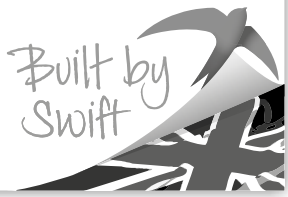
Motorhome Owner's Service and Warranty Handbook



Dear owner

Thank you for deciding to buy one of our new motorhomes.

We are sure you will enjoy many happy hours in it and we hope the information and hints in this handbook will heighten your enjoyment.

The handbook has been designed to give you a general guide to the care, use and maintenance of your motorhome. Whether you are a new or an experienced motorhomer the hints will help to protect your investment.

The information contained will answer most of your queries, but if there are any aspects which are not covered please consult your appointed dealer. We would suggest you make a note of your dealers name and contact information below.

Dealer Name:

.....

Telephone Number:

.....

E-mail:

.....

VIN:

.....

Throughout the season, specifications and equipment details contained within this handbook may change. Please refer to our online handbooks (www.swiftrgroup.co.uk) for the most up-to-date version of your handbook.

Customers should note that all motorhomes are supplied with two handbooks, the User Handbook which contains general information for the use and care of your product and the Technical Handbook, which contains technical information, weights and dimensions of your product.

Swift Talk

Swift Talk is the new central forum for the Swift community online. A place for all those united in their love of caravanning, motorhomes, holiday homes and touring in general, to share their experiences, meet new friends and find out a world of information on how to enjoy their touring lifestyle.

The site is packed full of features that actively encourage members, not only to liaise with the Swift Group via the forums, but also interact with each other through publishing their own content, uploading and sharing photos and video, and even posting their own blogs for the community to follow.

Swift Talk is the first place to learn about new product launches, events and Swift Group news, it's also the first place customers can go to as a quick reference to frequently asked questions or to actively take part in the forums; providing valuable feedback on Swift Group products and customer service.

The new online community can even be used to create your own groups, perfect for Owners' Clubs, dealers and exhibitors to attract new members, publicise and build awareness for upcoming events, rallies and shows.

Anyone who owns, uses, or is thinking of buying a Swift Group caravan, motorhome or holiday home, or would just like to be part of the growing Swift community is actively encouraged to sign up, create their own content, and start talking!

Just visit www.swift-talk.co.uk and become part of a unique online experience.

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Motorhome Warranty

All the illustrations and descriptive matter in this handbook are intended to give a general idea of the motorhome. Changing market and supply situations and our policy of continuous product development may prevent us from maintaining the exact specifications detailed in this handbook. We therefore reserve the right to alter specifications as materials and conditions demand.

Dealers are not agents of Swift Group Limited ("Swift") and have absolutely no authority to bind the manufacturer by any express or implied undertaking or representation.

Your Coach-built motorhome has four warranties:

Base Vehicle Warranty – provided by either Fiat or Peugeot

Your vehicle is a coach-built motorhome which utilises either a Fiat or Peugeot base vehicle. Swift takes a flat bed chassis supplied by either Fiat or Peugeot and adds the coach-built habitation part of the motorhome. Either Fiat or Peugeot provide a manufacturer's warranty for the base vehicle as supplied to Swift by them. For any issues with the base vehicle warranty please contact your local Fiat/ Peugeot dealer. This Motorhome Warranty does not cover any parts of your motorhome that are covered by the Fiat or Peugeot manufacturer's warranty. Your base vehicle warranty is subject to the terms and conditions contained in the Fiat or Peugeot handbook supplied with the base vehicle and the vehicle must be serviced in accordance with Fiat or Peugeot requirements.

SuperSure Warranty – provided by Swift

For all parts or fittings of your coach-built motorhome other than the habitation body shell and the Fiat/Peugeot base vehicle, Swift will repair (or at is option, replace) any defective parts or fittings for 3 years from the date of purchase (or hire purchase) subject to conditions, terms and exclusions below.

Body Shell Warranty – provided by Swift

Swift will repair (or at its option, replace) any defects with the habitation body shell for 6 years from the date of purchase (or hire purchase), subject to the conditions, terms and exclusions below.

Extended Body Shell Warranty – provided by Swift

For the first owner, Swift will repair (or at its option, replace) any defects with the habitation body shell for 10 years from the date of purchase (or hire purchase), subject to the conditions, terms and exclusions below.

The SuperSure Warranty, the Body Shell warranty and/or the Extended Body Shell Warranty provided by Swift do not cover any parts of the motorhome that are covered by the Fiat or Peugeot warranty.

Conditions for the SuperSure, Body Shell and Extended Body Shell Warranties

1. You must ensure that the habitation part of your coach-built motorhome has an Annual Service (see clause 2 below) within 90 days before or 60 days after each anniversary of the original date of purchase. In order to preserve your SuperSure Warranty the third Annual Service must, however, be carried out before the expiry of the 36 month period from the original date of purchase. In order to preserve your Body Shell Warranty, the sixth Annual Service must be carried out before the expiry of the 72 month period from the original date of purchase. In order to preserve your Extended Body Shell Warranty, the tenth Annual Service must be carried out before the expiry of the 120 month period from the original date of purchase. If you have not performed an Annual Service then Swift will not be obliged to perform any work under the applicable warranty. Original VAT invoices must be retained as proof that Annual Service have been carried out.
2. The Annual Service on the body shell and habitation area must be carried out in accordance with the requirements in this handbook. You will be responsible for any charges made for an Annual Service. If the Annual Service is performed by an authorised Swift Group Service Centre then Swift warrants that the Annual Service has been performed correctly. If the Annual Service is performed by an unauthorised

repairer or service centre then if the Annual Service has not been performed in accordance with the requirements in this handbook and/or work has been performed on your motorhome that is defective or faulty, then Swift will not be obliged to perform any work under this Warranty (insofar as it relates to defective or faulty work or defective Annual Service).

3. All new motorhomes must be registered with Swift within 6 weeks of purchase as new.

4. The benefit of the SuperSure and Body Shell Warranties may be transferred to a new owner if the motorhome is re-sold, provided that the motorhome has been serviced in accordance with the requirements of this handbook, and details of the change of ownership have been supplied to Swift using the change of ownership form set out in this handbook as soon as reasonably practicable after the change.

5. The benefit of the Extended Body Shell Warranty is non transferable to new owners and applies only to the original registered keeper of the vehicle.

6. If any repairs are identified as being necessary to the body shell or habitation areas during an Annual Service or otherwise, Swift will only pay for Warranty work performed by an authorised Swift Group Service Centre. The motorhome must be made available to an authorised Swift Group Service Centre within 6 weeks of the date the repair need was identified for the work to be carried out. The cost of transporting, towing or moving the motorhome by any means to or from the place of repair is the responsibility of the owner.

7. The SuperSure, Body Shell and Extended Body Shell Warranties only apply to motorhomes purchased and used primarily within the UK, which means that the motorhome is not used for continuous journeys outside of the UK of longer than 90 days per journey. Please refer to the Fiat or Peugeot handbook for use of the base vehicle outside the UK.

Terms

8. The Body Shell Warranty and Extended Body Shell Warranty covers any defect with the panels and seams of the coachbuilt habitation part of the motorhome. This includes body leaks, delamination of panels or floor, water ingress through any permanently sealed seam joints. NB: The Extended Body Shell Warranty is non transferable and only applies to the original registered owner.

9. In the first 12 months the SuperSure Warranty will cover any defect other than those specified in the Exclusions below.

10. In the years 2 and 3 the SuperSure Warranty will only cover any defect with the following components:

    - Water system; heater, fresh water tank, water pump, water gauges, taps and shower heads;
    - Heating system and components;
    - Main proprietary items (for example fridge, toilet, cooker);
    - Auxiliary electrics; and/or
    - Windows (excluding window furniture and blinds).

In years 2 and 3, any defect specified in the Exclusions will not be covered.

Exclusions

11. Swift shall not be liable under the SuperSure, Body Shell and Extended Body Shell Warranties for any defect related to or arising from the following:

    - The failure of a component for reasons of fair wear and tear;
    - Damage resulting from freezing, fire, over-heating or accidents (whether caused by the user or a third party);
    - Misuse of any component;
    - Normal deterioration, corrosion, intrusion of foreign or harmful bodies, lack of servicing or negligence of any person other than Swift which causes stoppage of or impairment to the function of any component of the motorhome;

- Replacement of parts which have reached the end of their effective working life because of age and/or usage;
- Cleaning or adjustment of any assemblies;
- Cosmetic finishes to kitchen sinks, cooker tops, vanity units, shower trays; and/or
- Routine maintenance items which are part of the annual service including lubricants, rubber gas hose, the cleaning of the heater and fridge flues, the replacement of gas jets, the resealing and/or replacement of shower room sealant, and the adjustment and lubrication of locks.

12. In addition to the exclusions above, in year 3 of the SuperSure Warranty Period, Swift Group Limited shall not be liable under this Warranty for any defects related to:
    - Pullout awning
    - External Omni-step
    - Omni-vent roof-light
    - GRP sheet material

Swift shall also not be liable under the SuperSure, Body Shell and Extended Body Shell Warranties if the Motorhome has been neglected, misused, modified or used for hire or reward or if the identification marks (chassis/VIN numbers) have been removed or defaced. The motorhome will be deemed to have been neglected if it has not been serviced and maintained as stated in this handbook or any repairs being identified as necessary at an Annual Service or by a Swift Group Service Centre have not been carried out in a reasonable time.

You have legal rights under UK law governing the sale of consumer goods. This Warranty does not affect your legal rights.

The name and address of the Warranty provider is:

Swift Group Limited, Dunswell Road, Cottingham, East Yorkshire, HU16 4JX

To make a claim under this Warranty, contact the Swift Group Service Centre which supplied your motorhome. Alternatively, details of your nearest authorised Swift Group Service Centre can be obtained by contacting the Swift Group Customer Care Department on 01482 875740, or enquiring on the website www.swiftgroup.co.uk

Change of ownership

There is a £50 administration fee to transfer the remainder of any 3 year 'Supersure' warranty' and the 6 year 'Body Shell' warranty, details of how to do this can be found at the rear of this handbook.

The 'Extended 10 Year Body Shell Warranty' is non transferable.

What to do if you require assistance

Congratulations on purchasing your new motorhome. We are confident that you will enjoy many happy holidays. However, should you have an enquiry or require assistance with a problem, we hope that this guide will be of assistance to you.

If you have a problem, or enquiry with regards to your new motorhome, please follow these steps:

1. Check the Owners Handbook, paying particular attention to the fault finding advice at the back of the book.
2. Contact your supplying dealer for assistance.

If you need to contact the Swift Group, please be aware of the following:

1. When contacting Swift Customer Care, please quote your name, postcode and VIN (Vehicle Identification Number). This can be found at the bottom of the front windscreen, on the plate on the front cross member within the engine compartment and on the Swift manufacturers plate situated on the bulkhead directly behind the front driver/ passenger seat.
2. In most instances, the Customer Care Team will involve your dealer in resolving the issue you are experiencing.
3. If you are contacting the company by email, letter or fax, the Customer Care Team will respond to you within five working days from the date of receiving the correspondence.
4. If you are calling the Customer Care Team, please avoid where possible, Mondays and lunch times.
5. Please be aware that the Swift Group cannot send parts direct from the factory. In all cases, without exception, your dealer must place the order for you.

Supplier contacts

A number of Swift Group suppliers manage their own Technical and Warranty related queries. Where a customer has a question relating to a product manufactured by a company listed below, we would advise that the first contact should be directly with them.

Sargent Electrical Services
Unit 39, Tokenspire Business Park, Beverley,
East Yorkshire, HU17 0TB

Phone: 01482 678981
Fax: 01482 678987
E-mail: support@sargentltd.co.uk

AL-KO Kober Limited
South Warwickshire Business Park
Kineton Road, Southam,
Warwickshire, CV47 0AL

Fax: 01926 818562
Email: mail@al-ko.co.uk

Truma UK Ltd.
Park lane, Dove Valley Park,
South Derbyshire, DE65 5BG

Phone: 01283 586020
Fax: 01283 586029
technical@trumauk.com

Thetford Ltd.
Unit 19, Oakham Drive,
Parkwood Industrial Estate,
Rutland Road, Sheffield, S3 9QX

Phone: 0114 273 8157
Fax: 0114 275 3094
Email: infogb@thetford.eu

Alde International (UK) Ltd
Huxley Close, Park Farm South,
Wellingborough, Northants NN8 6AB

Phone: 01933 677765
Fax: 01933 674975
Email: info@alde.co.uk

Dometic (UK) Ltd
Dometic House, The Brewery,
Blandford St Mary, Dorset, DT11 9LS

Phone: 0844 626 0133
Email: technical@dometic.co.uk

Motorhomes - annual service/ inspection record

In order to comply with the warranty, you must have your motorhome inspected and serviced by an authorised Swift Group Service Centre at least once per year.

It is important that the Owner's Handbook is stamped on the appropriate page by the authorised Swift Group Service Centre. Failure to do this will invalidate the warranty and the transfer of the warranty on the change of ownership.

The inspection should take approximately two to four hours and will cover the areas dealt with in the annual service check list. Any areas requiring service and/or maintenance will be highlighted by your dealer and we recommend that you authorise any necessary work to be carried out.

Note: It is essential, to validate the warranty, that an annual inspection be carried out by an authorised Swift Group Service Centre covering the items listed.

1. Damp and lamination test.
2. Chassis and chassis to body security.
3. Corner steadies.
4. Motorhome step.
5. Road lights, wiring and reflectors.
6. Internal lights and 12V DC system.
7. Water heater - gas and 230V AC (if fitted).
8. Hob, grill and oven.
9. Refrigerator 230V AC, 12V DC and gas.
10. Gas system.
11. Water pump, taps and water system.
12. Mains 230V AC system.
13. Windows and fittings.
14. Smoke alarm and battery.
15. Carbon Monoxide detector and Battery
16. Roof lights.
17. Furniture hinges/stays etc.
18. Exterior locks and hinges.
19. Grab handle security.
20. All internal vents.
21. Seals.
22. Blinds and fly screens (if fitted).
23. Blown air heating and gas fire systems

SERVICE INSPECTION

Annual service / inspection record stamps Motorhome model: ..... Year: ..... Chassis VIN:	**1st service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.
2nd service DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.	**3rd service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.
4th service DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.	**5th service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.
6th service DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.	**7th service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.

8th service DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.	**9th service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.
10th service DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.	**11th service** DATE: DEALER'S STAMP We certify that an annual service has been carried out in accordance with the handbook.

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Code of conduct

Camp sites

Arrivals

Report to reception immediately on arrival.

Vehicle Movement

Keep to roadways unless otherwise directed.

Adhere to speed limits. Note that these are generally 10 mph. (Remember that the stopping distance on grass is considerably greater than on tarmac.)

Only a person in possession of a current driving licence may drive on the site.

Park correctly as advised on your pitch. Where possible leave 20 feet of free space around your vehicle.

Use of Site Appliances

Use the electrical mains hook-up in the correct manner and with caution.

Ensure that all fresh water taps/connections are turned off after use.

Have care and consideration when using all facilities (toilets and showers etc) and leave clean and tidy. Young children should be supervised.

Waste Disposal

If the vehicle is not fitted with a waste water tank, a suitable receptacle should be placed below all waste water outlet pipes. Do not let these containers overflow. Dispose of all waste water where instructed. Empty effluent from chemical toilets where instructed.

To avoid possible damage to sewage purification works, only approved chemical fluids must be used. Under no circumstances should coal tar, phenol or caustic-based fluids be used.

Disposable napkins and similar bulky items must not be put into chemical closet emptying points but should be wrapped in a polythene bag and placed in the container provided. Place all litter in containers marked for the purpose.

Noise

Do not make excessive noise.

Children should be restrained from making excessive noise.

Flying kites and model aircraft and the use of items like catapults or air-guns, as well as ball games, should not be permitted among, or close to other vehicles.

Musical instruments, record players, radios and televisions should not be used to the inconvenience of other people on the site.

Open and close doors quietly.

Power generators must be adequately silenced and used with consideration.

Dogs and other Pets

All dogs and other pets should be kept under control.

Unless permission has been granted, no animal should be allowed loose on the site and leads must not exceed 10ft.

No animals should be allowed in the shower/ toilet blocks.

Do not let dogs foul the site.

Fire Precautions

Adhere to and take note of fire precautions noting the whereabouts of the fire points.

⚠ **WARNING:** Provide one dry powder fire extinguisher of an approved type or complying with EN3, of at least 1kg capacity, by the main exterior door and a fire blanket next to the cooker.
Familiarise yourself with the operating instructions on your fire extinguisher and the local fire precaution arrangements.

When using a dry powder extinguisher it is suggested that the motorhome be evacuated until the powder has settled, to avoid inhalation.

Unless permission has been granted, barbecues should not be used. If permission is given, consideration should be given to the annoyance that can be caused to other users of the site.

Open fires are not allowed.

Awnings and Tents

Awnings and tents should only be used when permission has been obtained.

When on grass and staying for more than a few days, the ground sheet and/or side flaps of awnings should be periodically raised in order to avoid damage to the ground.

Departure

Leave the pitch clean and tidy.

On leaving, check out with reception paying the required fees.

Wild camping

Camping away from licensed sites, without the permission from the land owner or his agents, is not allowed in the United Kingdom.

When permission has been granted, all aspects of this Code should be adhered to.

On no account should:

a. Litter be disposed of other than in the receptacles provided.

b. Water be allowed to escape from the vehicle.

c. Chemical toilets be emptied except into the disposal places agreed with the land owner.

d. Washing or similar be hung outside the vehicle.

Parking

Motorhomes should only be parked in approved places.

When using the facilities of a motorhome, care and consideration should be given to those around them.

Driving

Before moving off, elevated rooflights and aerials should be lowered and correctly secured, and top hinged windows closed. Likewise all doors and access lockers for gas containers and chemical toilets must be properly secured.

Exterior steps should be properly retracted and secured.

When the vehicle is in motion it is compulsory for all front seat passengers and rear seat passengers to wear seat belts, where fitted.

When using a motorhome on either the public highway or private roads the Highway Code should be complied with and full consideration given to other road users.

In the event of a motorhome travelling slowly the driver of the motorhome should, where possible, pull over in order to let other traffic pass.

⚠ **WARNING:** When refuelling or on a ferry ensure the gas system is fully isolated at source.

Handbooks (chassis & converter)

Before using a motorhome all aspects of the handbooks, produced by the chassis manufacturer and the converter, must be read and adhered to.

The separate chassis manufacturer handbook refers to your motorhome chassis and base vehicle including care and maintenance.

Environment

Care and consideration should be taken to protect the environment.

Observe the Country and Coastal Codes.

The Country code

Enjoy the countryside but respect its life and work.

More people than ever before are exploring the countryside, interested in farming, plant life, bird watching or just observing the general wildlife. Whatever your interest, there is a lot to learn, but please observe the following code:

1. Guard against all risk of fires. Hay and heathland catch alight easily and once ablaze are very difficult to put out. **Remember: fire spreads quickly.**
2. Fasten all gates.
3. Keep your dog under proper control.
4. Keep to the paths across farm land.
5. Avoid damaging fences, hedges and walls.
6. Leave no litter.
7. Safeguard water supplies.
8. Protect wildlife, wild plants and trees.
9. Go carefully on country roads.
10. Respect the life of the countryside.

The Coastal code

As our coastlines are increasingly used for recreation and education, the following suggestions are made to enable us to enjoy our inheritance and preserve it for posterity.

Disturbance may mean DEATH.

Do not trample about, or move rocks unnecessarily.

Do not frighten seals or seabirds.

Do not spill detergents, solvents or fuel from boats as these can kill marine life.

When sailing, moderate your speed - the wash from a fast boat can destroy banks and nests.

Live molluscs and crustaceans need not be collected as souvenirs - dead shells can usually be found.

Shellfish can take years to grow and fines can be imposed for not observing national regulations.

Do not pull up seaweeds unnecessarily.

Make your visit instructive - not destructive.

Look at material - don't remove it. Take notes and photographs, not specimens.

Observe by-laws and be considerate to others.

National Trust property and Country Parks have regulations to protect the wildlife. Follow these and the Country and Coastal Codes.

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Before moving off

Check:

- gas cylinders are correctly positioned, secured and turned off unless using en-route heating.
- all gas operated appliances have been isolated, except the en-route heating system if fitted.
- loose articles including luton ladder are stowed securely. Do not stow tins, bottles or heavy items in overhead lockers.
- all lockers and cupboard doors are closed and secured.
- main table is stored or locked in its transit position.
- fridge is on 12V operation and door lock is set.
- 230V mains input socket flap is securely closed.
- all drain taps are closed.
- tyre pressures and wheel nuts.
- rear corner steadies are raised.
- exterior roof rack ladder is raised and secured.
- all windows/doors/rooflights are closed and secured.
- TV aerial is lowered and locked into position (where fitted).
- exterior step (where fitted) is retracted /folded in.
- Ensure exterior service locker is closed and locked (where fitted).

Special attention must be taken to ensure all top hinged windows as well as the Luton windows and rooflights are closed when in transit. All units should be fully closed and latched to prevent damage. The motorhome exterior door should also be locked.

⚠ **WARNING:** Large and/or voluminous items should be stored securely before travelling.

⚠ **WARNING:** Vehicles over 3m high have a maximum vehicle height label affixed to the drivers sunblind. When planning your route take your vehicle height into consideration.

Central locking

The central locking will not activate unless the cab doors are closed. It will however activate with the habitation door open. The habitation door lock will then engage when the door is closed leading to the possibility of being locked out of the vehicle, if the keys are left inside. It is therefore essential that the habitation door is closed before the central locking is activated. To open the habitation door when locked, pull the internal door handle twice.

Motorhome terms

Mass in Running Order:

This is the mass of the motorhome as stated by the manufacturer, i.e. ex works weight including the driver with 90% fuel / fresh water / gas capacity and standard fixtures and fittings, in compliance with European Directive 92/21/EEC (Masses and Dimensions).

The mass in running order contains provisions for the masses of liquids and gases (see technical book for details). part of this provision can also be utilized as additional payload if for example you wish to travel with water tanks empty or no LPG cylinders.

Note: Quoted MRO is subject to tolerance, due to weight variation of materials used in Motorhome construction.

Maximum User Payload:

The maximum allowable weight to be put into the motorhome whilst it is being driven. This is made up of 4 sections:

Personal effects, conventional load, optional equipment and essential habitation equipment.

The Maximum User Payload is the difference between the Maximum Technically Permissible Laden Mass and the Mass in Running Order.

Personal Effects:

Those items which a user can choose to carry in a motorhome and which are not included as Essential Habitation Equipment or Optional equipment.

Conventional Load:

A mass allowance for each designated passenger seat.

Optional Equipment:

Items made available by the manufacturer over and above the standard specification of the motorhome.

Essential Habitation:

A mass allowance for liquids in systems not accounted for within the MRO.

Maximum Technically Permissible Laden Mass:

The maximum weight for which the motorhome is designed for normal use when being driven on a road, laden.

This mass takes into account specific operating conditions including factors such as the strength of materials, loading capacity of tyres etc.

⚠ **WARNING:** Under no circumstances should the axle loadings or the Maximum Technically Permissible Laden Mass of the motorhome be exceeded.

Nose weight of Towed Trailers:

The static mass of the trailer towing device on the rear of the towing vehicle.

Notes:

1. When measuring the noseweight it is important that the trailer is loaded.
2. The trailer is intended to be towed slightly nose heavy. The nose weight can be adjusted by distribution of the load. The nose weight should be approximately 7% of the actual laden weight (but not greater than the hitch capacity) and at the same time suit the motorhome requirements.

See ‘Advice on Towing’ page 20.

Loading of vehicle

⚠ **WARNING:** The driver is responsible for arranging the loads so that they comply with the technical weight limits of the specific motorhome model.

See specification handbook.

Correct weight distribution is an important factor in ensuring your vehicle is well balanced and easy to drive. It is therefore necessary to load your motorhome carefully making sure all heavy articles are evenly distributed and are preferably placed in the lower lockers or bed boxes.

⚠ **WARNING:** The two longitudinal bars fitted to the roof are there for styling purposes and should not be used for load carrying unless cross bars are fitted.

⚠ **WARNING:** Do not travel with televisions or microwaves in overhead lockers unless the appliance was supplied fitted to your motorhome by the manufacturer.

Although it is essential to ensure that the total weight of your motorhome does not exceed the stipulated Maximum Technically Permissible Laden Mass, (MTPLM), it is important to remember that the front and rear axles also have individual maximum weights which must not be exceeded.

Note: To ensure adequate road holding the load on the front axle, under all conditions, must not be less than 40% or more than 70% of the total weight.

Ensure you distribute the payload equally on each side of the vehicle to avoid an imbalance.

These weights, together with the MTPLM, can be found on the Statutory plate adhered to the bulkhead behind the right hand cab seat.

Note: Please take care to ensure you have allowed for the masses of all the items you intend to carry in your motorhome e.g. passengers, optional equipment, essential habitational equipment and personal effects such as clothing, food, pets, bicycles, sailboards, sports equipment etc.

Large storage areas

The large storage areas provided in some motorhome layouts are designed solely for the purpose of carrying personal possessions, these areas must not be used;

- as a habitation area (eg living, sleeping or cooking).
- to carry passengers, animals or livestock.
- for the installation (or use) of any LPG gas operated appliances, (unless supplied fitted by the manufacturer).
- for carrying LPG gas bottle cylinders.
- to carry any flammable liquids, unless properly stored, sealed and secured.
- for the operation of an electrical generator.
- in such a way that the load exceeds the MTPLM and maximum axle loads.

Care must be taken to ensure that exterior doors are closed, locked and that all possessions are properly stored and secured before setting off on any journey.

Roof loading

Some motorhome roofs can be fitted with a roof rack (optional).

A maximum load of 50kgs can be evenly distributed on the roof rack system.

This figure MUST NOT be exceeded.

Note: When loading the roof rack, make sure the load is spread evenly and do not allow sharp objects to come into contact with the roof surface.

Note: Ensure items loaded on the roof rack do not act as a sail (i.e. deck chairs).

⚠ **WARNING:** Do not apply excessive load to the rear suspension of your motorhome or allow the vehicle to reverse with the roof rack access ladder in the down position, touching the ground. This may cause excessive strain on the ladder fixing points.

The roof areas, up to the over cab section, are capable of withstanding an average person's weight (13 stone or 82.5kg).

Note: Do not walk on the over cab section.

⚠ **WARNING:** The roof may become slippery in adverse conditions, wipe dry before attempting to walk on roof section. Extreme care should be taken to avoid falling from the vehicle.

⚠ **WARNING:** When walking on the roof, deck type shoes should be worn – not leather sole

Tyres

If a wheel or tyre fitted to a wheel is changed any replacement must be of the same type of construction and size.

The law requires that the tyres and pressures must be suitable for the use to which they are being put. The minimum tread depth must be 1.6mm throughout a continuous band comprising the centre three-quarters

of the breadth of the tread and around the circumference of the tyre.

Please refer to base vehicle manufacturer's handbook for tyre pressure information.

This may also be displayed in the driver's or passenger's door aperture.

Motorhome Tyre Specifications

Customers should note that your Motorhome is fitted with "Camper Tyres". Camper tyres meet a specific "CP" (Camping Pneu) standard for tyres on Motorhomes. The Camper tyres on a Motorhome (unlike a commercial van) are designed to carry a significantly higher load for the majority of their life and even when stationery for greater periods of time unlike a van which typically loads and unloads. As a result Camper tyres have stiffened side walls to withstand the increased payloads and pressure on them, this extra reinforcement also gives better vehicle stability on the rear with the heavier rear axle loads typical on a Motorhome. The tyres are also designed to improve mileage (wear) and offer better grip off road.

When replacing your tyres we only recommend the fitment of CP or Camper Tyres.

Dedicated travelling passenger seating

Seat belts are fitted to all travelling seats. Travelling seats are designated by the manufacturer and vary according to the layout you have purchased. Each seat is homologated i.e. tested to all relevant safety requirements. NEVER travel in or attempt to install a seatbelt to a non-designated seat.

⚠ **WARNING:** Side facing seats are designed for habitational use only, not for use when the vehicle is in motion.

Seat belts and legislation

Designated driver and passenger seats are fitted with seat belts and MUST be worn.

Children, aged up to 3 years of age, must wear an appropriate child restraint suitable for their age and weight. Children from 3 years of age and up to 135cm (4'5") in height, or 12 years of age, whichever is reached first must use a restraint suitable for their age.

Children over 135cm (4'5") in height or aged 12 or 13 years must wear a seat belt.

Note: It is the legal responsibility of the driver To ensure children aged up to 14 years old are suitably restrained. For passengers aged 14 and over, it is their responsibility (not the driver) that a seat belt is worn.

Fig 1

Designated passenger seats within the habitational compartment of your motorhome are identified (fig. 1). Seat belts are fitted for your safety and must be worn unless a 'Certificate of Exemption from Compulsory Seat Belt Wearing' is held. This Certificate must be produced if asked for by the Police – seat belt offences can result in a fine.

Child seats

Choosing/Buying

Go to a reputable retailer such as Halford's, Mothercare, Toys R Us, John Lewis etc. Most reputable retailers will have trained child seat advisers on site and will offer a fitting service. Ask the advisor to fit various seats to the vehicle. Once a correctly fitting seat has been installed, satisfy yourself on its suitability for your child and the vehicle before buying as it is important to use a correctly fitting seat in your motorhome.

⚠ **WARNING:** The child seat you use in your car may not be suitable for mounting on a motorhome seat.

Choose the right seat for your child's height and weight.

Ensure it has an official approval mark (usually the United Nations 'E' mark). The current UN standards is Regulation 44.03

Never fit or use a second hand car seat. It could have been damaged and may not meet modern standards. The fitting instructions may also be missing.

Positioning/ Fitting

Dependant upon the child seat type, the most suitable position for the child seat to be fitted may be the front passenger seat of the cab (NOTE airbag advice below) or the window seat of the forward facing rear seat, the isle seat in the rear is not a recommended position, advice should always be taken from the retailer on the suitability and security of the seat in the motorhome.

Read and follow the child seat manufacturer's instructions for fitting the seat.

All Swift Motor homes are fitted with inertia reel seat belts, however, the child seat must be tight in the adult seat. Push all your weight into the child seat as you tighten the belt.

Keep a copy of the child seat fitting instruction in the motorhome for easy reference.

Any doubts, ask an advisor to show you how to correctly install the seat.

Airbag

Never fit a rear-facing child restraint in a seat with an active airbag in front of it.

Forward-facing child restraints should be positioned as far back from the airbag as possible. Check the base vehicle handbook.

Three point seat belts

This section refers to the seat belts located in the habitation area of your motorhome.

Fastening the seat belt:

Insert tongue into buckle; a positive 'click' indicates correct assembly.

Releasing the seat belt:

Press the red release button, the tongue will be ejected from the buckle.

- The belt is designed for use by one person and must not be put around a child seated on a person's lap.
- The belt is suitable for restraining most child seats and boosters.
- The belt should at all times be adjusted and used in accordance with the instructions. No excessive slackness should be present.
- Once installed the diagonal should pass across the centre of the shoulder and the buckle should lie just on or below the hip.
- Avoid twisting the webbing during use. Webbing must not be allowed to chafe against sharp edges.
- Do not make alterations or additions to the belt.
- Belts that have been cut, frayed, damaged or stressed through impact should be replaced. After impact the motorhome anchorage points should also be checked.
- To clean use warm soapy water only.
- Periodic inspection of the installation will ensure reliability of the seat belt.

Driving licence

Licences issued to drivers who passed their car driving test before 1st January 1997 include categories B+E and C1+E which gives them entitlement to drive motor vehicles up to 7500kg MTPLM.

Drivers who passed their test on or after this date have category B entitlement only, which restricts the entitlement to motor vehicles with up to 8 passenger seats and an MTPLM of up to 3500kg with trailers up to 750kg MTPLM (4250kg combined) or larger trailers providing the combination of the trailer and towing vehicle does not exceed 3500kg and the MTPLM of the trailer does not exceed the unladen weight of the towing vehicle.

Drivers who passed their test on or after the 1st January 1997 will need to take an additional test(s) to gain the B+E and C1+E entitlement.

A number of Swift Group motorhomes have an MTPLM greater than 3500kg, therefore

you must check you have the driving licence entitlement for the vehicle you drive.

Vehicle classifications

Motorhomes up to 3500kg MTPLM are P/LGV (Private Light Goods Vehicles), motorhomes with an MTPLM over 3500kg and up to 7500kg are P/HGV (Private Heavy Goods Vehicles). These are used in defining MOT classifications and vehicle excise duty (road tax) classifications.

Advice on towing

The towing capability of each motorhome differs depending on the specific chassis and engine types, (see 'Towing Capabilities' in your specification handbook).

This takes account of the maximum front and rear axle loadings as well as the minimum front axle loading in two conditions, MRO and MTPLM condition.

Towing in these, and any other condition requires sensible loading and distribution of payloads to ensure the requirements of the towing capability table are met.

When towing, the demands on both the vehicle and driver increase. A trailer reduces manoeuvrability, the ability to climb hills, acceleration and braking capacity and makes the vehicle handle and corner differently.

It will also increase the fuel consumption of the vehicle.

Always brake in good time. Special care must be taken when descending gradients. Change down before going down a steep hill so the engine can act as a brake. Ensure that the towing vehicle tyre pressures are correct and adjusted for full load conditions and that the trailer tyre pressures are as recommended by the trailer manufacturer. Regularly check the operation of trailer brakes and lights.

For maximum stability, when loading the trailer ensure that the loads are properly secured during transit. Position loads so that most of the weight is placed close to the floor and, where possible, immediately above or close to the axle(s). Where the load can be divided between trailer and tow vehicle, loading more weight into the vehicle will generally improve the stability of the combination. After loading the trailer, check that the nose weight and axle loads are in accordance with the manufacturer's recommendations, also check the rear and front axle loads on the motorhome. When calculating the laden weight of the trailer, remember to include the weight of the trailer PLUS THE LOAD.

Note: Towing regulations vary from country to country. It is very important to ensure that national regulations governing towing weights and speed limits are observed (refer to the relevant national motoring organisation for information). The stated maximum permissible towing weights refer to the vehicle's design limitations and NOT to any specific territorial restrictions.

Notes:

1. Do not exceed the motorhome gross vehicle train weight.
2. Do not exceed the maximum front & rear axle loads on the motorhome.
3. Ensure the motorhome front axle load is never less than 40% or more than 70% of the total weight.
4. Motorhomes with an MTPLM up to 3500kg which have European Type approval can only be fitted with a type approved towbar complying to 94/20/EC or ECE R55.
5. The limit for towing an un-braked trailer is 750kg (based on VIN plate not actual weight), this applies to a towed car.
6. A car dolly with a car with a GVW over 750kg in place is considered as two trailers, these are legal for use for recovery but under the Road Traffic Regulations Act 1984 the combination is limited to 40 mph on motorways and dual carriageways and 20 mph elsewhere. A car dolly is not legal for transportation (there is a very specific difference between recovery and transportation. Recovery is defined as the removal of a broken down vehicle to a place of safety).

7. The maximum permitted vehicle combination length is 18.75m, however any combination must ensure compliance with the turning circle requirements of Construction and Use regulations 1986 & 97/27/EC.

European Touring

Customer should note that there are a number of requirements placed on a driver when driving on European roads. Carrying a warning triangle, high visibility jacket, first aid kit and spare bulb is now compulsory in many EU states but some EU countries are now introducing further regulations such as carrying a breathalyser kit and not being able to use satellite navigation systems with speed camera warnings.

We would advise customers to check on the many web-sites available to ensure you are carrying the correct equipment when touring in those EU countries.

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Cruise control

The driver of the vehicle should always remain seated and in control of the vehicle when cruise control has been engaged. Never leave the driving seat for any reason when the vehicle is underway.

Removal of spare wheel on ALKO conversion:

⚠ **WARNING:** Exercise care when lowering the wheel and frame due to its weight.

Removal

a. Spare wheel in the stowed position (Fig. 1).

b. Remove the securing pins (a) from the supports (b) at each side of the spare wheel carrier frame (c) (Fig. 2).

c. Lift the wheel carrier frame (c) slightly and move the frame supports (b) forward and clear of the carrier frame (Fig. 3).

d. Lower the carrier frame and wheel to the ground (Fig. 4).

e. Remove the spare wheel.

Replacement

Replacement is a reversal of the removal procedure. Ensure the securing pins (a) are correctly located in the frame supports (b).

Fig.1

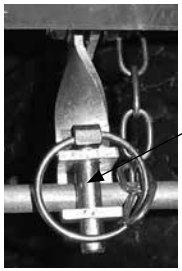

Fig.2

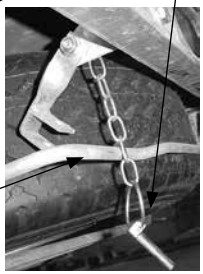

Fig.3

Fig. 4

Removal of Fiat / Peugeot spare wheel:

a. the ground should be flat and adequately firm.

b. turn the engine off and engage the handbrake.

c. engage first gear or reverse.

Removal

a. wheel restraining device screw (fig 1) – rear right side of vehicle

b. use the extension and wrench provided to operate the wheel restraining device screw (fig 2).

c. when the wheel is fully lowered (fig 3) and the restraining device screw can turn no more, use the wrench to pull the wheel out (fig 4).

d. loosen the knob and remove the support to release the wheel (fig 5 & 6).

Fig. 1

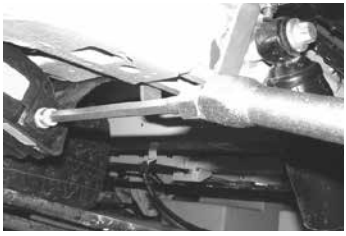

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Replacement

Replacement is a reversal of the removal procedure.

⚠ **WARNING:** Exercise care when handling the wheel due to its weight.

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Fire

Note: Your attention is drawn to the notice affixed inside the wardrobe advising on fire precaution, ventilation and what to do in case of fire.

In case of fire

1. Get everyone out of the motorhome as quickly as possible using whichever exit is the quickest, including windows. Do not stop to collect any personal items.
2. Raise the Alarm. Call the Fire Brigade.
3. Turn off the gas supply valve if it is safe to do so.
4. Turn off the electricity supply at supply point.

Model- si 601 smoke alarm operation

Normal condition

The red LED on the front should flash once every 40 seconds to show the alarm is active.

Low Battery Condition

⚠ **WARNING:** Your smoke alarm requires a battery with a sufficient capacity of power to operate correctly. This must also be correctly installed.

Should your smoke alarm enter a low battery condition, the unit will emit an audible 'chirp' once every 40 seconds. When this occurs you must replace the battery immediately. Your smoke alarm will continue to warn of this low battery condition for at least 7 days, however, failure to change the battery after this time would mean your smoke alarm has insufficient power to alert you in a real fire situation.

Battery replacement

⚠ **WARNING:** Only the following batteries can be used for replacement. Use of a battery other than those recommended below may have a detrimental effect on the detector's operation. Use of a lithium (long-life) battery could provide power for 10 years under normal operating conditions, meaning there is no need for an annual battery change.

Note: The alarm cover can not be installed without a battery fitted.

Note: Upon delivery the battery may be fitted with a protective cover. Please ensure this is removed before use.

Carbon-Zinc type:

Eveready Energizer 1222;
Gold Peak 16045 (UL).

Alkaline Type:

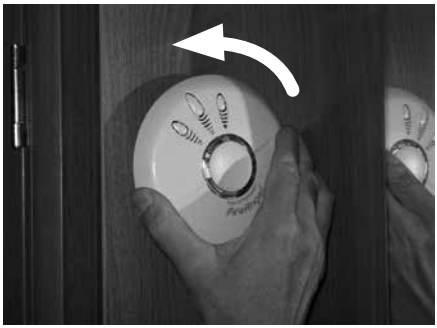
Energizer 522; Duracell MN 1604; Duracell 9V

Ultra; Energizer 9V Ultra+; Gold Peak 1604A.

