

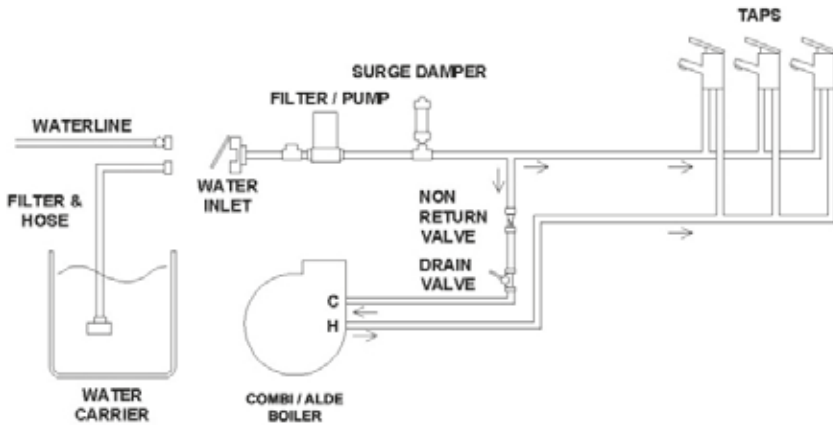
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WATER SYSTEM

Water system- Introduction

All Swift Group caravans water systems have been designed around a pump fitted within the caravan. This pump draws water from an external source, to provide water pressure within the caravan, whenever it is switched on and water is available.

The schematic below shows the basic configuration of the water system with inboard pump and no internal water tank:



When power is supplied to the pump, it will draw water from the external container through the water inlet mounted on the side of the caravan, and pump it to the caravan taps, shower and water heater.

The pump is fitted with its own pressure switch, and the pump will continue to pump water, until the pressure of water on the output of the pump reaches a pre-set level. For this pressure to be achieved, the taps must be closed.

When the taps are opened, water will leave the tap via the spout, and the pressure in the pipes between the pump and the taps will reduce. Because of this reduction in pressure, the pressure switch on the pump will switch back on and the pump will again run to pump more water.

Close to the pump, the water under pressure is split into two paths:

1. Through blue water pipes routed directly to the cold connection of each tap.
2. To the water heater.

Water from the pump enters the bottom of the water heater. Once the water fills the water heater (typically 10 litres), water then leaves the water heater via a connection at the top of that water heater. This water, which is still under pressure, then routes to the hot connection of each tap via red pipes.

Tank types – Overview

No Internal Water Tank

A caravan water system with no internal water tank functions in the following way:

The inboard pump draws water into the caravan, via the inlet on the offside of the caravan. This is directed to the water heater, taps and shower. An umbilical hose, with baffle, is supplied with the caravan to connect between the inlet and an aquaroll or similar external container.

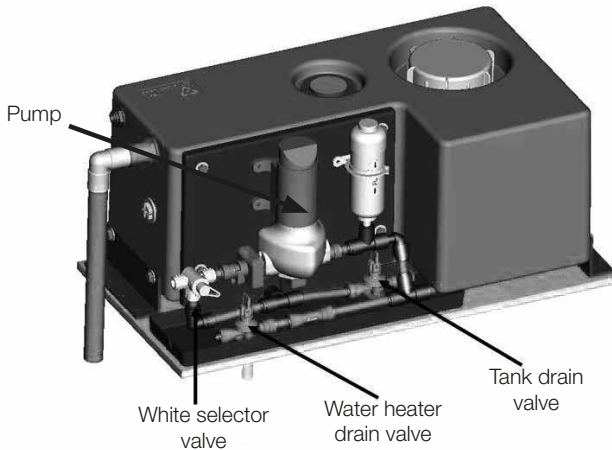
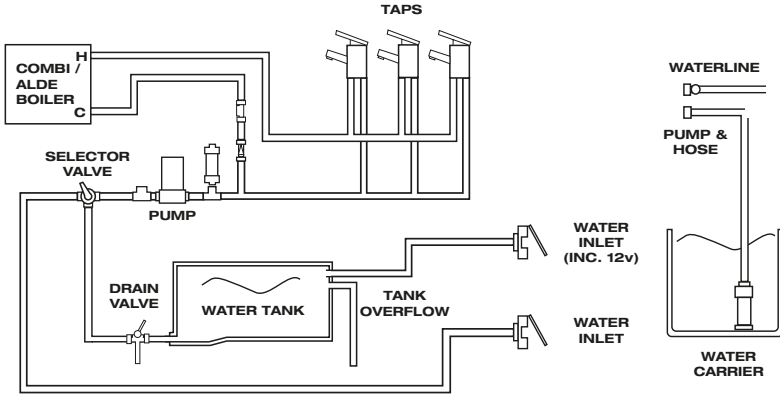
On Arrival at the campsite / Priming the system

- Ensure that the external water container is full.
- Close all of the taps (kitchen sink, bathroom, shower) except one, which should be open in the hot position.
- Ensure that the water heater drain valve is closed (move the Yellow handle on the floor near the water heater to a horizontal position).
- Switch the pump on using the button on the control panel. Water will flow through the open tap after a short time. This tap can then be moved to the cold position and again after a short time water will flow.
- Repeat the procedure at each tap, including the external shower point (model specific)
- When using a mains water connection the pump will still need to be switched on to supply water to the water heater, taps and shower.
- If a mains water connection is used, please ensure this is a Truma Waterline connection, which has a built in pressure reducing valve.
- To drain / winterise the system please see separate details later in this handbook.

