator's flow and static pressure.



Warning:

After inspection, bring the shut-off valve (4) **back** into its starting position.

Technical data and dimensions

DuoComfort Technical Data

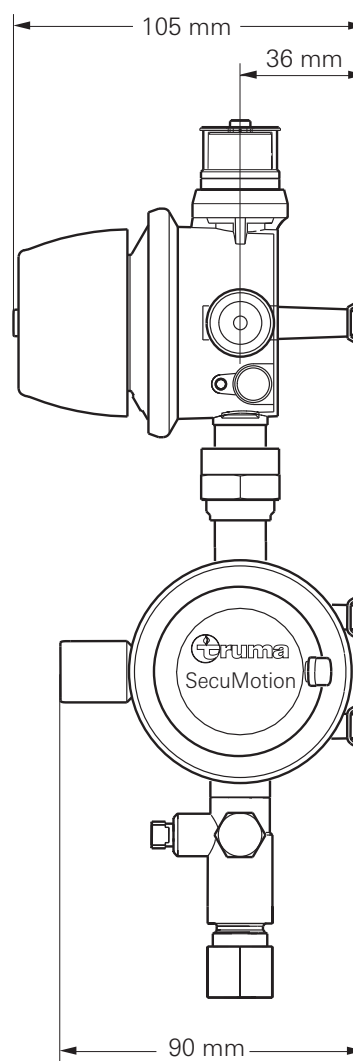
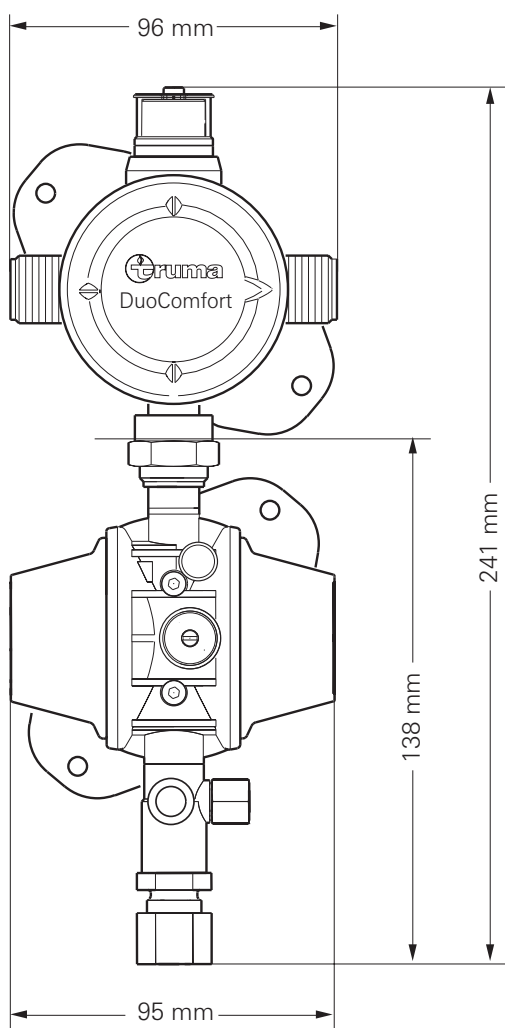
Gas type: liquid gas (propane/butane)
Inlet pressure: 0.3-16 bar
Outlet pressure: 0.3-0.7 bar
Changeover valve inlet: M 20 x 1.5 male threads
Changeover valve outlet: M 20 x 1.5 union nut

SecuMotion Technical Data

Gas type: liquid gas (propane/butane)
Inlet pressure: 0.3-16 bar
Outlet pressure: 30 mbar
Flow rate depends on output level:
0.8 kg/hour (gas pipe outlet 8 or 10 mm)
1.2 kg/hour (gas pipe outlet 10 mm)
1.5 kg/hour (gas pipe outlet 10 mm)
Regulator inlet: M 20 x 1.5 male threads
Regulator outlet: 8 or 10 mm
Cutting-ring screw fitting