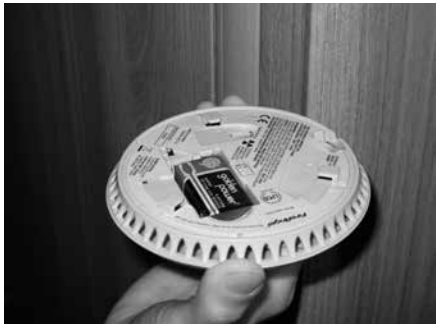
Lithium (long life) type:

Ultralife U9VL

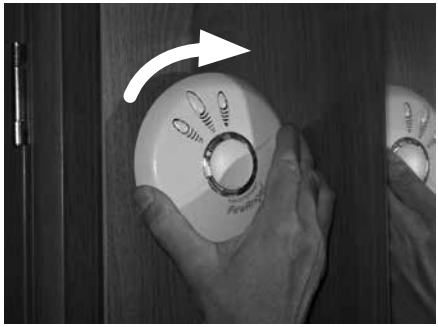
1. Remove the alarm from its mounting plate by turning anti-clockwise



2. Remove the existing battery and replace with a new battery. From the list on this page, making sure that the positive and negative connections are in the correct position. If unsure see the alarm user manual.



3. Replace the alarm on its mounting plate, lining up the large central vent on the front of the alarm, with the 'X' that is moulded into the plastic on the mounting plate (if unsure see page 13 of the alarm user manual). Ensure the unit is securely fitted.



4. Test your alarm as explained in the next section 'Alarm Test'.

Alarm test

1. Press the test button in the centre and release.

2. The unit will emit a loud (85dB at 3 meters) alarm for around 5 seconds and stop automatically.

3. The red LED on your alarm will flash rapidly during the audible signal.

Note: The test button accurately tests the alarm's smoke sensing circuit, there is no need to test your alarm with smoke. If your smoke alarm fails to give an audible test signal, please refer immediately to the troubleshooting guide at the end of the user manual supplied.

⚠ **WARNING:** Test your smoke alarm at least once per week.

Your smoke alarm has been designed to be as maintenance - free as possible and although the unit requires only battery maintenance for its entire life, there are several things you must do to keep it working properly.

⚠ **WARNING:** our smoke alarm is a sealed electrical device and no attempt should be made to open the case. Attempting to open the case will invalidate your Warranty.

Cleaning

As a minimum your smoke alarm should be cleaned once every 3 months using your vacuum cleaner fitted with the soft brush attachment.

⚠ **WARNING:** Your smoke alarm may false alarm when it is being cleaned using a vacuum cleaner.

⚠ **WARNING:** Do not use solvents or cleaners on your smoke alarm, as they may cause damage to the sensor or circuitry. The unit can be wiped with a slightly damp cloth.

⚠ **WARNING:** The electronic test button provides a full test of the unit's functionality. DO NOT try to test the alarm with a naked flame, as this may present a potential fire hazard.

⚠ **WARNING:** Never use portable cooking or heating equipment other than electric heaters that are not of the direct radiant type, as it is a fire and asphyxiation hazard.

⚠ **WARNING:** Appliances such as cookers must not be used for heating.

Fire Extinguisher

It is recommended that a dry powder fire extinguisher be carried inside your motorhome at all times.

When using a dry powder extinguisher it is suggested that the motorhome be evacuated until the powder has settled, to avoid inhalation.

A fat pan fire should not have a fire extinguisher aimed at it. It should be smothered with a fire blanket.

⚠ **WARNING:** Provide one dry powder fire extinguisher of an approved type or complying with ISO 7165, of at least 1kg capacity, by the main exterior door and a fire blanket next to the cooker.
Familiarise yourself with the instructions on your fire extinguisher and the local fire precaution arrangements.

Escape paths

It is important that you do not block escape paths to emergency exits with obstructions or hazards.

Children

Do not leave children alone in the motorhome in any event. Keep potentially dangerous items out of reach, as at home e.g. matches, drugs etc.

Ventilation

All motorhomes comply with BS EN 721. The ventilation points on your motorhome are fixed points of ventilation which are required by the European Standards.

All motorhomes have ventilation at high level and low level which have been calculated to suit the individual needs of your motorhome.

High level ventilation is achieved by means of the roof lights and washroom roof ventilators (where applicable). The low level ventilators are positioned under sink units.

Under no circumstances must these vents be blocked or obstructed.

It is advised that fixed ventilation points are checked and cleaned (if necessary) on a regular basis using a small brush and a domestic vacuum cleaner.

Additional night time ventilation is obtained by releasing the window catches and placing them in the second groove. Note the windows are not sealed from rain in this position.

As the ventilation levels are calculated to suit each model requirements no modifications should be made which may result in reduced ventilation levels.

⚠ **WARNING:** Do not obstruct ventilation.

Security

Motorhome theft:

The theft of a motorhome can occur in the most unlikely circumstances; from a motorway service area or even an owner's driveway. Secure all windows and doors when your motorhome is unoccupied even if only for a short length of time.

VIN (Vehicle identification Number)

Record your motorhome VIN which can be found on the lower edge of the base vehicle front windscreen and the plate located on the front cross member under the bonnet.

Make a note of these numbers in the space provided at the front of this handbook and make a separate note of the numbers to keep safe at home.

Additional security

Consider fitting any device which might deter intrusion by thieves. Customers are advised to identify their motorhome with a method for subsequent identification if other forms of identification have been altered or removed.

Free crime prevention advice about securing your motorhome, protecting your valuables, property marking either at home or whilst on site, can be obtained from the Crime Prevention Officer through your local Police station.

Tracker

Tracker battery powered retrieve unit

Your vehicle is fitted with a 'TRACKER Battery Powered Retrieve' unit. This is a self contained security device which has been positioned discreetly within the vehicle during the manufacturing process. There are numerous fitting positions for the device, the locations of which are kept secret and known only to TRACKER and the Swift Group.

This unit has a self contained battery, which has a minimum five year life. The unit draws no power from the vehicle battery or leisure battery. This unit is a tracking device only and is not an alarm.

The tracking device requires an active subscription to be in place with TRACKER. Your vehicle is supplied with a free 3 month subscription (from date of purchase), which is activated once you have registered your details with TRACKER (normally your dealer would do this with you at the time of collection of your new vehicle). If you chose not to register your device the unit is not activated and the vehicle can therefore not be tracked in the event of theft. At the end of the free 3 month subscription period your subscription will end. Owners can however choose to either subscribe to TRACKER for a further 12 months at £60 per year or for a period of five years

from date of purchase at £199. The TRACKER unit subscription cannot be subscribed to for longer than five years from the date of purchase and a new TRACKER unit would need to be installed and registered separately after the five year period has elapsed.

If in the unfortunate event your vehicle is stolen you should;

- Notify the police immediately.
- Contact TRACKER and confirm to them that your vehicle has been stolen and provide a police crime number.
- TRACKER will then activate the tracking device in your vehicle.
- The police can then track the vehicle using VHF tracking technology from the tracking computers inside police vehicles and aircraft.
- Once located TRACKER will inform you.

The device works in some (but not all) European countries (further details of which can be obtained from TRACKER). http://www.TRACKER.co.uk/

TRACKER's telephone number is:
0845 602 2356

CO alarm

Fireangel CO-9X Carbon Monoxide Alarm

⚠ **WARNING:** Please read the full user instructions provided.

Carbon monoxide

Known as the silent killer, Carbon Monoxide is an invisible, odourless and tasteless gas.

What are the symptoms of carbon monoxide poisoning?

Early symptoms of carbon monoxide (CO) poisoning can mimic many common ailments andmay easily be confused with flu or simple tiredness. Symptoms to look out for include:

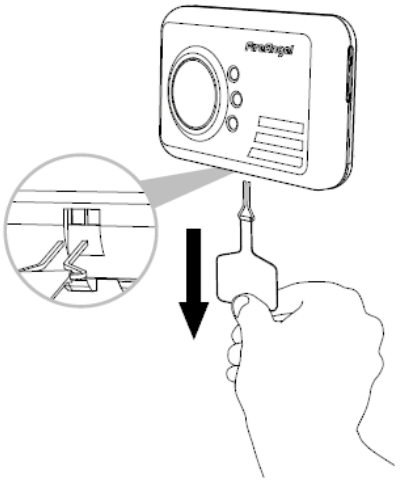
- tiredness
- drowsiness
- headaches
- giddiness
- nausea
- vomiting
- pains in the chest
- breathlessness
- stomach pains
- erratic behaviour
- visual problems

⚠ **WARNING:** Anyone with these symptoms should immediately turn off all appliances and seek medical attention.

What to do during an alarm

- Keep calm and open the doors and windows to ventilate the property.
- Stop using all fuel burning appliances and ensure, if possible, that they are turned off.
- Evacuate the property leaving the doors and windows open.
- Ring your gas or other fuel supplier on their emergency number; keep the number in a prominent place.
- Do not re-enter the property until the alarm has stopped. When exposed to fresh air it can take up to 10 minutes for the sensor to clear and the alarm to stop depending on the level of carbon monoxide detected.
- Get medical help immediately for anyone suffering the effects of carbon monoxide poisoning (headache, nausea), and advise that carbon monoxide poisoning is suspected.
- Do not use the appliance again until it has been checked by an expert. In the case of gas appliances the engineer must be Gas Safe registered.

Activating the Carbon Monoxide Alarm



Your detector comes complete with an integrated power pack that will provide power for its entire operational life. To activate the power pack you need to pull the disabling tab (see image). This will in turn pull out the metal disabling clip, which is attached to the end of the tab, from the disabling socket which is situated on the underside of the detector. Retain the disabling tab for future use by taping it to page 20 of the CO-9X user manual.

Normal operation of the alarm

When the detector is activated the Power LED will begin to flash green once every minute to indicate that the detector is receiving power from the power pack and is fully operational.

Testing the alarm

Test the sounder, power pack and circuitry by pressing and holding the centre of the Test/Reset button briefly to confirm that the detector is operating properly. The sounder will sound as soon as the button is pressed, and the Alarm LED will illuminate red indicating that the sounder is working and the power pack is providing power to the unit. This test for the sounder, power pack and circuitry should be performed on a weekly basis. This should be continued for the lifetime of the product.

⚠ **WARNING:** Prolonged exposure to the sounder in close proximity to your ears may damage your hearing. Under normal operating conditions, the power pack will last for the lifetime of the product i.e 7 years. The detector will not protect against the risk of carbon monoxide poisoning when the power pack has drained.

Sensor testing

The alarm manufacturer recommends that this is carried out monthly. See of the CO-9X user manual for more details.

CO alarm operation when CO detected

The higher the concentration of carbon monoxide detected by the detector, the quicker it will respond. When sufficient carbon monoxide is detected a loud audible signal (85 dB at 1m (3 feet)) will be emitted and the Alarm LED will flash red once every second.

The Alarm will sound:

- Between 60 and 90 minutes when exposed to a minimum of 50ppm of CO.
- Between 10 and 40 minutes when exposed to a minimum of 100ppm of CO.
- Within 3 minutes when exposed to a minimum of 300ppm of CO.

Fault / low power pack signal

The unit continuously checks the settings of its sensor and circuitry. If any of these settings are found to be incorrect or if the power pack becomes low then the detector will emit a single chirp once per minute and the Fault LED will flash yellow once per minute for up to 30 days.

⚠ **WARNING:** This does NOT mean that the detector has detected carbon monoxide.

Maintenance

Your detector will alert you to potentially hazardous CO concentrations in your home when maintained properly. To maintain your FireAngel detector in proper working order, and to ensure that the sensor will last for the lifetime of the product, it is recommended that you:

- Test the sounder, power pack and circuitry of your detector at least once per week by pressing the Test/Reset button briefly (see above).
- Perform the Sensor Test once every month (See of the CO-9X user manual for more details).
- Keep the detector free of dust by gently vacuuming the case with a soft brush attachment once per month.

To prevent the possibility of contaminating the sensor in your detector and thus affecting its reliability:

- Never use cleaning solutions on your detector. Simply wipe with a slightly damp cloth.
- Do not paint the detector.
- Do not spray aerosols on or near the detector.
- Do not use any solvent based products near the detector.

Positioning the motorhome.....40

Positioning the motorhome

Note: Check and observe site regulations.

Keep to roadways unless otherwise directed. Adhere to speed limits. Note that these are generally 10mph.

(Remember that the stopping distance on grass is considerably greater than on tarmac.)

Only a person in possession of a current driving licence may drive on the site.

Selecting a pitch

Do not pitch in such a position that your motorhome will obstruct others coming in.

Try to choose an area which is dry, reasonably level and preferably with a hard base.

If you have no alternative but to pitch on a slope try to ensure that you are facing down the slope, for when you leave.

Levelling the motorhome

Levelling must be carried out in both directions for the refrigerator and other equipment to function correctly. Stepped levelling boards (Fig. A) or proprietary ramps are ideal for this purpose. Levelling pads or boards should be used under the steadies where the ground is soft or uneven.

Fig. A Stepped levelling board

Fig. A Winding the corner steady

Lower the rear corner steadies (if fitted) until they are in firm contact with the ground (Fig. A). DO NOT use the steadies as a jack, they are only a means of stabilising the rear of the motorhome. Levelling pads or boards should be used under the steadies where the ground is soft or uneven.

Awnings and Tents

Awnings and tents should only be used when permission has been obtained. When on grass and staying for more than a few days the ground sheet and/or side flaps of awnings should be periodically raised in order to avoid damage to the ground.

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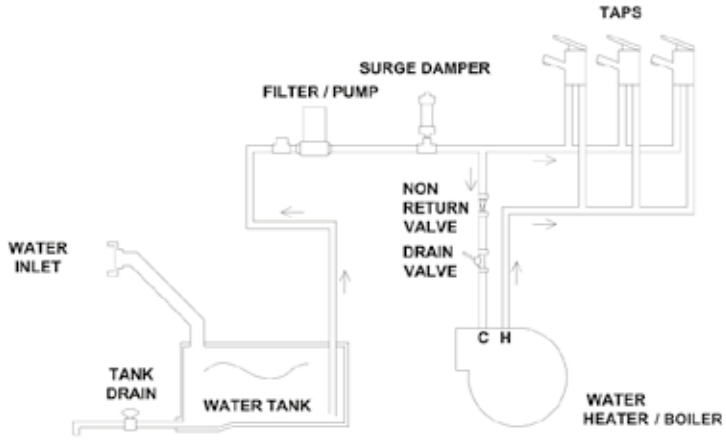
Water system - Introduction

All Swift Group motorhome water systems have been designed around a pump fitted within the motorhome. This pump draws water from an under floor or internal water tank, to provide water pressure within the water system, whenever it is switched on and water is available.

The schematic below shows the basic configuration of the water system:



When power is supplied to the pump, it will draw water from the water tank, and pump it to the motorhome 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 the red pipes.

To winterise the system please see separate details later in this handbook.

Fresh water system

1. All fittings, including the holding tank, water pipes, taps and connections are of food quality material (to BS6920) and therefore, should not affect the quality of the water used. It is recommended however, that the system is flushed through twice before it is used for the first time, and always cleaned/ flushed after it has stood unused for a period of time (eg over the winter period). Care has been taken (using smooth bore pipes etc) to eliminate as many water traps as possible.
2. When filling the fresh water system remember to check that the water source is suitable for use as drinking water and, if you are using a hose pipe or water carrier, that it is also made from nontoxic materials (preferably food quality material).
3. The fresh water tank may be drained either via a plug in the base of the tank accessible via the cleaning hatch or by the drain tap situated externally below the side skirts, or internally inside the furniture (model specific).

Escape fresh water tank showing central cleaning hatch

Kon-Tiki Drain valve

External view of suspended valve

⚠ **WARNING:** The fresh water system is pressurised by a pump which will continue to operate until it senses a pre-set pressure in the system.
If the fresh water tank is completely empty the pump will be unable to pressurise the system and will operate continuously. In this situation it is essential that, in order to avoid damage to the pump, it is switched off using the pump isolator switch on the distribution panel until such time as the water tank has been filled.

Lockable water filler inlet

Fresh Water Tank

Your motorhome is fitted with a water tank filled from the outside via a lockable water filler cap. When filling, use a hose manufactured from non toxic material, to prevent tainting of the water. Remember, if the water heater has been drained it will require 10 litre (0.2 gal) of water to fill it.

External 12v Fill Socket

Depending on specification your motorhome may be fitted with an external 12v socket which can be used to attach an external 12v tank filling pump.

Tank heaters

Depending on specification, your motorhome may be fitted with 12v tank heaters, designed to prevent or reduce instances of freezing water in fitted water tanks.

If tank heaters are fitted, a button marked 'Frost Protect' will be present on the control panel above the entrance door (see page 69). Turn this feature on when the external temperatures are low, and the tank heaters will then turn on and off automatically.

Before heating each tank the system will check that the water level in each tank is at the 1/4 level or higher (the heaters will not operate if the tank is 'empty'). If the water level is appropriate, the heaters will then switch on and off based on the temperature as measured by sensors within the tank. The approximate temperatures that the heater use to switch on and off, are:

Heater(s) switch ON if the temperature in the tank falls below +5 degrees C.

Heater(s) switch OFF if the temperature in the tank then rises to above +10 degrees C.

The fresh and waste water tank heaters can operate independently, for instance use of frost protect feature while the fresh tank is full, but waste tank is empty, would only result in the operation of the fresh tank heater. Please note that the heating elements use a 12V supply, and if used without a mains hook up and charger operating, then leisure battery power consumption will be increased (see consumption table on page 63 for more information.)

Priming the Water System

1. Close the water tank drain valve or re-fit the drain bung. (Model specific)
2. Fill the water tank with water.
3. Close the water heater drain valve (see boiler instructions in the fitted equipment section)
4. Open all the taps except the shower tap. Mixer taps should be opened in the central position so that both the hot and cold pipes are purged of air. Ensure the tap spouts are over the sinks.
5. Turn on the pump using the button on the control panel (See pump button in paragraph 2.5 of the Electrics section).
6. Turn each tap off in turn as and when the air is expelled and the water runs smoothly from each tap. Move the mixer taps to hot and then cold to check that the air is out of both the hot and cold pipes before turning them off.
7. Whilst holding the shower head down towards the shower drain, open the shower tap and shower head tap until all the air is expelled and the water runs smoothly. Turn the shower taps off.
8. Top up the fresh tank with water.

Please note that priming the system will automatically fill the water heater with water.

Holding the shower head towards the drain, open the shower tap until water flows freely.

Please ensure all taps are fully turned off when not in use (except when winterising).

Note: All tanks are fitted with a breather which acts as an overflow. Overfilling a tank will result in water being expelled from the overflow outside the vehicle.

Cleaning water system

Clean the water system at the start and end of the season with sterilising fluid.

Sterilising

When cleaning the water system at the start or the end of the season it is advisable to use a sterilising fluid e.g. Milton 2, Chempro SDP or similar.

An explanatory leaflet is available from:
The Milton Food Hygiene Advisory Service, Whitehall Lane, Egham, Surrey, TW20 9NW

Flush the system thoroughly to remove the effective fluid traces.

When water is first introduced, or the water supply in the internal tank, 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.

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.

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

The water systems, and in particular storage tanks, in motorhomes 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 motorhome 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 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 water system 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.

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

Waste water system

1. The waste water holding tank is secured underneath the chassis of your motorhome and is gravity fed.
2. In order to eliminate unpleasant odours as much as possible, only smooth bore pipes are used.

However, should the waste water tank be overfilled, it is possible the waste water will backfill the drain pipes until it eventually appears in the shower base. In order to prevent this, please take note of part 3.

3. The waste water gauge shows the level of the tank in quarter or half increments, it is therefore, recommended that the waste water tank is checked on a daily basis, emptying when required. This is done by opening the valve located just beneath the side skirt on the exterior of the Motorhome or by turning the handle located inside the vehicle at floor level behind the rear axle, usually found in bed box or wardrobe base (model dependant).

It should be emptied either directly, or via a waste water container (not supplied) into a designated waste water area.

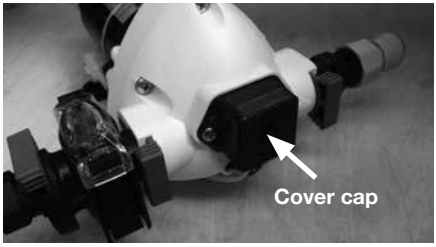
Pressure switch

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.

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.



The pump may have to be removed to gain access to the adjusting screw. Drain the water system before removing the pump.

To remove the pump pull the blue taps at right angles to the pipe work and lift the pump out.

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 pressure switch paragraph in this section for how to do this)

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

- Ensure that there is water in the fresh water tank.
- Check in-line filter is free from debris and correctly fitted.
- Ensure water system has been primed correctly, (see priming the water system page 44), 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 is watertight and not allowing air into the system.
- Using a multimeter check that the voltage is between 10 and 14.5 volts. If not, refer to your dealer.

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, as per the handbook, 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 pressure switch paragraph in this section for 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 securley 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 pressure switch paragraph in this section for how to do this)

Water level sensor & cleaning

Principle

The sensor, fitted to Swift Group motorhomes are pre-fitted to water tanks, and link to the control unit, 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 or waste water, and use the conductivity of water, between the probes, to provide a reading to the control unit.

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 control unit and a water level displayed.

Sensor cleaning

The first step, in case of fault diagnosis, is to clean the sensor rods. False water level readings at the control unit can be caused by calcium build-up or foreign objects within the tank bridging the probes. (Especially with waste tanks).

To clean sensor:

⚠ **WARNING:** Only use food safe plastic mesh scourers, which are suitable for domestic use, for cleaning the sensor studs.

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

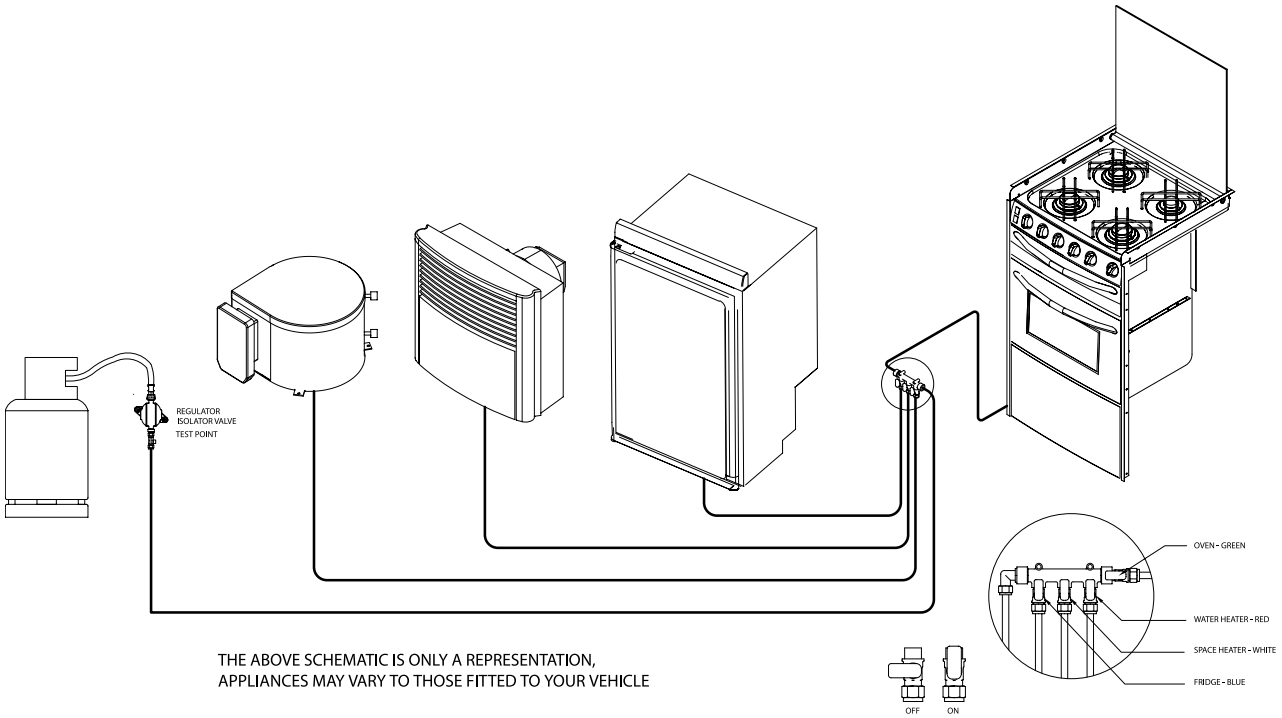
Water

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

Water

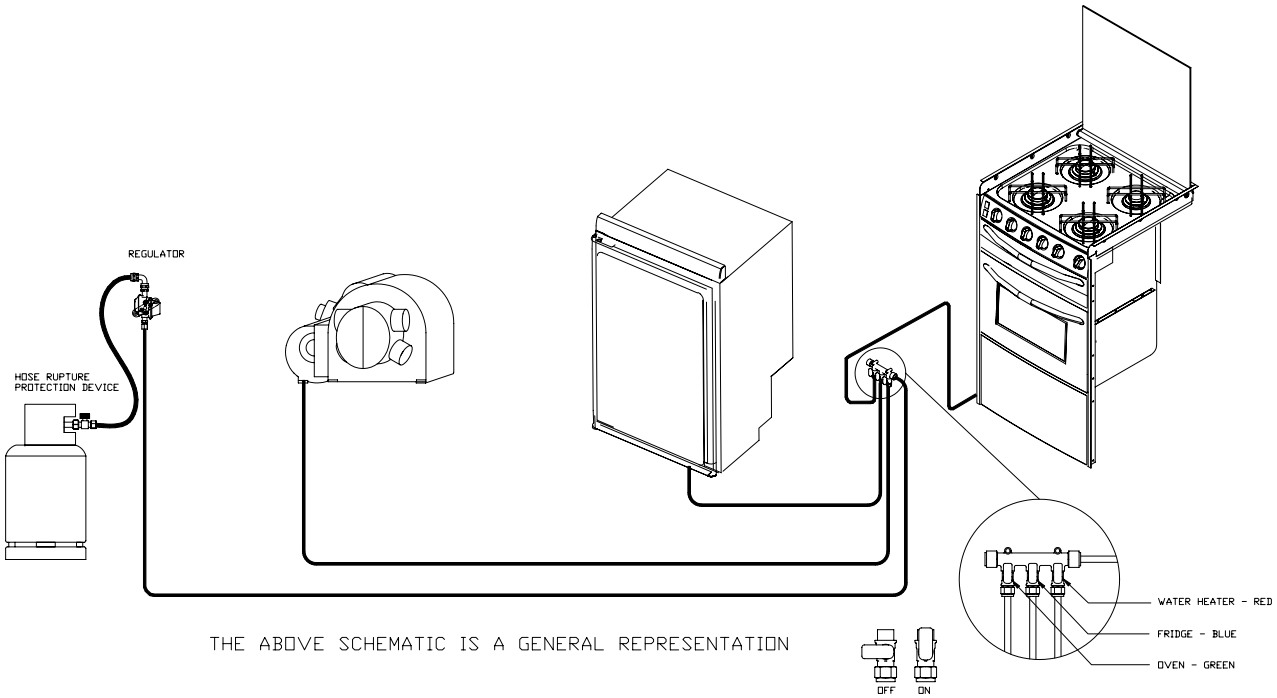
Fault	Cause	Remedy
Water flows from hot tap but has reduced flow from cold	Cold water pipe kinked preventing flow	Check and re-route if necessary
	Blockage in cold pipe line	Disconnect pipes after 1st connector and check up to tap
	Cold tap not connected	Refer to installation instructions
	Cold tap failed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

Typical gas schematic drawing with water heater



THE ABOVE SCHEMATIC IS ONLY A REPRESENTATION,
APPLIANCES MAY VARY TO THOSE FITTED TO YOUR VEHICLE

Typical gas schematic drawing with Combi or Alde Boiler



THE ABOVE SCHEMATIC IS A GENERAL REPRESENTATION

Gas

General information

Gas Cylinders

Bottled Liquified Petroleum Gas (LPG) is the most convenient portable source of fuel for your vehicle.

The gas cylinder, cooking and heating appliances should be isolated when travelling unless your motohome is fitted with en-route heating.

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.

Your vehicle is supplied with a wall mounted gas regulator plumbed inside the gas bottle 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 1.2 kg/H and complies with the requirements of EN 12864 annex D.

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

Motorhomes with external barbeque point

Models equipped with an external barbeque point can be used to power any gas appliance suitable for the gas used in the motorhome, at the working pressure shown on the label in the barbeque outlet box. Please note when using the outlet that the fitted regulator will allow a maximum of 1.5kg per hour of gas to be taken from the gas bottle. Therefore the consumption of gas from both the appliances within the motorhome and the appliance connected to the barbeque point cannot exceed a total of 1.5kg per hour at any one time. If you are in any doubt please consult your dealer for advice. To use point proceed as follows:

1. Fit male tail connector from despatch kit to your barbeque or appliance ensuring a gas tight joint. The work should be carried out by a competent person; if in any doubt consult your dealer.
2. Open box lid by pulling tab on bottom edge and lifting, while pressing on centre of flap.
3. Insert tail connector on appliance into female coupling, twist to engage and lock.
4. Open gas locker on motorhome, ensure gas bottle tap is open and supply is connected to regulator.
5. Light and operate appliance to its instructions.

Please note that you cannot open the gas supply until the nozzle has been inserted. In the interest of safety all external hose lengths should be kept to a minimum and attachments secured correctly.

⚠ **WARNING:** Care should be taken when using the external barbeque point. Never barbeque next to an awning or tent.

⚠ **WARNING:** The motorhome barbeque point should only be used as an outlet point for gas, never connect a gas bottle direct to the outlet.

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

Standard Truma Regulator

REGULATOR for systems NOT approved for use when travelling. (Fig 2)

Fig. 2

Note: The regulator valves should be in the 'OFF' position when driving.

Note: No safety device on this system

Gas Hoses

High-pressure hoses or pigtails as they are called must be used with the new style regulator.

High-pressure hoses incorporate a safety shut off valve for the use of the en-route heating system

LPG cylinder i.e. Propane, Butane, BP and Camping Gaz cylinders all have unique bottle 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 latest 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.
When replacing the en-route hose ensure the new hose incorporates a safety shut off valve (Hose rupture protection).

⚠ **WARNING:** Ensure that the high pressure hose is not excessively twisted or under stress when connected to the LPG cylinders and regulator.

⚠ **WARNING:** Always ensure the gas supply is isolated at the LPG cylinder (and not at the regulator) whilst the vehicle is in storage for any period. It is important to ensure that the high pressure gas hose has a continuous rise from the bottle cylinder to the regulation to allow any condensate to fall back into the gas bottle cylinder.

Cylinder compartment

All cylinder compartments have four plastic mouldings per cylinder position fitted to the floor of the compartment that are designed to fit both steel and BP Gas Light cylinders. Two straps are provided for retaining the bodies of the cylinders at mid to high level.

Types of gas

Propane

Propane is supplied in red, or partly red cylinders 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 motorhoming.

Note: Swift recommend that 6kg CalorLite propane gas bottles are used.

Butane

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

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 bottles 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 but will not work below that.

Note: A hose suitable for use with propane has been supplied with your motorhome. For en-route systems only.

En-route heating

The majority of Swift Group motorhomes are equipped with an LPG en-route heating system. The en-route heating system is installed with additional safety features.

⚠ **WARNING:** When re-fuelling your motorhome, switch off the heater and close the cylinder valve.

Safety features

- MonoControl CS regulator incorporating a crash sensor which stops the gas flow in the event of the motorhome being involved in a traffic collision.
- Gas flow monitor
- Hose rupture protection is installed.

The full system is Homologated in compliance with European Directive 2001/ 56/ EC,

Operating instructions

Priming the gas system

- Open the cylinder's valve. (1)
- Firmly press the hose rupture protection (green button) on the high pressure hose. (2) If necessary (e.g. if the regulator has been knocked when replacing a LPG cylinder) press the green reset button on the regulator. (3)
- Start the gas-burning devices if desired.

Note: The regulator should be replaced no more than ten years after manufacture.

Changing a gas cylinder

Please use the correct size spanner for the gas hose connectors as this will prevent damage to the screw fittings and ensure that the fitting is tightened sufficiently.

- Close the empty gas cylinder's valve
- Remove the high pressure hose from the gas cylinder.
- Attach the high pressure hose to the full gas cylinder.
- Open the full cylinder's valve.
- Press the hose-break safety device

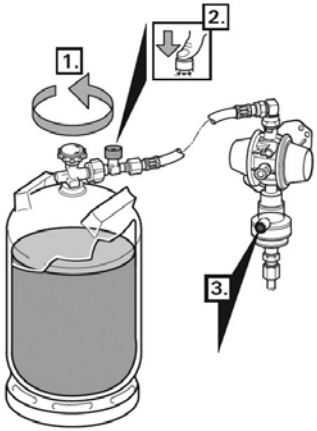
Check the hose connection to the cylinder valve for leaks.

⚠ **WARNING:** To ensure the safe working of the en-route heating any replacement high pressure hoses must be of the same type as originally fitted. They must have the safety valve to ensure that the gas does not leak out in the event of damage to the gas pipe work in the event of a traffic collision.

⚠ **WARNING:** When travelling using the en-route system all other LPG appliance shut off valves must be in the closed position including the fridge, cooker, water heater etc.

Note: It is dangerous and illegal to operate other LPG appliances whilst travelling

Note: Service and repairs must only to be carried out by a competent service engineer.



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 motorhome and ventilate. Seek professional advice as to the cause of the leak.

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.

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

General Safety Notes

In the event of leaks in the gas system or if there is a smell of gas:

- Extinguish all naked flames.
- Do not smoke.
- Switch off the appliance and gas cylinder.
- Open the windows.
- Do not operate any electrical switches.
- Have the entire system checked by an expert.

Precautions

a. 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 motorhome should be evacuated and qualified personnel consulted.

b. Avoid naked lights when connecting or changing a cylinder.

c. Check the flexible hose frequently.

d. The gas is heavier than air and therefore sinks to the lowest point.

e. 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.

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 cylinders must be fully located, seated at the base of the bottles and restrained by the straps provided in the dedicated compartment position. Straps are positioned to suit 6kg, 7kg and 13kg bottles.

⚠ **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.

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 motorhome is turned off.

All gas equipment is supplied through a Gas Manifold System which has individual isolation taps for each appliance (Fig A), as follows:

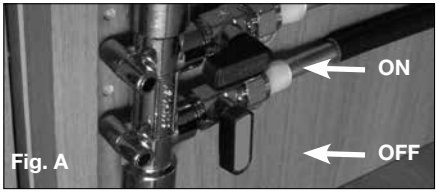


Fig. A

RED - Water Heater / Combination boiler

WHITE - Space Heater (if fitted)

BLUE - Fridge

GREEN - Oven

YELLOW - BBQ (if fitted)

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 (CO_2) build up leading to the risk of asphyxiation.

The risks of carbon monoxide (CO) build up, which is a colourless, odourless 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

Thermal insulation heating

Your motorhome has been designed to achieve a thermal insulation and heating level for specific climatic conditions when tested according to the procedure in EN1646-1. See the motorhome technical book for the classification of your motorhome.

The classifications are as follows:

Grade 1

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

Grade 2

A motorhome with an average thermal transmittance (u) that does not exceed 1.7w/(m2k) and which can achieve an average temperature difference of at least 20k between inside and outside temperatures when the outside temperature is 0°C.

Grade 3

A motorhome with an average thermal transmittance (u) that does not exceed 1.2w/(m2k) and which can achieve an average temperature difference of at least 35k between inside and outside temperatures when the outside temperature is -15°C.

Gas

Fault	Cause	Remedy
Hob does not light	No gas	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on
	Air in pipe	Purge system Refer to hob manufacturers instructions
Oven does not light	No gas	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on
	Air in pipe	Purge system Refer to oven manufacturers instructions
Space heater	No gas	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on Check exhaust outlet is clear
	Over gassed Air in pipe	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	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on
	Air in pipe	Purge system Refer to fridge manufacturers instructions
Water heater/ Combination Heater does not light	No gas	Check level of gas in cylinder Check gas cylinder valve is on Check gas taps are on
	Air in pipe	Purge system Refer to water heater 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 motorhomes are re-inspected every 3 years or annually if the van is used frequently. 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

- 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 motorhome, 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.

Note: 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.

Note: As with the RCD it is good practice to check the Miniture 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.

Note: Never use a mains supply lead whilst coiled. Always uncoil the full length before connecting to the supply and remember to protect the cable from traffic.

⚠ **WARNING:** Current consumption in the motorhome 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.

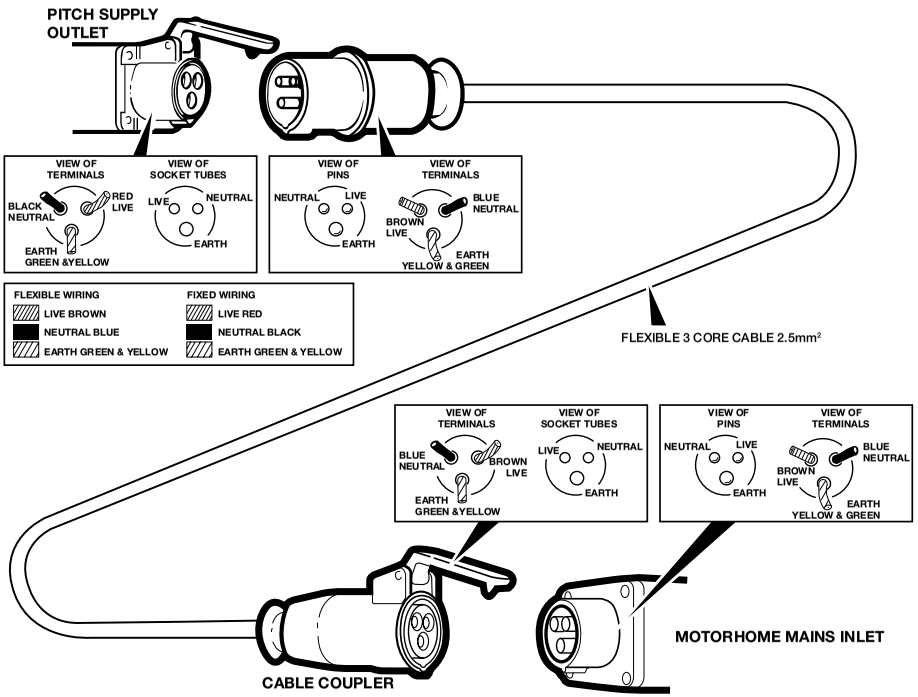
⚠ **WARNING:** Never allow modifications of electrical or LPG systems and appliances except by qualified persons.

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 motorhome should be observed. A label positioned close to the MCB's (Miniture Circuit Breakers will identify which appliances within the motorhome 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 cable and motorhome 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

Appliances	230V		12V		LP GAS
	Watts	Amperes	Watts	Amperes	Grams/hour
Dometic Refrigerator	190 W	0.8 amp	Only when driving		16 g/h
Truma Combi 4kw Heating system	900/1800 W	3.9/7.8 amp	13 W	1.1 amp (avg)	320 g/h
Truma Combi 6kw Heating system	900/1800 W	3.9/7.8 amp	13 W	1.1 amp (avg)	480 g/h
Alde 3010 Heating System	1050/2100/3150 W	4.6/9.1/13.7 amp	12 W	1.0 amp	245-460 g/h
Truma Space Heater	500/1000/2000 W	2.2/4.3/8.5 amp	12 W	1.0 amp	30 to 280 g/h
Truma Ultrastore Water Heater	850/1300 W	3.7/5.6 amp	Not Applicable		120 g/h
Microwave (factory fit)	1000 W - 1270 W	4.3 5.5 amp	Not Applicable		Not Applicable
Cooker - Hob burners	Not Applicable		Not Applicable		70-161 g/h
Cooker - Electric Hotplate	850 W	3.7 amp	Not Applicable		Not Applicable
Grill	Not Applicable		Not Applicable		117 g/h
Oven	Not Applicable		Not Applicable		125 g/h
Battery Charger	690W	3.0 amp	Not Applicable		Not Applicable
12V LED lights (each, depending on size of light)	Not Applicable		0.4w - 6.1w	0.05 amp - 0.5 amp	Not Applicable
12v Fluorescent lights	Not Applicable		8 W / 13 W	0.7 / 1.1 amp	Not Applicable
Water tank frost element (Where fitted)	Not Applicable		30 W	2.5 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 electronics 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.