WATER TANKS

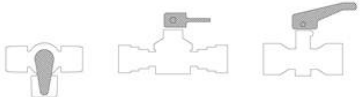
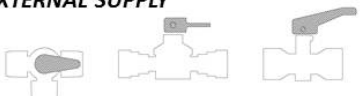
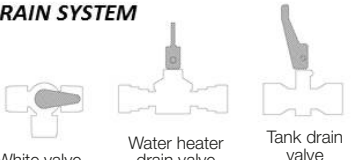
Internal Water tank (UK Caravans)

The following arrangement is used for a caravan with internal water tank:



- Two water inlets are fitted on the outside of the caravan, on the offside. The upper inlet is used to fill the internal water tank, and the lower inlet is used to bypass the tank
- The inboard pump draws water from whichever water source is in use.
- A White selector valve located close to the pump is used to select the water supply from the external source or the internal tank (see valve positions on the next page).
- An external pump is supplied with the caravan, this can be used with the lower inlet when the onboard pump is being used to draw water from an external source.

- The same external pump can be used with the upper inlet, this will transfer water from the external source to the internal tank.
- When filling the internal tank, monitor the amount of water in the tank and stop filling before the tank overflows via the switch on the control panel.
- Please see label on bed flap rear for valve operation.
- The control panel above the door has buttons to turn on and off both the internal and external pumps.

<p>INTERNAL TANK SUPPLY</p>  <p>EXTERNAL SUPPLY</p>  <p>DRAIN SYSTEM</p>  <p>White valve Water heater drain valve Tank drain valve</p> <p><i>When using EXTERNAL SUPPLY ensure external pump is connected to lower outer socket. Upper socket is used only to fill internal tank</i></p>	<p>WINTERISATION / STORAGE</p> <ol style="list-style-type: none"> 1) With external pump connected to upper external socket, lift the external pump out of the water container and allow the pump to run briefly. 2) Disconnect the external pump and set the valves to drain the internal tank and water heater, as shown opposite. 3) Open the kitchen tap, vanity tap, shower mixer and shower head to the fully open, mixed hot and cold position, and allow system to drain. Run the internal pump briefly. 4) Dis-connect input and output connections to the internal pump and allow water to drain from connections (including filter body). Remove filter until further use. 5) Again run the internal pump for short time to expel any water from the pump body. 6) Unscrew shower head, or shower head and hose, and shake dry. 7) It is advised to leave the pump, and shower head and hose, disconnected until further use. <p><i>Please also check handbook and/or appliance manufacturers instructions for further winterisation advice</i></p>
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On Arrival at the campsite / Priming the system

The caravan water system can be used with or without the internal water tank.

To use the caravan without the internal water tank:

- Ensure that the external water container is full.
- Connect the external pump to the lower connection point on the outside of the caravan, labelled 'direct to taps'.

- Move the White selector valve close to the pump anti-clockwise to select the external source.
- Close all of the taps except one, and follow the steps as detailed for a caravan without internal water tank.

To use the caravan with the internal water tank:

- Connect the external pump to the upper connection point on the outside of the caravan, labelled 'direct to tank'.

WATER TANKS

- Ensure that the tank drain valve (which is a Yellow handled valve identical in appearance to the water heater drain valve) is in the closed position - with the handle horizontal.
- Rotate the handle of the White selector valve clockwise to select internal tank as the water source.
- Press the 'tank fill' button on the control panel to transfer water from the external container to the internal tank.
- Water will now be transferred from the external container to the internal water tank. The amount of water within the internal tank can be checked by looking at the water level gauge on the control panel.
- Once the control panel shows this level at $\frac{1}{4}$ or higher, taps can be used as normal.
- Press the 'water pump' button to switch on the internal pump.
- When the control panel display shows the internal tank as full, or the external container is empty.
- Press the 'Tank Fill' button to switch off the external pump. Refill the external container if required.

To use the caravan with a mains water connection:

- When using a mains water connection the pump will still need to be switched on to supply water to the water heater, taps and shower.
- If a mains water connection is used, please ensure this is a Truma Waterline connection, which has a built in pressure reducing valve.
- The Waterline connection should be connected to the lower connection point on the outside of the caravan, labelled as 'direct to taps'.

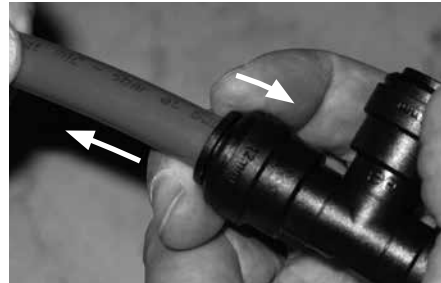
Plumbing Connections

In most cases, speed fittings are used, which allow easy and quick connection of water pipes.

To connect a pipe to a fitting, simply push the pipe into the connector. To remove the pipe, push the collar of the fitting inwards, and then withdraw the pipe.



To connect a pipe, simply push the pipe into the connector.



To remove a pipe, push the collar inwards, and then remove the pipe.

As a note, when refitting the pipe, ensure the end of the pipe is round (not oval) and the cut is square. If not, it could lead to water leaks.

Troubleshooting

Pump will not start, when the tap is opened:

- Check fuse(s).
- Check power source(s), and ensure there is sufficient voltage to run the pump.
- Ensure 'pump' LED is illuminated.
- Using a multi-meter, ensure there is power at the pump. If not, refer to your dealer as there maybe damaged cabling or a fault with the fusebox.
- Is the pump hot? If so, allow to cool before retrying.
- Has the vehicle been stored over winter? Was it correctly winterised? If no, the pump may have frozen, causing permanent damage.
- The pressure switch may need adjusting. See page 54 on how to do this.