Dimensions of DuoComfort with SecuMotion



Overview of country-specific high pressure hoses

L. 450 mm = 50410-xx L. 750 mm = 50420-xx	A	B	CH	CY	CZ	D	DK	E	F	FIN	GB	GR	HR	H	I	IRL	IS	L	M	N	NL	P	PL	S	SK	SLO	TR	YU
G. 1 50410-04 50420-04				☺								☺			☺				☺								☺	
G. 2 50410-03 50420-03		x	☺		x		x	x	☺				x	x			x	x			x		x		x	x		x
G. 7 50410-02 50420-02											☺ P					☺ P												
G. 8 50410-06 50420-06		☺			☺		☺	☺	x		☺ B		☺	☺		☺ B	x	☺		x ₁	☺		☺		☺	☺		☺
G.10 50410-05 50420-05																	☺			☺		☺		☺				
G.12 50410-01 50420-01	☺					☺	x			☺											x							

(D)

☺ = gängigster Gasflaschen - Anschluss im Land

X = ebenfalls erhältliche Anschlüsse im Land

X₁ = für Gasflaschen mit Clip-on Adapter

P = Propan

B = Butan

L = Länge

(GB)

☺ = most common connection

X = also available gas cylinders

X₁ = for gas cylinders with clip-on adapter

P = propane

B = butane

L = length

(F)

☺ = raccord le plus courant bouteille de gaz

X = bouteille également disponible dans pays

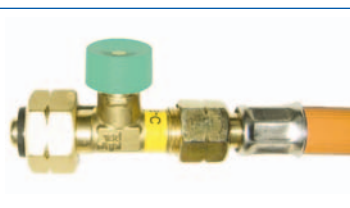
X₁ = pour bouteilles avec adaptateur à clipser

P = Propane

B = Butane

L = longueur

G.1



G.8



G.2



G.10



G.7



G.12



Product- and part number overview

Description	Illustration see page:	Part-No. single pack
Regulator SecuMotion EN-GSW 30/0,8 RVS8	5	52300-01
Regulator SecuMotion EN-GSW 30/0,8 RVS10	5	52300-02
Regulator SecuMotion EN-GSW 30/1,2 RVS10	5	52300-03
Regulator SecuMotion EN-GSW 30/1,5 RVS10	5	52300-04
DuoComfort	6	51500-01
HP-gas hose HRP G.12, 450 DE	6	50410-01
HP-gas hose HRP G.7, 450 GB propane	6	50410-02
HP-gas hose HRP G.2, 450 FR shell	6	50410-03
HP-gas hose HRP G.1, 450 IT liqui	6	50410-04
HP-gas hose HRP G.10, 450 SE Pol	6	50410-05
HP-gas hose HRP G.8, 450 GB butane	6	50410-06
HP-gas hose HRP G.12, 750 DE	6	50420-01
HP-gas hose HRP G.7, 750 GB propane	6	50420-02
HP-gas hose HRP G.2, 750 FR shell	6	50420-03
HP-gas hose HRP G.1, 750 IT liqui	6	50420-04
HP-gas hose HRP G.10, 750 SE Pol	6	50420-05
HP-gas hose HRP G.8, 750 GB butane	6	50420-06
HP-gas hose HRP 1.5 m, for external gas cylinders, 11-33 kg with G.5 connection (only for Germany)	6	50020-61300
Control remote DuoComfort L (standard) Cable lenght 6m	6	50210-01
Elbow 90°	7	50020-56000
Extension set	7	50020-61100
EisEx 12V	6	53101-01
Remote gas switch GS 8	6	57013-01
Remote gas switch GS10	6	57023-01
Test hose	10	50020-61200
Leak testing kit	10	54100-00
Adapter test hose - regulator test equipment	10	50020-04100
Regulator testing kit	10	54110-00
Straight reducer union Z8 / RVS 10	4	50000-06500
Straight reducer union Z10 / RVS 8	4	50020-04000
Straight reducer union G 8/10	4	50040-11900
Screwing tool	6	50020-61500

You can purchase wall-mounted pressure regulators Typ EN 61-DS at:

GOK Regler & Armaturen GmbH & Co. KG, Obernbreiter Str. 2- 16, 97340 Marktbreit, Germany
 Telefon +49 (0)9332 404-0, Telefax +49 (0)9332 404-49, info@gok-online.de, www.gok-online.de

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