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EC400 Series Power control system

1. Introduction

This section of the handbook will guide you through the operation of the electrical system. Further technical details are contained in section 3 or in the supporting dealer technical manual available from www.sargentltd.co.uk

For the safe operation of all electrical equipment within your Leisure Vehicle it is important that you read and fully understand these instructions. If you are unsure of any point please contact your dealer / distributor for advice before use.

The system has a number of key components that you will need to be familiar with before attempting to use the system, these are:

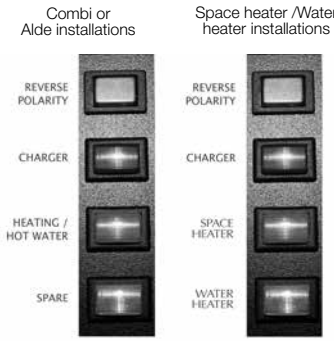
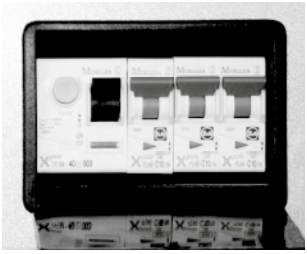
- **The EC400 series Power Supply Unit (PSU)** - a combined mains consumer unit and 12V controller located in the front locker or bed box area. The EC400 series of power supply units include horizontal units and vertical units, further details are contained later in this document.
- **The EC400 series Control Panel (CP)** - a remotely located user control panel used to turn circuits on and off and to display battery and water tank information. This panel uses simple straight forward controls and reliable data communication to the PSU.

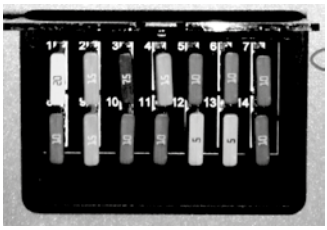
2. Using the System

The PSU is located in the front offside locker area or front bed box in motorhomes.

2.1 Power Supply Unit - Models

A number of different PSU versions are used within the system. The operation of each model is very similar and is detailed below.

230V Components	
	Red indicator – Reverse polarity indicator, lights up when the 230V supply polarity is reversed.
	Green push switch – Charger switch, this switch turns the 12V battery charger on or off. “In” is on “out” is off.
	Amber push switch – Space heater switch, this switch turns the 230V supply to the space heater / combination heater / central heating system on or off. In is on out is off.
	Clear push switch – Water heater switch, this switch turns the 230V supply to the separate water heater on or off. In is on out is off. **Note, If the vehicle contains a combined space & Water heater (Alde or Truma Combi) then this button is not used.**
	Black lever switch, far left – Residual Current protection Device (RCD) and main 230V on / off switch.
	Yellow button, far left – RCD test button.
	Red lever switches, right – 3 x 10A Miniature Circuit Breakers (MCB). Please note that installations with a 3KW Alde heating system will have 2 x 10A and 1x16A MCB’s.

12V Components	
	Black push switch, far left – System shutdown switch, this switch turns the power control system on or off. In is on out is off.
	Yellow push button, top right – Select button, this button is used to scroll through the display items on the LCD screen**.**
	Red push button, bottom right – Set button, this button is used to change the setting of the displayed item on the LCD screen.
	12V DC circuit protection fuses. Fuse number 1 is top left; Fuse number 14 is bottom, right. See section 3.5 for full fuse allocation details.

2.3 Activating the System

The EC400 system has a shutdown feature that should be used when the vehicle is in storage or is not being used for long periods of time. This allows the leisure electronics to be turned off when not required to save battery power. When in the off state the alarm and tracking system supplies are still active, most other supplies are turned off.

Before using the system please ensure the shutdown switch is in the system on position (button in).

2.4 Connecting to the Mains 230V supply and Safety checks

For your safety it is IMPORTANT that you follow these connections instructions each time your Leisure Vehicle is connected to a mains supply. This section assumes that the system is complete and that a Leisure battery has been installed (see 3.4).

a. **Ensure suitability of the Mains Supply.** Your Leisure Vehicle should only be connected to an approved supply that meets the requirements of BS7671 or relevant harmonised standards. In most cases the site warden will hold information regarding suitability of supply. If using a generator you also need to comply with the requirements / instructions supplied with the generator.
Please note that some electronic generators may not be compatible with your leisure system. Further generator operational information is contained elsewhere in this manual.

b. **Switch the PSU internal Power Converter OFF.** Locate the green 'Charger' power switch on the PSU and ensure the switch is in the off position (button out) before connection to the mains supply.

c. **Connect the Hook-up Lead**.
Firstly connect the supplied hook-up lead (orange cable with blue connectors) to the Leisure Vehicle and then connect to the mains supply.

d. **Check Residual Current Device operation.** Locate the RCD within the PSU and ensure the RCD is switched on (lever in up position). Press the 'Test' button and confirm that the RCD turns off (lever in down position). Switch the RCD back to the on position (lever in up position). If the test button failed to operate the RCD see section 3.10.

e. **Check Miniature Circuit Breakers.** Locate the MCB's within the PSU (adjacent to the RCD) and ensure they are all in the on (up) position. If any MCB's fail to 'latch' in the on position see section 3.10.

f. **Turn the PSU ON**. Locate the black 'Shutdown' button and ensure it is in the on position (press button in). Locate the green 'Charger' switch on the PSU and turn to the on position (press button in). The charger switch will illuminate when turned on.

g. **Check correct Polarity**.
Locate the 'Reverse polarity' indicator on the PSU and ensure that the indicator is NOT illuminated. If the indicator is illuminated see section 3.10.

h. **Check operation of equipment**.
It is now safe to operate the 12v and 230v equipment.

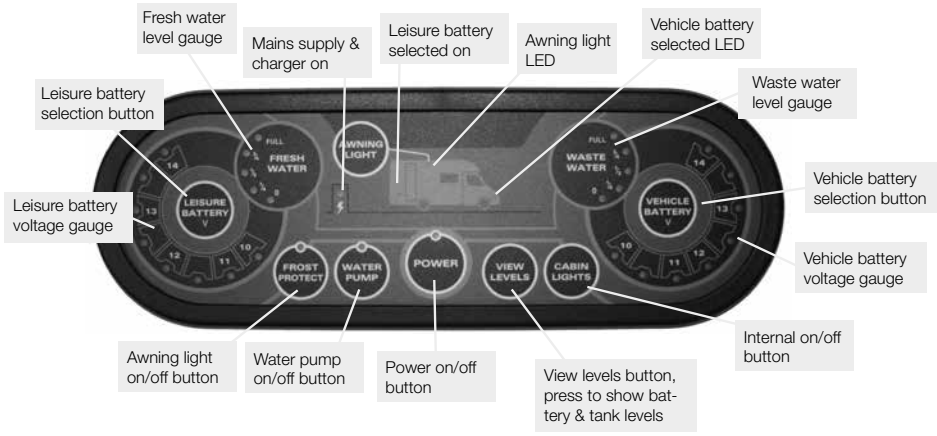
2.5 Control Panel - Component Layout

Depending on your type of vehicle (caravan or motorhome) the control panel will vary in specification.

Not all features are present in all vehicles. Please refer to the following diagrams to identify your control panel.

Motorhome Control Panels

EC467



EC462

2.6 Control Panel Operation

- **Power Button.** Press the power button to turn the leisure power on. Press the button again to turn the power off. The adjacent LED will illuminate when the power is on, and also thevoltage of the selected battery will be displayed on the voltage gauge.
- **Pump Button.** With the power on, press the pump button to turn the water pump on. Press the button again to turn the pump off. The adjacent LED will illuminate when the pump is on, and also the level of the water tank will be displayed on the water gauge.
- **View Levels.** To display the battery voltage levels and the water tank levels on the control panel gauges, press the levels button. The display will remain illuminated for 10 seconds. It is possible to lock the display 'on' to allow continuous display. This can be achieved by pressing and holding the view levels button for 2-3 seconds until you hear a beep. To turn this locked feature off, either press and hold the view levels button again for 2-3 seconds or turn the power off and back on.
- **Battery Select.** By default, the leisure battery is selected as the power source if no mains supply is present, or as the battery to be charged when the mains supply is available. To change the selected battery, press the vehicle battery select button. The selected battery is indicated by the LED's situated to the front (vehicle) or rear (leisure) of the motorhome logo
- **Mains on indication.** When connected to a 230v supply the LED with a "lightning strike" shown will be illuminated.

- **Charging when the vehicle engine is running.** When the vehicle engine is running both the vehicle battery and the leisure battery LED's will flash in unison to indicate that they are connected together and are being charged by the vehicle.
- **Cabin Lights Button.** For motorhomes, with the power on, press the cabin lights button to turn the main lighting supply on or off.
- **Awning Light Button**. For motorhomes, with the power on, press the awning light button to turn the awning light on or off.
- **Frost Protect Button.** For motorhomes if / when fitted, with the power on, press the frost protect button to turn on the water tank heating system. The adjacent LED will illuminate to show that the tank heating system is on.

2.7 Operation while driving

The EC400 system is designed to shutdown parts of the system while the engine is running. This is to meet Electro Magnetic Compatibility (EMC) regulations and to ensure the safe operation of the caravan or motorhome. This is indicated by the two battery LED's flashing together.

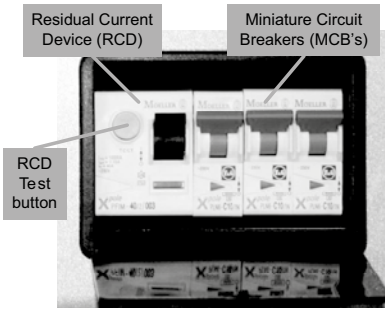
Please ensure the system shutdown switch on the PSU is in the "on" (button in) position before driving (see 2.3). This will ensure the electronic system is active and will therefore be able to control the charging process, supply the refrigerator and monitor other system circuits.

On motorhomes if / when fitted, designated 12v sockets, en-route reading lights and en-route heating will remain operational while the engine is running.

3. System Technical Information

The following section provides further technical information relating to the electrical system. You can also access the supporting technical manual from www.sargentltd.co.uk

3.1 Residual Current Device & Miniature Circuit Breakers



The Residual Current Device (RCD) is basically provided to protect the user from lethal electric shock. The RCD will turn off (trip) if the current flowing in the live conductor does not fully return down the neutral conductor, i.e. some current is passing through a person down to earth or through a faulty appliance.

To ensure the RCD is working correctly, the test button should be operated each time the vehicle is connected to the mains supply (see section 2.4)

The Miniature Circuit Breakers (MCB's) operate in a similar way to traditional fuses and are provided to protect the wiring installation from overload or short circuit. If an overload occurs the MCB will switch off the supply. If this occurs you should investigate the cause of the fault before switching the MCB back on.

The following table shows the rating and circuit allocation for the three MCB's

MCB	Rating	Output wire colour	Description
1	10 amps	White	230v Sockets
2	10 amps	White (Yellow for heater	Extra 230v Sockets / Space Heater
2	16 amps	Yellow	Alde heating (EC470 PSU Only)
3	10 amps	Black (Blue for water heater)	Fridge / Water Heater / 12v Charger (internally connected)

3.2 Battery Charger

The EC400 system incorporates an intelligent three-stage battery charger / power converter. During stage 1 the battery voltage is increased gradually while the current is limited to start the charging process and protect the battery. At stage 2 the voltage rises to 14.4V to deliver the bulk charge to the battery. When the battery is charged, the voltage is decreased at stage 3 to 13.6V to deliver a float charge to maintain the battery in the fully charged state. The charger can be left switched on continuously as required.

The battery charger / power converter also provides power to the leisure equipment when the mains supply is connected. This module supplies DC to the leisure equipment up to a maximum of 25 Amps (300 Watts), therefore the available power is distributed between the leisure load and the battery, with the leisure load taking priority as per the following example:

Lesiure Load	Available power for battery charging
5A	20A
10A	15A
15A	10A
20A	5A

⚠ **WARNING:** Under heavy loads the Charger case may become hot. ALWAYS ensure the ventilation slots have a clear flow of air. Do not place combustible materials against / adjacent to the Charger.

3.3 Smart Charging

On EC468 and EC469 PSU's, the system incorporates a smart charge feature, which monitors both leisure and vehicle batteries and automatically adjusts and directs the charger power (and solar power if a solar panel is installed) to maintain the leisure and vehicle batteries at an optimal level.

3.4 Leisure Battery

a. Type / Selection

For optimum performance and safety it is essential that only a proprietary brand LEISURE battery is used with a typical capacity of 75 to 120 Ah (Ampere / hours). A normal car battery is NOT suitable.

This battery should always be connected when the system is in use. The PSU is configured to work with standard lead acid leisure batteries, and in most cases is also compatible with the latest range of Absorbed Glass Matt (AGM) batteries. Before fitting non-standard batteries please check that the charging profile described in 3.2 is suitable for the type of battery by referring to the battery documentation or battery manufacturer.

Some vehicle installations can cater for two leisure batteries connected in parallel. In these cases it is recommended that two identical batteries are used.

The battery feed is fitted with an inline fuse between the battery and the electrical harness, and is usually located immediately outside the battery compartment or within 500mm of the battery. The maximum rating of this fuse is 20A per battery. If a single battery is fitted to a motorhome, this fuse may be increased to 40A, however if two batteries are fitted each battery should be fused at a maximum of 20A.

b. Installation & Removal

Always disconnect the 230v mains supply and turn the PSU green charger switch to the off position (button out) before removing or installing the battery.

When connecting the battery, ensure that the correct polarity is observed (black is negative [-] and red is positive [+]) and that the terminals are securely fastened. Crocodile clips must not be used.

⚠ **WARNING:** Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity of the battery and do not smoke.

c. Operation / Servicing

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of the terminals and "topping up" of the battery fluid where applicable. Please see instructions supplied with the battery.

Note: Do not over discharge the battery. One of the most common causes of battery failure is when the battery is discharged below the recommended level of approximately 10v. Discharging a battery below this figure can cause permanent damage to one or more of the cells within the battery.

To prevent over discharge, the EC400-450 system incorporates a battery protect circuit that warns the users and then disconnects the batteries when they fall below set values.

If the power is turned on and the leisure battery level falls below 9V a warning beep will be heard and the leisure battery gauge 10V LED will flash. To cancel the warning, press the levels button.

If the power is turned on and the vehicle battery level falls below 10.9V a warning beep will be heard and the vehicle battery gauge 10V LED will flash. To cancel the warning, press the levels button.

These warnings will not be repeated unless the power switch is turned off and on again. This is to ensure the warning does not become a nuisance.

Battery	Voltage cut off	Action after cut off	Notes
Vehicle	10.9v	Battery selection is changed from Vehicle battery to Leisure battery. If the leisure battery is below 9v then a further warning will occur (see below).	This cut off level is designed to protect the vehicle battery from over discharge. The 10.9v level ensures there is sufficient power in the battery to run the vehicle electronics and start the vehicle. This cut off only applies to power drawn from the battery by the leisure equipment; it will not protect the battery if you leave vehicle circuits switched on, such as the road lights.
Leisure	9v	Power is turned off	This is an emergency cut off level to protect the battery from severe damage. You should not rely on this cut off level during normal operation, but manage your power consumption to a discharge level of 10v. This cut off only applies to power drawn from the battery by the leisure equipment that is controlled by the control panel power switch; it will not protect the battery from discharge by permanently connected equipment.

3.5 12 Volt DC Fuses

⚠ **WARNING:** When replacing fuses always replace a fuse with the correct value. NEVER replace with a higher value / rating as this could damage the wiring harness. If a replacement fuse 'blows' do not keep replacing the fuse as you could damage the wiring harness. Please investigate the fault and contact your dealer.

EC400 SERIES POWER SUPPLY SYSTEM

The following table shows the fuse allocation for the 15 fuses fitted to the PSU. Please note that fuses are dependant on PSU versions, so not all fuses may be present.

Fuse	Rating	Fuse colour	Description
1	20 Amps	Yellow	* Motorhome Fridge 12V
2	15 Amps	Blue	* Motorhome Towing
3	7.5 Amps	Brown	* Motorhome Marker Lights
4	15 Amps	Blue	* Motorhome Fridge D+
5	10 Amps	Red	Extractor Fans / Heating Systems
6	10 Amps	Red	12V Sockets / TV Amp / ***Radio
7	10 Amps	Red	Front Internal Lights
8	10 Amps	Red	Water Pumps / Toilet
9	15 Amps	Blue	* Electric Step
10	10 Amps	Red	* Motorhome Tank Heaters
11	10 Amps	Red	** Auxiliary Supplies
12	5 Amps	Tan	Electronics / Fridge / Alarm
13	5 Amps	Tan	Oven Ignition / * Water Heater
14	10 Amps	Red	Rear Internal Lights
15	25 Amps	Clear	Charger (fitted internally to PSU)

* Where Applicable / When Fitted

** Motorhome Awning / Entry lights / Map lights / Enroute Heating / Compressor Fridge / Travel Skts

*** Motorhome Bathroom lights

The following table shows details of the fuse(s) located at the Leisure battery. See also 3.4A

Fuse	Rating	Fuse colour	Description
Battery 1	20 Amps	Yellow	Fuse remotely located near battery
Battery 2	20 Amps	Yellow	Fuse remotely located near battery 2 (where fitted)

3.6 Solar Charge Management

EC468 and EC469 PSU's incorporate a built-in solar charge management feature, which will control the input from a separate solar panel and regulator. Depending on the charge state of the batteries, the solar power will be directed to the required battery, and continuously monitored to ensure optimum operation. For this system to operate intelligently, the shutdown button should be left switched on. If the shutdown button is turned off then the solar panel will charge the vehicle battery only.

3.7 System Status and Configuration display

On the 468 & 469 PSU, the unit contains an LCD display and two control buttons that allow system information to be viewed or settings changed.

Press the top yellow 'select' button to change the item being viewed. Press the bottom red 'change' button to change the setting. Both buttons work on a continuous loop, so if you want to return to an item or setting keep pressing the button until the required item is reached. The EC468 and EC469 PSU's also contain a status display unit that can be used to view system information. Press the top yellow 'select' button to change the item being viewed.

3.8 Water System Operation

The control panel pump button operates the internal (onboard) water pump. This pump will draw water from the internal (onboard) water tank.

The system also incorporates a separate powered water inlet that can be used with an external filler pump to fill the internal (onboard) water tank.

The water tanks (fresh & waste, where fitted) incorporate a level warning feature to warn the user when the fresh water level drops below 25% or when the waste water level reaches 100%. If the water pump power is turned on and the fresh water level drops to below 25% a warning beep will be heard and the fresh gauge empty LED will flash. To cancel the warning, press the levels button.

If the water pump power is turned on and the waste water level rises to full (100%) a warning beep will be heard and the waste gauge full LED will flash. To cancel the warning, press the levels button. These warnings will not be repeated unless the water pump power switch is turned off and on again. This is to ensure the warning does not become a nuisance.

3.9 Frost Protection

On vehicles fitted with water tank frost protection, the control panel frost protect switch can be used to turn the feature on or off.

With protection on, the system monitors the tank water temperature and water level and will control the tank heaters accordingly. If the fresh or waste water levels are less than 25% the appropriate heater will be turned off to prevent overheating or damage to the element.

There are two types of system employed, both working in a very similar way. One system uses heaters with built-in thermostats; the other uses separate temperature probes in the tank. Both types switch on at 4-5°C and off at 8-10°C

3.10 Electric Step Operation

On vehicles fitted with an electric step, this is operated by a button near the entry door. Press and release the button to move the step in or out. One press of the button will move the step out, a further press will move the step in again. If the engine is started the step will move in automatically, after a short warning buzzer. If this operation fails due to an obstacle a buzzer will sound continuously to warn that the step is still out, and therefore requires your attention.

3.11 Warnings and Alerts

If the vehicle engine is started whilst the motorhome is connected to the 230v supply, a warning beep will be heard. This is to warn you to remove the 230v supply before driving away.

When the vehicle engine is running both the vehicle battery and the leisure battery LED's will flash in unison to indicate that they are connected together and are being charged by the vehicle.

Step operation, if the engine is started with the step in the out position, the step will move in automatically, after a short warning buzzer. If this operation fails due to an obstacle a buzzer will sound continuously to warn that the step is still out, and therefore requires your attention.

Low water level and waste tank, if the fresh water level drops to below 25% a warning beep will be heard and the fresh gauge empty LED will flash. To cancel the warning, press the levels button. If the waste water level rises to full (100%) a warning beep will be heard and the waste gauge full LED will flash. To cancel the warning, press the levels button.

Low voltage warning and cut off, if the power is turned on and the leisure battery level falls below 9V a warning beep will be heard and the leisure battery gauge 10V LED will flash. To cancel the warning, press the levels button. If the power is turned on and the vehicle battery is selected (being used) and the level falls below 10.9V a warning beep will be heard and the vehicle battery gauge 10V LED will flash. To cancel the warning, press the levels button.

3.12 Common Fault Table

Fault	Possible Cause	Proposed Fix
No 230 volt output from PSU	Connecting lead between the site and Leisure Vehicle not connected	Check and connect lead as per 2.4C
	RCD switched off	Reset RCD as per 2.4D
	RCD not operating correctly	Check supply polarity; if the RCD continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	MCB switched off	Reset MCB by switching OFF (down position) then back ON (up position), if the MCB continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	No or deficient supply from site	Contact site Warden for assistance
	Other fault	Contact your Dealer
Reverse Polarity light is illuminated on PSU	Mains Supply reversed?	The reverse polarity light is designed to illuminate when the Live and Neutral supply has been reversed / crossed over. If the light illuminates there is a problem with the site supply or the cable connecting the supply to your vehicle. The light is designed to work on UK electrical supplies (where the neutral conductor is connected to earth at the sub station). If you are using your vehicle outside the UK this light may illuminate when no fault exists. In these cases consult the site warden for advice.

3.12 Common Fault Table

Reverse Polarity light is illuminated on PSU	Generator being used	'The Reverse Polarity warning light is on when using my Generator'. This is a normal side effect when using some types of generator. Instead of connecting the neutral conductor to earth, some generators centre tap the earth connection making both neutral and live conductors 110v above earth. This 110v difference causes the neon polarity indicator to illuminate. In most cases it is still safe to use the generator, but please consult the generator handbook for further information.
Control Panel Problems	Control Panel has no display	Check batteries and fuses, turn PSU shutdown switch and charger switch on and ensure mains supply is connected. Check control panel connecting lead at PSU and behind Control Panel. Contact your Dealer
	12v Power turns off	Battery protect feature has operated to protect the Vehicle battery and or the Leisure battery. See 3.4C Engine has been started, all equipment has been disconnected to meet EMC requirements. See 2.7
	Control Panel locked / erratic function	Observe control panel handling instructions Control panel software may have crashed. Reboot control panel by turning off the PSU isolate switch. Wait 30 seconds then turn the switch back on.

No 12 volt output from PSU	No 230v supply	Check all above
	Charger not switched on	Turn charger switch on, switch will illuminate
	Battery not connected and / or charged	Install charged battery as per 3.4
	Power button on control panel not switched to on	Turn power on at control panel
	Battery flat / Battery fuse blown	Recharge battery, check fuses, check charging voltage is present at battery
	Fuse blown	Check all fuses are intact and the correct value fuse is installed as per fuse table
	Equipment switched off / unplugged	Check equipment is switched on and connected to the 12v supply
	PSU overheated / auto shut-down operated	Reduce load on system. Allow PSU to cool down. PSU will automatically restart when cool.
	Other fault	Contact your Dealer
Pump not working	Fuse blown	Replace fuse with correct value as per fuse table.
	Pump turned off	Turn pump on by pressing the pump button at the control panel.
	Setting incorrect	Both the internal and external pump feeds are controlled from the control panel. To alter the setting of the pump switch see section 3.8 Ensure the setting matches your desired requirement.

3.13 Contact details

Sargent Electrical Services Limited, provide a technical help line during office hours. Please contact 01482 678981 if you require technical help. For out of hour support please refer to the tech support section of the Sargent web site www.sargentltd.co.uk

4.Technical Data & Approvals

4.2 Motorhome Equipment -
EC460,465,468,469,470 PSU & EC461,462,466,467 Control Panel

Outline Specification		
INPUT 230v	230 Volts / 0 to 16 Amps	+ / - 10%
OUTPUT 230v	RCD protected, 3 x MCB outputs of 10A Separate switched channels for water heater, space heater and charger EC470 2 x 10A MCB Outputs & 1 x 16A MCB Output (Alde systems only)	
INPUT 12v	2 x 20A battery inputs via 2 x 4 way connectors	
SOLAR INPUT	1 x Dedicated solar panel input (20 to 100W panel) via a 2 way connector	
OUTPUT 12v	25A total output via multiple switched channels protected by 14 fused outputs	
CHARGER	Input 220-240 Volts AC +/- 10%, Frequency 50 Hz +/- 6%, Current 3A max. DC Output 13.6 to 14.4 Volts nominal, Current 25 Amps max (300 Watts). Overall size (HxWxD) 50 x 250 x 135mm	Fixing centres 128*128mm 1.2kg
Signal INPUT	4 x Fresh water level, 4 x Waste water level, 1 x Engine running, plus multiple vehicle connections	Fresh water negative sensed Waste water negative sensed
Data IN / OUT	CANBUS Data communication and power to Control Panel via 6 way connector	
IP rating	IP31	
Operating temperature	Ambient 0 to 35°C PSU case temperature with full load 65°C Max	Automatic shutdown and restart if overheated / overloaded

Dimensions		
EC468, EC469 PSU	Overall size (HxWxD) 315 x 195 x 150mm Clearances 75mm above, 50mm left & right	Weight 2.9 Kg
EC462, EC467 Control Panel	Overall size (HxWxD) 87 x 250 x 15mm Cut-out size (HxW) 70 x 233mm	Fixing centres 130*75mm Weight 114 g

4.3 Approvals

System: BSEN 1648-1, BSEN1648-2 compliant, BS7671: 2008 compliant

Residual Current Device: RCD 40A 30mA trip to BS EN 61008

Miniature Circuit Breakers: MCB's type C 6000A breaking capacity to BSEN 60898

Electro Magnetic Compatibility (EMC) directive 2004/108/EC Certificate CE20071224-1

Integrated Charger: BS EN 60335-1/2.29, 2006/95EC, IEC61000-3.2/3:1995, 1.

Low Voltage Directive: 2006/95EC TUV-014900-A1, EN55022, Class B, EN55024/ Level 2

12V Operation of Electrical Items

Most appliances within your product are designed to function when supplied with a 12V feed, either from a leisure battery or the on-board charger.

However, customers should note that some items may have limited functionality when the battery is in a lower voltage state (i.e. circa 10V). The Swift Group makes every effort when specifying components to operate at low voltages, but is not responsible if a component fails to work at lower voltages.

Components that are typically affected by low battery voltage include, but are not limited to, the pump, the radio and some lights which require higher voltages for start-up.

Motorhome battery

⚠ **WARNING:** Use precaution when removing or replacing the battery, as batteries contain acid liquids which can cause severe injuries and damage when handled incorrectly. Refer to the cleaning and maintenance section.

Your motorhome has been fitted with one or two leisure batteries depending on size of vehicle and expected electrical loads. The battery is housed in a special compartment designed to hold the battery securely and to contain any electrolyte (acid) spillage. The compartments are either under the floor or in a side opening battery box opening to the outside of the vehicle. Under floor compartments are sealed from the habitation compartment and a breather pipe is fitted to ensure any build up of explosive gases (hydrogen) is vented to the outside. If a breather pipe is fitted it is important to ensure that replacement batteries are also fitted with a breather pipe.

The battery or batteries should only be positioned in the appropriate compartment, which is vented to the outside, and be properly secured before travelling

It is recommended that a good quality leisure battery is always connected when the motorhome electrical system is in use.

Leisure batteries are a deep cycling rechargeable heavy duty 12v battery designed to provide power for lights and other electrical appliances. Replacement batteries should be a proprietary brand leisure battery with a minimum 80 amp - 110 amp capacity.

Note: Replacement batteries should be checked dimensionally before purchasing, to ensure fitment within the battery compartment, as brands vary in size.

It should be remembered that batteries suitable for the electrical demands of a motorhome differ in design from those for use with a car, and whilst the system may operate with a car battery it is strongly recommended that only a rechargeable leisure type battery, maintained in good condition is used. The battery should be kept topped up at all times.

If two leisure batteries are fitted additional care is needed, as one battery deteriorates this can reduce the lifespan of the other.

⚠ **WARNING:** When connecting the battery, ensure that the correct polarity is observed (black is negative and red/brown is positive) and that the terminals are securely fastened.

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of terminals and ‘topping up’.

Note: The batteries fitted to your motorhome must be kept upright.

⚠ **WARNING:** Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity.

Your motorhome has been fitted with an in-line 20 amp fuse between the battery terminal and the power supply unit. Do not use a higher rated fuse as this may cause damage to your motorhome.

⚠ **WARNING:** Switch off all appliances and lamps before connecting or disconnecting the battery. Smoking is prohibited around the battery compartment.

To preserve the life of your leisure battery and charger please observe the following:

1. Do not leave all 12v lights powered at the same time as this will drain your leisure battery more rapidly.
2. If all 12v lights must be powered together, ensure the battery is ‘in-circuit’ and that the battery charger is turned on.
3. For optimum performance use the transformer/charger unit with a leisure battery attached.

Please note the auxiliary battery or batteries supplied with your motorhome may not be fully

charged and should be charged for a minimum of 24 hours before use.

Battery performance may be affected by a number of things such as ambient temperature, age, state of charge etc.

Cleaning and maintenance

- Use protective clothing and glasses when handling a leaking battery, and avoid direct contact to the skin, eyes and respiratory organ.
- Should a battery leakage occur, please act according to the instructions supplied by the manufacturer of the battery. Act with caution as caustic substances are present in the battery.
- Always remove the battery and the power cable before carrying out any maintenance of the product.
- Before removing the clamps switch off all appliances.
- Use a soft cloth or sponge and a non-acid/ abrasive detergent when cleaning the Battery Box and Soft Tray.
- To check if any acid is present in the Soft Tray, simply press it softly. A strong smell from the Soft Tray may also indicate spilled acid. The battery can be filled again with acid collected from the Soft Tray. Always treat spilled battery acid as hazardous waste. Dispose of spilled battery acid according to the local and national regulations.
- At the beginning of each season or extensive travelling, check the Soft Tray for faults and replace if necessary.
- The cleaning of the Battery Box and Soft Tray should only be done after all power sources have been switched off, in order to prevent a hazardous situations.

Side opening battery box

The Battery Box is intended to accommodate an auxiliary battery in your motorhome. The Battery Box has a CE socket to connect to a 230 V power supply. Inside the Battery Box there is the option to fit several sockets and outlets.

⚠ WARNING:

- Use precaution when mounting the battery, as batteries contain acid liquids which can cause severe injuries and damage when handled incorrectly. Refer to the instructions on the battery.
- No smoking is allowed in the area of the Battery Box!
- Please note that the CE socket has a max of 16 amp.

- This product meets the latest version of the EN 1648 part 1 and 2 standard.

Before placing the battery inside the Battery Box, the battery should be placed in either the battery bag or the Soft Tray and rested on the ground adjacent to the Battery Box. Carefully connect the electrical wires (the red cable attaches to the + pole and the black cable to the - pole of the battery).

Note: Incorrect connection of the cables will cause a short circuit with potential hazardous consequences.

After mounting the terminals, lift the battery together with the Soft Tray into the middle of the Battery Box compartment. Push the battery to the back of the Battery Box.

The battery is secured by a strap (figure A).

When attaching the 230 volt cable on the CE socket, the maximum recommended thickness of the cable is 10 mm. When closing the door, the attached cable is to be fed through the slot in the door.

The maximum battery size that can be fitted is 225mm high (including terminals) x 175mm deep x 353mm wide. The depth and width dimensions include the rim around the bottom used for securing the battery.

Note: Batteries that are not foot mounted, ie. without a rim can still be fitted, but check first that they will fit within the battery box and can be secured before purchasing.

Figure A

Cleaning and maintenance

- Use protective clothing and glasses when handling a leaking battery, and avoid direct contact to the skin, eyes and respiratory organ.
- Should a battery leakage occur, please act according to the instructions supplied by the manufacturer of the battery. Act with caution as caustic substances are present in the battery.
- Always remove the battery and the power cable before carrying out any maintenance of the product.
- Before removing the clamps switch off all electrical and gas appliances.
- Use a soft cloth or sponge and a non-acid/ abrasive detergent when cleaning the battery box, soft tray or bag.
- To check if any acid is present in the soft tray or bag, simply press it softly. A strong smell from the soft tray may also indicate spilled acid. Always treat spilled battery acid as hazardous waste. Dispose of spilled battery acid according to the local and national regulations.
- Before the camping season or extensive travelling, check the soft tray for faults and replace if necessary.
- The cleaning of the battery box and soft tray should only be done after all power sources have been switched off, in order to prevent a hazardous situations.

Solar panel connection point or Solar panel fitment

Depending on specification, a solar panel connection point, or a solar panel and regulator, will be installed in the motorhome.

Solar Panel Connection Point

If a connection point only has been included in the motorhome harness, a solar panel using the provision must provide a fused and regulated output. From the provided connection the supply is taken to the EC400 power supply unit. This facility is designed to be used with a maximum solar panel size of 100 watts – if a solar panel (or panels) of output greater than 100 watts are required, please contact Sargent Electrical Services or the Swift Group for further advice.

Solar charge directed to the power supply unit can then be distributed to the leisure battery, vehicle battery, or each battery in turn. For further details of selecting which battery receives the solar charge, please see the EC400 series instructions. Please note that solar charge can only be directed to both batteries in this way if the System Shutdown button is ON – if System Shutdown is OFF, any available solar charge will be directed to the vehicle battery only.

Solar panel installations should be undertaken by trained technicians who are familiar with the systems involved. Particular care should be taken when making connections to solar panels, which can generate high voltages ahead of a regulator when exposed to light. Depending upon the specification of the motorhome, the connection point will be presented in one of the following formats:

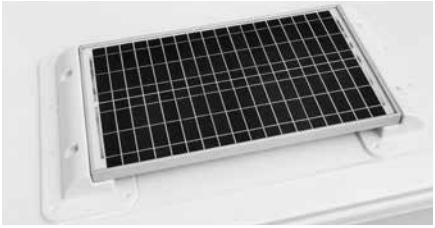
1. Solar panel connection point with EC400 series control panel and related power supply unit. In these installations two way connectors will be present close to the leisure battery, and/or at a high level within furniture (i.e. within a wardrobe, either visible or behind a removable cover). The output from a regulator, rated to suit the chosen solar panel, should be connected to this point.

2. Solar panel connection point -with EC400 series control panel and related power supply unit, and with roof mounted solar panel connection point. On some models, in addition to the connections detailed above which take a regulators output to the power supply unit, an additional harness and external connection box has been fitted. The intention of this link harness is to provide an electrical route between the inside of the motorhome body, and a solar panel installation on the roof of the motorhome.

The external connection box will be located towards the front of the motorhome roof, and within this connection box is a two way weatherproof connector, to which a solar panel or panels can be connected directly. Then, within a high level furniture locker, relatively close to the external connection box, two connectors will be found and this is where a regulator should be installed / connected. The first connector is the other end of the link harness from the roof mounted connection box, and this should be connected to the input connections of a solar panel regulator. The second connector should be connected to the output from the regulator, and this connection takes the output from the regulator to the power supply unit.

A Brown and Blue pair of wires will feature in the link from the roof providing the input, with a Red and Black pair of wires taking the regulator output to the power supply unit.

Factory fitted Solar Energy System



Depending on specification, your motorhome may be fitted with a solar panel of up to 100w, and if a solar panel is fitted then a suitable solar regulator will also be installed. This solar panel and regulator may provide additional 12v power whenever sunlight is available to the panel, and this will be directed to the EC400 power supply unit. Conditions allowing, and depending on the settings chosen in the EC400 power supply unit, the system can keep the leisure battery and vehicle battery 'topped up' during storage, and will provide a daily boost to the leisure battery when camping without a mains 230V supply.

Regulator operation

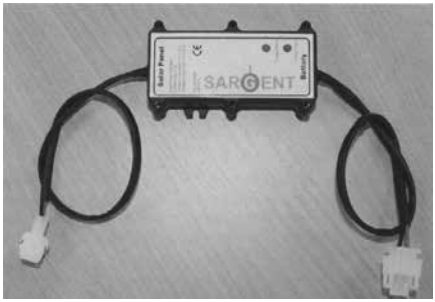
The regulator operates automatically, turning on and off as required to charge and operate. When the solar panel is exposed to a source is exposed to a source of sunlight the regulator tarts to operate. When the voltage from the panel reaches a usable level, the Panel Output LED will flash indicating that the battery is being charged (see battery charging above). If insufficient power is being generated by the solar panel the regulator will turn off. The regulator checks the solar panel output every 30 seconds and turns on/off as required. On overcast days when the solar panel output is minimal the regulator can still deliver a small charge, and in this mode the LED's are not illuminated to conserve power.

Control Panel

When the solar panel is operating the leisure battery voltage display on the control panel will increase, however this does depend on the amount of load placed on the system and the amount of power being generated by the solar panel at that time.

Battery charging

If a leisure battery is fitted and requires charging the Charge Status LED will illuminate. Depending on the state of charge of the battery this LED will illuminate red for bulk charge (14.4V output) or green for float charge (13.6V output). It may take a few hours to several days to charge the battery depending on its state of charge. When the battery is fully charged the regulator will turn off to prevent overcharging of the battery. If the mains charger is turned on to charge the leisure battery this can also cause the solar panel regulator is to tun off.



Power Supply Unit

The PSU does not need to be switched on (shutdown button in) for the solar panel to charge the battery, but if the PSU has an LCD display then this can be used to see the increase in battery voltage as the solar panel charges the battery. During caravan storage the PSU should be shutdown (shutdown button out).

Maintenance and cleaning

The solar panel will require cleaning periodically in order to maintain the performance of the panel. A caravan, car shampoo or simple soap can be used, but do not use abrasive cleaners.

Solar Panel Use

All Swift Group products have the specific provision for the connection and use of a solar panel, even when the solar panel has not been factory fitted. Each Sargents PSU (fusebox) has a dedicated solar panel connection which allow the 12V feed from a panel to be connect to the leisure batteries.

It should be noted that this connection is only designed for the use of a solar panel and has a maximum rating of 100W.

Accessory harnessing

Alarm Power Supply

A connection exists within the motorhome harness, which can be used as a power supply for an alarm or tracking system. For security reasons, information regarding this is not published; please contact your dealer for further information.

Satellite Power Supply

Dependant on specification, in many motorhomes a power supply harness is included for use with roof mounted satellite systems. This power supply is terminated in a 4-way connector marked ‘SATELLITE’, and carries 12v positive, 12v negative, and a signal which can be used to detect when the vehicle engine is running. (The engine run signal is required by some systems to automatically retract satellite dishes.

In addition, on Kon-Tiki and E700 models which have a decoder / receiver position. At this position an additional 230v socket is present for use with a decoder / receiver, and a 12v supply is present (2-way connector, 12v positive and 12v negative), which can be used with an inverter (not supplied) to power a decoder/receiver when a mains supply is not available.

Tow Bar Connection

The addition of tow bar electrics requires an electronic interface, to prevent problems with road lighting on the base vehicle. At the rear of the motorhome, a power supply is included in the motorhome harness for use with a tow bar interface. Please ask your dealer about the tow bar and tow bar harness kit that is available for use with this connection.

Generator usage

Caution should be used before connecting a generator to your motorhome.

⚠ **WARNING:** Never start or stop the generator while electrical loads are connected and switched on. Start the engine, let it stabilise, then connect the electrical load. To stop engine, disconnect the electrical load and let engine stabilise before switching off.