Pump runs, but will not pressurise system (i.e. no or little water being discharged from taps) - Not Pulsing:

- Ensure water in source is present (onboard tank or aqua roll).
- Check in-line pump filter is free from debris and correctly fitted.
- Ensure water system has been primed correctly, (see pages 49 and 51) and there are no air-locks present.
- Ensure there are no restrictions in the plumbing.
- Using a multi-meter, ensure there is power at the pump. If not, refer to your dealer as there maybe damaged cabling or a fault with the fusebox.
- Ensure the inlet side of the pump (including Truma inlet and in-line filter) are watertight and not allowing air into the system.
- Ensure the pump has good voltage.
- Check (using a multimeter) that the voltage at the pump is between 10v-14.5v.

Pump continues to run (for more than 5 seconds) after taps are closed or pump turns on for no reason:

- Check for leaks on the high pressure side of the pump.
- Ensure water system has been primed correctly, (see pages 49 and 51) and there are no air-locks present.
- Ensure the pump is securely mounted.
- Ensure the piping on the high pressure side of the pump is in good condition (not blowing or deforming).
- The pressure switch may need adjusting. See page 54 for information on how to do this.

Noisy or rough operation

- Check for leaks on the high pressure and low pressure side of the pump.
- Ensure that all pipes (especially those within 150mm of the pump) are not touching any furniture.
- Ensure the pump is securely mounted.

Pump rapidly cycles (switches on or off) or water pulses from taps, including temperature pulsing:

- Check for leaks on the high pressure and low pressure side of the pump.
- Ensure there are no restrictions in the plumbing
- The pressure switch may need adjusting. See Section (page 54) for information on how to do this.

WATER TANK SENSORS AND PRESSURE SWITCH

Fresh level sensor & cleaning

Principle

The sensor, fitted to Swift Group caravans are pre-fitted to water tanks, and link to the fusebox, via a pre-fitted wiring harness. The sensors, which consist of a number of stainless steel rods or probes, at different lengths, are immersed in the fresh water, and use the conductivity of water, between the probes, to provide a reading to the fusebox.

The sensors are 'digital', in that while the conductivity (resistance) value can vary, the fusebox will register any conductivity between the reference probe and the various different length probes, indicating water present.

Normally, even if the rods are dirty, and providing the rods have not bridged by a foreign object, a circuit will still be delivered back to the fusebox and a water level displayed.

Sensor cleaning

The first step, in case of fault diagnosis, is to clean the sensor rods. False water level reading at the control panel can be caused by calcium build up or foreign objects within the tank bridging the probes.

Sensor Cleaning Instructions

Cleaning recommendations for lime scale build up:

1. Remove sensor from tank.
2. Check probes for build up or contamination.
3. Use clean soapy water.
4. Place scourer in water and dampen.
5. Apply scourer to sensor probe with limited pressure.
6. Rub sensor probe removing contamination.
7. Swill sensor with fresh clean water.
8. Replace probe into tank.

Suggested scourers - food safe

Plastic mesh scourer

1. Material: It is made of plastic.
2. Usage: Used for cleaning steel utensils, dishes, pots, pans, ovens, Bar-B-Que grills, glass, cutlery, sinks, kitchen and bathroom tiles and tubs etc.

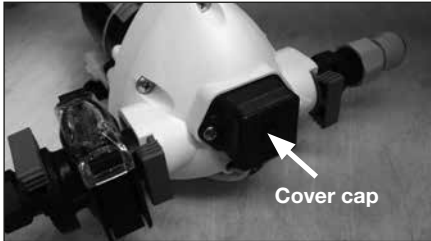
Water pump pressure switch

The purpose of a pressure switch is to monitor the pressure on the outlet side of the pump. When a tap is closed, and the pump continues to run, there is an increase of pressure in the system, and when that pressure reaches a pre-set limit, the pressure switch will turn the pump off.

Water pump pressure switch adjustment

Pressure Switch Adjustment, Truma/Flo-Jet pump. (Normally Grey upper section with White lower section/valve housing)

- All of the Truma/Flo-Jet pumps used by Swift are pre-set at 28psi + / -3psi.
- To further adjust the pressure switch setting, a cover cap must be first be removed from the end of the pump to reveal a pressure adjusting screw, as shown in the photos. A maximum of 1/4 turn clockwise or anti-clockwise, from the factory setting, is advised. Turning the screw clockwise 1/4 turn will increase the pressure switch cut-out pressure, turning the screw anti-clockwise will reduce the pressure setting.
- Please note a second screw mounted below the cover cap is set in position with threadlock, this should not be disturbed.



Cover cap

Pressure switch
adjusting screw

Ultraflow water intake housing

Operating instructions

Raise the lid, clean both the water socket and the plug of the Intake Assembly.

Plug the intake connector into the socket.



Place the assembly into the water container, ensuring that it is fully submerged before operating the system. The Dust cover is to stop contaminants falling into the water container.

When water is first introduced, or the water supply in the internal tank, or aquaroll, runs out, air will be present in the pipework. It is important that every tap is run to remove any air in the system before, for instance, the shower is used. Air left in pipework local to a tap can act as an accumulator and affect the ratio of hot and cold water flowing from other taps or shower mixers in the system.

If the pump fails to deliver water the most likely cause will be air in the system. Switch off the pump and shake the pump assembly in the external water container. Then switch on again.



To remove the Intake Assembly from the Water Intake Housing. To remove, pull the lower trigger and pull out the hose plug.

⚠ WARNING: Do not remove by pulling the hose. Please ensure that the lid is properly closed before driving!

Routine maintenance

Ensure that the O-ring seal on the hose plug and the socket are free from dirt. To aid fitting of the plug assembly smear the O-ring with vegetable oil.