Whilst some generators use invertor technology, others use a more basic principle to generate the 230v supply. Preference should be to choose a generator which produces a consistent sinusoidal wave form with accurate voltage control.

The reverse polarity warning light may illuminate when using a generator. This is a normal side effect when using some types of generator. Instead of connecting the neutral and live conductors 110v above earth. This 110v difference causes the neon polarity indicator to illuminate.

In most cases it is safe to use a generator, but please consult the generator handbook for further information.

Habitation relay

Habitation relays are fitted to motohomes by manufacturers to comply with the following legislation:

1. The Road Vehicles (Construction and Use) Regulations 1986 Regulation 60 - Radio interference suppression
2. Council Directive 72/245/EEC of June 20, 1972 amending for the purpose of their adaptation to technical progress, relating to the radio interference (electromagnetic compatibility) of vehicles and Council Directive 2007/46/EC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers.

A habitation relay must be fitted by manufacturers, safe guarding the consumer, the purpose of the relay is to disable non-homologated appliances/components whilst the vehicle is in transit.

Unintentional electromagnetic energy can be created by non-homologated devices within the habitation compartment, which could cause a malfunction of the base vehicles electronic systems/components, including safety critical items such as air bags, ABS braking etc.

In your motorhome the habitational relay is within the EC400 / 450 power supply unit.

ELECTRICS FAULT FINDING

The Swift Group recommends that electrical fault finding is undertaken by a trained Technician familiar with the systems involved. The basic checks below are therefore limited to items that can be checked without the use of tools etc. If in any doubt please consult a Swift dealer.

Power Supply	
Fault	**Remedy**
No 230v output from PSU	See Sargent EC400/EC450 information
No 12v output from PSU	See Sargent EC400/EC450 information
Reverse Polarity light illuminated	See Sargent EC400/EC450 information
Control Panel Problems	See Sargent EC400/EC450 information

Appliance Not Operating	
Fault	**Remedy**
Error code or fault light displayed on appliance (eg fridge LCD display)	Check appliance specific information for next steps
No display at appliance controls	Check power supplies are available (electric hook up, charger operating, battery in good state of charge). Majority of appliances will not be operational when engine is running. Ensure control panel is ON. Check appropriate fusing in Power Supply unit

Internal Lighting	
Fault	**Remedy**
Lighting not operational	Check power supplies are available Check control panel is ON, and that CABIN LIGHTS button has been pressed Locate furniture mounted switches, where appropriate Check fuses on Power Supply Unit Determine if light is LED or Tungsten / Halogen bulb, or Fluorescent tube – check and replace bulb if appropriate

Road Lighting	
Fault	**Remedy**
Dashboard warning light illuminated / groups of road lights inoperative	Check all bulbs are located correctly in bulb holders (especially those recently replaced). See bulb replacement information in Service Book If Tow Bar fitted check trailer lighting / disconnect trailer to determine if this is the cause of the fault. Check fuses in Fiat dash for main road lighting (see Fiat handbook for details of which light groups are fused) Check fuse in Power Supply Unit for auxiliary marker lights (Amber side markers, Luton / upper rear markers)

Electric Step Operation (When fitted)	
Fault	**Remedy**
Step will not automatically retract with engine start	Check fuses in Power Supply Unit. Check mechanical condition of step – clean / lubricate if appropriate. Check other functions that are linked to the running of the vehicle engine (i.e. fridge 12v operation). If these are also inoperative contact dealer.
Step does not respond to furniture switch	Check fuses in power supply unit Check mechanical condition of step – clean / lubricate if appropriate. It is possible to link the operation of the step to the lock/ unlock commands from the central locking keyfob. If this feature is enabled on your motorhome, check if operation of the step via the central locking keyfob is possible. To enable / disable the keyfob feature contact your dealer.

Power Supply	
Fault	**Remedy**
Fresh water level sensor gives incorrect readings	Use floor hatch within motorhome to access top of water tank, remove sensor (4-screws) and clean probes If problems persist, dealer assistance required for further fault finding.
Waste water level sensor gives incorrect	If possible, from below motorhome remove level sensor from top of waste tank, and clean probes. Alternatively, clean waste tank internal surfaces by flushing through with water or cleaning agent. If problems persist, dealer assistance required for further fault finding.

Battery Discharge	
Fault	**Remedy**
Leisure battery discharging earlier than anticipated	If appropriate to battery, check condition and top-up battery fluid if required Have condition of leisure battery checked by dealer or tyre/exhaust/battery specialist If motorhome is not in use, ensure 'SYSTEM SHUTDOWN' button on Power Supply Unit is being used to isolate all circuits If motorhome is in use, see consumption table in handbook – are several items perating simultaneously / is total load likely to cause discharge. Check charger is operational when mains hook up is present, and that the charger is allowed sufficient time to replenish battery / batteries.
Vehicle battery discharging earlier than anticipated	If appropriate to battery, check condition and top-up battery fluid if required Have condition of leisure battery checked by dealer or tyre/exhaust/battery specialist If motorhome is not in use, see base vehicle handbook section headed 'periods of inactivity'. Consider use of vehicle battery isolator If motorhome is in use, Power Supply Unit configured to charge / maintain both leisure and vehicle batteries. (Contact dealer for further assistance if unsure)

Audiovisual Equipment	
Fault	**Remedy**
Rear view camera system inoperative when reversing (if fitted)	Check if camera system can be switched on manually, using power button on rear view mirror.
	Check Reverse Lights are operational on rear of motorhome. (Check base vehicle fuses if reverse lights are inoperative.)
Rear view camera system inoperative whether moving forward or reversing (if fitted)	Check fuses in habitation area fusebox (Power Supply Unit)
Radio switches off intermittently	Radio will not remain on indefinitely when vehicle ignition is switched off. Please see following page or Fiat / Peugeot handbook.

Cab radio - timer Settings

On all Euro V cabs fitted with a Fiat / Peugeot radio, the amount of time the radio will stay on can be altered. To do this please follow the instructions below:

- Turn radio on using central 'power' button
- Within 15 seconds, simultaneously press 'FM AS' and preset button '2'. Each time this pair of buttons are pressed, the display will alternate between 'NORMAL POWER MODE' and 'CAMPER POWER MODE'
- Ensure that 'CAMPER POWER MODE' is displayed, then press 'MENU'
- Using the 'UP' and 'DOWN' button now changes the display to show various adjustable items. Cycle through the options until 'RADIO OFF' and a number of minutes is shown on the display. This will take approx two presses of the 'UP' button or seven presses of the 'DOWN' button.
- With 'RADIO OFF' shown on the display press the 'LEFT' or 'RIGHT" button. Each press of either button will alternate the number of minutes shown between '180' and '0'
- With '180' showing on the display the setting is complete and three hours of radio operation should be possible. Press the 'POWER' button to exit the menu and return the display to its usual view

Please note that in 'NORMAL POWER MODE' the same subsequent steps detailed above can be followed, to choose between '20 mins' and '0 mins' of radio operation.

ELECTRICS

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Truma heating system and air flow

The Swift Group undertakes considerable testing of our products in cold chambers to ensure they meeting the BS EN 1649 Grade 3 standard and are useable in cold temperatures. During this testing, the air flow on the blown air outlets (S3004 space heater and Combi Heaters) is defined and set by us. In some cases, customers may wish to alter this setup to achieve a different heating pattern (i.e. more hot air to the rear of the vehicle or vice-versa) and this can be achieved by altering the diverter flap (S3004 heater) or by placing restrictors in the blown air system (Combi units).

Customers should seek the advice of Truma or their Dealer on how to do this

Equipment Specification

For details on type of equipment fitted in your motorhome, please refer to the Sales Brochure or Dealer.

Note: In all cases the electric (230v) heating system is designed to supplement the gas heating system. For quick / efficient / prolonged heating gas must be used.

Important

To maximise the use and life of all fitted equipment in your motorhome it is essential that any accompanying manufacturers' literature is read fully. All recommended maintenance and preparation procedures should be followed. The information provided in this handbook is only intended as a guide. If in any doubt consult your manufacturer appointed dealer, particularly before attempting to install EXTRA EQUIPMENT.

Note: In the interest of safety, replacement parts for an appliance shall conform to the appliance manufacturer's specifications and should be fitted by them or their authorised agent.

Truma Ultrastore water heater operating instructions

⚠ **WARNING:** Before using for the first time, it is essential to flush the entire water supply through with clean warm water. Always mount the cowl cover when the water heater is not being operated! Drain the water heater if there is a risk of frost! There shall be no claims under guarantee for damage caused by frost!

When connecting to a central water supply (rural or city connection) or when using more powerful pumps, a pressure reducer must be used which prevents pressures of greater than 2.8 bar occurring in the Ultrastore.

Filling the Truma Ultrastore with water

e = Lever position 'Closed'

f = Lever position 'Drain'

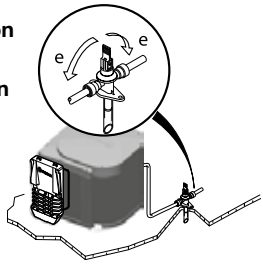


Fig. 1

1. Check that the drain valve in the cold-water intake is closed. Lever should be in the horizontal position (e).
2. Open the hot tap in the bathroom or kitchen with pre-selecting mixing taps or single lever fittings set to hot.
3. Switch on power for water pump (main switch or pump switch). Leave the tap open to let air escape while the water heater is filling. The heater is filled when water flows out of the tap.

Note: residues of frozen water can prevent filling if there is a frost. The water heater can be defrosted by switching on the heater for a short period (max 2 mins). Frozen pipes can be defrosted by heating the room.

Note: If just the cold water system is being used, without water heater, the heater tank is also filled up with water. Therefore, order to avoid damage through frost, the water contents must be drained by opening the drain valve when the system is no longer in use.

Draining the water heater

1. Disconnect power for water pump (main switch or pump switch).
2. Open hot water taps in bathroom and kitchen.
3. Open safety/drain valve: Lever in vertical position, (Fig. 1) position (f).
4. The water heater is now drained directly to the outside via the safety/drain valve. Check that the water contents have been completely drained (10 litres).

Gas operating instructions

⚠ **WARNING:** Never operate the water heater without water in it!

1. Remove cowl cover.

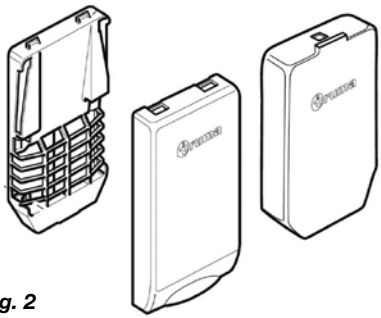
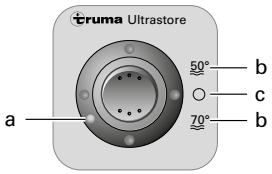


Fig. 2

2. Open gas cylinder and open the gas shut off valve at the manifold.
3. Turn on the heater by moving the central rocker switch to the 50ºC or 70ºC position as desired. (Fig 3).

Fig. 3



a = Red LED “Failure”

b = Water heater “On” 50 °C or 70 °C

c = Water heater “Off”

4. After 5 seconds clicking sound will be heard from water heater, as boiler attempts to light. Outer collar (a) in control module will turn Red if boiler fails to light - If boiler does fail to light, turn switch back to central position (c), wait 5 minutes, and then repeat step 3.
5. If there is air in the gas supply line, it may take up to a minute before the gas is available for combustion. If the appliance switches to “Failure” during this period, switch off the appliance - wait 5 minutes - and switch on again!

Switching off (gas operation)

Switch off the water heater by moving the rocker switch to the central position. (Fig 3).

⚠ **WARNING:** Drain the water heater if there is a risk of frost!

If the water heater is not to be used for a longer period, mount cowl cover and close the heater gas shut off valve at the manifold.

Note: There shall be no claim under guarantee if this point is not observed.

Always remove the cowl cover prior to operating the water heater!

⚠ **WARNING:** Care should be taken to ensure adequate ventilation of the flue at all times. It is inadvisable to inhale exhaust fumes.

Red indicator lamp "Failure"

The red indicator lamp (d) lights up if there is a failure.

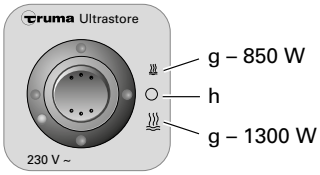
The reason for such an indication is, for example, no gas available or air in the gas supply system, triggering of the excess temperature monitor etc. To unlock, switch off the appliance, wait 5 minutes, and switch on again.

In event of faults, always contact the Truma Service on Tel: 01283 586020.

Electrical Operating Instructions

1. Ensure that the heater tank is full of water before operating the unit on electric power.
2. Turn on the electric heating element by operating the water heater switch on the power supply unit. See page 69.
3. At the Ultrastore control (Fig 4.), move the rocker switch from the central off position (h), to either 850W or 1300W (g). The 850W setting will take longer to heat the water, but less power than the 1300W setting.
4. Once a setting has been selected, the electric element within the water heater will turn ON and OFF automatically, to aim to regulate the water temperature at 70°C. As long as there is a suitable mains supply present, and the water system is primed, there is no requirement to switch the water heater 230V element off.

Fig. 4



g = Water heater 'on' 850W or 1300W

h = Water heater "Off"

Note: The water temperature cannot be selected, automatic temperature limitation at approx. 70°C. For a faster heating up period the appliance can be simultaneously operated with gas and electrical power.

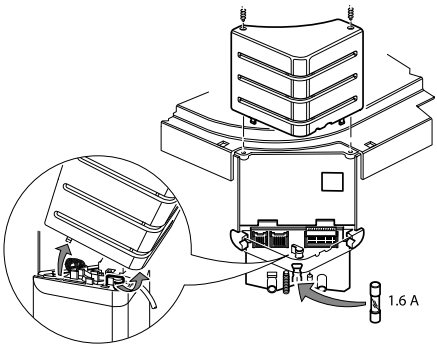
The electrical heating rod is fitted with an excess temperature cut-out. In the event of a fault, switch off at the operating element. Check water content, refill if required (close drain valve). Wait 10 minutes, then switch on again.

Maintenance

We recommend the Truma system care set for cleaning, disinfecting and looking after the boiler. Other products – in particular products containing chlorine – are unsuitable.

To avoid infestation by micro-organisms, the water content must be heated to 70 °C at regular intervals. Clean the device and the ventilation slits with a dry and fluff free cloth.

Fuses



The water heater 12 V fuse is on the electronic control unit on the water heater.

Note: Only replace the miniature Fuse on the p.c.b. with a fuse of the same type: 1.6 A, EN 60127-2-3 (slow action).

SYMPTOM	CAUSE	RECTIFICATION
Gas operation		
When switching on, the heater does not operate.	• No 12 V supply voltage.	• Check the power supply (operation voltage min. 10.5 V).
		• Check the water heater fuse (refer to mainanance “Fuses”).
	• Window open.	• Close any windows above the cowl.
When switching on, the heater does not operate and the red lamp lights up after approx. 30 secs.	• Cowl cover fitted.	• Remove cowl cover and / or clear any obstruction.
	• No gas supply.	• Check gas valves and gas bottle.
	• Incorrect gas pressure.	• Check gas valves and gas bottle.
	• Air in the gas supply.	• To unlock (and purge air), switch off the appliance, wait 5 minutes, and switch on again.
Heater operates for a prolonged time and then the red lamp lights up.	• Over temperature thermostat operated.	• Check water content, refill if required (close drain valve).
		• To unlock, switch off the appliance, wait 5 minutes, and switch on again.
Electrical operation		
When switching on, the heater does not operate.	• No 230 V supply voltage.	• Connect the motorhome to the site supply and / or check residual current circuit breaker.
	• Over temperature thermostat operated.	• Check water content, refill if required (close drain valve).
		• The electrical heating element is fitted with an excess temperature cut-out. In event of a fault, switch off at the control panel, wait 10 minutes, then switch on again.
	• Too slow warm-up in position 850 W	• Please contact the Truma Service.
Water supply		
Water drips from the safety/ drain valve.	• Water pressure to high.	• Check water pressure (max. 2.8 bar), use a pressure reducer when connected to central water supply.
When opening the cold water tap, hot water tap comes out.	• Hot water flows back through the cold water supply.	• Fit a no-return valve in the cold water supply (refer to installation instructions “Water connection”).

If fault persists please contact the nearest Truma Service (see Truma Service Booklet or www.truma.com).

S 3004 Space heater

Note: Surfaces become hot in use. Guards provided do not give full protection for the young or elderly.

Note: The S3004 is primarily a gas heater with supplementary 230v heating.

Safety Instructions

In case of gas system leaks or gas smell:

- Put out all naked flames
- Do not smoke
- Switch off equipment
- Close gas cylinders
- Open doors and windows
- Do not use any electrical switches
- Allow the whole system to be checked by an expert!

An opened skylight / lifting roof around the exhaust cowl involves the danger of exhaust gas entering the vehicle interior. The heating may only be operated with the skylight / lifting roof closed where necessary.

Note: Only experts may carry out repair work!

A new O-ring must be mounted each time the exhaust is dismantled.

Guarantee claims, warranty claims and acceptance of liability will be ruled out in the event of the following:

- Modifications to the unit (including accessories)
- Modifications to the exhaust duct and the cowl
- Failure to use original Truma parts as replacement parts and accessories
- Failure to follow the installation and operating instructions

It also becomes illegal to use the appliance, and in countries this even makes it illegal to use the vehicle.

Note: The vehicle owner is responsible for arranging inspection

Liquid gas devices may not be used while refuelling, in multi-storey car parks, garages or on ferries.

Slight development of smoke and odours can occur when commissioning a new factory device (or after a longer period out of use). It is appropriate to immediately allow the device to burn on the highest power and ensure good ventilation of the room.

An unusual burner noise or raising of the flame points to a controller defect and makes an inspection of the controller necessary.

Heat sensitive objects (e.g. spray cans) may not be stored in the heating installation area as high temperatures can occur.

Only suitable controller connection hoses that correspond with the national requirements may be used for the country of destination. These must be regularly checked for brittleness.

Pressure regulating devices and hoses must be replaced with new ones no more than 10 years after their date of manufacture (every 8 years if used commercially). This is the responsibility of the operator.

Important operating notes

The combustion air intake under the vehicle floor must be kept clear of dirt and slush.

The exhaust cowl must always be placed free in the air flow during operation of the heating. Roof structures can disturb the function of the heating.

The cowl must be cleared of snow before commissioning the heating system in winter. For winter or permanent camping, we recommend the attachable cowl extension set SKV (3 x 15cm - part no. 30690-00) on the cowl.

Should the heating system keep going out in extreme wind conditions or upon use in winter, we recommend use of a cowl extension AKV (15cm = part no. 30010-20800) or an additional suitable cowl top.

⚠ **WARNING:** Care should be taken to ensure adequate ventilation of the flue at all times. It is inadvisable to inhale exhaust fumes.

⚠ **WARNING:** If 2 or 3 extensions measuring 15cm are used, these must be removed before a journey so that they are not lost (risk of accident). A remaining extension must be screwed down tight and secured with a screw.

If a canopy is mounted to the motorhome, it is compulsory that the exhaust cowl is guided through the roof. Please use cowl leadthrough UEK (part no. 30630 - 04)!

The **heat exchanger**, the **exhaust duct** and all connections **must be regularly inspected by an expert,** and always after **deflagration** (misfiring).

The exhaust duct must:

- Be connected **tight and fixed** to the cowl
- Be made of one piece (without separators)
- **Without cross-section narrowing** and laid **rising along the whole length**
- **Mounted tight** together with the insulating duct **with several clamps**

No objects may be placed on the exhaust duct as this could lead to damages.

⚠ **WARNING:** Heating systems with incorrectly mounted, a damaged exhaust duct or a damaged heat exchanger may not continue to be used!

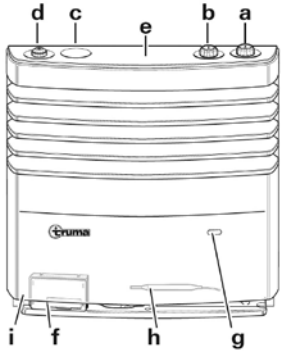
Steps must be taken to ensure that the warm air outlet of the heating system is never obstructed. Therefore never place textiles or similar to dry in front of or on the heating system. Such misuse could cause major damages to your heating system and the textiles caused by overheating. Do not place any flammable objects near the heating system!

⚠ **WARNING:** The heating system case becomes hot during operation due to the construction. The operator is responsible for due diligence towards others (especially small children).

It is compulsory to pay attention to the operating instructions and 'Important Operating Notes' when commissioning! The vehicle owner is responsible for operation of the device taking place correctly.

Operating instructions

S 3004 (P) heating system



a = Operating handle (thermostat)

b = Piezo pressure switch (S 3004 P)

c = Blind cover

d = Integrated panel for a Truma fan TEB-3

e = Sensor button to switch on the lighting (optional)

f = Auto ignitor with battery compartment (S 3004)

g = Mica window to observe the flame

h = Thermostat sensor

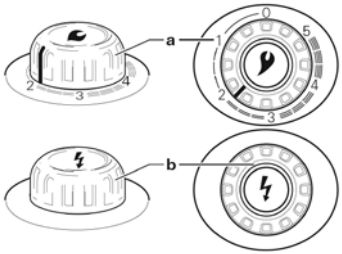
i = Type plate (removable case!)

Note: The illustration shows installation on the right. For installation on the left, the parts are arranged on the other side (mirror-image).

To operate

S 3004 P with piezo pressure switch

1. Open gas cylinder and quick-acting valve in the gas supply line.
2. Turn the operating handle (a) into thermostat position 1-5 and push down as far as possible. Press the ignitors in quick succession at the same time until the flame burns.



3. Hold down the operating handle (a) for up to 10 seconds so that the safety pilot responds.
4. Watch another 10 seconds through the mica window whether the flame is extinguished by the air in the line (caused by gas cylinder change).

⚠ **WARNING:** Never re-ignite before waiting another 3 minutes otherwise there is danger of deflagration! This also applies if a heating system already in operation goes out and needs to be re-ignited.

If the gas supply line is filled with air, it can take up to two minutes until the gas is ready to burn. Keep the operating handle pressed down and keep pressing the pressure switch until the flame burns.

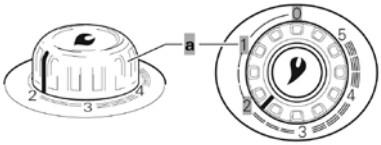
5. In order to achieve even and quick distribution of warm air and reduction of the surface temperature at the outlet grill for warm air, we recommend that the heating system is operated with the Truma warmer running.

Note: The S 3004 P heating system (with piezo pressure switch) is constructed so that subsequent installation of an auto ignitor is possible (part no. 30580-01).

S 3004 with auto ignitor

Make sure that a battery is inserted before commissioning for the first time (see “Battery change on auto ignitor”)!

1. Open gas cylinder and quick-acting valve in the gas supply line
2. Turn the operating handle (a) into thermostat position 1-5 and push down as far as possible. Ignition takes place automatically (audible ignition) until the flame burns.



Hold down the operating handle for up to 10 seconds so that the safety pilot responds.

⚠ **WARNING:** Wait min. 3 minutes before re-igniting after a fault, otherwise there is a risk of deflagration!

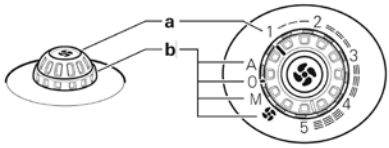
Should the flame go out during operation, immediate re-ignition takes place within the closing time of the safety pilot (approx 30 seconds).

If a flame is not produced, the auto ignitor continues to work until ‘0’ is switched on the operating handle (a).

If the gas supply line is filled with air, it can take up to two minutes until the gas is ready to burn. Keep the operating handle pressed down during this time until the flame burns.

3. In order to achieve even and quick distribution of warm air and reduction of the surface temperature at the outlet grill for warm air, we recommend that the heating system is operated with the Truma warmer running.

Operating the fan



a - Control knob / scale for fan power (1-5)

b - Rotary switch / scale for operating modes.

A - Automatic - The electronics control the necessary fan power and limits the speed.

0 - Off - Switch off fan.

M - Manual - Set the required fan level.

- Booster Level - Set the fan power to the highest value (for maximum air volume current).

Room Thermostat

An average room temperature of approx 22°C is achieved with a thermostat setting of approx 3 without **operating the fan.** We recommend operation **with a fan** and a thermostat setting of approx 4 for comfortable warm air distribution and for reduction of condensation on cold surfaces.

The exact thermostat setting must be established corresponding with the construction type of the vehicle and according to the individual warmth requirement.

Note: The thermostat sensor is on the bottom of the heating system. Please note that the cold draughts caused by refrigerator ventilation, gaps in doors or a high pile carpet can have a negative influence on the thermostat. Such sources of disturbance are to be addressed in all cases otherwise a satisfactory temperature control is not guaranteed.

Switching off

Set the control knob on the heating system to '0' (the auto ignitor is simultaneously switched off.).

Switch off fan (set rotary switch '0').

If the device is not used for a longer period, close the quick-acting valve in the gas supply line and gas cylinder.

Maintenance

In Germany, the Truma Service Center is generally to be notified in case of any faults; the respective service partners are available in other countries (see Truma service book or www.truma.com).

Despite careful production, the heating system can contain parts with sharp edges, therefore always wear protective gloves for maintenance and cleaning work!

Observe the ESD - regulations!

The electronics can be damaged by the danger of electrostatic charge. Only experts may carry out repair work!

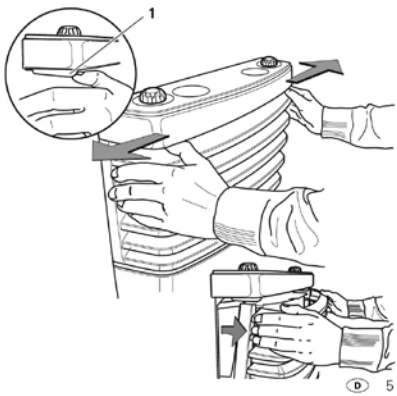
Cleaning
(only with the device switched off!)

It is recommended to remove the dust that has collected on the heater exchanger, floor plate and on the fan wheel on the Truma warm air system at least once per year at the beginning of the heating season. Carefully clean the fan wheel with a paint brush or small brush.

Remove Cover

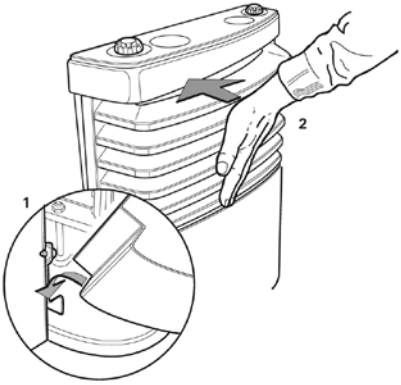
⚠ **WARNING:** Only remove the cover with the heating switched off and cold.

By simultaneously pressing both closure levers (1) outwards, the cover is unlocked. It can be pivoted out and lifted out of the lower bearings.



Attach cover

Suspend the cover (1) in the bottom bearing and pivot in (2) until the lock audibly clicks into place. Check the tight fit by pulling.



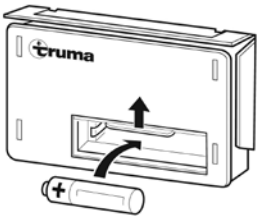
Battery change on the auto ignitor

If ignition sparks cannot be heard when commissioning or only at intervals of more than one second, the battery needs to be replaced.

Only change the battery with the heating system switched off. Insert a new battery before the beginning of each heating season! Dispose of the old battery correctly!

Only use temperature-resistant (+70°C), leak-proof mignon batteries (LR 6, AA, AM 3) (part no. 30030 - 99200); other batteries can cause function faults!

Remove the case, slide the battery compartment cover up and change the battery. Pay attention to positive / negative. Close the battery compartment again. Put the case back on.



Note: It is compulsory to remove the battery and dispose of it correctly before scrapping the auto ignitor!

Technical data

(Established according to EN 624 or Truma test conditions)

S 3004 (P), S 5004

Gas type
Liquid gas (propane / butane)

Operating pressure
30mbar (see type plate)

Rated thermal output
S 3004 (P): 3500W

S 5004: 6000W

Gas consumption
S 3004 (P): 30-280 g/h

S 5004: 60-480 g/h

S 3004(P): Q_n = 4,0 kW (Hs); 290g/h; C_{51}; $I_{3B/P}$

S 5004(P): Q_n = 6,8 kW (Hs); 290g/h; C_{51}; $I_{3B/P}$

Countries of destination

BE, BG, RO, DK, DE, EE, FI, FR, GR, UK, IS, IE, IT, LV, LT, LU, MT, NL, NO, AT, PL, PT, SE, CH, SK, SI, ES, CZ, HU, CY

Operating voltage
1.5 V (auto-ignitor with battery)

Current Draw
225mW (ignite)

Weight
S 3004 (P): approx 9.8kg (without fan)

Note: The motorhome control panel, situated above the entrance door must be switched on for the fan to operate. See page 69.

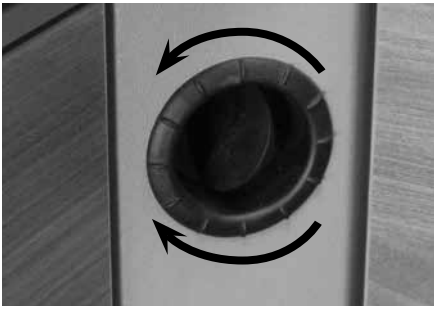
Cleaning

(With switched off appliance!) We recommend removing dust which has collected on the heat exchanger and base plate of the heater and on the impeller wheel of the Trumavent fan, once a year before the heating season starts. Clean the impeller wheel carefully using a brush or tooth brush.

Butterfly outlets

The butterfly plate may be opened or closed to control the quantity of air and may also be twisted around to control direction.

For uniform distribution, outlets nearest the heater should be closed more than those further away.



Blown air

The air ducting outlets are generally of the butterfly type and may be opened or closed by adjusting the butterfly valves. Twisting the disc in its housing directs the flow in the direction required.

One outlet on each leg of the air ducting layout must be kept open at all times. Under no circumstances should the air ducting outlets be blocked.

Truma Combination Boiler

The Truma Combination Boiler has been designed to run on gas or electric power and the optimum performance is obtained when used in **dual fuel mode, that is running on gas and electric at the same time.**

Running in dual fuel mode has the following benefits:

- Fastest possible heat up time, the 2KW gas burner combines with a 1.8KW electric element to provide 3.8KW of energy to heat your hot water and warm your motorhome.
- The intelligent heat management system automatically senses when the water and room are nearing the required temperature and then automatically turns off your gas burner and operates solely electric power, conserving your gas.
- As hot water is used or the room cools the Truma combination heater will continue to operate on electric only until a point where the demands necessitate that additional gas power is required. An example for such a demand could be for instance if the exterior door was left open and the room temperature dropped by 10 degrees in the space of a few minutes, in this case the intelligent heat management system would decide that the best way to get the room back to the required temperature would be to use both gas and electric at the same time.

Operating the Truma Combination system on electric or gas only will result in longer heat up times for hot water and the room temperature in comparison to operating on dual fuel.

Operating on electric only may not in all cases maintain a comfortable room temperature especially in colder conditions.

The intelligent heat management system operation in dual fuel mode and allow the Truma Combination boiler to prioritize the electric power source over your gas, which all conserve your gas supply.

Truma Digital Timer Control

Depending on the specification of your caravan, the Truma CP-Plus controller may be fitted to control the operation of the Truma Combi appliance.

Safety instructions

- The device may only be operated if it is in perfect working order.
- Arrange for malfunctions to be rectified immediately. Only rectify malfunctions yourself, if the remedy is outlined in the troubleshooting information in these Operating Instructions.
- Do not repair or modify the device!
- Only allow the manufacturer or its customer service to repair a faulty device.

Note: If the power supply to the systems is interrupted for longer than 20 minutes, the time and date need to be entered again.

Intended use

The control panel Truma CP plus serves to control and monitor a Combi heater and / or a Truma air conditioning unit. The device is designed for installation in caravans and motor-caravans.

For clarity only the instructions relevant to combi heating are included in this guide. Instructions relevant to air conditioning should be requested if an appropriate air conditioner is fitted.

Display and control elements

1 - Display

2 - Status line

3 - Menu line (above)

4 - Menu line (below)

5 - Display of mains voltage 230 V (shore power)

6 - Display timer

7 - Settings / values

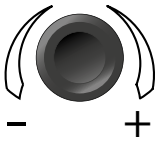
8 - Control knob / push button

9 - Back button

The control knob / push button (8) is used to select menus in the lines (3 + 4) and configure the settings. These are shown via a display (1) with a lighted background. Pressing the Back button (9) takes the user back out of the menu again.

Control knob / push button

The control knob / push button (8) is used to select and change set values and parameters; these can be saved by clicking the control knob / push button. Selected menu items will flash



Turn to the right (+)

- Menu is paged from left to right.
- Increase values.

Turn to the left (-)

- Menu is paged from right to left.
- Reduce values.

Clicking

- Accept (save) a selected value.
- Select a menu item, change to the setting level.

Press (3 seconds)

- Main switch function ON / OFF

Back button

Pressing the Back button (9) takes the user back out of the menu again and discards the settings. This means that the previous values are retained.

Functions

The functions in the menu lines (3, 4) of the control panel can be selected in any sequence. The operating parameters are shown in the status line (2) or the displays (5, 6).

Start / stand-by screen

After connecting the control panel to the power supply, a start screen is shown after a few seconds.

If no entry is made within a few minutes, the standby screen is automatically shown again. The display shows the time and current room temperature alternately.

Switch on / return to setting level

- Press the control knob / push button for longer than 3 seconds or the
- Back button.

The display shows the setting level. The first symbol flashes.

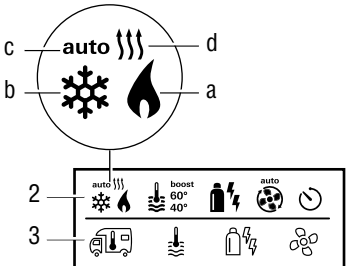
Note: Previously set values / operating parameters become active again after the system is switched on.

Switch off

- Press the control knob / push button for longer than 3 seconds.

Change the room temperature

- Use the control knob / push button to select the symbol in menu line (3).
- Click to change to the setting level.
- Depending on the connected device, use the control knob / push button to select between the heater or air conditioning unit.
- Use the control knob / push button to select the required temperature.
- Click the control knob / push button to confirm the value.



Heater

Settable temperature range 5 - 30 °C (1 °C steps)

a = heater * – Heater is switched on.

Air conditioning unit (not normally fitted)

Settable temperature range 16 - 31 °C (1 °C steps)

b = cool *
(Air conditioning unit is switched on)

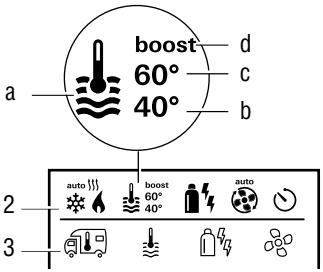
c = auto
(Air conditioning unit is set to automatic)

d = hot
(Air conditioning unit is in heating mod.)

* This symbol will flash until the required room temperature is reached.

Change the warm water level

- Use the control knob / push button to select the symbol in menu line (3).
- Click to change to the setting level.
- Use the control knob / push button to select the required level.
- Click the control knob / push button to confirm the value.



a = Boiler *
(Warm water boiler is switched on)

b = 40°
(Warm water temperature 40 °C)

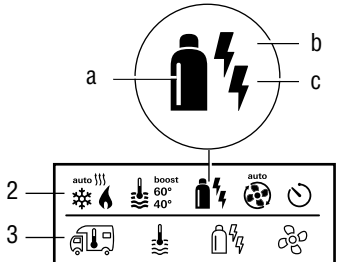
c = 60°
(Warm water temperature 60 °C)

d = boost *
(Targeted, fast heating of the content of the boiler [boiler priority]. The water temperature is kept at the higher level [around 62 °C] – Not Combi Diesel. Once the water temperature is reached, the room is heated again.)

* This symbol will flash until the required water temperature is reached.

Select power type

- Use the control knob / push button to select the symbol in menu line (3).
- Click to change to the setting level.
- Use the control knob / push button to select the required power type.
- Click the control knob / push button to confirm the value.



Symbol	Operating mode	Power type
a	Gas	Gas
b	EL 1	Electro
b + c	EL 2	Electro
a + b	Mix 1*	Gas + Electro
a + b + c	Mix 2*	Gas + Electro

* Mixed mode

Special aspects in the mixed mode

Interruption of the power supply 230 V

Combi Gas

The heater automatically switches to the gas mode. As soon as the 230 V power supply is reconnected, the heater automatically switches back to the mixed mode.

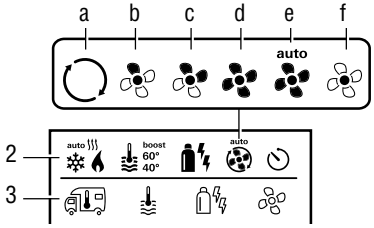
Malfunction in the combustion process (e.g. lack of fuel): Combi Gas

The heater automatically switches to the electro mode. If the heater should operate in the mixed mode again, the cause of the malfunction needs to be rectified. Switch the heater off and on again on the control panel.

Select fan level

When the heater / air conditioning unit is connected.

- Use the control knob / push button to select the symbol in menu line (3).
- Click to change to the setting level.
- Use the control knob / push button to select the required fan level.
- Click the control knob / push button to confirm the value.



Symbol	Operating mode	Description
–	Off	Fan is switched off
a	Vent	Circulating air, if no device is in operation. 9 speed levels can be selected.
b	Eco	Low fan level
c	Mid	High fan level (only Combi Gas)
d	High	Fast heating of the room. Available, if the difference between the selected and current room temperature is >10 °C.

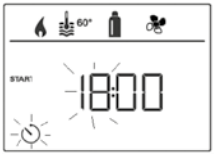
Set timer

- Use the control knob / push button to select the symbol in menu line (4).
- Click to change to the setting level.

Note: If the timer is activated (ON), the timer in the menu is shown as deactivated (OFF).

Enter start time

- Use the control knob / push button to set the hours, then the minutes.



Enter end time point

- Use the control knob / push button to set the hours, then the minutes.

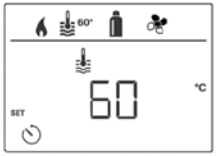
Note: If the start / end times are exceeded when entered, the operating parameters are only taken into consideration when the next start / end times are reached. Until then, the operating parameters set outside the timer remain valid.

Set the room temperature

- Click to change to the setting level.
- Use the control knob / push button to select the required room temperature.
- Click the control knob / push button to confirm the value.

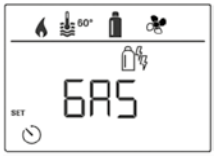
Set the warm water level

- Click to change to the setting level.
- Use the control knob / push button to select the required warm water level.
- Click the control knob / push button to confirm the value.



Select power type

- Click to change to the setting level.
- Use the control knob / push button to select the power type.
- Click the control knob / push button to confirm the value.

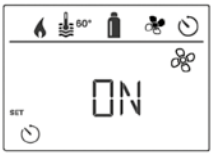


Select fan level

- Click to change to the setting level.
- Use the control knob / push button to select the required fan level.
- Click the control knob / push button to confirm the value.

Activate the timer (ON)

- Click to change to the setting level.
- Use the control knob / push button to activate the timer (ON)
- Click the control knob / push button to confirm the value.



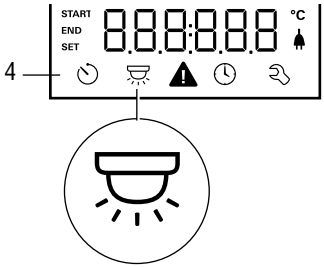
Note: The timer remains active, even for several days, until it is deactivated (OFF).

Deactivate the timer (OFF)

- Click to change to the setting level.
- Use the control knob / push button to deactivate the timer (OFF)
- Click the control knob / push button to confirm the value.

Switch lighting on/off

Available if an air conditioning unit is connected



Set time

- The hour display flashes.
- Use the control knob / push button to set the hours (24 h mode).
- After clicking the control knob / push button again, the minute display will flash.
- Use the control knob / push button to set the minutes.
- Click the control knob / push button to confirm the value.

Service menu

Query the index status of a connected device

Change the background lighting of the control panel

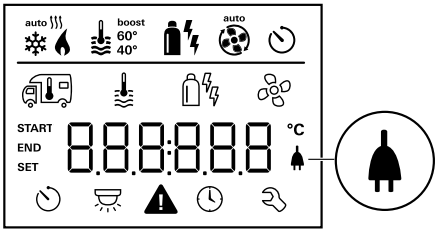
There are 5 background lighting levels to choose from.

Change language

Select the required language from those available (e.g. English, German, French, Italian).

Display mains voltage 230 V

The symbol indicates that 230 V mains voltage (shore power) is available.



Warning

In the event of a warning, a warning symbol appears to indicate that an operating parameter has reached an undefined status. In this case, the affected device continues to run. As soon as the operating parameter returns to the set range, this symbol will turn off automatically.

Read out the warning code

- Use the control knob / push button to select the symbol.
- Click the control knob / push button. The current warning code is shown. The cause of the warning can be identified and rectified via the error list.

Cause rectified / return to setting level

- Click the control knob / push button.

Cause not rectified / return to setting level

- Press the Back button

Note: In this case, the warning is not acknowledged on the control panel and the warning symbol remains. The control panel remains in the warning status. Devices connected to the control panel can be operated.

Malfunctions

In the case of a malfunction, the control panel immediately jumps to the menu level “malfunction” and shows the error code of the malfunction:

Cause remedied / return to setting level

- Click the control knob / push button.
- The respective device is restarted.

If the cause is not remedied, the malfunction will occur again and the control panel will jump again to the menu level “malfunction”.

Cause not remedied / return to setting level

- Press the Back button.

Note: In this case, the malfunction is not acknowledged in the control panel and the warning symbol remains on. The device remains in the malfunction status. Other devices connected to the control panel can be operated.

Maintenance

This device is maintenance-free. Use a non-abrasive damp cloth to clean the front. If this proves inadequate, use a neutral detergent.

Disposal

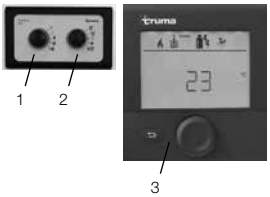
The device must be disposed of in compliance with the administrative provisions of the respective country in which it is used. The national regulations and laws (in Germany these are e.g. the End-of-Life Vehicle Regulations) must be observed.

Troubleshooting instructions (Combi Gas heater)

Error code	Cause	Remedy
#17	• Summer mode with empty water container • Warm air outlet blocked • Circulated air intake blocked	• Switch device off and allow to cool. Fill boiler with water • Check each of the outlet openings • Remove the blockage from the circulated air intake
#18	• Gas pressure regulator frozen • Too much butane in the gas cyclinder	• Use the regulator heating (EisEx) • Use propane (Butane is unsuitable for heating, especially at temperatures below 10°C
#21	• Room temperature sensor or cable faulty	• Please contact the Truma Service
#24	• Potential under-voltage battery voltage too low <10.4V	• Charge battery
#29	• Heating element for FrostControl has a short circuit	• Disconnect the heating element plug on the electronic control unit. Replace heating element
#41	• Electronics are blocked	• Please contact the Truma Service
#42	• Window above the cowl is open (window switch)	• Close the window
#43	• Over-voltage > 16.4V	• Check the battery voltage and voltage sources eg. the charger
#44	• Under-voltage battery voltage too low < 10.0V	• Charge battery. Replace any old batteries
#45	• No 230V operating voltage • Faulty 230V fuse • Overheating protection has triggered	• Reconnect the operating voltage 230V • Replace the 230V fuse • Reset the overheating protection. Allow the heating to cool down, remove the connection cover and press the reset button
#112	• Gas cyclinder or quick-acting valve in the gas line closed	• Check the gas supply and open the valves
#212	• Combustion air intake or exhaust outlet closed	• Check the openings for soiling (snow, ice, leaves etc) and remove
#255	• No connection between the heater and the control panel • Control panel cable faulty	• Please contact the Truma Service

If these steps do not rectify the malfunction, please contact the Truma Service.

Truma Combi 4E/6E



1. Control panel
2. Power selector switch
3. Digi-plus controller (see previous section)
4. Room temperature sensor
5. Cold water connection
6. Hot water connection
7. Gas connection
8. Hot air outlets
9. Recirculated air intake
10. Waste gas discharge
11. Combustion air infeed
12. Electronic control unit
13. Water container (10 litres)
14. Burner
15. Heat exchanger
16. Power electronics
17. Heating elements 230V
18. Overheating switch 230V

For details of the Digi-plus Combi Controller (3) see previous section, this section refers to operation of the combi with separate control panel (1) and power selector switch (2).

Function description

The liquid gas heater Combi E is a warm-air heater with integrated hot water boiler (10 liter volume). The burner operates fan-supported, which ensures trouble-free function even when on the move. The unit also has heating elements for electrical operation.

In winter operation the heater can be used to heat the room and simultaneously warm water. If only warm water is required, select summer operation.

3 different options are available for operating the unit.

- gas operation only Propane / Butane for autonomous use
- electrical operation only 230 V for stationary use on camp sites
- operation only possible in winter mode.

Winter operation

In winter operation, the unit automatically selects the required power setting according to the temperature difference between the temperature set on the control panel and the current room temperature. When the boiler is filled, the water is automatically heated as well. The water temperature depends on the selected operational mode and the heater output.

All 3 energy selection options can be used for winter deployment.

With gas operation the unit automatically selects the output level that is required.

Depending on the fuse protection at the camping site, power of 900 W (3.9 A) or 1800 W (7.8 A) can be manually selected for electrical operation.

If more output is required (e.g. heating up or low outside temperatures) gas or mixed operation should be selected so that enough heating power is always available.

With mixed operation, 230 V electrical operation is preferred if the power requirement is low (e.g. for maintaining the room temperature). The gas burner is not enabled until the power requirement is higher, and is the first to switch off during heat-up operations.

Summer operation (boiler operation only)

Gas operation or 230 V electrical operation is used for hot water preparation. The water temperature can be set to 40 °C or 60 °C.

With gas operation the water is heated at the lowest burner setting. Once the water temperature is reached, the burner switches off.

Depending on the fuse protection at the camping site, power of 900 W (3.9 A) or 1800 W (7.8 A) can be manually selected for electrical operation.

Mixed operation is not possible. With this setting the unit automatically selects electrical operation. The gas burner is not enabled.

Repairs may only be carried out by an expert

Guarantee claims, warranty claims and acceptance of liability will be ruled out in the event of the following:

– modifications to the unit (including accessories),

– modifications to the exhaust duct and the cowl,

– failure to use original Truma parts as replacement parts and accessories,

– failure to follow the installation and operating instructions.

It also becomes illegal to use the appliance, and in some countries this even makes it illegal to use the vehicle.

During the initial operation of a brand new appliance (or after it has not been used for some time), a slight amount of fumes and smell may be noticed for a short while. It is a good idea to heat the device up several times in summer operation (60 °C) and to make sure that the area is well ventilated.

Heat-sensitive objects such as spray cans or flammable liquids may not be stored in the same compartment where the heater is installed because, under certain conditions, this area may be subject to elevated temperatures.

Important operating notes

The integrity and tight fit of the exhaust gas double duct must be checked regularly, particularly at the end of long trips. Also check the mounting of the appliance and the cowl.

Following a blow-back (misfire) always have the exhaust gas system checked by an expert!

Always keep the cowl for the exhaust duct and combustion air intake free of contamination (slush, ice, leaves etc.).

The hot air outlets and the recirculated air intake openings must be free so that the unit does not overheat. The integrated temperature limiter blocks the gas supply when the unit becomes too hot.

Operating Instructions

Always observe the operating instructions and “Important operating notes” prior to starting! The vehicle owner is responsible for the correct operation of the appliance.

Before using for the first time, it is essential to flush the entire water supply system through with clean water. If the heater is not being used, always drain the water contents if there is a risk of frost. There shall be no claims under guarantee for damage caused by frost!

Taking into operation

Heating is possible without restrictions with gas, electrical and mixed operation, with or without water.

Check to make sure the cowl is unobstructed. Be sure to remove any covers that may be present.

⚠ **WARNING:** Care should be taken to ensure adequate ventilation of the flue at all times. It is inadvisable to inhale exhaust fumes.

For operating on gas turn on gas cylinder and open the shut off valve at the manifold.

For operating on electric operate the heater / heating system heater switch on the power supply unit. See page 69.

Summer operation (boiler operation only)

Mixed operation (gas and electrical) is not possible in summer mode. With this setting the unit automatically selects electrical operation with a preselected power setting of 900 W or 1800 W.

Winter operation

- **Heating with water temperature monitoring**
  The device automatically selects the required power setting in accordance with the temperature difference between the temperature selected on the control panel and the current room temperature. When the room temperature selected on the control panel is reached, the heater switches back to the smallest setting and heats the water to 60 °C. Once the water temperature is reached, the heater switches off and the yellow LED (p) goes out. The warm air fan can continue to run in order to cool the unit (after-run).
- **Heating without water temperature monitoring**
  The device automatically selects the required power setting in accordance with the temperature difference between the temperature selected on the control panel and the current room temperature. Once the room temperature selected on the control panel has been reached, the heater switches off. The warm air fan continues to run at slow speed until the outgoing air temperature (on the unit) has fallen to 40°C or less.
  If the boiler is filled, the water will automatically be heated at the same time. The water temperature is then dependent on the heating output being given off, and the duration of heating required to reach the desired room temperature.
- **Heating with drained water system**
  Depending on the operating mode, the unit will automatically select the required power level according to the temperature difference between the setting on the control panel and the current room temperature. Once the room temperature selected on the control panel has been reached, the heater switches off. The warm air fan continues to run at slow speed until the outgoing air temperature (on the unit) has fallen to 40°C or less.

Filling the water heater

Switch on power for water pump (main or pump switch).

Open hot water taps in kitchen and bathroom, (set preselecting mixing taps or single-lever fittings to “hot”). Leave the fittings open for as long as it takes for the boiler to displace the air and fill up, and the water to flow without interruption.

If just the cold water system is being operated, without using the water heater, the heater tank also fills up with water. To avoid frost damage, the boiler must be drained through the drain valve, even if the boiler was not operated.

When connecting to a central water supply (rural or city mains), a pressure reduction valve must always be installed to prevent pressures above 2.8 bar from developing in the water heater.

Draining the water heater

Switch off power to water pump (main or pump switch).

Open hot water taps in kitchen and bathroom.

In order to check the water that is flowing out, place an appropriate container (capacity 10 litres) beneath the drain valve.

Open the drain valve which is situated next to the boiler by lifting the yellow handle into the vertical position.

Check whether all of the water in the boiler (10 itres) has been drained into the container via the drain valve.

There shall be no claims under guarantee for damage caused by frost!

Maintenance

Only original Truma parts may be used for maintenance and repair work! Materials in the device which come into contact with water are suitable for use with drinking water (see manufacturer‘s declaration: www.truma.com / downloads / manufacturer‘s declaration).

Bio-film, deposits and limescale must be removed using chemicals to protect the unit from infestation by microorganisms.

Only chloride-free products must be used in order to prevent damage to the unit.

The effectiveness of the use of chemicals to combat microorganisms in the unit can be increased by heating the water in the boiler to 70 °C at regular intervals.

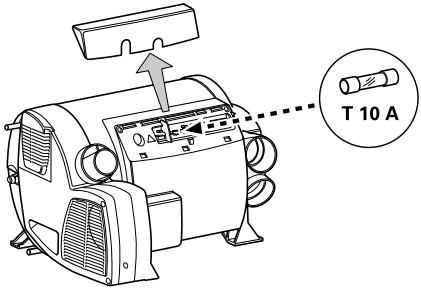
The unit must stay switched on for at least 30 minutes and no warm water may be removed. The residual heat in the heat exchanger will heat the water up to 70 °C.

Fuses 12 V

The fuse is in the electronics beneath the connection cover.

Replace the unit’s fuse only with an identical fuse.

Device fuse: 10 A – slow – (T 10 A)



Fuses 230 V

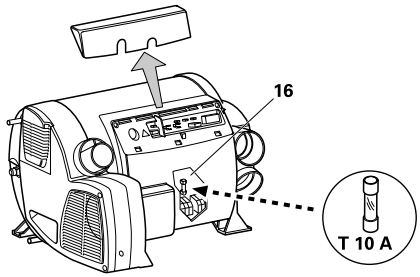
The fuse and the power supply lines must only be replaced by an expert!

The unit must be disconnected from the mains

(all poles) before opening the electronic housing lid.

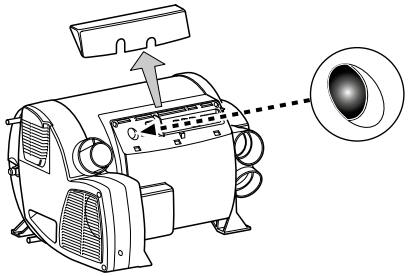
The fuse is in the power electronics (16) beneath the electronic housing lid.

This fine fuse must always be replaced with a fuse of the same type: 10 A, slow, interrupting capacity “H”.



Overheating protection 230 V

The 230 V heating facility has a mechanical overheating switch. If the 12 V power supply is interrupted during operation or during the after-run period, for example, the temperatures within the unit could activate the overheating protection.



To reset the overheating protection, allow heater to cool, remove connection cover and press red reset button.

Technical data

Determined in accordance with EN 624 or Truma test conditions

Device category

$I_{3\ B/P}$ in accordance with EN 437

Type of gas
Liquid gas (propane/butane)

Operating pressure
30mbar (see type plate)

Water contents
10 litres

Heating up time from approx 15°C to 60°C
Boiler approx 20 minutes (measure according to EN15033)
Heater + boiler approx 80 min

Water pressure
max 2.8 bar

Rated thermal output
(automatic output levels)

Gas operation
Combi 4 E: 2000 W / 4000 W
Combi 6 E: 2000 W / 4000 W / 6000W

Electrical operation
Combi 4 E / Combi 6 E: 900 W / 1800 W

Mixed operation (gas and electrical)
Combi 4 E: max. 3800 W
Combi 6 E: max. 5800 W

Gas consumption

Combi 4 E: 160-320 g/h
Combi 6 E: 160-480 g/h

Readiness-heat power requirement Combi 4 E / Combi 6 E:
Gas operation 5.2 g/h

Air delivery volume
(free-blowing without hot-air pipe)

Combi 4 E:
with 3 hot-air outlets max. 249 m3/h
with 4 hot-air outlets max. 287 m3/h

Combi 6 E:
with 4 hot-air outlets max. 287 m3/h

Current input at 12 V
heater +boiler

Combi 4 E: Short-term max. 5.6 A (average power consumption 1.1 A)
Combi 6 E: Short-term max. 5.6 A (average power consumption 1.3 A)
Heating up of boiler: 0.4 A
Stand-by: 0.001 A
Heating element FrostControl (optional): maximum 0.4 A

Troubleshooting

Fault	Cause	Rectification
After switching on (winter and summer operation) none of the controls are operational.	- No operating voltage. - Device fuse or vehicle fuse defective.	- Check 12 V battery voltage, charge if necessary. - Check all electrical plug connections. - Check the unit or vehicle fuse and replace if necessary (see fuses).
The unit is switched on, but the heater does not operate.	- The temperature setting on the control panel is lower than the room temperature.	- Select higher room temperature at the control panel.
After operating for a longer period of time, the heater switches to failure.	- Summer operation with empty water tank. - Hot-air outlets blocked. - Recirculated air intake blocked. - Gas pressure regulator iced up - Butane content in the gas cylinder too high.	- Switch device off and allow to cool. Fill boiler with water. - Check individual outlet apertures. - Remove blockage from recirculated air intake. - Use regulator heating (EisEx). - Use propane (at temperatures below 10 °C in particular, butane is unsuitable for heating purposes).
Fan continues to run after controls switched off	- Unit was switched off during failure. After-running is active in order to reduce the unit's temperature. - After-running is active in order to reduce the unit's temperature.	- After-running will switch off after a few minutes. Only at that time will a failure reset be possible (switch off and then back on). - No failure. After-running will switch off after approximately 5 minutes.
When the device is switched on in electrical operation, the heater does not heat up.	- No 230 V operating voltage. - 230 V fuse defective. - Overheating protection has activated	- Check 230 V operating voltage. - Check 230 V fuse and replace if necessary. - Reset overheating protection. Allow heater to cool, remove connection cover and press reset button.

If these measures do not remove the failure, please contact the Truma Service Centre.

Operating instructions control panel Alde 3010 613

Please read these instructions carefully before using the boiler. For Operating and Installation Instructions of boiler, please see separate instruction. These instructions are for the Alde Compact 3010 boiler fitted in vehicles, boats and buildings in accordance with CE no. 0845 BP0003, installation in vehicles e500 00005 and EMC e5 03 261.Installation and repairs may only be carried out by a professional. National regulations must be adhered to.

1. Starting the boiler

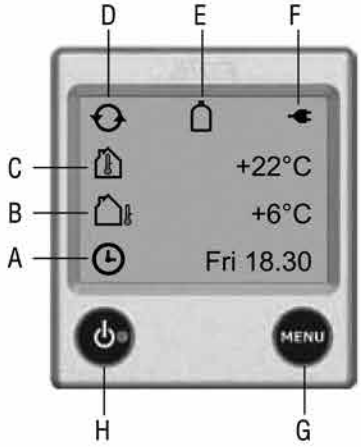
1. The control panel and the boiler are switched off.

2. To start the boiler, press the On/Off button and the start-up display is displayed. The boiler starts with the last selected setting.

A green LED comes on beside the On-/Off button when the panel/boiler is on.

2. The control panel in standby mode

Note: if “Standby Brightness” is set to Off, the display goes out when it enters standby mode, but lights up if you press the screen. See settings under 9.12.



A. Clock
The clock shows day and time. Theclock is set under section 9 point 2.

B. Outdoor temperature
The outdoor temperature is displayed only if an outdoor temperature sensor is fitted.

C. Indoor temperature
The indoor temperature is displayed automatically.

D. Circulation pump
This symbol is displayed when circulation of the central heating is called for.

E. LPG bottle full/empty
This symbol is displayed when the sensor on the cylinder changeover is connected and activated in accordance with section 9 point 8.

F. 230 volts
This symbol is displayed when 230V is connected to the boiler.

G. MENU button
Button for setting menu.

H. On/Off button
Shut down / turn on the boiler

3. From standby mode to setting menu

When on standby, the indoor temperature is displayed, and the outdoor temperature is displayed if an outdoor temperature sensor has been connected. The background lights up when you press the screen or the MENU button. Start the setting menu by pressing the MENU button. The background lights up and those functions which can be set are displayed. The settings are automatically saved after 10 seconds. The control panel reverts to standby automatically after 30 seconds if no buttons are pressed (or if the MENU button in the setting menu is pressed).

1. The control panel in standby.

2. The control panel in setting menu.

Note: if “Standby Brightness” is set to Off, the display goes out when it enters standby mode, but lights up if you press the screen. See settings under 9.12.

4. Set the required temperature

The temperature can be set from +5°C to +30°C in steps of 0.5°C. Warm water is always available (50°C) when the boiler is on and running on LPG and/or electricity. During summer, when only warm water is required, adjust the temperature setting to well below the surrounding temperature so that central heating circulation is not called for.

1. The temperature displayed is the temperature which is set at present (in this case 22.0°C).
2. Raise the temperature by pressing the + button. Lower the temperature by pressing the – button.
3. The settings are ready and the central heating will circulate at the set temperature.

5. Hot water boost

If you need more warm water, you can raise the water temperature temporarily from 50°C to 65°C. After 30 minutes, the boiler reverts to normal operation. While hot water boost is activated, the circulation pump is stopped.

1. Increase the quantity of warm water by pressing the + button. When activated the plus symbol changes colour to green.
2. The settings are ready.

If you wish to revert to the basic warm water settings before 30 minutes have expired.

1. Reset the warm water by pressing the – button.
2. The settings are ready.

6. Heating with electricity

Do as follows to active heating with electricity. The greater the power, the better the heating performance. In choosing between electricity and gas, electricity is given priority.

1. Start and step between the various power steps (Off, 1kW, 2kW or 3kW) with the + button or – button. The set value is displayed on the screen. When activated the plus symbol changes colour to green. (Certain boilers are equipped with max 2 kW, selecting 3kW is not possible in these cases.)
2. The settings are ready and the boiler is working at set temperature.
3. To switch off the electrical operation, step with the – button to Off.

7. Heating with gas

Do as follows to activate heating with gas. If both electricity and gas are selected, electricity is given priority.

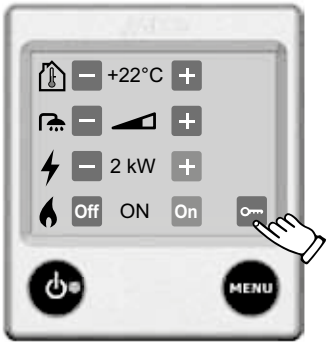
1. Start the gas operation by pressing On. The On symbol is activated and changes colour to green.
2. The settings are ready and the boiler is working at set temperature.

3. In order to switch off gas operation, press Off.

8. Unlocking the tool menu

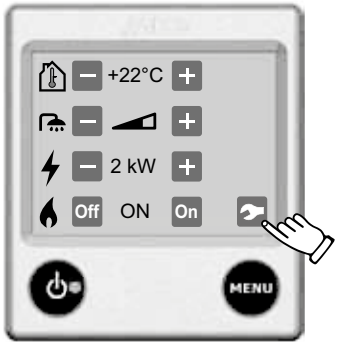
It is possible to go from the setting menu to the tool menu. Under the tool menu you can access the other functions of the control panel, described in section 9.

1. The control panel in setting menu. Press the unlock symbol.



2. The control panel in unlocking menu. Press on open padlock, then OK or MENU to unlock the tools menu. When activated the symbol changes colour to green.

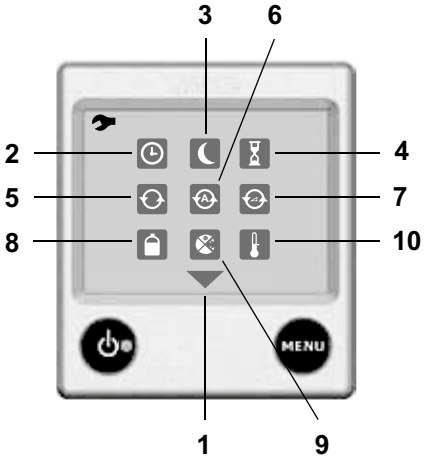
3. The control panel in setting menu with unlocked tool menu. In order to get to the tool menu, press the symbol.

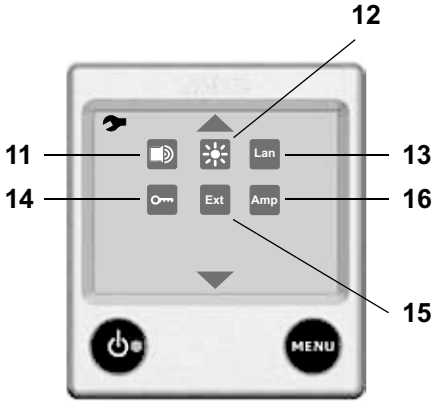


9. The tool menu - functions

When you are in the tool menu (see section 8), you can use the tools described below. Step between the various tool fields by pressing the up or down arrow symbols. You can always leave the tool menu with the MENU button.

Note: Functions marked with * indicate that the symbol for the function is displayed on the control panel even if the accessory is not installed!





1. Arrow symbols
Step between the various tool fields by pressing the up or down arrow symbols. You can always leave the tool menu with the MENU button.

2. Clock
The clock must be set if automatic nighttime mode or automatic start is to be used. If 12V voltage is lost, the clock will be reset and correct time will no longer be displayed. This is prevented with an optional AA battery backup.

3. Automatic night-time mode
This function is used when you want to programme the central heating to automatically lower the temperature at night and raise the temperature in the morning.

4. Starting the boiler automatically
This function is used to start the boiler automatically at a later point of time. With automatic start, the boiler works for 24 hours and then stops. After that, it repeats the automatic start once a week; at the same day and time, as long as the function is activated. For automatic start to function, the On/Off button must be set in the OFF position.

5. Constant pump operation
Cont.: With this function selected the pump is permanently on. (NB., this function limits the supply of hot water, particularly when there is a low heating requirement) Therm: With this function selected the pump is controlled by the panel/room sensor. This is the normal operating mode for heating the vehicle and obtaining a normal supply of hot water. Factory setting is Therm.

6. *Pump Auto / 12V
In the Auto mode, the 230V pump operates, and when 230V is disconnected, the 12V pump starts. In 12V mode, the 12V pump is used even if 230V is connected. The Auto function is activated in the factory setting.

7. *Pump speed
The circulation pump's capacity can be remote controlled from the panel.

Note: A pump with remote control must be installed in order that this function can be used (see the manual for the vehicle, boat or building).

8. *LPG bottle full/empty
This function is used in combination with the cylinder changeover (DuoComfort or DuoControl) and indicates if the LPG bottle is full or empty. This function can also be used to control defroster heating of the cylinder changeover using an EisEx defroster.

Note: The cylinder changeover (DuoComfort or DuoControl) must be installed in order for this function to work (see the manual for the vehicle, boat or building).

9. Automatic anti-bacterial mode (legionella)
At 02.00 at night (if the clock is set) the boiler starts and works according to "Hot water boost" (see section 5). This is in order to reduce the risk of legionella. The function is deactivated in the factory setting.

10. Offset (temperature adjustment)
Using this function, you can calibrate the temperature on the panel if you notice that the temperature (the stabilised room temperature) is not the same as the temperature shown on the panel. This also applies to outdoor temperature.

11. Button sound
With this function, you can activate or deactivate the button sound. The button sound is activated in the factory setting.

12. Screen Brightness
Brightness: The brightness of the display (working mode) can be adjusted from 1 to 10. Factory setting is 5.
Standby brightness:
Off: Used to turn the display's backlighting off so that the display is turned off (becomes dark) in standby mode (the LED is still active).
On: Used to activate the backlighting in the display (low lighting) in standby mode (the LED is still active). Factory setting is On.

13. Language
This function is used to reset the screen between different languages. Available languages are: English, French and German. On the other hand, the service menu is only in English (see section 10.1).

14. Tools / Key
Under Tools / Key you can lock or unlock access to the tool menu.

15. *External start
This function is used when starting the boiler from the outside, for example, with GSM. When external start has been activated, the control panel's On/Off button must be switched off (see the assembly setting manual for external start).

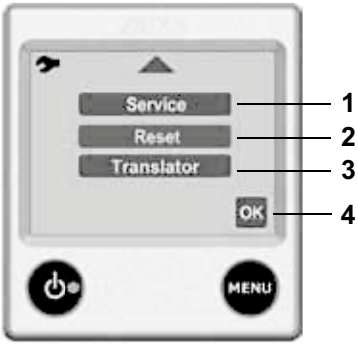
Note: To use this function, an external start installation is required (see the manual for the vehicle, boat or building).

***230 V**
This function is used in connection with starting the boiler when connection of 230 V to vehicle takes place from outside. When the 230 V function has been activated the control panel's on/off button must be turned off, but 12 V must be connected (the vehicle's main switch is on). Before turning off the control panel with the on-/ off button set the parameters/functions that you want the boiler to have when it starts (230 V is connected).

16. *Load monitor
This function is used to prevent the 230V fuses being overloaded. If the total power consumption of the vehicle, boat or building exceeds the set value, the boiler's power will be automatically reduced. On account of voltage variations and tolerances, different setting levels can be selected (for example, for 6A fuse, one can choose 6 or 7 Amp setting). If the fuse does not hold, choose a lower set value. The function is deactivated in the factory setting.

Note: The load monitor has to be installed for the function to be used (see the manual for the vehicle, boat or building).

10. Service and Resetting the system



1. Service

With this function, you can see certain values of the boiler on the screen. The values are updated once a second

2. Resetting the system

With this function the panel can be reset to factory setting. After resetting, the panel is set as follows: the boiler in Off mode, electrical operation 1kw, LPG heating in On mode and indoor temperature 22°C.Other functions are disconnected.

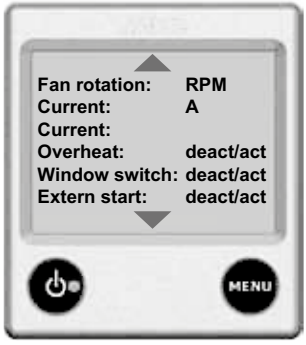
3. Translator

This function is used to enable an external main panel to operate the boiler. If a main panel is connected to the Alde panel, it is activated with the On button, otherwise it must always be set at Off. Factory setting is Off.

4. OK

To leave the tool menu, press OK or Menu.

Service menus



11. Fault messages

If an error occurs in the system, the display will show the reason. This is only displayed when the panel is on standby.

Battery too low: If the vehicle, boat or building has a battery voltage of less than 10.5V, the boiler stops. It is automatically reset when the voltage reaches 11V.

Fan failure: Faulty fan speed. In order to reset, disconnect 12V from the boiler and reconnect (automatic reset after 5 minutes).

Gas failure: Gas finished. Reset by switching off and restarting the boiler in accordance with item 1.

Overheat red fail: Overheating protection (red cable) triggered. To reset, disconnect 12V from the boiler and reconnect.

Overheat blue fail: Overheating protection (blue cable) triggered. To reset, disconnect 12V from the boiler and reconnect.

Window open: Window open, the boiler stops for gas. Gas operation in the boiler starts again when the window is closed. The electrical operation remains in function. Check the vehicle, boat or building manual to see whether this function is installed.

Connection failure: There is a connection fault between boiler and panel. To reset, disconnect 12V from the boiler and reconnect.

Connection fail ext: Communication error between Alde's panel and external panel.

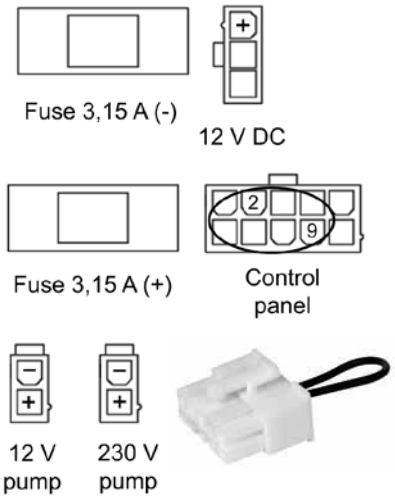
Panel failure 1: Panel fault.

Panel failure 2: Panel fault.

12. Emergency start

- Disconnect the 12V cable and the cable to the panel on the boiler.
- Connect a cable between 2 and 9 in the connector on the boiler.
- Reconnect 12V to the boiler

Now the boiler starts with gas and 1kW. Adjustment of the room temperature is not working. Constant pump operation is set.



Alde Heat Exchanger

The Kon Tiki range of motorhomes is fitted with an Alde heat exchanger, which transfers heat from the engine of the motorhome (when available) to the heating system in the habitation area of the motorhome.

The diagram below shows a typical heating circuit, with the heat exchanger highlighted. The heat exchanger provides a link, via a series of plates, between the engine coolant fluid from the base vehicle, and the glycol fluid in the Alde heating circuit: At no time though do these two fluids mix, so the levels of each fluid must be maintained separately.

To use the Heat Exchanger

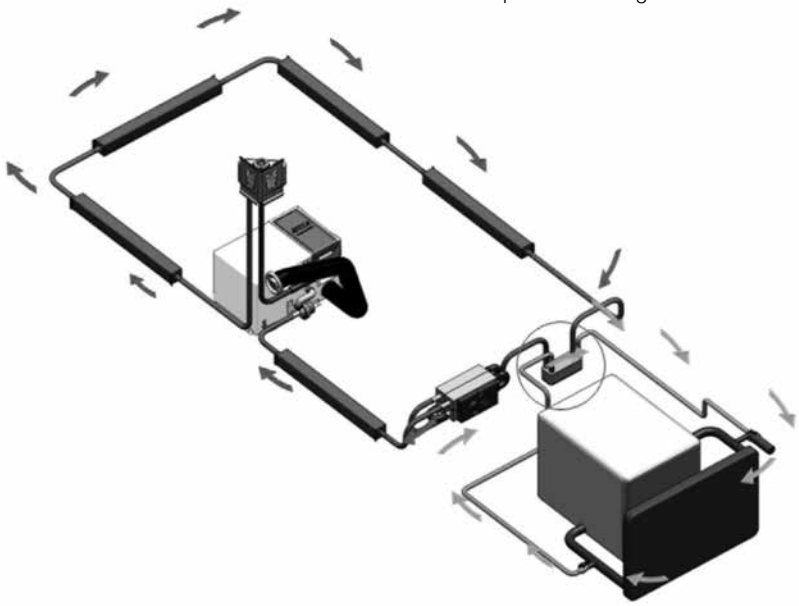
The Alde heating system must be switched on, while the motorhome engine is running, to use the heat exchanger. The following settings on the Alde control panel are suggested:

Turn Alde heating system ON using power button at bottom left of panel

Press MENU button at bottom right of panel

Using the MINUS (-) and PLUS (+) touch screen settings on the top row of the panel (Thermometer symbol) to select a desired room temperature.

During en-route use the water temperature setting on the second row of the touch screen (Shower symbol) is not relevant, and can be left in its previous setting.



Use the MINUS touch screen setting on the third row of the touch screen (Lightning flash symbol) to switch off electric heating.

Use the MINUS touch screen setting on the fourth row of the touch screen (flame symbol) to switch off the gas heating.

With these settings, once the motorhome engine is up to normal operating temperature, heat will become available for the Alde system to use in the habitation area as required.

It is also possible to use the Gas and Heat Exchanger sources simultaneously whilst travelling, by turning on Gas heating using the fourth row of the touch screen.

In this situation the Alde system will initially use Gas to heat the rear habitation area - when the motorhome engine is up to normal operating temperature, gas burner operation, and therefore gas consumption, will automatically be reduced.

Note: This system is not designed to pre-heat the engine prior to travel.

Pre-Start Checks

- Ensure the system is filled with Glycol before starting the boiler, check the expansion tank level. The fluid should be 10mm above the minimum mark when cold.
- Ensure adequate LPG Propane, 230V and 12V supplies are connected and turned on. The control panel should be active and display the 230V connection symbol.
- Turn the boiler 'On' using the control panel, and raise the desired room temperature to +30ºC. Visually check in the expansion tank that the pump is operating.
- Turn on the 2kW electric heater using the panel. Wait for 10 minutes and check that the upper flow pipe on the boiler is getting hot. The bottom return pipe may also be warm.
- Turn on the gas burner using the control panel. You might not be able to hear it start, so visually check the flue outside to confirm the boiler is operating. Wait for 10 minutes and check the lower return pipe on the boiler. It should now be hot and the boiler fully operational.

Alde Compact 3010

Please read these instructions carefully before using the boiler.

Installation and repairs may only be carried out by a professional. National regulations must be adhered to.

Boiler design

The boiler consists of three eccentrically- fitted cylinders (heat exchanger, water jacket for the heating system and, outermost, water jacket for hot water). The two outer pipes, and their ends and connections, are made of stainless steel, while the heat exchanger is made of aluminium.

The heat exchanger is divided into two semi-circles. The burner is located in the upper half, being the combustion chamber, and the combustion gases are expelled through the lower half. The burner unit is fitted on the end of the heat exchanger. It consists of a combustion fan, burner, solenoid valve and intake/exhaust connections. Two heating cartridges are fitted to the water jacket of the heating system. Maximum output is 2 or 3 kW, depending on model.

Description of functions

Using LPG

When LPG operation is selected on the control panel, the combustion fan starts. When the fan speed is correct, it signals the circuit board that the boiler can be lit. The circuit board sends ignition sparks to the spark plug at the same time as it sends electricity to the solenoid valve, which opens to allow gas in. The burner ignites, and a sensor transmits a signal back to the circuit board that the boiler is lit, and the ignition spark stops. The burner keeps burning until the boiler thermostat or the room thermostat reaches the set temperature reading.

Should the boiler go out for any reason, the sensor is activated and a new attempt is made to start the boiler (in about 10 seconds).

Using the heating cartridge

Electrical operation is selected on the control panel, the 12-volt relays on the circuit board trip, allowing the 230 volt supply to reach the electrical elements.

The heating cartridge is controlled in the same way as the gas boiler.

Warm water

When only warm water is required, for example during the summer, no settings need to be made, the boiler will look after this function automatically.

The pump will only start when the temperature in the vehicle is lower than the set temperature. If the vehicle temperature is higher, the pump will not start.

Important information

- The boiler must not be started if there is no glycol in the system.
- The LPG boiler and heating cartridge may be operated in parallel.
- The heating system may be heated up without the warm water heater being filled with fresh water.
- Always switch off the main isolator for the boiler when the vehicle is not being used.
- Always drain the warm water heater of fresh water if there is a risk of frost.
- The LPG boiler must not be operated when refuelling the vehicle.
- When washing the vehicle, take care not to get water in the venting.

The domestic hot water heater

The boiler is fitted with a built-in warm water heater with a volume of approx. 8.5-litres fresh water. The warm water heater can produce around 12 litres of 40°C water per half-hour (at a cold water temperature of 10°C). If the heating cartridges are used instead of gas for heating the boiler, the capacity is slightly reduced.

Always rinse out the heater before it is used, particularly if it has not been in operation for some time.

Note: The hot water is not intended for drinking or cooking. When the heater is in continuous use, it should be emptied approx. once a month, to ensure that a new air cushion is formed in the heater. The air cushion is essential for absorbing pressure surges in the heater.

Note: The warm water heater should always be drained of fresh water when there is a risk of frost and when the motorhome is not in use.

Note: The warranty does not cover frost damage.

Draining the heater using the combined safety/drain valve:

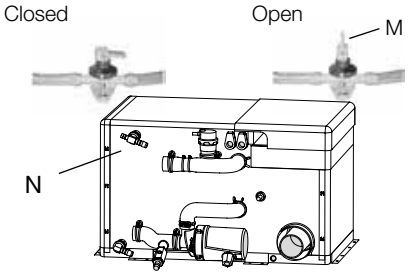
1. Switch off the freshwater pump

2. Open all water taps.

3. Then open the safety/drain valve by raising the yellow lever (M) to a vertical position.

4. The heater will now drain directly below the vehicle through the safety/drain valve hose. Check that all the water is emptied out (about 7-10 litres). Leave the valve in the open position until the next time the heater is used.

Note: Check that the automatic check valve (N) is open and is allowing air to enter the heater when it is being drained, and that the hose is not blocked.



The heating cartridges

All Compact 3010s are fitted with two 230V heating cartridges with a maximum output of either 2100 or 3150W. Select the heating cartridge output on the control panel.

Always check that the input supply to the vehicle has the correct amperage in relation to the selected output.

Note these ratings are for the boiler only.

1050W requires a 6 amp fuse/supply.
2100W requires a 10 amp fuse/supply.
3150W requires a 16 amp fuse/supply.

The circulation pump

A circulation pump is required to circulate the heated glycol fluid. A 12V circulation pump is fitted in the expansion tank.

An optional 230V circulation pump can be fitted on the boiler. Selection of circulation pump is made with a switch on the control panel. The room thermostat on the control panel controls the circulation pump, i.e. switches it on or off according to the amount of heat required.

Depending on the specification of your motorhome, the circulation pump for the heating system may be in the header tank, as shown in the diagram on page 130, or, an inline pump may be fitted on the side of the Alde heating appliance.

When the Alde inline pump is fitted care should be taken not to leave the pump in high speed service operation (setting 4-5) as this will considerably shorten the life of the pump. Settings 1-3 are advised for normal operation. Setting 4-5 are for removing air from the system only. Pumps found to have failed due to overheating will not be covered under warranty.