Notes

Before winter storage the water system must be completely drained (see winterisation / storage in the maintenance section).

Clean the water system at the start and end of the season with sterilising fluid (see notes under sanitising on the following page).

System care

Allowing water to freeze in the system may result in damage to the pump and plumbing system.

Non-Toxic antifreeze for potable water may be used with Truma pumps. Follow manufacturers recommendations.

⚠ WARNING: Do not use automotive antifreeze to winterize potable water systems. These solutions are highly toxic and may cause serious injury or death if ingested.

SANITISING

Sanitising**Guidance on cleaning portable water tanks and the water system in touring caravans.**

The water systems, and in particular water tanks, in caravans are susceptible to contamination by bacteria if care is not taken with their use and cleaning. The symptoms caused by bacterial contamination are not purely limited to gastro-intestinal diseases, but may also manifest themselves as ear, nose, throat, eye or skin infections. It is therefore important that you carry out the following procedure prior to using the caravan each time, even if you boil or filter all water you use for drinking.

Separate Water Containers

1. All water remaining in the container should be disposed of so that the container is empty.
2. The outside of the container should be thoroughly cleansed and washed down to remove any dirt, dust or other contaminant. Water at a suitably hot temperature containing an appropriate detergent is recommended for this purpose.
3. Water should be put in the container, swirled around, then emptied out.
4. The container should then be totally filled with water containing an appropriate sterilant solution and allowed to stand for the recommended contact time (e.g. Milton for 15 minutes).
5. The solution should be emptied from the container.
6. The opening of the container should be cleaned thoroughly with an appropriate prepared wipe impregnated with a sterilant.
7. The container should be inverted whilst stored overnight (if possible).
8. The container must be filled with mains water only and mains water only should be used for the above cleaning procedure.
9. On no account should garden hoses be used to fill water tanks.

For Systems:

1. Drain down the system (open all taps to allow air in, enabling the system to drain quickly).
2. Remove any after market water filters fitted, and replace with a short length of hose or empty filter cartridge (this will ensure the filter is not affected by the disinfectant/sterilant solution).
3. Fill the system by using the pump with a disinfectant/sterilant solution (check that the solution at full strength appears at all taps/showers). Allow to stand for the recommended period of time.
4. Drain the system completely.
5. Thoroughly clean the outside of all taps/connectors with a cloth soaked in the disinfectant/sterilant.
6. Flush the system through with clean drinking water until no traces of disinfectant/sterilant can be detected at any tap.
7. Replace the filter.

Suitable sterilising chemicals are available from your caravan dealer, accessory shop, chemist or home-brew shops. It is not, however, recommended to use bleach or sodium metabisulphite.

Water

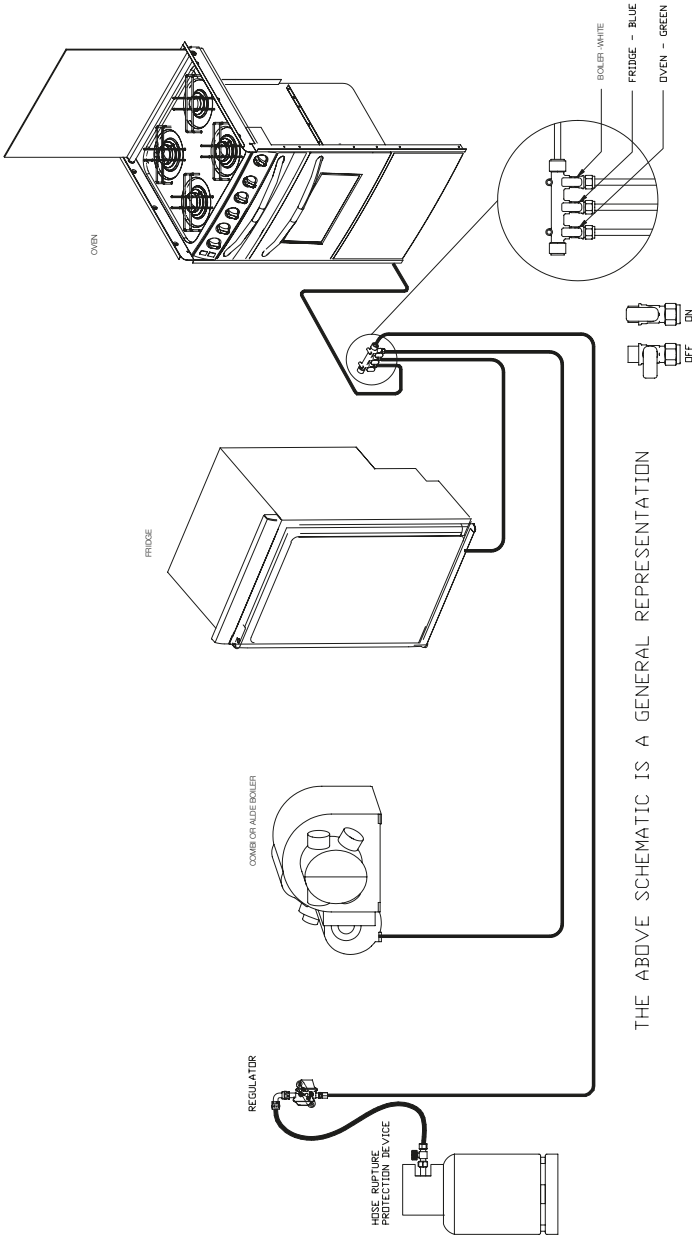
Fault	Cause	Remedy
Water not flowing from any tap when operated but pump runs	Freshwater tank empty Pump wired in reverse Pipe inlet or outlet pipe disconnected Pump pipes restricted by kinking Blockage in pump inlet or outlet pipe Blocked in-line filter of pump filter Air leak in suction line to pump	Check Check wiring, refer to pump manufacturers instructions Check connections Check pipes run Check, starting inside freshwater tank Dismantle and clean Check for bubbles.
Pump does not run	Pump or tap incorrectly wired Pump fuse blown Battery disconnected Pump seized or overheated Pressure pump sensing switch may have failed Contacts may be faulty Wiring connections may be faulty	Refer to pump/tap manufacturers instructions Check wiring connection and then replace with fuse of correct rating Check connections Refer to pump manufacturers servicing instructions Refer to pump manufacturers servicing instructions Check contacts in plug and socket are clean and making contact Check wiring connections
Water flows from cold tap but not from hot	Feed pipe to water heater incorrectly connected to the heater outlet Blockage in hot pipeline Heater inlet or outlet pipes kinked preventing flow Hot tap not connected Hot tap failed or blocked Heater non-return valve jammed	Refer to installation instructions Disconnect pipes and inspect. Check and re-route if necessary. Check pipe and connect where required. Disconnect and inspect. Refer to dealer.