System temperature

The boiler is set to a system temperature of 80°C, i.e. the temperature of the glycol fluid as it circulates in the heating system.

Air circulation

In order to achieve the best possible result from the principle of convected heat, it is important to allow air to circulate freely under bunks, and behind backrests and wall-mounted cabinets.

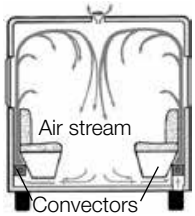
If the vehicle has a fitted carpet, ensure that the carpet does not obstruct the air supply to the radiators.

It is just as important that cushions or blankets do not interrupt the flow of air behind backrests and wall cabinets.

Maintaining the heating system

Winter camping

While camping during the winter, ensure that the flue is kept clear of snow and ice, since the inlet air to the LPG boiler enters through the flue. Do not start the LPG boiler until the flue is completely free of snow. A flue extension (part no. 3000 320) for fitting on the roof is recommended for winter camping.



The heating system

Regularly check the heating system's fluid level in the expansion tank. The level should be about 1cm above the minimum indicator in a cold tank. The heating system should be filled with a mixture of water and glycol.

For preference, use high quality ready mixed glycol (with inhibitor) intended for use in aluminium heating systems.

If using concentrated glycol, the mixture should consist of 50% water and 50% glycol. Any vessels used for the liquid must be spotlessly clean, and the pipes in the heating system must be free of contamination. This will prevent the growth of bacteria in the system.

The glycol mixture should be changed every second year, since its ability to protect against corrosion, for example, will deteriorate. The glycol content should be checked before topping up with new liquid. This will ensure that the concentration of glycol in the mixture is not too high.

If the fluid level in the expansion tank falls for reasons other than evaporation, please check all joints, drain cocks and bleeder screws to ensure that they are not leaking. If the glycol-water mixture leaks out, rinse with water and wipe up.

Never allow the heating system to stand empty of glycol.

Filling the system with glycol fluid

Note: Any vessels used to carry the fluid must be spotlessly clean and the pipes in the system must be free of contamination. This will prevent the growth of bacteria in the system.

The system is filled through the expansion tank, either manually or using the Alde filling pump which both tops up and bleeds the system. For manual filling, unfasten the circulation pump nut (R) and lift the pump (S) if fitted, out of the tank. Slowly pour the glycol mixture into the tank. Bleed the system.

Top up with more liquid if the level has fallen after bleeding. Bleed a newly filled system regularly during the first days the heating system is in operation.

Types of glycol

Various types of antifreeze (as used in car radiators) are available from service stations, car accessory shops and on line retailers and these types of antifreeze can be used to top up or replace the heating system fluid in the Alde heating system.

Frost and corrosion damage are not covered under warranty, so it is important that the type purchased contains corrosion inhibitors suitable for use with aluminium systems. Always check the label, ask the retailer for advice, or check with your supplying dealer if unsure. Please note the corrosion inhibitor will have a limited life, and after it expires, the system will have no corrosion protection.

The fluid will usually be named as Ethylene glycol, but may also be described as monoethylene glycol, MEG, ethanediol, or G12++. There is no industry standard for the colour of the antifreeze, but as a general guideline it indicates the type of corrosion inhibitor:

Blue, Green = Silicate inhibitor, usually offering 2-year corrosion protection

Red, Orange = OAT inhibitor, usually offering 5-year corrosion protection

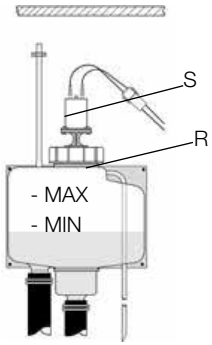
Purple, Magenta = G12++ Silicated OAT inhibitor, usually offering 5-year corrosion protection

It is important that antifreeze containing Silicate inhibitor (Blue or Green) is not mixed with antifreeze containing OAT inhibitor (Red or Orange). To guarantee compatibility, there are two options:

Match the colour, taking care to also check the label on the antifreeze bottle, i.e. if the system is filled with blue silicate-containing antifreeze, top up with blue silicate-containing antifreeze.

Use G12++ antifreeze which is compatible with any of the other types of inhibitor described.

Header tank



Note: All Alde systems are installed and bled during the manufacturing stage to the requirements of Alde UK. However, further bleeding may be required after the first few operations of the system.

Bleeding the system

Depending on how the pipes have been fitted, air pockets may form when the system is filled with glycol fluid.

A sign that there is air trapped in the system is that the heat released into the pipes only extends a metre or so from the boiler even though the circulation pump is operating.

In newly-filled systems, small air bubbles can form in the expansion tank, creating a murmuring sound. If the circulation pump is stopped for a few seconds, the bubbles will disappear.

Bleeding

The boiler is fitted with an automatic bleeder, valve to bleed air out of the boiler. Start the LPG boiler. The circulation pump should be switched off.

Open the bleeder screws in the system (please refer to the motorhome technical book for their locations). Leave the bleeder screws open until they start discharging fluid, and then close them. Start the circulation pump and let it run for a while. Check that the pipes and radiators around the vehicle are heating up.

If they still fail to heat up, try the following:

To help bleed the remaining trapped air place the vehicle on a sloping surface with the front end downwards. Then open the bleed screw at the highest point at the rear until it starts discharging fluid, then close the the bleed screw. Turn the vehicle around and bleed the highest point at the front.

Fault finding

The boiler does not start

1. No LPG? Incorrect type for conditions?
2. Is the cylinder valve and gas shut off valve on the manifold open?
3. If the boiler has not been operated for some time, or if the gas cylinder has been changed, it may take longer than normal to light the boiler.
4. Check that the boiler is connected to the electricity supply (> 11V).
5. Check that the fuse (T) for the boiler is intact (See fuses on page 73).
6. Check whether the electric connections on the boiler are securely in position.

If none of the above helps, contact a service workshop.

The heating cartridge is not working

1. Check that there is an electricity supply (230V ~) to the heating cartridge.
2. Check that the relays fitted to the boiler come on (a slight click can be heard from the relays when the heating cartridge is switched on at the control panel).

If none of the above helps, contact your dealer or Alde - See page 9 for contact numbers.

Alde technical data

Measurements/Weights

Boiler height:	310mm
Boiler depth:	340mm
Boiler width:	510mm
Weight:	14kg (without fluid)

Gas	**Propane**	**Butane**
Output 1:	3.3kW	3.8kW
Consumption	245g/h	275g/h
Output 2:	5.5kW	6.4kW
Consumption:	405g/h	460g/h
Pressure:	I3+ 28-30/37 mbar I3B/P 30 mbar	

Volume/Pressure/Temp

Liquid volume radiator water:	3.5 litre
Liquid volume warm water:	8.4 litre
Max pressure radiator water:	0.05MPa (0.5 bar)
Max pressure warm water:	0.3MPa (3.0 bar)
System temperature:	max 85°C

230V ~

Output element:	1 x 1050W
Output element (2 or 3kW):	1 x 2100W

12V DC

Current consumption:	1 amp (max)
Fuse:	3.15 amp+ / 3.15amp-

Dometic absorption refrigerator

Guide to these operating instructions

Before you start using the refrigerator,please read the operating instructions carefully.

These instructions provide you with the necessary guidance for the proper use of your refrigerator. Observe in particular the safety instructions. Observation of the instructions and handling recommendations is important for dealing with the refrigerator safely and for protecting you from injury and the refrigerator from damage. You must understand what you have read before you carry out a task.

Keep these instructions in a safe place close to the refrigerator so they may be referred to at any time.

Copyright protection

Warranty

Warranty arrangements are in accordance with EC Directive 44/1999/CE and the normal conditions applicable for the country concerned.

For warranty or other maintenance, please contact our customer services department.

Any damage due to improper use is not covered by the warranty. The warranty does not cover any modifications to the appliance or the use of non-original Dometic parts. The warranty does not apply if the installation and operating instructions are not adhered to and no liability shall be entertained.

Limitation of liability

All information and guidance in these operating instructions were prepared after taking into consideration the applicable standards and regulations as well as the current state of the art. Dometic reserves the right to make changes at any time which are deemed to be in the interest of improving the product and safety.

Dometic will assume no liability for damage in the case of :

- Non-observation of the operating instructions
- Application not in accordance with the regulations or provisions
- Use of non-original spare parts
- Modifications and interferences to the appliance
- Effect of environmental influences, such as
  - temperature fluctuations
  - humidity

Customer services

Dometic offers a pan-European customer service network. Find your authorised customer service centre by calling the phone number indicated in the EuroService Network book, EuroService Network - which accompanies every refrigerator. You can also obtain the address information of the nearest customer service from www.dometic.com. When contacting Dometic Customer Services, please state the model, product number and serial number together with the MLC code, if applicable. You will find this information on the rating plate inside the refrigerator. We recommend that you note this data in the field provided on the front page of this operation manual.

Spare parts

Parts can be ordered throughout Europe from our customer services. Always give the model and product number when you contact the customer service! You will find this information on the rating plate inside the refrigerator.

Note: Refrigerators manufactured by Dometic GmbH are free of CFC/HCFC and HFC. Ammonia (a natural compound of hydrogen and nitrogen) is used in the cooling unit as a coolant. Non-ozone-hazardous cyclopentane is used as a propellant for manufacturing PU foam insulation.

In order to ensure that the recyclable packaging materials are re-used, they should be sent to the customary local collection system.

The appliance should be transferred to a suitable waste disposal company that will ensure re-use of the recyclable components and proper disposal of the rest. For eco-friendly draining of the coolant from all absorber refrigeration units, a suitable disposal plant should be used.

Energy-saving tips

- At an average ambient temperature of 25°C, it is sufficient to operate the refrigerator at middle thermostat setting.
- Where possible, always store precooled products.
- Do not expose the refrigerator to direct sunlight.
- Ensure that air circulation of the cooling unit is not obstructed.
- Defrosting at regular intervals saves energy (see “Defrosting”). Open the refrigerator door only for a short period of time when removing products.
- Run the refrigerator for about 12 hours before filling it.

Safety instructions

Application according to regulations

This refrigerator is designed for installation in recreation vehicles such as caravans or motorhomes. The appliance has been type approval tested for this application in accordance with the EC Gas Directive.

The refrigerator is to be used solely for storing foodstuffs.

⚠ **WARNING:** The refrigerator is not suitable for the proper storage of medication. Please observe in addition the instructions in the medication package inserts.

User’s responsibility

Anyone operating the refrigerator must be familiar with the safe handling and understand the advice in these operating instructions.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been given instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. Cleaning and user maintenance shall not be made by children.
[EN 60335-2-24, 7.12]

Protection of children when disposing of the equipment

⚠ **WARNING:** When disposing of the refrigerator, detach all refrigerator doors and leave the storage racks in the refrigerator. In this way inadvertent entrapment and suffocation is prevented.

Working upon and checking the refrigerator

⚠ **WARNING:** Work on gas equipment, exhaust system and electrical facilities must be carried out by authorised personnel only. Substantial damage to property and / or injury to persons can arise through unprofessional procedures.

⚠ **WARNING:** Never use an unshielded flame to check gas bearing parts and pipes for leakage!
There is a danger of fire or explosion.

⚠ **WARNING:** Never open the absorber cooling unit! It is under high pressure.
There is a danger of injury.

Information on coolant

Ammonia is used as a coolant. This is a natural compound also used in household cleaning agents (1 litre of Salmiak cleaner contains up to 200g of ammonia - about twice as much as is used in the refrigerator). Sodium chromate is used for corrosion protection (1.8% by weight of the solvent).

In the event of leakage (easily identifiable from the strong odour), proceed as follows:

- Switch off the appliance.
- Air the room thoroughly.
- Inform authorised customer services.

Note: For your safety it was ascertained in an expert's report that no impairment of health exists when the coolant is discharged.

Operating the refrigerator with gas

It is imperative that the operating pressure corresponds to the data specified on the rating plate of the appliance. Compare the operating pressure of the rating plate with the data specified on the pressure reducing valve of the liquid gas cylinder.

⚠ **WARNING:** Operating the appliance with gas is not permitted

- At petrol stations
- On ferry boats
- While transporting the motorhome by a transporter or breakdown vehicle.

There is danger of fire!

Leave the equipment switched off

Safety instructions when storing foodstuffs

Instructions for storing food in a refrigerator:

No refrigerator of any kind can improve the quality of the food; refrigerators can only maintain the food's quality for a short duration as from the time of storing it.

Please observe the following particular conditions for storing food in a refrigerator that is built into a vehicle:

- A change in the climatic conditions such as temperature fluctuations
- High temperatures inside the vehicle when it is closed and parked in direct sunlight (temperatures are possible up to 50°C)
- Use of the refrigerator during travel with the power supply of 12V DC
- A refrigerator built in behind a window and exposed to direct sunlight
- Storing the products too soon, i.e. shortly after starting up the appliance for use

Under these particular conditions the refrigerator cannot guarantee reaching the temperature needed for perishables.

Perishables include all products with a stipulated use-by date and a minimum storage temperature of +4°C or less, especially for meat, poultry, fish, sausages, pre-packed foods.

- Pack raw and cooked foods separately (e.g. in containers, aluminium foil, etc.).

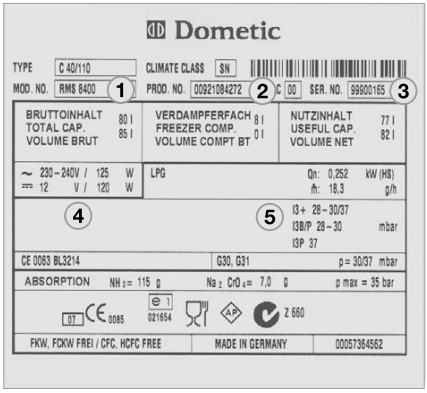
- Only remove the outside packaging of single packs if all the necessary information, e.g. the use-by date, can also be read on the single packs.
- Do not leave cooled goods outside the refrigerator for too long.
- Place the foods with the next use-by date at the front, accordingly.
- Pack away any left-over food and eat at the first opportunity.
- Wash your hands before and after handling any food.
- Regularly clean the inside of the refrigerator.

Please observe the instructions and information regarding the use-by date on the outside packaging of the food.

Please observe section “Cleaning” of this instruction.

Refrigerator rating plate

The rating plate is to be found on the inside of the refrigerator. It contains all important details of the refrigerator. You can read off from this the model identification, the product number and the serial number. You will need these details whenever you contact the customer service centre or when ordering spare parts.



1 - Model Number

2 - Product Number

3 - Serial Number

4 - Electrical rating details

5 - Gas pressure

Note: The cooling unit’s performance is influenced by ambient temperatures. Please select the medium setting for ambient temperatures between +15°C and +25°C (refer to Setting of cooling compartment temperature). The unit operates within its optimum performance range.

Dometic refrigerators work according to the absorption principle. For physical reasons, an absorption system responds slowly to changes made by the thermostat controller, by loss of cooling energy through opening the door or during storing food. The devices meet the cooling performance requirements of the Climatic Class SN acc. to EN/ISO 7371 in the temperature range of +10°C to +32°C ambient temperature.

For temperatures below +10°C, winter covers should be installed. For ambient temperatures exceeding +32°C for a longer period of time, it is recommended installing Dometic additional fan (item no. 241 2985 -00).

Description of refrigerator

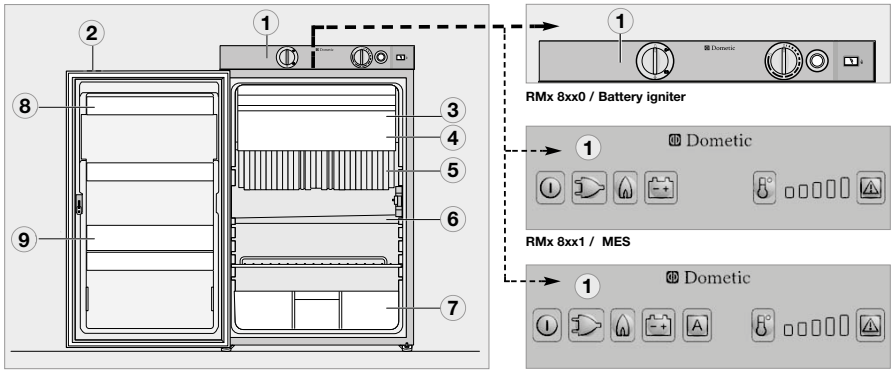


Fig. 5

1 - Operating controls

2 - Door locking button

3 - Freezer compartment (removable)

4 - Insertable grid shelf (available as option, to be used when freezer compartment is removed)

5 - Post-evaporator for cooling compartment

6 - Condensation water drain channel

7 - Vegetable bin

8 - Upper door shelf with flap, egg shelf available as option may be inserted

9 - Lower door shelf with bottle holders

Description of fridge freezer

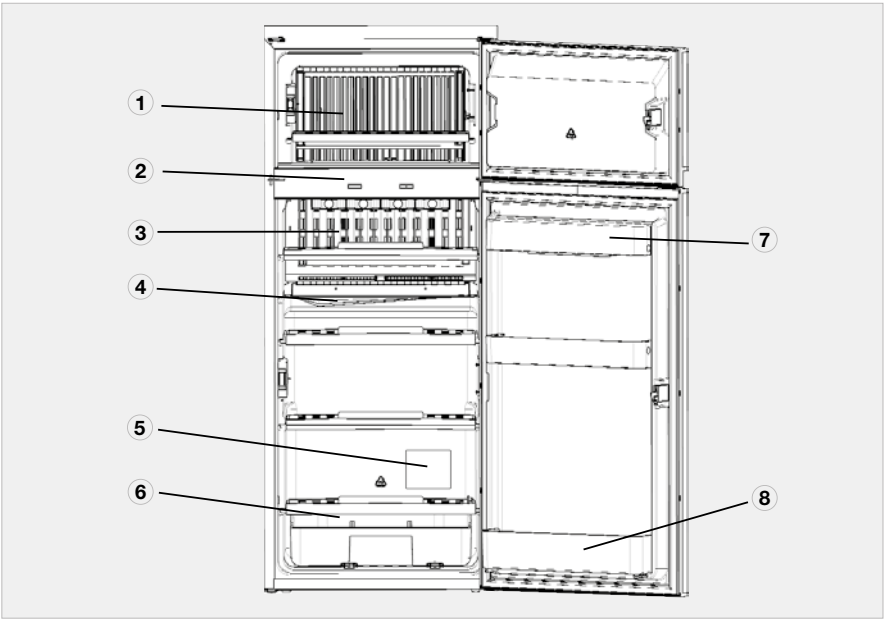


Fig. 3

1 - Freezer compartment

2 - Operating controls

3 - Post-evaporator for cooling compartment

4 - Condensation water drain channel

5 - Data plate

6 - Vegetable bin

7 - Upper door shelf with flap, egg shelf available as option may be inserted

8 - Lower door shelf with bottle holders

Manual energy selection / automatic ignition (RM 8xx1) MES

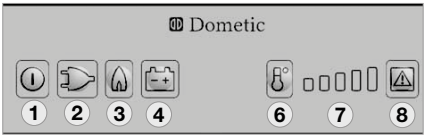


Fig. 8

1 - Power ON/OFF switch

2 - Energy selector button 230V ~

3 - Energy selector button GAS

4 - Energy selector button 12V =

6 - Temperature level selection

7 - Temperature level display

8 - Indicator LED failure / Reset button GAS FAILURE

Switching ON/OFF

- Switch ON by pressing button (1), 2s
- Switch OFF by pressing button (1), > 2s

230V AC operation

- Select “Mains voltage” by pressing button (2)
- Set temperature step by pressing button (6)

12V DC operation (vehicle’s battery)

- Select “Battery voltage” by pressing button (4)
- Set temperature step by pressing button (6)

Gas operation

- Select “Gas” by pressing button (3)
- Set temperature step by pressing button (6)

Automatic energy selection / automatic ignition (RM 8xx5) AES

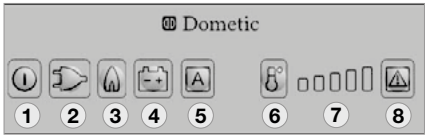


Fig. 9

1 - Power ON/OFF switch

2 - Energy selector button 230V ~

3 - Energy selector button GAS

4 - Energy selector button 12V =

5 - Selector button “AUTOMATIC”

6 - Temperature level selection

7 - Temperature level display

8 - Indicator LED failure / Reset button GAS FAILURE

Switching ON/OFF

- Switch ON by pressing button (1), 2s
- Switch OFF by pressing button (1), > 2s

Manual operation

- Select energy source with buttons (2,3,4)
- Set temperature step by pressing button (6)

Automatic operation

- Change over to “Automatic” with button (5)
  Automatical energy selection (if available)
  Sequence of priority:
  1.) Solar (12V -)
  2.) 230V ~
  3.) 12V -
  4.) Liquid gas
- Set temperature step by pressing button (6)

RM 8xx1 models MES appliances (manual energy selection)

Electrical operation

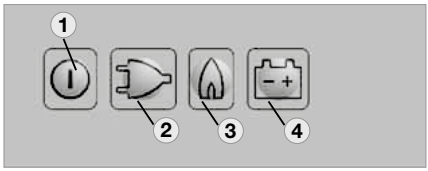


Fig. 16

To start the refrigerator, press button (1) for 2 seconds.

The refrigerator starts with the last selected type of energy.

230V operation :
Press button (2) :

12V operation :
Press button (4) :

Gas operation

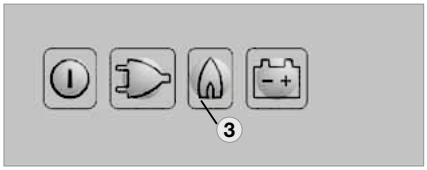


Fig. 17

Gas operation :

Press button (3) :

The ignition process is activated automatically by means of an automatic igniter.

Note: The flame extinguishes after reaching the preset cooling compartment temperature and ignites again if the cooling compartment temperature increases again. If the flame is not lit after the first ignition attempt, the automatic igniter repeats the ignition twice (duration 30 s) at time intervals of 2 minutes. If the flame is not lit afterwards, a fault is indicated.

Setting of cooling compartment temperature

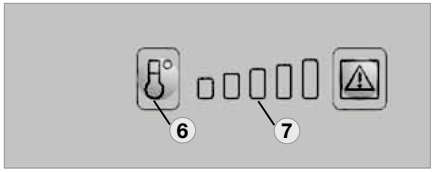


Fig. 18

Select the desired cooling compartment temperature by pressing button (6) .

The LED display (7) of the selected temperature setting is illuminated.

The scale starts with MIN position at the left LED position (small bar = highest temperature) and climbs up to MAX position at the right LED position (large bar = lowest temperature).

Note: The temperature levels do not relate to absolute temperature values.

RM 8xx5 models

Manual operation

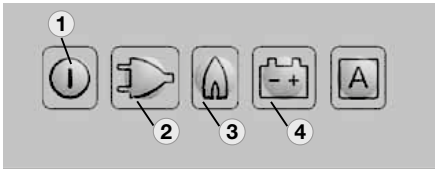


Abb. 19

To start the refrigerator, press button (1) for 2 seconds.

The refrigerator starts with the last selected type of energy.

230V operation :
Press button (2) :

12V operation :
Press button (4) :

Gas operation :
Press button (3) :

Automatic operation

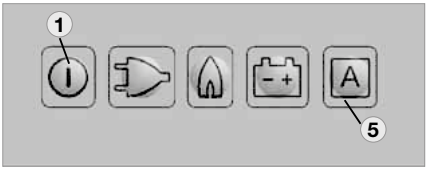


Fig. 20

To start the refrigerator, press button (1) for 2 seconds.

The refrigerator starts with the last selected type of energy.

Automatic operation :

Press button(5) : A

Upon switching on, the electronics automatically selects one of the three possible energy types: 230V - 12V - liquid gas. The control electronics automatically ensures that the refrigerator is supplied with the optimum source of energy in each respective case.

Sequence of priority:
1.) Solar (12V -)
2.) 230V ~
3.) 12V -
4.) Liquid gas

Note: If sufficient mains voltage is available (more than 195 V), this power source is selected as prime option. If a solar system capable of powering the refrigerator is installed, the solar 12V supply takes priority. The 12V operation is otherwise only effective while the engine is running.

According to the sequence of priority the electronics selects GAS as energy source only, if both of the electrical energy source are not available.

Manual operation is possible at any time.

Note: For Setting of cooling compartment temperature see point “4.7.2”

Refuelling while in AES mode operation

Note: In order to prevent unintended switching to gas operation during refuelling, the electronic system starts gas operation of the refrigerator after the motor has been turned off for 15 minutes. During this period the appliance is ready for operation (“stand-by”). The temperature level LEDs do not light then while all other indicators remain active.

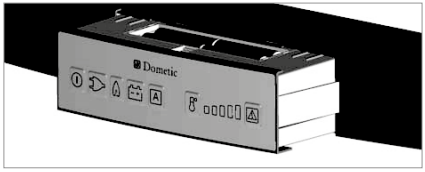
⚠ **WARNING:** The use of unshielded flames is prohibited in petrol station environments. Should the refuelling stop last longer than 15 minutes, the refrigerator has to be switched off or switched over to another energy type.

Additional features (MES / AES)

- The brightness of the display reduces after a few seconds if no other buttons are pressed. The indicator lights again if a button is pressed. Press the button again to activate the required function.
- Failures are indicated by flashing of the failure indicator LED.
- Should the door be kept open for too long (more than 2 minutes), an acoustic signal is initiated (pulsing whistle tone).
- Should the electronic control detect any failure, an acoustic signal will sound (pulsing whistle tone). At the same time the display starts flashing (for trouble-shooting, please refer to page 150).

Gas operation with internal batteries (optional)

An optional battery compartment in the electronics case for internal (self-contained) power supply of the electronics is available for the model variants RM 8xx1 and RM 8xx5 (appliances with electronics).



Battery compartment *Fig. 21*

Load the battery compartment with batteries (8 x AA 1.5 V) before operating the refrigerator. All operating modes can be selected while the on-board 12 V DC power supply is active. The internal voltage is disconnected.

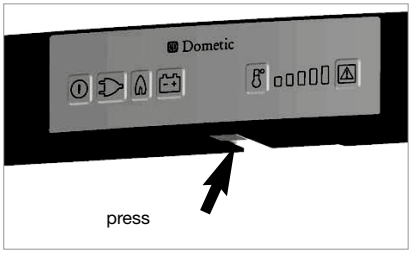
If the on-board 12 V DC power supply is not present or there is an interruption of the mains power supply during operation, the electronics automatically switch to the internal (battery) power supply.

The refrigerator can now only be operated in the gas mode. All LED indicators except the GAS LED are not lit during operation with internal batteries. The GAS LED flashes every 15 seconds.

If a button is pressed, the temperature level LEDs (7) also light. If the battery voltage is too low, an acoustic signal (whistle tone) sounds every 15 seconds. Then replace the batteries in the battery compartment.

Inserting / changing the batteries

Switch off the refrigerator, as described in section “Shutting of the refrigerator”.



Opening battery compartment *Fig. 22*

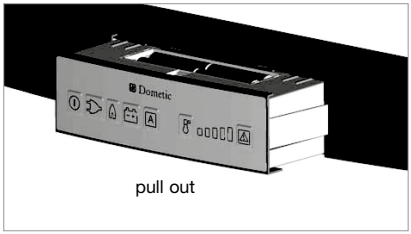


Fig. 23

Note: Batteries (8 x AA 1.5V) are not included!

⚠ WARNING:

- Observe the correct polarity!
- Do not connect non-rechargeable batteries to a charger.
- Remove rechargeable batteries from the battery compartment before charging.
- Avoid short circuits on the contacts in the battery compartment!
- Remove discharged batteries.
- Remove the batteries from the battery compartment if the refrigerator will not be used for a long time.
- Do not mix different types of batteries.

Explanation of operating controls Fridge / Freezer models

The control panel buttons are not accessible when the refrigerator door is closed. Open the bottom door to reach the operating buttons.

Depending on the door opening direction, there are two LEDs on the left or right edge of the control panel. The outer LED (1) indicates that the refrigerator is operational (blue). The other LED (2) lights red in the event of a fault.

Indicator LEDs *Fig. 4*

Refrigerators for self-contained (gas) operation contain two battery compartments in the control panel which are located on the left and right next to the button bar.

Operating controls without battery compartments *Fig. 5*

Operating controls with battery compartments (L, R)

Manual energy selection / automatic ignition (RMD 8xx1) MES

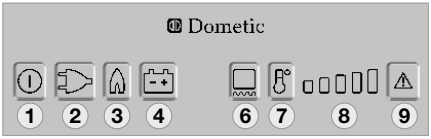


Fig. 7

1 - Power ON/OFF switch

2 - Energy selector button 230V ~

3 - Energy selector button GAS

4 - Energy selector button 12V =

6 - Frameheating

7 - Temperature level selection

8 - Temperature level display

9 - Indicator LED failure / Reset button GAS FAILURE

Switching ON/OFF

- Switch ON by pressing button (1), 2s
- Switch OFF by pressing button (1), > 2s

230V AC operation

- Select “Mains voltage” by pressing button (2)
- Set temperature step by pressing button (7)

12V DC operation (vehicle’s battery)

- Select “Battery voltage” by pressing button (4)
- Set temperature step by pressing button (7)

Gas operation

- Select “Gas” by pressing button (3)
- Set temperature step by pressing button (7)

Automatic energy selection / automatic ignition (RMD 8xx5) AES

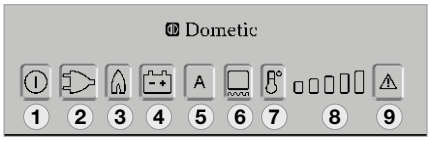


Fig. 8

1 - Power ON/OFF switch

2 - Energy selector button 230V ~

3 - Energy selector button GAS

4 - Energy selector button 12V =

5 - Selector button “AUTOMATIC”

6 - Frameheating

7 - Temperature level selection

8 - Temperature level display

9 - Indicator LED failure / Reset button GAS FAILURE

Switching ON/OFF

- Switch ON by pressing button (1), 2s
- Switch OFF by pressing button (1), > 2s

Manual operation

- Select energy source with buttons (2,3,4)
- Set temperature step by pressing button (7)

Automatic operation

- Change over to “Automatic” with button (5)
  Automatical energy selection (if available)
  Sequence of priority:
  1.) Solar (12V -)
  2.) 230V ~
  3.) 12V -
  4.) Liquid gas
- Set temperature step by pressing button (7)

Gas operation with internal batteries (optional)

An optional battery compartment in the electronics case for internal (self-contained) power supply of the electronics is available for the model variants RMd 85x1 and RMD 85x5 (appliances with electronics).

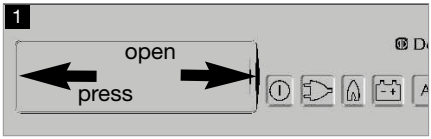
Left battery compartment *Fig. 14*

Load the battery compartment with batteries (8 x AA 1.5 V) before operating the refrigerator. All operating modes can be selected while the on-board 12 V DC power supply is active. The internal voltage is disconnected.

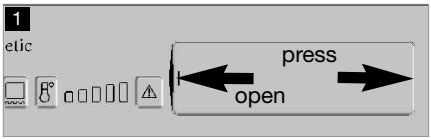
If the on-board 12 V DC power supply is not present or there is an interruption of the mains power supply during operation, the electronics automatically switch to the internal (battery) power supply. The refrigerator can now only be operated in the gas mode.

All LED indicators except the GAS LED are not lit during operation with internal batteries. The GAS LED flashes every 15 seconds. If a button is pressed, the temperature level LEDs (7) also light.

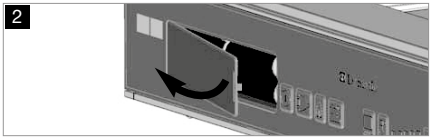
If the battery voltage is too low, an acoustic signal (whistle tone) sounds every 15 seconds. Then replace the batteries in the battery compartment.



Opening left battery compartment *Fig. 15*



Opening right battery compartment *Fig. 16*



Note: Batteries (8 x AA 1.5V) are not included!

⚠ WARNING:

- Observe the correct polarity!
- Do not connect non-rechargeable batteries to a charger.
- Remove rechargeable batteries from the battery compartment before charging.
- Avoid short circuits on the contacts in the battery compartment!
- Remove discharged batteries.
- Remove the batteries from the battery compartment if the refrigerator will not be used for a long time.
- Do not mix different types of batteries.

Frame heating

All models are equipped with a frame heating (12VDC/3,5W) around the freezer compartment. During summer months with high temperatures and humidity the metal frame may have water droplets forming. To evaporate these droplets switch on the frame heating with button (6).

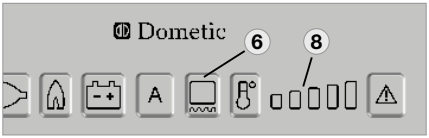


Fig. 18

The operating time of the frame heater can be set to 2 hours, 5 hours or continuous operation. After selecting the operating time using the button (6), the temperature level indicator (8) is extinguished for a short time to show the set operating time for a few seconds. The display then returns to the temperature level indicator.

Operating time: 2 hours

Press button (6) once Display

Operating time: 5 hours

Press button (6) twice Display

Permanent Operation

Press button (6) three times Display

⚠ **WARNING:** In order to prevent discharge of the onboard battery, change the frame heater from continuous operation to another operating time or switch it off.

Note: The frame heater is active for 30 minutes after switching on and then switches itself off and on again at time intervals of 5 minutes.

Refrigerator compartments

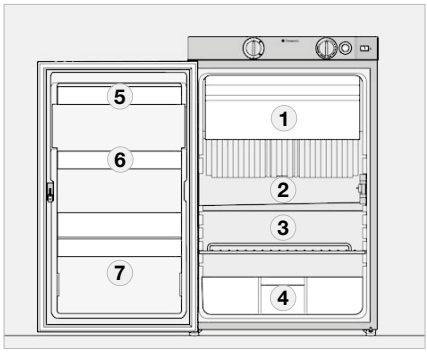


Fig. 37

1 - Freezer compartment :
already frozen food (deep-frozen food)

2 - Middle compartment:
Dairy products, convenience food

3 - Bottom compartment:
Meat, fish, food for defrosting

4 - Vegetable compartment:
Salads, vegetables, fruit

5 - Top door shelf:
Eggs, butter

6 - Middle door shelf:
Cans, dressings, ketchup, jam

7 - Bottom door shelf (drinks compartment):
Drinks in bottles or bags

Removable freezer compartment

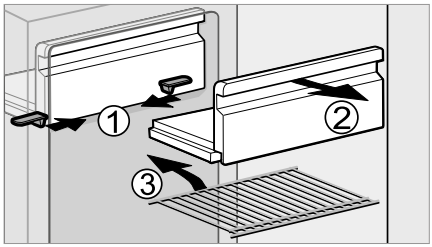


Fig. 32

To enlarge the cooling compartment, just remove the freezer compartment.

1. Unlock the freezer compartment on both sides.
2. Pull the freezer compartment out.

Store the freezer compartment safely in order to prevent damage

Note: Once the freezer compartment is removed, an additional storage rack (3.) may be installed. The storage rack is a piece of extra equipment and may be obtained by Dometic.

Door locking

⚠ **WARNING:** As a basic rule, shut and lock the refrigerator before you start your journey!

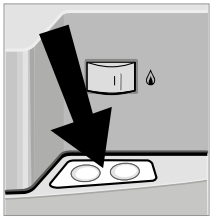


Fig. 24

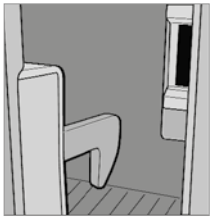


Fig. 25

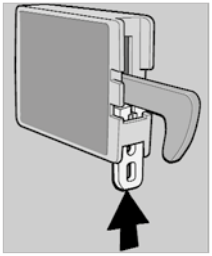
Open the door by pressing the locking button and pull open (see Fig. 24).

Shut the door again by pushing it to close. The snapping into the lock can be heard.

While the vehicle is parked, the locking hook may be fixed to facilitate opening of the door (Fig. 26-27).

Fastening and releasing the, door lock hook when parking the vehicle

If the vehicle is parked for a longer period of time, the locking hook may be clamped by means of a lockbar. The door may now be opened by just pulling it without need of pressing the locking button.



Fastening *Fig. 26*

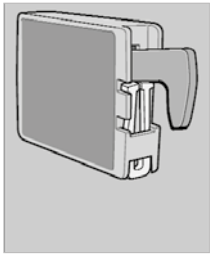
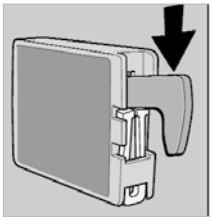


Fig. 27



Releasing *Fig. 28*

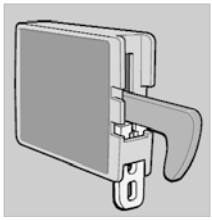


Fig. 29

Lighting

The interior lighting is controlled using a door contact. Should the door be kept open more than 2 minutes, an acoustic signal is initiated (pulsing whistle tone). (except for models with battery igniter).

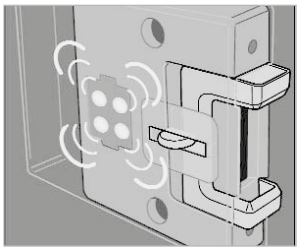


Fig. 30

Note: Please contact the authorized Dometic Service if a failure occurs.

Positioning the storage racks

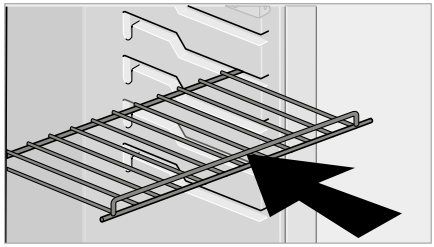


Fig. 31

The storage racks may be pulled out by smoothly lifting them and may be positioned as desired.

Refrigerator compartments

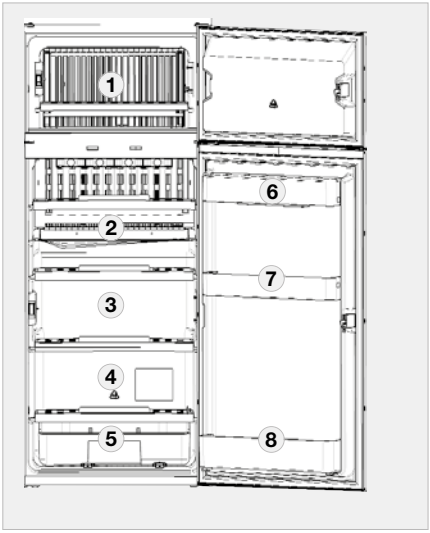


Fig. 29

1 - Freezer compartment :
already frozen food (deep-frozen food)

2 - Top compartment:
convenience food

3 - Middle compartment:
Dairy products, convenience food

4 - Bottom compartment:
Meat, fish, food for defrosting

5 - Vegetable compartment:
Salads, vegetables, fruit

6 - Top door shelf:
Eggs, butter

7 - Middle door shelf:
Cans, dressings, ketchup, jam

8 - Bottom door shelf (drinks compartment):
Drinks in bottles or bags

Shutting off the refrigerator

- Switch off the refrigerator by pressing button (1) (s. 4.5). Keep button (1) pressed for 3 seconds. The display disappears and the appliance is fully switched off .
- Release the locking mechanism (Fig. 30-31) of the door lock by pushing it and shift it to the front. If the door is shut in this position, a small gap is nevertheless kept open to prevent formation of mildew.

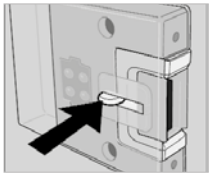


Fig. 30

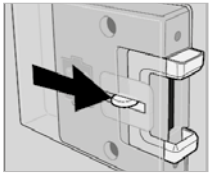


Fig. 31

- If the refrigerator is to be taken out of service for an extended period of time, close the onboard shut-off valve and the cylinder valve.

Defrosting

As time goes by, frost builds up on the fins inside the refrigerator. A layer of frost thicker on one side may occur and does not represent a malfunction. When this layer of frost is about 0.118 inches (3 mm) thick, the refrigerator should be defrosted.

- Switch off the refrigerator, as described in section 4.14 Shutting of the refrigerator.
- Remove all food and the ice cube tray.
- Leave the refrigerator door open to allow air to enter and to prevent formation of mildew.
- After defrosting (freezer compartment and fins free of frost), wipe both cooling compartments dry with a cloth.

Storing food and making ice cubes

Storing products in the cooling compartment

- Switch the refrigerator on approx. 12 hours before filling it.
- Always store pre-cooled foods in the refrigerator. Make sure that the food is well cooled when it is bought and also when transporting it. Use insulated cooling bags.
- Open the refrigerator door only for a short period of time when removing products.
- Products must be packed - best of all in closed containers, wrapped in aluminium foil or similar - and stored separately from each other, in order to prevent drying out or odours.
- Allow foods that have been warmed up to cool down before storing.
- Avoid storing products in the refrigerator that could emit volatile flammable gases.
- Do not overfill the storage grids and compartments to prevent obstructing the internal air circulation.
- Maintain a clearance of approx. 5 - 10 mm between chilled products and post-evaporator ("cooling fins").
- Do not expose the refrigerator to direct sunlight. Please bear in mind that the temperature inside a closed vehicle increases sharply if exposed to sunlight and that this can reduce the efficiency of the refrigerator.
- Ensure that air circulation of the cooling unit is not obstructed. Keep the ventilation grilles free from obstructions.
- The freezer compartment is suitable for making ice cubes and for short-term storage of frozen food. It is not suitable as a means of freezing foods.

When ambient temperatures are lower than +10°C and the refrigerator is exposed to these temperatures for extended periods of time, an even regulation of freezer temperature cannot be guaranteed for system related reasons. This can cause the temperature in the freezer to rise and the stored goods to melt.

Making ice cubes

Ice cubes are best frozen overnight. At night, the refrigerator has less work to do and the unit has more reserves.

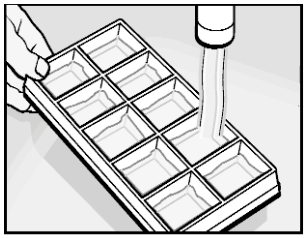


Fig. 27

1. Fill the ice cube tray with drinking water.

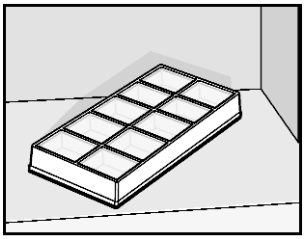


Fig. 28

2. Place the ice cube tray in the freezer compartment.

⚠ **WARNING:** Only use drinking water!

Shutting off the refrigerator

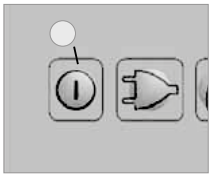


Fig. 41

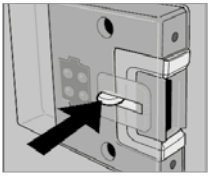


Fig. 42

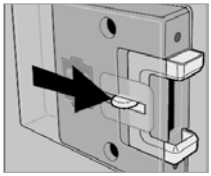


Fig. 43

- For battery igniter models, set energy selector switch (1) to position “OFF”. The appliance is switched off (Fig. 40).
- Switch off MES and AES models by pressing button (2). Keep button (2) pressed for 3 seconds. The display disappears and the appliance is fully switched off (Fig. 40).
- Release the locking mechanism of the door lock by pushing it and shift it to the front. If the door is shut in this position, a small gap is nevertheless kept open to prevent formation of mildew.
- If the refrigerator is to be taken out of service for an extended period of time, close the onboard shut-off valve and the cylinder valve.

Winter operation

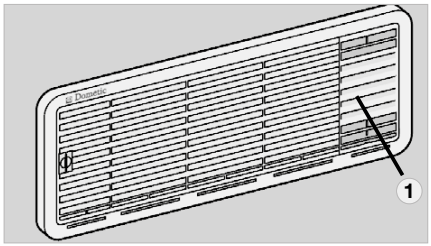


Fig. 35

In winter, check that the ventilation grilles and the exhaust duct system (1) have not been blocked by snow, leaves, etc.

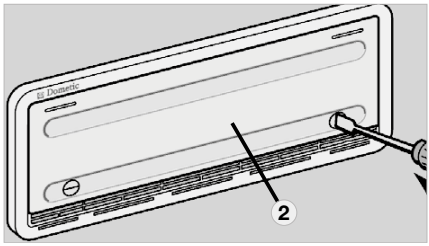


Fig. 36

When the outside temperature falls below +10°C, the winter covers should be fitted. This protects the unit from excessively cold air which could have adverse effects on the performance of the unit

Note: You should also attach the winter covers if the vehicle is taken out of service for a longer period of time or while it is being cleaned from the outside.

Winter operation (fridge freezer models)

In winter, check that the ventilation grilles and the exhaust duct system (1) have not been blocked by snow, leaves, etc.

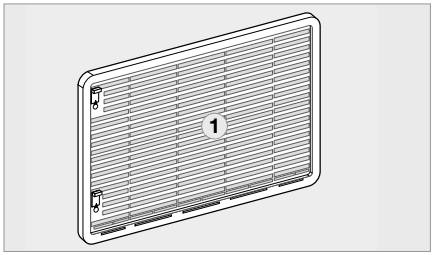


Fig. 32

When the outside temperature falls below +10°C, the winter covers (2) should be fitted. This protects the unit from excessively cold air which could have adverse effects on the performance of the unit.

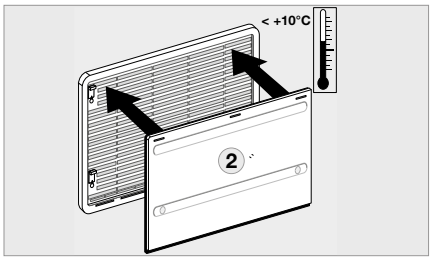


Fig. 33

You should also attach the winter covers if the vehicle is taken out of service for a longer period of time or while it is being cleaned from the outside.

Troubleshooting

Failure: The refrigerator does not cool sufficiently.

Possible cause	Action you can take
Inadequate ventilation to the unit	Check that the ventilation grilles are not covered
Thermostat setting is too low	Set thermostat to a higher level
The condenser is heavily frosted	Check that the refrigerator door closes properly
Too much warm food has been stores inside within a short period of time	Allow warm food to cool down before storage
The appliance has been running for only a short period of time	Check whether the cooling compartment works after approx 4-5 hours
Ambient temperatures too high	Regularly remove ventilation grilles.

Failure: The refrigerator does not cool in gas operation mode.

Possible cause	Action you can take
Gas cylinder empty	Change gas cylinder
Is the upstream shut-off device open?	Open shut-off device
Air in the gas pipe?	Switch off the appliance and start again. Repeat this procedure 3-4 times, if necessary.

Failure: The refrigerator does not cool in 12 V operation.

Possible cause	Action you can take
On-board fuse defective	Fit new fuse
On-board battery displaced	Check battery, charge it
Engine not running	Start engine
Heating element defective (please refer to failure indication)	Please inform the Dometic Customer Services.

Failure: The refrigerator does not cool in 230 V operation.

Possible cause	Action you can take
On-board fuse defective	Fit new fuse
Vehicle not connected to mains supply voltage	Make a connection to a mains power supply
AES: Gas operation despite connection to the mains supply voltage?	Appliance switches to gas operation due to insufficient mains supply voltage (automatically switches back to 230 V operation)
Heating element defective (please refer to failure indication	Please inform Dometic Customer Services

Information on failure display and trouble-shooting

- Refrigerators with an electronics system (MES, AES) indicate the occurence of a malfunction by the LED or display flashing.
- If a malfunction occurs, the indicator LED “Failure” (8) flashes simultaneously. In the case of AES models an acoustic alarm sounds.

Before notifying the authorised Service Center, please check whether:

- the instructions in section “Operating the refrigerator” have been observed.
- the refrigerator stands level.
- it is possible to operate the refrigerator with any available power source.

Status indicators

MES *Fig. 51*

1 - Button ON / OFF

2 - Energy selector switch 230 V AC

3 - Energy selector switch GAS

4 - Energy selector switch 12V DC

6 - temperature level button

7 - temperature level display

8 - fault LED / GAS FAULT reset button

Operation with on-board 12 v power supply

Indicator	Fault	Remedy
(2) and (8) flashing and acoustic signal 20s	**230 V mode:** "230V" not available or voltage too low	Check mains power connection, mains voltage, fuse
(4) and (8) flashing and acoustic signal 20s	**12 V mode:** "12V" not available or voltage too low	Check 12V connection, on-board battery, fuse
(3) and (8) flashing and acoustic signal 20s	**Gas mode:** Flame not ignited	Check gas supply (gas bottle, gas valve) Press the **(8)** button after clearing the fault
Acoustic signal, 15s at two minute intervals	Interior lighting is switched on	Close door, check door contact
(2) and (7) flashing and acoustic signal 20s	**230 V mode:** 230V heating element defective	Arrange replacement of 230V heating element, contact Customer Service
(4) and (7) flashing and acoustic signal 20s	**12 V mode:** 12V heating element defective	Arrange replacement of 12V heating element, contact Customer Service
(7) flashing and acoustic signal 20s	Temperature sensor without contact or defective	Contact Customer Service
(3) and (7) flashing and acoustic signal 20s	Burner defective or cooling unit defective	Check burner, burner nozzles, if necessary contact Customer Service and arrange replacement

Operation with batteries (internal power supply)

Indicator	Fault	Remedy
(3) and (8) flashing brightly	Flame not ignited	Check gas supply (gas bottle, gas valve) Press the **(8)** button after clearing the fault
(3) and (7) flashing brightly	Burner defective or cooling unit defective	Check burner, burner nozzles, if necessary contact Customer Service and arrange replacement
Acoustic signal at 15 second intervals	Undervoltage detection (internal batteries)	Replace batteries
Automatic switching from external to internal power supply does not function (absence of the onboard 12V power supply for the electronics)	Refrigerator does not function, gas operation not possible although the batteries are inserted	Switch off the refrigerator and start again The onboard power supply was interrupted during the starting of the gas operation **Note:** No automatic switching is performed during the ignition.

Cooker 3 burner with combined grill and oven / cooker 3 burner + electric hotplate with separate grill and oven

Burner operation

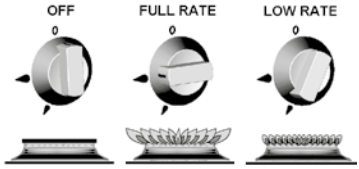


Fig. 1

Important

- Although each burner will support pans from 10 to 22cm, care should be taken not to overload the appliance as performance may be reduced.
- The following pan sizes are the maximum:
  - Auxiliary Burner:- Ø200mm Semi-Rapid Burner:- 2x Ø200mm or 1x Ø220mm with 1x Ø180mm
  Electric Hotplate:- Ø180mm
- When using small pans the flames should not spread beyond the base of the pan as this will reduce the efficiency of the burner.
- Avoid old or misshapen pans as these may cause instability.
- The lid must be opened fully prior to using the hotplate burners.

Using the Hotplate Gas Burners

1. Ensure gas cylinder is connected and turned on and the shut off valve at the manifold is open. In the event of a gas smell turn off at gas cylinder and contact supplier.
2. Flame supervision: Each burner is controlled individually and is monitored by a thermocouple probe. In the event of the burner flames being accidentally extinguished, turn off the burner control and do not attempt to re-ignite the burner for at least one minute.
3. To light: Push in the control knob and turn to full rate – see Fig.1. Hold a lighted match or taper to the burner and push the control knob in and hold. It is necessary to hold the knob depressed after the burner has ignited for approximately 10 - 15 seconds, to allow the thermocouple probe to reach temperature, before releasing the knob. Should the flame go out when the knob is released, the procedure should be repeated holding the knob depressed for slightly longer.
4. For models fitted with Spark Ignition the procedure is similar except that the burner can be ignited by depressing the ignition button, which is located on the fascia. If the burner has not lit within 15 seconds the control knob should be released and the burner left for at least 1 minute before a further attempt to ignite the burner.
5. For simmering, turn the knob further anti-clockwise to the low rate position.
6. To turn off: Turn the control knob until the line on the control knob is aligned with the dot on the control panel. Always make sure the control knob is in the off position when you have finished using the hotplate burners.

Operation

Using the Electric Hotplate

Ensure the electricity is switched on.

The hotplate control is numbered from 1 to 6. To turn it on, rotate the knob either clockwise or anti-clockwise to the required position. Position 1 is the coolest setting.

To turn the hotplate off, rotate the knob until the line or pointer on the knob lines up with the zero on the control panel.

The hotplate is a sealed construction and transfers heat through conduction. For maximum efficiency a correctly sized pan with a flat heavy gauge base should be used. Pan size should be the same or slightly larger (up to 1" / 2.5cm oversize).

Before using your hotplate for the first time, we recommend that you prime and then season it.

To prime the Hotplate

Switch on the hotplate for a short period, without a pan, to harden and burn off the coating.

Use a medium to high setting for 3 – 5 minutes. A non toxic smoke may occur during this process. Allow it to cool, then season.

To season the Hotplate

First heat the hotplate for 30 seconds on a medium setting, then switch off. Pour a minimal amount of unsalted vegetable oil onto a clean dry cloth or paper towel, and apply a thin coat of oil to the hotplate surface. Wipe off any excess oil, then heat the hotplate on a medium setting for 1 minute. Occasional seasoning will help to maintain the Hotplate's appearance.

⚠ **WARNING:**
- Glass lids may shatter when heated. Turn off the hotplate and allow it to cool before closing the glass lid.
- Remove all spillage from the surface of the glass lid before opening.
- The glass lid has the tendency to snap shut towards the end of lowering.

This is caused by the travel lock action of the hinges as it is activated.

Make sure all fingers are removed from appliance when closing the lid.

⚠ **WARNING:** The use of the electric hotplate and gas hobs will generate heat. We recommend, to avoid excess build-up of heat around the cooker area, the window is left opened when cooking to allow for additional ventilation.

IMPORTANT
- Depending on specification, your appliance may be fitted with a glass lid shut-off system, which cuts off the power to all hotplate burners (gas and electric) if the lid is closed.
- Ensure the glass lid is in the open and upright position before turning on the hotplate burners.
- Not all models are fitted with the shut-off system.

Operation

⚠ **WARNING:**
- The grill must only be used with the door open.
- On combined grill and oven cookers the heat deflector below the fascia should be pulled out prior to lighting the grill. Never adjust the heat deflector position without using hand protection i.E. Oven gloves. See fig 3

On separate grill and oven cookers the grill area can get hot when the oven is in use, even if the grill is switched off.
- Care should be taken when removing pans from the grill, i.e. use of oven gloves, and by making use of the removal grill pan handle.

Important
- The grill pan supplied is multi functional, for use in grill or oven.
- The handle design allows removal or insertion whilst the pan is in use.
- Always remove the handle when the pan is in use.
- The grill MUST only be used with the door open.

Using the Grill

1. Ensure gas cylinder/supply is connected and turned on. In the event of a gas smell turn off at gas cylinder/mains and contact supplier.
2. To light: Open door, push in the control knob and turn to full rate – see Fig 1 (page 156). Hold a lighted match or taper to the burner and push the control knob in and hold. The burner should ignite and the control knob should be held in for 10 -15 seconds before release.

If the burner goes out, repeat procedure holding control knob for slightly longer.

3. For models fitted with Spark Ignition the procedure is similar except that the burner can be ignited by depressing the ignition button, which is located on the fascia. Ignition must be carried out with the door open, and if the burner has not lit within 15 seconds the control knob should be released and the grill left for at least 1 minute before a further attempt to ignite the burner.
4. **Note:** the grill must only be used with the door open.
5. On first use of the grill, it should be heated for about 20 minutes to eliminate any residual factory lubricants that might impart unpleasant smells to the food being cooked. A non-toxic smoke may occur when using for the first time so open any windows and turn on mechanical ventilators to help remove the smoke.
6. Although the grill does heat up quickly, a few minutes preheat is recommended.
7. Flame Failure Device (FFD): the grill burner is fitted with a flame sensing probe, which will automatically cut off the gas supply in the event of the flame going out. In the event of the burner flames being accidentally extinguished, turn off the burner control and do not attempt to re-ignite the burner for at least one minute.
8. It is normal for the flames on this burner to develop yellow tips as it heats up.
9. A reversible grill pan trivet enables the correct grilling height to be achieved.

Fast Toasting	trivet in high position
Grilling Sausages	trivet in high position
Grilling Steak/Bacon	trivet in high position
Grilling Chops, etc	trivet in low position
Slow Grilling	trivet removed

10. To turn off: turn the control knob until the line on the control knob is aligned with the dot on the control panel. Always make sure the control knob is in the off position when you have finished grilling.

Important:

- The pan supplied with the appliance is multi functional, for use either whilst grilling or when using the oven.
- The handle design allows removal or insertion whilst the pan is in use.

⚠ **WARNING:** Pans must not touch the glass lid.

Note: To avoid heat build up around the hob open the kitchen window slightly to allow the heat to dissipate.

Operation

Important

- The appliance is fitted with a cooling system. The cooling fans should automatically switch on a couple of minutes after the grill and/or oven is turned on, and will remain on even after the appliance has been switched off.
- The fans should automatically switch off a few minutes after the appliance has been

switched off, when the front of the appliance has cooled sufficiently.

- A constant 12V supply is necessary at all times to ensure the cooling system operates correctly.

Using the Oven

1. Ensure gas cylinder/supply is connected and turned on. In the event of a gas smell turn off at gas cylinder/mains and contact supplier.
2. To light: Open door, push in the control knob and turn to full rate (240°C). Hold a lighted match or taper to the burner and push the control knob in and hold. The burner should ignite and the control knob should be held in for 10 -15 seconds before release. If the burner goes out, repeat procedure holding control knob for slightly longer.
3. For models fitted with Spark Ignition the procedure is similar except that the burner can be ignited by depressing the ignition button, which is located on the fascia. Ignition must be carried out with the door open, and if the burner has not lit within 15 seconds the control knob should be released and the oven left for at least 1 minute before a further attempt to ignite the burner.
4. Place the oven shelf in the required position and close the door. Set control knob to approximately 200°C and heat the oven for about 30 minutes to eliminate any residual factory lubricants that might impart unpleasant smells to the meals being cooked. A non-toxic smoke may occur when using for the first time so open any windows and turn on mechanical ventilators to help remove the smoke.
5. Although the oven does heat up quickly, it is recommended that a 10 minute preheat be allowed. The oven should be up to full temperature in about 15-20mins.
6. To turn off: turn the control knob until the line on the control knob is aligned with the dot on the control panel.
7. Shelf: the shelf has been designed to allow good circulation at the rear of the oven and is also fitted with a raised bar to prevent trays or dishes making contact with the back of the oven. To remove a shelf, pull forward until it stops, raise at front and remove.

⚠ **WARNING:** The pans and trays supplied with this appliance are the maximum sizes recommended for use. Larger pans and trays may restrict good circulation of heat, increasing cooking times.

Oven Temperature Control

The temperature in the oven is controlled by a thermostatic gas tap and is variable over the range 130°C to 240°C. Approximate temperatures for the settings on the control knob are shown in the table below. The temperatures indicated refer to the centre of the oven and at any particular setting the oven will be hotter at the top and cooler towards the base.

The variation between top and centre, and centre to bottom is approximately equivalent to one gas mark. Good use can be made of the temperature variation in several dishes requiring different temperatures may be cooked at the same time. In this way maximum benefit can be obtained from the gas used to heat the oven. Care should be taken not to overload the oven, adequate spacing being used to allow free circulation for heat.

Operation

Cooking Guidelines

Best results will be obtained by the shelf positions in this guide. It is not necessary to preheat the oven but advisable for a range of dishes. The oven is capable of full temperature in 15-20 minutes.

Most cookery books give details of the shelf positions and gas mark settings for each recipe. If in doubt about a recipe you intend to use, study the recipe carefully then find a similar dish in our guide and use our shelf position and gas mark setting recommendation.

Shelf positions are from the top down. When roasting with aluminium foil care must be taken that the foil does not impair circulation or block the oven flue outlet.

Gas Mark	Temperature (Centre - Shelf Pos. 2)	
1/4 - 1/2	265 - 275°F	130-135°C
1	285	140
2	300	150
3	330	165
4	355	180
5	385	195
6	410	210
7	430	220
8	445	230
9	465	240

Do's and don'ts

Do read the user instructions carefully before using the appliance for the first time.

Do allow the oven to heat before using for the first time, in order to expel any smells before the introduction of food.

Do clean the appliance regularly.

Do remove spills as soon as they occur.

Do always use oven gloves when removing food shelves and trays from the oven.

Do check that controls are in the off position when finished.

Don't allow children near the cooker when in use. Turn pan handles away from the front so that they cannot be caught accidentally.

Don't allow fats or oils to build up in the oven trays or base.

Don't use abrasive cleaners or powders that will scratch the surfaces of the appliance.

Don't under any circumstances use the oven as a space heater.

Don't put heavy objects onto open grill and oven doors.

Leaks

If a smell of gas becomes apparent, the supply should be turned off at the cylinder

IMMEDIATELY. Extinguish naked lights including cigarettes and pipes. Do not operate electrical switches. Open all doors and windows to disperse any gas escape. LPG gas is heavier than air; any escaping gas will therefore collect at a low level. The strong unpleasant smell of gas will enable the general area of the leak to be detected. Check that the gas is not escaping from an unlighted appliance. Never check for leaks with a naked flame, leak investigation should be carried out using a leak detector spray.

Maintenance & servicing

Important

- Shut off gas supply at isolating valve, switch off electric supply and ensure all parts are cool before cleaning or servicing
- All servicing must be carried out by an approved competent person.
- After each service the appliance must be checked for gas soundness
- This appliance must not be modified or adjusted unless authorized and carried out by the manufacturer or his representative. No parts other than those supplied by the manufacturer should be used on this appliance.
- If the supply cord is damaged, it must only be replaced by the manufacturer or his representative in order to avoid a hazard.

This appliance needs little maintenance other than cleaning. All parts should be cleaned using warm soapy water. Do not use abrasive cleaners, steel wool or cleansing powders.

When cleaning the burner ring it is essential to ensure that the holes do not become blocked. The control knobs are a push fit and can be removed for cleaning. They are interchangeable without affecting the sense of operation.

Microwave oven general user instructions

Note: Always refer to the microwave operating instructions supplied with the vehicle.

Note: Precautions to avoid possible exposure to excessive microwave energy

a. Do not attempt to operate this oven with the door open since open door operation can result in harmful exposure to microwave energy. It is important not to defeat or tamper with the safety interlocks.

b. Do not place any objects between the oven front face of the door or allow soil or cleaner residue to accumulate on sealing surfaces.

⚠ **WARNING:**
c. If the door or door seals are damaged, the oven must not be operated until it has been repaired by a competent person (1) door broken (2) hinges and latches (broken or loosened), (3) door seals and sealing surfaces.

⚠ **WARNING:**
d. It is hazardous for anyone other than a competent person to carry out a service or repair operation.

⚠ **WARNING:**
e. Liquids or other foods must not be heated in sealed containers since they are liable to explode.

⚠ **WARNING:**
f. Only allow children to use the oven without supervision when adequate instruction has been given so that the child is able to use the oven in a safe way and understands the hazards of improper use.

⚠ **WARNING:**
g. When the appliance is operated in the combination mode, children should only use the oven under adult supervision due to the temperature generated. (if provided)

Important safety guidance

⚠ **WARNING:** To prevent fire, burns, electric shock and other warnings. Listed below are, as with all appliances, certain rules to follow and safeguards to assure high performance from this oven.

Important instructions

1. Do not use the oven for any reason other than food preparation, such as for drying clothes, paper, or any other non food items or for sterilizing purposes.
2. Do not use the oven when empty, this could damage the oven.
3. Do not use the oven cavity for any type of storage, such as papers, cookbook, cookware etc.
4. Do not operate the oven without the glass tray in place. Be sure it is sitting properly on the rotating base.
5. Make sure you remove caps or lids prior to cooking when you cook food sealed in bottles.
6. Do not put foreign material between the oven surface and door. It could result in excessive leakage of microwave energy.
7. Do not use recycled paper products for cooking. They may contain impurities which could cause sparks and/or fires when used during cooking.

8. Do not pop popcorn unless popped in a microwave approved popcorn popper or unless it's commercially packaged and recommended especially for microwave ovens. Microwave popped corn produces a lower yield than conventional popping; there will be a number of unpopped kernels. Do not use oil unless specified by the manufacturer.
9. Do not cook any food surrounded by a membrane, such as egg yolks, potatoes, chicken livers, etc., without first piercing them several times with a fork.
10. Do not pop popcorn longer than the manufacturer's directions. (Popping time is generally below 3minutes). Longer cooking does not yield more popped corn it can cause scorching and fire. Also, the cooking tray can become too hot to handle or may break.
11. If smoke is observed, switch off or unplug the appliance and keep the door closed in order to stifle any flames.
12. When heating food in plastic or paper containers, keep an eye on the oven due lo the possibility of ignition.
13. The contents of feeding bottles and baby food jars shall be stirred or shaken and the temperature checked before consumption, in order to avoid burns.
14. Always test the temperature of food or drink which has been heated in a microwave oven before you give it to somebody, especially to children or elderly people. This is important because things which have been heated in a microwave oven carry on getting hotter even though the microwave oven cooking has stopped.
15. Eggs in their shell and whole hard-boiled eggs should not be heated in microwave ovens since they may explode, even after microwave heating has ended.
16. Keep the waveguide cover clean at all times. Wipe the oven interior with a soft damp cloth after each use. If you leave grease or fat anywhere in the cavity it may overheat, smoke or even catch fire when next using the oven.
17. Never heat oil or fat for deep frying as you cannot control the temperature and doing so may lead to overheating and fire.
18. Liquids, such as water, coffee, or tea are able to be overheated beyond the boiling point without appearing lo be boiling due to surface tension of the liquid. Visible bubbling or boiling when the container is removed from the microwave oven is not always present. **This could result in very hot liquid suddenly boiling over when a spoon or other utensil is inserted into the liquid.**

To reduce the risk of Injury to persons:

a. Do not overheat the liquid.

b. Stir the liquid both before and halfway through heating it.

c. Do not use straight-sided containers with narrow necks.

d. After heating, allow the container to stand in the microwave oven for a short time before removing the container

e. Use extreme care when inserting a spoon or other utensil into the container.

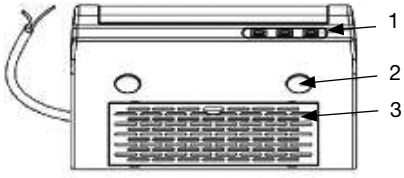
Care of the microwave

1. Turn the oven off before cleaning
2. Keep the inside of the oven clean. When food spatters or spilled liquids adhere to oven walls, wipe with a damp cloth. Mild detergent may be used if the oven gets very dirty. The use of harsh detergent or abrasives is not recommended.
3. The outside oven surface should be cleaned with soap and water, rinsed and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.
4. If the central panel becomes wet, clean with a soft dry cloth. Do not use harsh detergents or abrasives on Control Panel.
5. If steam accumulates inside or around the outside of the oven door, wipe with a soft cloth. This may occur when the

microwave oven is operated under high humidity conditions and in no way indicates malfunction of the unit.

6. It is occasionally necessary to remove the glass tray for cleaning. Wash the tray in warm sudsy water or in a dishwasher.
7. The roller guide and oven cavity floor should be cleaned regular/y to avoid excessive noise. Simply wipe the bottom surface of the oven with mild detergent water or window cleaner and dry. The roller guide may be washed in mild sudsy water.
8. The oven should be cleaned regularly and any food deposits removed;
9. Failure to maintain the oven in a clean condition could lead to deterioration of the surface that could adversely affect the life of the appliance and possibly result in a hazardous situation.

Extractor hood 524



1 Operating panel
2 Light
3 Filter holder with grease filter

The extractor hood 524 serves to extract water vapour from cooking areas in motorhomes. The integrated halogen lamps (2) serve to illuminate the work surface.

The fan and the lighting (2) can be switched independently via the operating panel (1). At the same time. The integrated grease filter (3) prevents the extraction system from being contaminated from inside.

Note: Safety information, always refer to the user instructions provided with your motorhome.

Replacing the lamps on the extractor

Lamp type: max. 10W /12V halogen with UVStop

Always switch off the lights before replacing the lamps! The lamps get very hot during operation. There is a risk of being burnt. Wait until the lamp has cooled down.

There is a risk of injury if the lamp is broken.

Remove the remainder of the lamp using suitable tools only.

Replacing or cleaning the grease filter

Flip the front part of the grease filter downwards.

Pull it out towards you.

Remove the filter holder

You can now exchange the filter. Fix the new filter in place with the filter holder. Finally, reinstall the filter unit in the reverse order.

Always switch off the fan motor before replacing the grease filter! There is a risk of injury when reaching inside the running fan.

Replacing the grease filter

To replace the filter, proceed according to figures 8 & 9.

Flip the front part of the grease filter downwards.

Pull it out towards you.

Remove the filter holder

You can now exchange the filter. Fix the new filter in place with the filter holder. Finally, reinstall the filter unit in the reverse order.

Thetford C260CS & C260S cassette toilet

The toilet is made up of two parts: a permanently fixed part and a Waste Holding Tank that is accessible from the outside. The removable Waste Holding Tank is located under the toilet bowl and can be removed via a door on the outside of the motorhome.

Parts

a. Removable Seat and Lid

b. Swivelling Toilet Bowl

c. Blade Handle

d. Flush Button

e. Waste Holding Tank Level Indicator

f. Rotating Emptying Spout

g. Automatic Pressure Release Vent

h. Sliding Cover

i. Removable Mechanism

j. Vent Plunger

k. Pull-Out Handle

l. Wheels

m. Blade Opener

n. Access Door to Waste Holding Tank

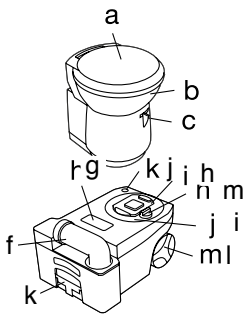
p. Electric blade opener

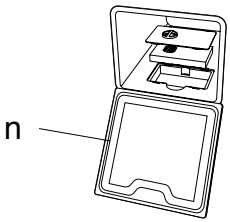
q. Electric ventilator

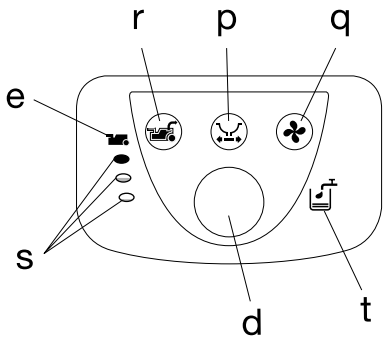
r. Waste pump-out system

s. Waste holding tank mult-level indicator

t. Flush water tank level indicator







Control panel

Preparing for use

1. Open the access door on the outside of your motorhome.
2. Remove the Waste Holding Tank by pulling the safety catch (which holds the tank in place) upwards.
3. Pull the Waste Holding Tank outward to the stop. Tip it slightly and take the tank fully out.
4. Place the tank upright and turn the rotating emptying spout upwards. The emptying spout ensures that the tank can be easily and hygienically emptied.
5. Remove the cap, with the measuring cup inside, from the emptying spout and pour the correct dosage of Thetford toilet fluid (see product label) into the holding tank. This avoids unpleasant smells and keeps the inside of the tank clean. Next add approximately 2 litres of water - enough to ensure that the bottom of the Waste Holding Tank is covered. For more information on Thetford toilet fluids, see last page of the Thetford user manual. Screw the cap back onto the emptying spout and turn back to its original position.

Note: The Emptying Spout Measuring Cap is supplied in the same packaging as the Thetford user manual.

⚠ **WARNING:** Never add toilet fluid directly via the blade or the toilet bowl as this could damage the lip seal of the Waste Holding Tank. Always pour the fluids via the emptying spout.

6. Slide the Waste Holding Tank back into its original position via the access door. Make sure that it is secured with the safety catch. Close the access door and lock it. Your Thetford toilet is now ready to use.

⚠ **WARNING:** Never use force if you cannot get the tank back into place easily. This may cause serious damage. If blockage occurs, always check if the blade handle is in the correct (closed) position.

Using the toilet

7. Turn the bowl to the desired position with the lid closed and using both hands.
8. To activate the control panel, press the flush-button once. The control panel display will stay activated for approximately 5 minutes. Run some water into the bowl by pressing the flush button again briefly.
9. The toilet may be used with the blade open or closed. To open the blade, slide the blade handle under the toilet bowl sideways. After use, open the blade (if still closed) and flush the toilet by pressing the flush button for several seconds (if necessary re-activate the control panel). Close the blade after use.

Emptying

The Waste Holding Tank has a capacity of 18 litres and requires emptying when the red light (LED) on the toilet control display lights up, when the Waste Holding Tank only has capacity for approximately 2 more litres, which is no more than two to three further uses. Make sure that the blade is closed. Open the access door located outside the vehicle, pull the safety catch upwards and remove the Waste Holding Tank.

10. Place the Waste Holding Tank in an upright position (Pull-Out Handle at the top, Wheels at the bottom). Slide the handle sideways - to the front of the tank - until it snaps out of its locked position.
11. Pull the handle up and wheel the Waste Holding Tank to an authorised waste disposal point.
12. Push the handle back into its locked position. Turn the emptying spout upwards and remove the cap from the spout. Hold the Waste Holding Tank in such a way that during emptying you can operate the vent plunger with your thumb. To empty the tank without splashing, depress the

vent plunger while emptying the tank. After emptying, rinse the tank and blade thoroughly with water.

⚠ **WARNING:** Do not seriously shake the tank or use high pressure water cleaners. This may cause damage to the tank's interior.

Note: The vent plunger should only be depressed once the emptying spout is pointing downwards. Prepare the toilet for re-use if required. Slide the Waste Holding Tank into the toilet and close the access door.

Cleaning and maintenance

The toilet should be cleaned and maintained regularly, depending on the amount of use. To clean Thetford toilets, we advise using water and Thetford Bathroom Cleaner.

Note: Never use bleach, vinegar or other powerful household cleaners that contain these substances. These may cause permanent damage to the seals and other toilet components.

Toilet bowl

- Squirt Thetford Bathroom Cleaner into the toilet bowl.
- Flush the toilet bowl with water and wipe down the rest of the toilet with a damp cloth.
- Clean seat and lid The seat and lid can easily be removed: Lift the seat and lid assembly and pull the round pins (inside the assembly) outwards from the pin holes. After cleaning, replace the seat and lid by positioning the round pins in front of the pin holes and push the lid and seat downwards.
- To keep your flush water fresh and to prevent deposits from forming in your toilet bowl, add a correct dosage of Aqua Rinse in your flush water tank, if present, on your toilet.

Tip! For a really shining toilet, dry with a soft dry cloth after cleaning.

Waste holding tank

To keep your Waste Holding Tank fresh and clean, Thetford has developed a number of different toilet fluids. Thetford toilet fluids suppress smells, reduce formation of gas, promote breakdown of toilet waste and increase the life span of a mobile toilet. See page 50 of the Thetford user manual for more information. We advise a thorough cleaning of the Waste Holding Tank once each season, using Thetford's Cassette Tank Cleaner.

- Remove the removable mechanism from the Waste Holding Tank by turning it anti-clockwise and rinse it under a tap.
- Remove the cover plate from the Automatic Pressure Release Vent by prising it up using a small screwdriver. Use one hand to push the Automatic Pressure Release Vent open while holding the float of the Automatic Pressure Release Vent on the inside of the tank with the other hand. Push the float upwards, turn it 180 degrees and remove it from below. Remove the rubber seal underneath the float. Rinse the float and rubber seal under a tap. Replace the Pressure Release Vent using the same method in reverse.

The rubber seals in the toilet (the lip seal, the mechanism seal, the automatic pressure release vent seal and the cap seal) should be regularly cleaned with water and treated with Thetford High Grade Seal Lubricant. This will ensure that the seals remain flexible and in good condition. If the toilet is not to be used for any length of time, it is important to treat the seals with Thetford High Grade Seal Lubricant after cleaning.

Note: Never use Vaseline or any vegetable oil except olive oil. These may cause leakage or malfunction. The lip seal is a part of the toilet that is subject to wear. Depending upon the extent and manner of use, the seals will become less effective and will need replacing periodically.

Winter operation

You can use your Thetford Cassette Toilet as normal in cold weather as long as the toilet is situated in a heated location. If there is a risk of freezing we advise that the toilet is drained by following the instructions under 'Storage'. For environmental reasons the use of antifreeze, such as that used in car radiators, is not recommended.

Storage

It is important that you follow the instructions below if you do not expect to use your Thetford toilet for a long (winter) period.

- With the vehicle fresh water tank drained, (See "Fresh Water System" on page 42 for how to drain the tank), press the toilet flush button until water stops flowing into the bowl. Close the blade. Open the access door on the outside of your motorhome and empty the Waste Holding Tank at an authorised waste dump. Follow the instructions for cleaning and maintenance. To allow the Waste Holding Tank to dry, do not place the cap back on the emptying spout of the tank.

Thetford warranty refer to the Thetford user handbook.

Cassette toilet fault finding

Fault	Remedy
Bowl does not drain when toilet is flushed. Cassette is overfilled	DO NOT REMOVE CASSETTE. While inside the motorhome turn flush knob anti-clockwise to open valve blade and leave it in the open position. Open access door on side of motorhome. Rotate pour-out spout outward. Place appropriate size container under spout cap. Remove cap carefully. Allow bowl contents to drain into container. This will lower the water level in the bowl. Replace cap and return pour-out spout to stored position. DO NOT REMOVE CASSETTE. Go inside the motorhome and turn the flush knob clockwise to close valve blade. Now, the cassette may be removed following the normal removal and emptying procedure.
Odours	Use proper amount of holding tank deodorant specified on bottle.
Soiled bowl after flushing	Partially fill bowl to cover soiled portion of bowl. Next flush will dissolve waste. Tip: Leave valve blade open during use.
No power to add water to toilet bowl	Check cassette safety sensor switch and fuse-holder for proper engagement and operation. Note: Cassette has to be removed to reach switch and fuse. Insert cassette and try adding water to toilet bowl. Toilet can be flushed manually. Add water. Add water to bowl from a separate container. Turn flush knob anti-clockwise to open valve blade. Turn clockwise to close valve blade.
Cassette cannot be removed	Check for obstacles under retaining clip. Depress retaining clip several times to check operation. Remove cassette. Flush knob and valve blade in partial open position. Close valve blade by moving knob clockwise. **CAUTION: If valve blade is open during cassette removal, severe damage to system can occur. Never force insertion or removal of the cassette tank.**
Valve blade mechanism sticks or is hard to open	Spray light film of silicone on blade.
Major unit malfunction	Contact your original Motorhome Dealer.

Thetford C400 Cassette Toilet

These operating instructions cover Thetford cassette toilet models C-402C, C-402X and C-403L. There are a few differences in the use of these models. Make sure that you follow the instructions that apply to your toilet model.

The parts and functions that are referred to by letters are illustrated in later pages.

The actions to be taken, referred to by numbers, are illustrated are also illustrated in pages 174-175.

Parts and functions C-402C and C-402X

a. Handle: opens and shuts the valve blade

b. Flush knob: when this pressed, an electric pump fills the bowl with water

c. Level indicator display: the red LED on the display lights up when the waste tank is full (C-402C and C-402X). When the flush know is pressed briefly, the display shows the level in the waste tank and the level in the water tank (C-402X).

d. Removable seat and cover

e. Cover plates

f. Storage compartment for toilet fluids (only the tall model)

g. Safety catch: holds the waste tank in place

h. Water filling tunnel: for easy filling of the water tank.

i. Cover: guarantees optimal hygiene. Opens when the waste tank is located in the toilet and closes when the waste tank is removed.

j. Removable mechanism

k. Valve blade opener

l. Valve blade / valve seal

m. Vent plunger: for emptying with splashing.

n: Upper handle

o. Automatic pressure release valve: ventilates the waste tank when this located in the cassette toilet. Avoids excessive pressure in the waste tank.

p. Pull-out handle: for easy transport of the waste tank.

q. Wheels

r. Rotating emptying spout: ensures that the waste tank can be easily and hygienically emptied.

s. Water filling extension

t. Access hatch to waste tank and water filling funnel: lockable from the outside of the vehicle.