WATER FAULTS

Water

Fault	Cause	Remedy
Water flows from hot tap but has reduced flow from cold	<p>Cold water pipe kinked preventing flow</p> <p>Blockage in cold pipe line</p> <p>Cold tap not connected</p> <p>Cold tap failed or blocked</p>	<p>Check and re-route if necessary</p> <p>Disconnect pipes after 1st connector and check up to tap</p> <p>Refer to installation instructions</p> <p>Disconnect and inspect</p>
Reduced flow from both hot and cold taps	<p>Battery condition low causing pump to run slowly</p> <p>If new taps have been fitted they may be restricting flow</p> <p>Pump needs servicing</p> <p>Partially blocked pump filter or in-line filter, if fitted</p> <p>Pump outlet pipe kinked restricting flow</p> <p>Water leak</p>	<p>Check battery state of charge, refer to electrical supply note</p> <p>Disconnect and check that they have at least 1/4" (6.3mm) bore</p> <p>Refer to pump servicing instructions</p> <p>Dismantle and clean if necessary</p> <p>Check and re-route if necessary</p> <p>Check all water connections</p>
Reduced flow from either tap	Pipe kinking restricting flow	Check and re-route if necessary
If pump motor runs steadily and will not stop	<p>Battery voltage may be too low (below 10.5 volts)</p> <p>Pressure Switch setting problem</p>	<p>Check that there is water in the container</p> <p>Adjust switch and/or re-charge battery</p> <p>Check all connections in pipework.</p> <p>Adjust settings.</p>

Typical gas schematic drawing with
Combi / Alde boiler



GAS SCHEMATIC

Note: Depending on the caravan model, the gas isolation tap for the water heater may be located close to the appliance.

Gas

General information

Gas Cylinders

Bottled Liquefied Petroleum Gas (LPG) is the most convenient portable source of fuel for your caravan. Make sure that heating and cooking appliances and the gas cylinders are switched off before you move the caravan.

Regularly check flexible gas hose, joints and connections for tightness.

Finally make sure that each gas appliance is working efficiently to the recommendations of the appliance manufacturers.

Only use gas bottle cylinders that are located within their dedicated position within the front gas bottle housing, never extend hose - hose lengths must not exceed 400mm.

Gas Hoses

A high pressure hose must be used with the regulator to connect to the gas bottle.

LPG cylinders i.e. Propane, Butane and Camping Gaz cylinders all have varying cylinder adaptor connections. It is important to check you have the correct hose and adaptor to suit your gas cylinders. Push on hoses are no longer permitted under the new regulations, The new high-pressure hoses have threaded connections and must be securely attached to the regulator and to the gas cylinder.

Ensure that there is a constant rise in the flexible gas hose between the gas cylinder outlet and the regulator elbow.

⚠ WARNING: Inspect flexible gas hose(s) regularly for deterioration and renew as necessary with the approved type, in any case no later than 5 years after the date of manufacture marked on the hose.

⚠ WARNING: Ensure hoses do not become entangled in door mechanism.

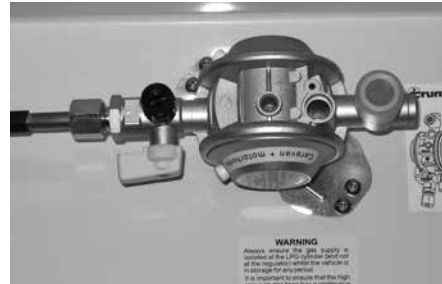
Cylinder compartment

All cylinder compartments have two universal plastic mouldings fitted to the floor of the compartment that are designed to fit both steel

and BP Gas Light cylinders and two universal support cradles with straps for retaining the bodies of the cylinders at mid to high level and two universal support cradles with straps for retaining the bodies of the cylinders at mid to high level.

⚠ WARNING: Ensure that the hose assembly is not under stress when connected to the cylinder.

Regulators



Your caravan is supplied with a wall mounted gas regulator plumbed inside the gas cylinder compartment. The regulator and all appliances work at a harmonised 30mb pressure, which work with Butane and Propane gas.

Pressure regulation system in this vehicle has a fixed working pressure of 30 mbar with a flow rate of 1.5 kg/h and complies with the requirements of EN 12864 annex D.

Note: Regulator valves and cylinder valves should always be in the 'OFF' position when towing and storage.

⚠ WARNING: When leaving the caravan for any period of time or storage always turn off the gas at the gas cylinder.

DuoControl (Model Specific)



The DuoControl combines the gas pressure regulator and the changeover valve in one unit for operation as a two-cylinder system. When the operating cylinder is empty, DuoControl automatically changes over to the reserve cylinder.

- Combines a gas pressure regulator and a changeover valve in one unit
- Automatically switches over to the reserve cylinder
- Complies with EN 13786

The Truma Drive Safe Regulator approved for en-route heating



Fig. 1

Approved for en-route heating if your caravan has a factory fitted habitation en-route LPG heating system that can be used whilst travelling. Fig 1 shows the two safety valves features that are part of the system, these are there for your safety whilst using the system when travelling. When in use ensure all other gas appliances are separately isolated.

To use safety devices:

1. Open cylinder valve
2. Firmly press the hose rupture protection (green button) on the high pressure hose
3. If necessary (eg. after a new installation or inadvertently striking the gas cylinder against the gas pressure regulation system), press the green reset button (crash sensor triggering element reset) on the regulator

⚠ WARNING: Isolate cylinders when re-fuelling

General

Regularly check flexible gas hose, joints and connections for tightness. Finally make sure that each gas appliance is working efficiently to the recommendations of the appliance manufacturers.

The LPG system should be inspected by a competent person.

Only use gas cylinders that are located within their dedicated position within the gas bottle housing, never extend the hose - hose lengths must not exceed 400mm.

We do not recommend the use of an inline LPG BBQ with the 1.2kg/H regulator when other LPG appliances are in use.

⚠ WARNING: Unless en-route heating is in use the LPG cylinder valve should be closed when driving.

TYPES OF GAS

Types of gas

Propane

Propane is supplied in red, or partly red bottles which have a female left hand threaded connector.

Scandinavian countries use the same connector.

Germany and Austria supply propane with a male connection.

Propane will work at temperatures as low as -40°C and is therefore suitable for all winter caravanning.

Butane

Butane is supplied in the U.K. in green or blue cylinder.

All these have a male left hand thread

EXCEPT for Camping Gaz which has a special female right hand thread and Calor 7kg and 15kg and aluminium cylinders which have a special clip-on connection.

Continental cylinders usually have a male left hand thread similar to but not identical with U.K. butane.

Butane is only suitable for use at temperatures down to 2°C and will not work below that.

Gas safety advice

⚠ WARNING: If you smell gas or suspect a leak or in the event of a fire and if it is safe to do so, isolate the gas appliances and turn off the gas bottles at the regulator. Evacuate the caravan and ventilate. Seek professional advice as to the cause of the leak.

⚠ WARNING: Inside outlet sockets shall only be used with dedicated appliances i.e. equipment supplied with the Touring Caravan. No gas appliances shall be used outside when connected to an inside socket

Facts about LPG

- LPG is not poisonous.
- Bi-products are harmless.

- There is danger if all air and oxygen were excluded.
- (Ventilation holes must be kept clear at all times).
- LPG has been given a smell by the manufacturers in order to identify leaks.

Awning Spaces LPG Appliance Exhaust

There is no danger of pollution of an enclosed awning space by the LPG exhaust from a refrigerator venting into it, as awning spaces are generally well ventilated.

Space heaters may produce sufficient exhaust to pollute the awning space, if it is totally enclosed, from a general comfort, smell and hygiene point of view. In the extreme case there could be a build up of carbon dioxide to a dangerous level.

Caravan owners are advised to allow some fresh air circulation in the awning space when such appliances are in use.

Precautions

- Never look for a leak with a match. Always use a soap solution or its equivalent when testing connections. Do not operate any electrical apparatus whatsoever, especially light switches. If the leak is not obvious, the caravan should be evacuated and qualified personnel consulted.
- Avoid naked lights when connecting or changing a cylinder.
- Check the flexible hose frequently.
- The gas is heavier than air and therefore sinks to the lowest point.
- Keep bottle gas containers outside (and protected against frost). If they must be kept inside make sure they are well away from heat.

⚠ WARNING: Do not use appliances with a different working pressure to 30mbar.

⚠ WARNING: Maintain adequate spacing of combustible materials from sources of heat.

⚠ WARNING: Do not use independent portable gas appliances inside the vehicle. Cookers shall not be used as heaters

⚠ WARNING: A BBQ point inlet valve, if fitted, must only be used for the connection of portable LPG appliances.

⚠ WARNING: Always read individual appliance instructions

Connection

Ensure that the gas regulator hose is correctly connected to the gas cylinder in gas bottle compartment and that the hose connection is tight.

Gas bottles must be fully located, seated at the base of the bottles and restrained by the strap provided in the dedicated compartment position. Straps are positioned to suit 6kg Calor Lite cylinders.

⚠ WARNING: If using cylinders other than those recommended, the user must ensure these are adequately supported, ventilation openings must not be obstructed and the cylinders must not cause damage to other fixtures and fittings located in the compartment.

Open ended gas hoses must always be protected from dirt and insects.

Before turning on the gas supply at the regulator, ensure that all gas operated equipment in the caravan is turned off.

All gas equipment (except barbecue and some water heaters) is supplied through a central Gas Manifold System which has individual isolation taps for each appliance (Fig A), as follows:



Fig. A

WHITE -Combi / Alde boiler

BLUE -Fridge

GREEN - Oven

Note: the external barbecue point is fed from the main feed through a built in integrated isolation valve. See schematic layout for details (page 59).

Note: In some installations the water heater is fitted with a separate isolation valve.

Ventilation

All ventilation complies with BS EN 721 and vents should not be obstructed in any manner as this could lead to insufficient fresh air. In this case the confined atmosphere becomes depleted of oxygen which could lead to dangerous levels of carbon dioxide (CO₂) build up leading to risk of asphyxiation.

The risks of carbon monoxide (CO) build up, which is a colourless, odorless and tasteless gas, will also be reduced with ventilation. Carbon monoxide is produced from incomplete combustion and should the CO detector be activated the cause of the incomplete combustion must be investigated prior to reusing the appliance in question.

Roof-mounted Flue installations

All flue installations should be inspected once a year throughout their length for corrosion. Flues should be replaced if any sign of perforation is found. Ensure that the replacement is of an approved type.

Thermal insulation heating

Your caravan has been designed and manufactured to a grade 3 thermal insulation and heating level for specific climatic conditions and tested according to the procedure in EN1645-1.

The classifications are as follows:

Grade 1

A caravan with an average thermal transmittance (u) that does not exceed 1.7w/(m²k).

GAS FAULTS

Grade 2

A caravan with an average thermal transmittance (u) that does not exceed $1.7w/(m^2k)$ and which can achieve an average temperature difference of at least $20k$ between inside and outside temperatures when the outside temperature is $0^{\circ}C$.

Grade 3

A caravan with an average thermal transmittance (u) that does not exceed $1.2w/(m^2k)$ and which can achieve an average temperature difference of at least $35k$ between inside and outside temperatures when the outside temperature is $-15^{\circ}C$.

GAS

Fault	Cause	Remedy
Hob does not light	No gas Air in pipe	Check level of gas in the cylinder Check gas cylinder valve is on Check gas taps are on Purge system Refer to hob manufacturers instructions
Oven does not light	No gas Air in pipe	Check level of gas in the cylinder Check gas cylinder valve is on Check gas taps are on Purge system Refer to oven manufacturers instructions
Combi boiler or Alde appliance will not light.	No gas Over gassed Air in pipe	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on Check exhaust outlet is clear Turn off appliance, wait 2 minutes and try again Purge system Refer to space heater or boiler manufacturers instructions
Fridge does not light	No gas Air in pipe	Check level of gas in the cylinder Check gas cylinder valve is on Check gas taps are on Purge system Refer to fridge manufacturers instructions

The electrical system

General Information

It is strongly advised that the mains installation is inspected periodically to ensure safe use. The IET (BS7671) wiring regulations recommend that mains installations in touring caravans are re-inspected every 3 years.

The National Caravan Council lists the qualifications necessary to perform this inspection, but an NICEIC approved contractor is probably the first choice.

On arrival at the campsite

- Disconnect hitch and 13 pin plug from the towing vehicle.
- Place the 13 pin plug in the holder provided to prevent damage.



13 pin plug example

- Check the suitability of the supply, is it AC or DC, is the voltage and frequency correct.
- Ensure that there is a proper earth (3 pin socket outlet).
- If in doubt consult site staff.
- Make sure that the supply from the site is switched off.
- Make sure that the charger switch on the PSU is switched off.
- Lift the cover on the electricity inlet on the caravan, and insert the connector on the flexible supply cable.
- At the site supply point, connect the other end of the supply cable to this using the socket provided.

- Switch on the main switch at the site supply point.

Care point: It is good practice to test the RCD (Residual Current Device) in the PSU before switching on. There is a test button on the RCD to test the lever, put the lever in the up position (on) before testing.

Care point: As with the RCD it is good practice to check the Miniature Circuit Breaker (MCB) in the PSU. Switch all to the on position (lever up). If any do not stay up then there is a fault.

On departure from the campsite

- Switch off supply from the site, disconnect the cable at both ends.
- Switch off RCD.

⚠ WARNING: Current consumption in the caravan must not exceed 16 amps or the pitch permitted maximum if this is less than 16 amps.

Overseas connection

- Connection to a mains voltage overseas requires particular attention.
- Overseas supplies can be of reverse polarity.
- Reverse polarity results in equipment not necessarily being isolated when turned off, reverse polarity indicator on the PSU will light in the event of reverse polarity.
- The only sure way to make equipment safe is to unplug it.
- It is useful to have a means of checking polarity when overseas.
- If it can be achieved then connect live to live, and neutral to neutral to achieve full electrical protection.

⚠ WARNING: Never allow modifications of electrical or LPG systems and appliances except by qualified persons.

13 PIN CONNECTION

13 pin connection

When using the 13 pin connector system for the first time it is worth taking a few minutes to familiarise yourself with the basic features of the connectors.



Fig. 1 - Correct alignment



Fig. 2 - Incorrect alignment

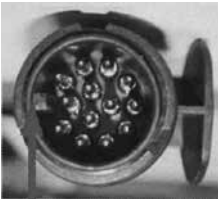


Fig. 3 - Incorrect alignment



Fig. 4 - Alignment marks

The important difference with the new 13 pin plug, when compared to the old 12N/S type, is that the plug has an inner ring assembly that is independent from the outer body. Under normal circumstances the inner ring and the outer body will be locked in one position (see fig 1).

When the plug is first inserted in the socket body ensure that the locating protrusion (key) matches the groove (keyway) in the socket body. The outer body can then rotated a full 90

degrees clockwise until a click is felt or heard, at this point the cover flap can be allowed to fall over the circular surface of the plug top.

To remove the plug it is important to rotate the outer body a full 90 degrees anti-clockwise, again until a click is heard or felt before withdrawing the plug from the socket. This will ensure that the inner and outer parts of the plug are returned to a locked condition.

If the connector is not fully rotated anti-clockwise prior to removing it from the socket it is possible that the inner ring will become 'floating' and may result in a condition where the protrusion will be incorrectly aligned (see fig 2 & 3).

If this situation does occur then it can be corrected by entering the edge of the protrusion on the plug into the groove in the socket (fig 8) and rotating the plug body anti-clockwise until a click is felt. This process will re-establish the lock between the inner and outer parts allowing the correct insertion of the plug into the socket.



Fig. 5 - Socket body (containing female socket terminals) fitted to the car



Fig. 6



Fig. 7



Fig. 8

Plug inner ring
(containing
male pin
terminals fitted
to the caravan)

Plug outer
body with locating
groove and hood
fitted to the
caravan)



Fig.9

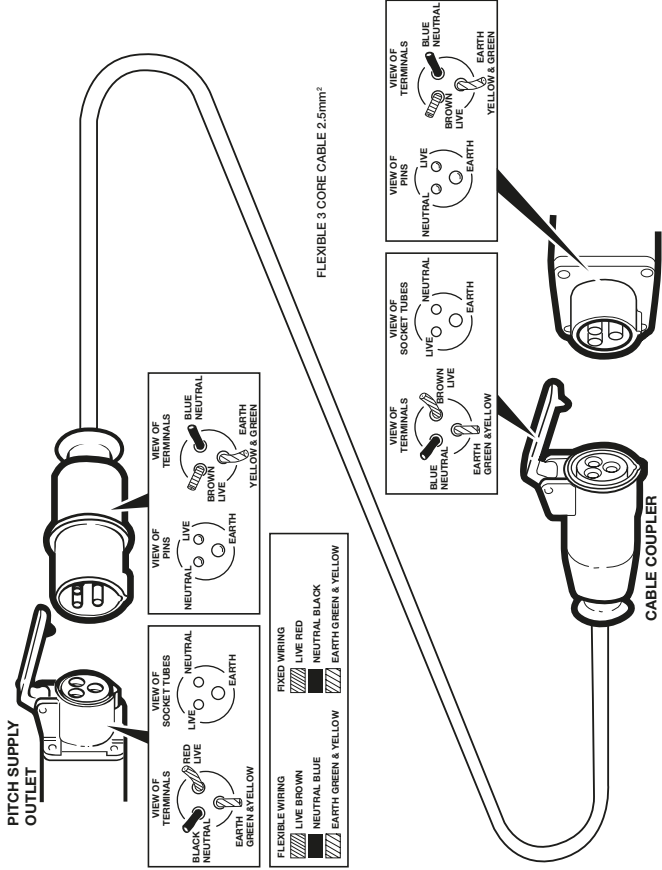
230V mains electrical equipment power consumption

Note: It is possible that the 230v mains electrical equipment may not all operate simultaneously. A typical UK site mains hook up point provides a maximum output of 10 amps and on some continental sites the available output may be as low as 5 amps. If your loading exceeds the site supply it may trip the site circuit breaker. Please check the available mains supply with your site operator.

Similarly loadings on each circuit breaker within the caravan should be observed. A label positioned close to the MCB's (Miniture Circuit Breakers will identify which appliances within the caravan are fed from which MCB. Consulting the typical appliance consumption figures table in conjunction with this label, will give an indication of which appliances can, and cannot, (site supply allowing), be operated simultaneously.

WIRING OF CONNECTING CABLES AND CARAVAN MAINS INLET

Wiring of connecting cable and caravan mains inlet



The legal length of the mains inlet cable is 25 ± 2 metres. When in use it must be fully uncoiled and protected from traffic.

TYPICAL APPLIANCE CONSUMPTION FIGURES

Typical appliance consumption figures

Appliance/ Item	230 Volt		12 Volt		LP Gas grams/hour
	Watts	Amperes	Watts	Amperes	
Theford Refrigerator	140 W	0.6 amp	Only when towing		13 g/h
Dometic Refrigerator	190 W	0.8 amp	Only when towing		16 g/h
Truma Combi 4 kw Heating system	900 / 1800 W	3.9 / 7.8 amp	13 W (avg)	1.1 amp (avg)	320 g/h
Truma Combi 6 kw Heating system	900 / 1800 W	3.9 / 7.8 amp	13 W (avg)	1.1 amp (avg)	480 g/h
Alde 3010 Heating System	1050 / 2100 / 3150 W	4.6 / 9.1 / 13.7amp	12W	1.0 amp	245 - 460 g/h
Microwave (factory fit)	1000 - 1270 W	4.3 - 5.5 amp	Not applicable	Not applicable	Not applicable
Cooker hob burners	Not applicable		Not applicable	Not applicable	70 - 161 g/h
Cooker Electric Hotplate	850W	3.7 amp	Not applicable	Not applicable	Not applicable
Grill	Not applicable		Not applicable	Not applicable	117 g/h
Oven	Not applicable		Not applicable	Not applicable	125 g/h
Battery Charger	690 W	3.0 amp	Not applicable	Not applicable	Not applicable
12V Fluorescent Lights	Not applicable		8 / 13 W	0.7 / 1.1 amp	Not applicable
12V LED Lights (each, depending on size of light)	Not applicable		0.4W - 6.1W	0.05 amp - 0.5amp	Not applicable
Pressure switched pump	Not applicable		48 W	4.0 amp	Not applicable

Note: These are approximate figures for guidance only, and are subject to changes in specification. The figures show energy consumption when an item or appliance is operating - ie. a light is illuminated, or a heating system is providing space heating or water heating. Appliances which feature LCD or illuminated control panels can have a low current consumption when in stand by mode, or have a constant low current draw in the background to run their displays and electronic systems - these figures are typically 0.4 amps or less, for each applicable item. These electronic items can in most cases be switched off individually, or, use of the System Shutdown button on the power supply unit isolates all of these items.