C-402L

a. Handle: opens and shuts the valve blade.

b Flush knob: when pressed a central electric pump in the vehicle pumps water into the bowl.

c. Level indicator display: the red LED on the display lights up when the waste tank is full. When the flush knob is pressed briefly, the display shows the level in the waste tank.

d. Removable seat and cover

e. Cover plate

f. Storage compartment for toilet fluids (only the tall models)

g. Safety catch: holds the waste tank in place.

h. Cover: guarantees optimal hygiene. Opens when the waste tank is located in the toilet.

i. Removable mechanism

j. Valve blade opener

k. Valve blade / Valve seal

l. Vent plunger: for emptying without splashing.

m. Automatic pressure release vent: ventilates the waste tank when this is located in the cassette toilet. Avoids excessive pressure in the waste tank.

n. Upper handle: for easy emptying

o. Pull-out handle: for easy transport of the waste tank.

p. Wheels

q. Rotating emptying spout: ensures that the waste tank can be easily and hygienically emptied.

r. Access hatch to waste tank: lockable from the outside of the vehicle.

Introduction

The Thetford cassette toilet is a high quality product. The functional design combines modern styling and ease of use and the toilet forms an integrated part of your motorhome bathroom. The Cassette toilet is manufactured from high quality synthetic material This makes it a durable, user and maintenance friendly toilet.

The toilet is made up of two parts, a permanently fixed part and a waste tank that is accessible from the outside. The removable waste tank is located, under the toilet bowl and can be removed via a door on the outside of the motorhome.

Preparing for use

C-402C, C-402X and C-403L

1. Open the access door on the outside of your motorhome.

C-402C and C-402X

2. Rotate the waste tank emptying spout 90 degrees and remove the water filling extension (you will find it positioned beneath the handle closest to the emptying spout).
3. Rotate the waterfill funnel outwards, remove the cap and place the extension on the waterfill funnel. Add the stated amount of Thetford fresh water additive to the water tank. This ensures a better and cleaner flush and keeps the water in the flush tank fresh.
4. Fill the water tank with clean water. Warning: keep water level below the top of the water filling funnel.
5. Remove the extension and return to its original position on the waste tank.

Note: depending on the space between the door and wate tank, this extension part may also be fixed on the door with a hook. Screw the cap back onto the water filling funnel and push back inwards towards the side of the flush water tank.

Note: 150ml of water will remain in the waterfill funnel when the water tank is empty.

C-402C, C-402X and C-403L

6. Remove the waste tank by pulling the safety catch upwards.
7. Pull the waste tank outward to the stop. Tip it slightly and take the tank fully out.
8. Place the tank upright and turn the emptying spout upwards.
9. Remove the cap, with the measuring cup inside, from the emptying spout and pour the stated quantity of toilet fluid into the waste tank. This avoids unpleasant smells in the waste tank and keeps the inside of the waste tank clean. Next add approximately 2 litres of water - enough to ensure that the bottom of the waste tank is covered. Screw the cap back onto the emptying spout. Turn the emptying spout back to its original position. **N.B.** The emptying spout measuring cap is supplied in the same packaging as this manual.

⚠ **WARNING:** Never add toilet fluid via the valve blade or via the toilet bowl.

10. Slide the waste tank back into its original position via the access door.

⚠ **WARNING:** Never use force if you cannot get the tank back into place easily. This may cause serious damage.

11. Made sure that the wate tank is secured with the safety catch. Shut the access door and lock it.

Use C-402C, C-402X and C-403L

12. Run water into the bowl by pressing the flush knob briefly or open the valve blade by turning the handle anti-clockwise. Your Thetford toilet is now ready for use.
13. After us, open the valve blade (if still closed) by turning the handle anti-clockwise. Flush the toilet by pressing the flush knob for several seconds. Close the valve blade after use.

Note: Do not leave water in the bowl if toilet is not being used. This does not help to reduce unpleasant smells and only leads to flooding.

Note: To prevent clogging, we recommend using Aqua soft, Thetford's quickly dissolving toilet paper.

⚠ **WARNING:** Please do not travel with a flush water tank that is too full (we advise empty, but for sure not filled more than half full. Do not travel with water in the toilet bowl. Failure to adhere to this notice may result in water damage to yxour motorhome.

Emptying

The waste tank has a capacity of 19 litres and must be emptied at the latest when the red light in the level display lights up. The indicator lamp will light up when the waste tank can still take about two litres, which is about three uses.

Note: Do not allow the waste tank to become too full.

Use C-402C, C-402X and C-403L

14. Make sure that the valve blade is closed. Open the access door located outside the vehicle. Pull the safety catch upwards and remove the waste tank.
15. Remove the water filling extension first to avoid it getting lost during the emptying of the waste tank.
16. Stand the waste tank upright (pull out handle at the top, wheels at the bottom). Press the handle down and move it away from the waste tank until it snaps out of its locked position.
17. Pull the handle up and wheel the waste tank to an authorised waste dump.
17. Pull the handle up and wheel the waste tank to an authorised waste dump.
18. Push the handle back. Turn the emptying spout upwards and remove the cap from the spout. Hold the waste tank by the upper handle with one hand, while placing your other hand by the rear handle so that during emptying you can operate the vent plunger with your thumb.
    To empty the tank without splashing, depress the vent plunger while emptying the tank. After emptying, flush the tank thoroughly with water. Also clean the valve blade with water.

Note: The vent plunger should only be pressed once the emptying spout is pointing downwards!

19. If required make the toilet ready for use once again. Return the water filing extension to its original position on the waste tank. Slide the waste tank into the toilet and close the access door.

Storage

It is important that you follow the instructions below if you do not expect the Thetford toilet for a long period.

Completely empty the water tank through the drain tube, which also serves as a level indicator. Take the drain tube out of the clamp and carefully pull it downwards from the upper plug. Direct the drain tube out through the access door opening to allow water to flow out. Afterwards, be sure the drain tub is placed back into the clamp first and then pushed into the upper plug.

C-403L

Drain the central water system of the motorhome.

C-402C, C-402X and C-403L

20. Open the valve blade by turning the handle on the toilet anti-clockwise. Press the blue knob until water stops flowing into the bowl. Close the valve blade.

C-402C and C-402X

21. Open the access door on the outside of your motorhome and turn the water filling funnel outwards. Remove the cap and empty the water filling funnel by turning it a quarter turn anti-clockwise.

C-402C, C-402X and C-403L

22. Remove the waste tank and empty this at an authorise waste dump. Follow the instructions for cleaning and maintenance.
23. Replace the waste tank and open the valve blade by moving the handle on the toilet to the left.

Cleaning and maintenance

The toilet should be cleaned and maintained regularly, depending on the amount of use. To clean Thetford toilets, we advise using water and Thetford Plastic Cleaner.

Note: Never use household cleaners (bleach, solvents or other powerful cleaning agents). These may cause permanent damage to the seals and other toilet components.

Toilet

- Squirt Thetford Plastic Cleaner in the toilet.
- Flush the bowl with water and wipe down the rest of the toilet with a damp cloth.

Tip! For a really shining toilet, dry it with a soft dry cloth after cleaning.

- Clean seat and lid. The seat and lid can easily be removed. Lift the lid and seat together and pull upwards. After cleaning, replace the seat and lid by positioning the round pins above the holes and then pushing the lid and seat downwards.

Waste tank

We advise a thorough cleaning of the waste tank once each season.

- Remove the mechanism from the waste tank by turning it anti-clockwise, as shown on the waste tank. Rinse the complete mechanism under a tap.
- Remove the cover plate from the automatic pressure release vent by prising it up using a screwdriver. Use one hand to push the automatic pressure vent open, while holding the float of the automatic pressure release vent on the inside of the tank with the other hand. Push the float upwards, turn the float half a turn and remove it from below. Remove the rubber seal that is under the float. Rinse the float and the rubber seal under a tap. Replace the rubber seal and float for the automatic pressure release vent in the same way.

The rubber seals in the toilet(the valve blade seal, the mechanism, seal and the automatic pressure release vent seal and the cap seal) should be regularly treated with Thetford High Grade Seal Lubricant. This will ensure that the seals remain supple and in good condition. If the toilet is not to be used for any length of time, it is important to treat the seals with Thetford High Grade Seal Lubricant after cleaning.

Note: Never use Vaseline or any vegetable oil except olive oil. These may cause leakage.

Note: The valve blade is part of the toilet that is subject to wear. Depending on the extent and manner of service, after a certain period the seal will become less effective and must be replaced.

Winter operation

You can use you Thetford cassette toilet as usual in cold weather, as long as the toilet is situated in a heated location. If this is not the case there is a risk of freezing. In that case we advise that the toilet is drained by following the instructions under ‘Storage’.

For environmental reasons the use of antifreeze, such as that used in a car radiator, is not advised.

Thetford Warranty

Thetford B.V. offers the end users of its products a three year gurantee. In the case of defects within the guarantee period Thetford will replace or repair the product. In this instance, the costs of replacement, labour costs for the replacement of defective components and/or the costs of the parts themselves will be paid by Thetford.

1. To claim under this guarantee, the user must take the product to a Service Centre recognised by Thetford. The claim will be assessed there.
2. Components replaced during repair under guarantee become the property of Thetford.
3. This guarantee does not prejudice current consumer protection law.
4. This guarantee is not valid in the case of products that are for, or are used for, commercial purposes.
5. Guarantee claims falling into one of the following categories will be honoured:
   - the product has been improperly used or the instructions in the manual have not been followed;
   - the product has not been installed in accordance with the instructions;
   - alterations have been made to the product;
   - the product has been repaired by a Service Centre not recognised by Thetford;
   - the serial number or product code has been changed;
   - the product has been damaged by circumstances outside the normal use of the product.

Customer service

Please visit the Thetford web site if you require further information or have questions about your toilet, www.thetford.eu The information available includes frequently asked questions, problems and solution, instructions for repair, tips and a list of Thetford dealers near you.

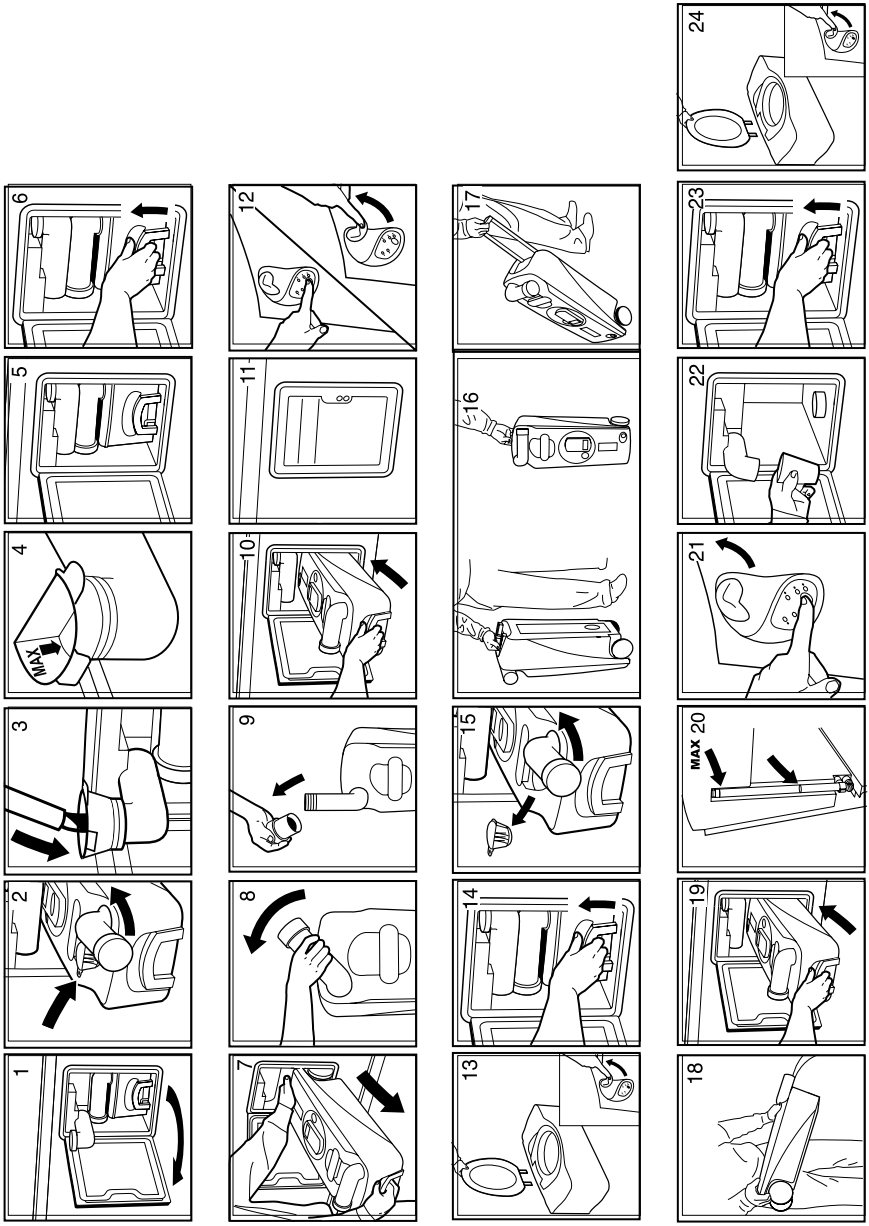
If you still have questions or remarks, please contact the Customer Service Department in your country (see the addresses at the back of this manual).

Liabilty

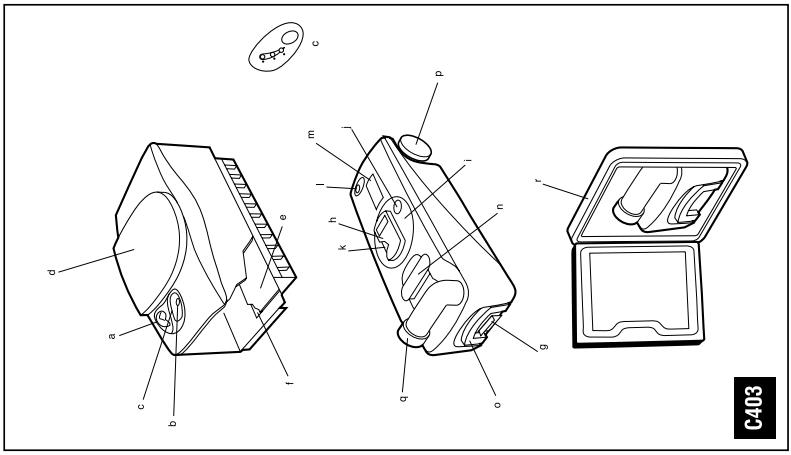
Thetford is not liable for loss and/or damage caused directly or indirectly by use of the toilet.

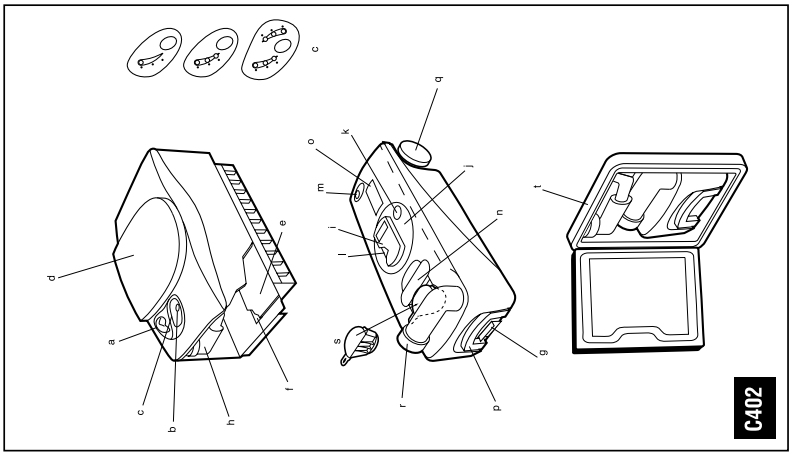
Flush water tank contents	Waste tank contents
15 L	19.3 L

THETFORD CASSETTE TOILET



C-402c, c-402x and c-403l models
Parts and functions
C-402c, c-402x and c-403l





Cassette toilet fault finding

Fault	Remedy
Bowl does not drain when toilet is flushed. Cassette is overfilled	DO NOT REMOVE CASSETTE. While inside the motorhome turn flush knob anti-clockwise to open valve blade and leave it in the open position. Open access door on side of motorhome. Rotate pour-out spout outward. Place appropriate size container under spout cap. Remove cap carefully. Allow bowl contents to drain into container. This will lower the water level in the bowl. Replace cap and return pour-out spout to stored position. DO NOT REMOVE CASSETTE. Go inside the motorhome and turn the flush knob clockwise to close valve blade. Now, the cassette may be removed following the normal removal and emptying procedure.
Odours	Use proper amount of holding tank deodorant specified on bottle.
Toilet tissue does not fit into compartment.	Since some tissues are supplied on larger rolls, it may be necessary to use some tissue before storing into compartment.
Soiled bowl after flushing	Partially fill bowl to cover soiled portion of bowl. Next flush will dissolve waste. Tip: Leave valve blade open during use.
No power to add water to toilet bowl	Check cassette safety sensor switch and fuse-holder for proper engagement and operation. Note: Cassette has to be removed to reach switch and fuse. Insert cassette and try adding water to toilet bowl. Toilet can be flushed manually. Add water. Add water to bowl from a separate container. Turn flush knob anti-clockwise to open valve blade. Turn clockwise to close valve blade.
Cassette cannot be removed	Check for obstacles under retaining clip. Depress retaining clip several times to check operation. Remove cassette. Flush knob and valve blade in partial open position. Close valve blade by moving knob clockwise. **CAUTION: If valve blade is open during cassette removal, severe damage to system can occur. Never force insertion or removal of the cassette tank.**
Valve blade mechanism sticks or is hard to open	Spray light film of silicone on blade.
Major unit malfunction	Contact your original Motorhome Dealer.

Windows

To open, turn knobs anti-clockwise and open catches. Swivel the window pane open to the desired position and close knobs clockwise to lock in the open position.

To close, reverse the operation.

All opening windows have two catch positions. The first position is for ventilation the second seals the window from ventilation and rain.

Acrylic (Plastic) Window Condensation

Unlike domestic double glazed windows, your motorhomes window are not vacuum sealed instead the double panes of acrylic plastic with are fitted with a breathable plug on the inner pane.

It is possible, in weather where extremes in temperatures occur between night and day, that customer will notice condensation between the panes. The same phenomenon may also occur when washing your vehicle on a hot day.

The condensation should clear itself when the ambient conditions return to normal and the air between the panes dries. However, if this is taking a longer time than required, the breathable plug (normally located in the top corner of the window) can be removed, with a pin or sharp object, and replaced when the panes are dry. Care should be taken when doing this.

Acrylic (Plastic) Window Cleaning

The material used to produce most motorhome windows is acrylic plastic. While the acrylic used is very durable, it is able to be scratched with relative ease and therefore, care must be taken when clearing your vehicle not to use aggressive clearing products. Equally, care should be taken when using a drying cloth that it is clean and free from grit.

S2000/S3000 blinds (Seitz)

Rubber window seals should be cleaned periodically and talcum powder can be used to keep the profiles in good condition.

Blinds and Flyscreens

Flyscreen and blinds operate in the same manner. The flyscreen can only be 'fully up' or 'fully' down, but the blind also has an intermediate position.

To operate, pull down by holding the fingergrip(s), gently ease towards the window to locate the catches. To retract, pull down easing away from the window to release the catches and guide to the required position.

- Only operate by holding the fingergrip(s) - pulling on one side will cause uneven running and snagging.
- Do not allow the blind or flyscreen to re-coil without control.
- It is not recommended that blinds and/or flyscreens are left in the down position for long periods, or when travelling, as this can result in fatigue of the spring.

- Clean the cassette, side track and fabrics with mild detergent and water.
- Lubrication of mechanism or spring is not required or recommended.

For more detailed information, see manufacturer's instructions.

Cassette Blind and Flyscreen

Always hold the end rod in the middle. When closing blinds, slide the end rod of the flyscreen blind on to the end rod of the sun blind and engage. To open the blind push the end rods towards the darkening blind to the edge and disengage the end rods. Now move the end rod of the flyscreen back by hand - do not let it recoil.

Tensioning Seitz blinds and flyscreens
Seitz S2000 window blinds/flyscreens are pre-tensioned, it may also be necessary in the future to adjust the tension of these. Remove the left hand top corner cap. Adjust the lower screw for the blind and the higher screw for the flyscreen. Care should be taken not to over tighten the springs.

The spring in the Seitz cassette window blinds/ flyscreens are pre-tensioned. However, it may be necessary in the future to adjust the tension. The tensioning screw is positioned on the right hand top corner of the cassette. Firstly remove the plug then adjust by rotating the screw clockwise. Then replace plug.

The blinds should rewind without stopping or moving in a sluggish manner.

Windows/ Roller Blind Advice

In case of prolonged exposure to the sun roller blinds should not be completely closed as this could cause excessive heat concentration at the top of the window, due to characteristics of the glazing material the windows could be adversely affected.

Roller blinds that shade from the bottom upwards it is necessary to leave a gap of a few centimetres open at the top, this way the heat between window and blind can escape. A fly screen does not cause an obstruction.

Roller blinds that shade from the top downwards must be kept completely open, or be opened regularly to allow the heat to escape.

Keeping the windows in ventilation position allows heat to escape.

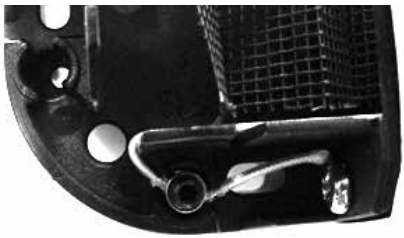
Never fully close a roller blind system when storing the vehicle or when not in use for longer periods!

Therefore for optimal window life it is recommended:-

- Blinds starting at the bottom of the window a gap should be provided for ventilation at the top with the window in its ventilation position.
- For vehicles containing blinds from the top downwards or with other types of reflective blinds / curtains, please make sure that these blinds are also ventilated or not fully closed.

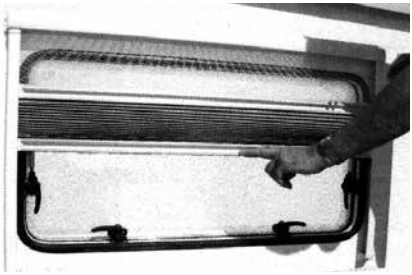
Ensure that all windows and roof vents are closed when the vehicle travels on the road.

To adjust the tension of the Horrex blind:



In each corner piece there is an cord tensioner (see photo). By unscrewing the hexagon screw, the cord can move through the cord tensioner. When you pull the cord, the tension will get higher, when you let it move back the tension will get less.

Operating instructions for blinds (Softrollo)



Closing: Grab the end bar in the middle and push the blind and flynet together or singly (blind - lower end bar) downwards until the required position is reached.

Opening: Push the end bar of the flynet and / or of the blind upwards.

Care instructions: Clean the blind only with a damp sponge. Clean on a regular basis to avoid dirt particle build up as this can damage the blind material. Use only water or with mild suds or a vacuum cleaner.

In order to avoid material fatigue, do not leave the flynet closed for a long time.

Skyview operating instructions

Safety and care instructions

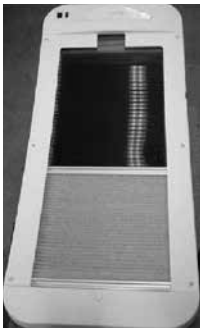
Note: Before opening the dome please check if all handles are disengaged and no objects are in the opening area of the rooflight.

To open, turn the handle anti-clockwise to the required opening position.

To close, turn the handle clockwise until the dome lies on the seal and a resistance is noticeable.

Note: Before you start your journey, close the rooflight by turning the handle to the closed position.

Please make sure that no persons or objects are in the closing area of the rooflight.



Opening/closing the blind and fly net
Pull the end rod from the recessed part and push it in a position you desire. You can adjust the incidence of light with the second operating bar.

Safety precautions
Repairs should be carried out only by trained personnel. Inform an approved dealer in case of defects and malfunctions.

Before starting off, check the roof light for damage in the dome (tension cracks) and the opening mechanism which could arise owing to, for example, branches and other natural causes. Do not step on the screen.

Do not leave the vehicle with the roof light open (danger of burglary and water penetration).

Do not open in strong wind, rain or snowfall. Before opening, remove snow, ice, dirt etc. from the dome.

Malfunctions must be repaired by an approved dealer at once. Do not use caustic detergents (danger of tension cracks in the dome).

Before setting off close the dome and check the locking mechanism.

Avoid high speed (maximum speed recommended is 130 km/h). Do not close the blind more than 2/3 during the day (danger of heat build up). Before starting off, open the blind.

Care instructions

Clean the dome with the Seitz acrylic cleaner.

Opaque spots and light scratches on the dome can be removed with the Seitz Acrylic Polish and the Seitz Special Polishing cloth.

Use talcum powder regulary (4 times yearly) to care for the rubber seals.

Clean the blinds only with water and mild soap suds or a vacuum cleaner.

Note: The guarantee becomes null and void if the care and safety instructions are not followed.

Roof lights

When opening the roof lights, care must be taken to release the locking mechanism as the unit is raised.

Roof lights must be fully closed when driving. Roof lights provide essential fixed levels of ventilation.

Mini Heki Rooflight

To open depress button and push bar upwards. The rooflight has two open ventilation positions and a fully open position.

The blind and flynet operate independently of each other and are engaged by connecting to each other and sliding.

Heki care instructions

Clean the blind only with a damp sponge. Clean on a regular basis to avoid dust/ dirt particle build up as this can damage the blind material. Use only water or with mild suds or a vacuum cleaner.

In order to avoid material fatigue, do not leave the flynet closed for a long time.

Roof light blind and flyscreen

The blind and flyscreen operate Independently of each other and are engaged by connecting to each other and sliding.

Safety precautions:

1. Repairs should be carried out only by trained personnel.
2. Inform an approved dealer in case of defects and malfunctions.
3. Before starting off, check the rooflight for damage in the acrylic dome (tension cracks) and the winding mechanism which could arise owing to, for example, branches and other natural causes.
4. Do not step in the acrylic dome.
5. Close the roof light before starting off (check whether it is locked).

6. Do not leave the vehicle with the rooflight open (danger of burglary or from rain).
7. Do not open in strong wind or rain.
8. Before opening, remove snow, ice, dirt, etc. from the acrylic dome.
9. Malfunctions are to be repaired by an approved dealer at once.
10. Do not use caustic detergents (danger of tension cracks in the acrylic dome).
11. Do not operate whilst the vehicle is moving.

Midi Heki Roof-light

With operating bar

To open, depress button and push bar to required position. The rooflight has two open ventilation positions and a fully open position.

To close, reverse the operation and then check if locked into position.

With crank

To open, rotate the crank until a resistance is noticeable during the operation.

To close, reverse the operation and then check if locked into position.

Electric version

To open, push button until desired position is reached or the electric motor switches off.

To close, reverse the operation and then check if locked into position.

Care instructions:

- Please clean the acrylic panes with the Seitz Acrylic Cleaner.
- Stains and light scratches on the acrylic pane can be removed by using the Seitz Acrylic Polish and the Seitz special polishing cloth.
- Use talcum powder (4 times yearly) to care for the rubber seals
- Clean the blinds only with water and mild soap suds
- The guarantee becomes null and void if these instructions are not followed.

Doors

In order to provide customers with the latest designs of door furniture it is possible, due to the use of natural wood, that warping may occur. This should not detract from the correct functioning of items fitted in the motorhome.

Information

During the normal travelling vehicle vibration and flexing may cause some of the furniture doors to become out of alignment.

For your convenience many hinges are adjustable.

Omnistep single step

Operation

The OMNISTEP is operated by the lever switch.

Important: when extending the step, hold the switch until the step is completely extended. Never mount the step if retracted of if not fully extended, because then the blocking is not working and the motor can be damaged.

Check if the step is retracted before departure.

Maintenance

Dirt and frost can prevent the step from operating properly. In this case the moving parts should be cleaned or defrosted.

All points of movement are layered in maintenance-free bearings.

In case of electrical failure

If the step does not retract by motor: Loosen the square connection according to fig. 5 (actions 1, 2 and 3), push the footboard in (4) and tie it to the frame.

Current drawn

5 A. When fully extended or retracted: 14-18 A

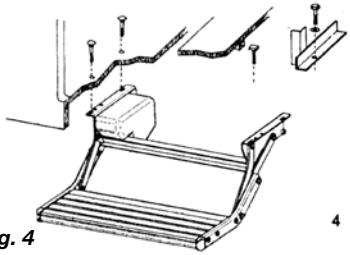


Fig. 4

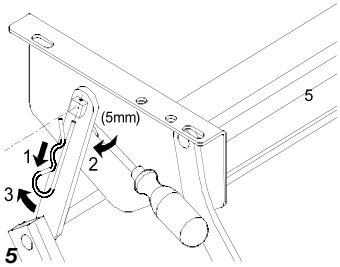
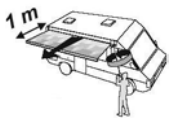
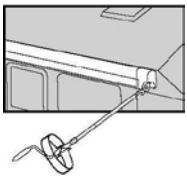


Fig. 5

Fiamma F45S/F45L side awning

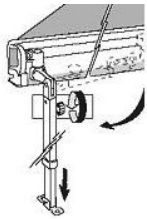


In order to avoid unnecessary strain on the awning as well as on the vehicle side, we suggest that the legs be extended about 1m from the opening.



Unscrew the leg knob to slide the leg out of its seat.

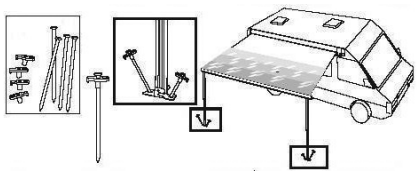
Grasp the leg near its hingejoint and pull it in a horizontal direction.



Lower the leg as shown in the figure.

After unrolling the awning completely, adjust the legs at the chosen height.

To avoid that the awning is lifted up by an unexpected gust of wind, it is necessary to secure the legs to the ground with the provided hooks. For greater safety, we strongly advise you also use some storm cords in the upper part of each support leg or anchor the awning with the Fiamma Tie-Down Kit strap.



If you want to fasten the support legs to the vehicle, put the terminals into the wall brackets. The brackets can be fixed only in reinforced points.

⚠ **WARNING:** Swift recommend that the awning be ground mounted only. Side mounting brackets are supplied. But in inclement weather conditions may cause damage to the motorhome bodywork.

⚠ **WARNING:** The awning is a sun protection, please roll up your awning in case of rain, wind or snow. Alternatively lower one side of your awning, so that water can flow away and assemble the tension rafter as shown in the figure (not included for all awning lengths).

Make sure that the awning perfectly rolls up: when it is, the red indicators on the front profile ends are no longer visible. A damaged fabric does not allow the awning to perfectly roll up. Never use the awning with a damaged canopy. Wash the canopy with Fiamma BRILL.

Note: In case of problems refer to the awning user manual or contact your dealer.

Suggestions for use and maintenance for the fabric of your awning.

Fiamma fabrics are made with PVC and Polyester layers and their properties can change in certain weather conditions.

For example, if you close the awning which has been opened in the sun for a long time, wrinkles can appear on the fabric.

In low temperature, the fabric becomes less pliable and there is a risk of cracks.

Please find here a list of some practical advice for the best and long lasting use of your awning:

1. Open and close the awning in normal condition of dampness and temperature (at night or in the morning) making sure the fabric has no sharp objects on it and is clean.
2. When closing the awning after a long period in the sun, wrinkles may appear and prevent the awning closing completely. In this case the security of the awning is not compromised, as the security winch will prevent accidental opening. If wrinkles appear re-open the awning and leave in the sun for some hours and the folds will disappear. Then of course you need to re-close the awning in normal conditions (see point 1).
3. Residual damp can cause spots on the fabric. If the awning has to be closed when the fabric is damp we suggest you re-open it as soon as possible to dry.
4. We suggest you avoid using the awning below freezing 0°C.
5. When closing the awning you should support the front bar.
6. Most of the dirt seen on the fabric will be superficial and can be cleaned with water and a cloth. Stubborn marks can be removed using a light detergent. Please do not use aggressive chemical substances and do not use high pressure cleaning tools.

Cycle racks

The Swift Group allows the fitment of a two cycle rack to our motorhomes and we have made provision for fixing blocks for this purpose.

Due to the complex nature of a cycle rack, the different models available and the need to break into the habitation box (therefore, having a potential of a leak), we suggest this modification only be carried out by a competent person, ideally, a Swift Group dealer or Authorised Repairer.

Please be aware a cycle rack can not be fitted onto a model where there is a rear escape window. Contact your dealer for clarification if your van has a rear window.

Twin lense reverse camera system

Depending on the specification of your motorhome, a reverse camera system may be installed. The system uses a pair of cameras mounted at high level on the rear of the motorhome, connected to an LCD screen which forms part of the rear view mirror, mounted on the windscreen. The two cameras give alternate views from the rear of the motorhome: A ‘close’ view, and a ‘long distance’ view.

The reverse camera system is powered whenever the vehicle engine is running.

With the vehicle in neutral, or in a forward gear, it is possible to switch the screen ON (using the power button on the mirror), and then using the V1/V2 button on the mirror switch between the two different views.

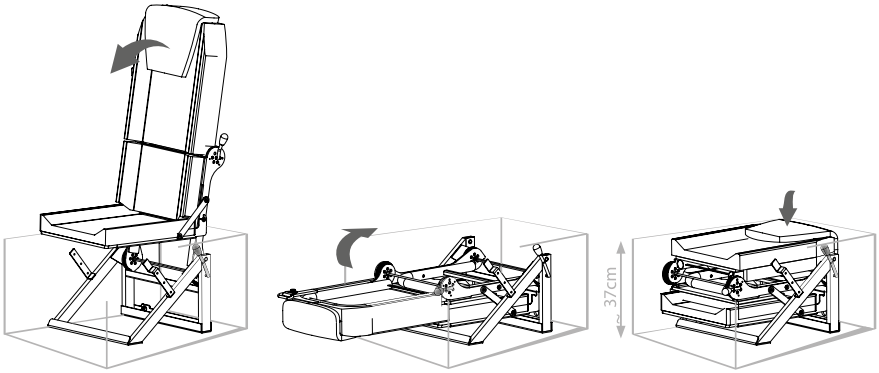
When reverse gear is selected (with the engine running) the mirror will automatically switch on (if not already on), and will display the ‘close’ image.

Solar panel use

All Swift Group products have the specific provision for the connection and use of a solar panel, even when the solar panel has not been factory fitted. Each Sargents PSU (fusebox) has a dedicated solar panel connection which allow the 12V feed from a panel to be connect to the leisure batteries.

It should be noted that this connection is only designed for the use of a solar panel and has a maximum rating of 100W.

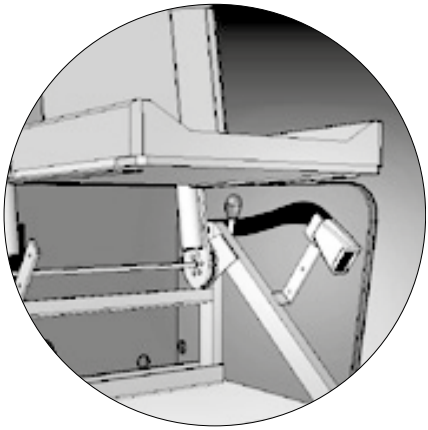
For further details see the services section of this handbook.



Aguti folding seat

The seat is foldable by using two levers mounted on the side of the seat.

1. After unfastening, please place the belt buckle into the provided fixture.
2. Activate the lower lever. The seat may no longer be strained! At the same time, the complete seat backrest can be folded forward.
3. Activate the upper level and fold the upper part of the backrest completely back.
4. Activate the lower lever and then fold the complete seat. The seating surface is brought automatically into the right position.



Seat swivel (Driver/Passenger)

To turn the swivel, slide the BLACK lever rearwards and adjust to the required angle. Before driving off ensure the locking mechanism is fully secure.

Side lockers

Some models are provided with exterior access locker doors. These are suitable for storing external equipment.

Bunk and luton bed safety

Where the sleeping surface is over one metre above floor level the following notices apply.

⚠ **WARNING:** Always ensure safety boards are located before entering the bunk.

⚠ **WARNING:** Use upper bunks for sleeping only, with the provided protection against fall out in position.

⚠ **WARNING:** Care shall be taken against the risk of fall out when the upper bunks are being used by children, especially under 6 years of age, these bunks are not suitable for use by infants without supervision.

Layouts with an over-cab bed (luton bed), access may be restricted when the lower bed (model specific) is fully extended at night time.

Tables

Note: The free standing table legs have a positive locking mechanism. Care must be taken to ensure that, when folded, the leg which is closed first locks into the second position.

When engaging legs in down position the mechanism must be positively locked down.

⚠ **WARNING:** When erecting the free standing table, be careful to avoid trapping fingers.

Table storage

Tables stored in the table storage compartment must be securely clipped into place whilst in transit.

To avoid damage care must be taken when removing tables from their stored position.

Care of laminate tops, tables, furniture and doors

Do not use abrasives, chemically treated cloths or aggressive detergents as these may cause damage

Do not place hot objects on laminated surfaces i.e. tops, tables. Any temperatures 70°C and over will cause permanent damage.

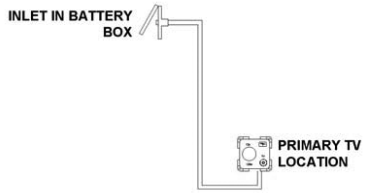
Clean worktop surfaces, furniture and door fascias with a soft, slightly damp cloth, dry off with a soft cloth.

12V Reading lamp

⚠ **WARNING:** 12v reading/spotlamps generate high temperatures when in use, the body, lens/bulb may become very hot. Never make directional adjustment in the direction of flammable materials i.e. Curtains, nets or blinds.

TV inlet

Depending on specification, the motorhome may be fitted with an external co-ax connection in place of, or in addition to, connections for a roof mounted TV aerial. The external co-ax connection point will be within the battery box (Escape models) or the mains inlet enclosure (Sundance, E400, Borero and E500 models).

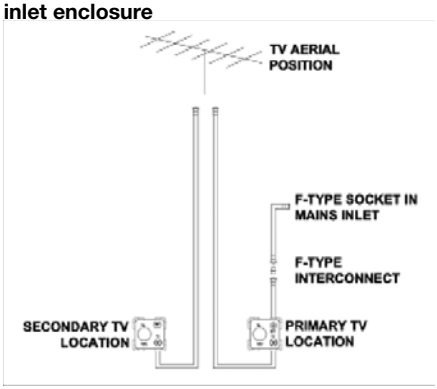


Co-ax connection within battery box

Within the battery box a White cover flap conceals a push-on type co-ax connection. A co-ax cable is fitted and connected within the motorhome from the back of this connection to the TV position within the motorhome.

An external TV aerial or site TV feed can be connected to the external connection point; signals from that connection will then be available at the TV position co-ax socket within the motorhome.

Co-ax connection point within the mains inlet enclosure

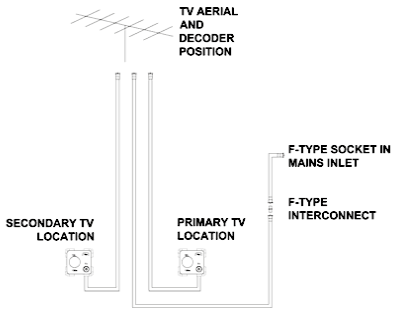


A short co-ax lead featuring a screw on co-ax connection will be present behind the Blue mains inlet connector. A co-ax cable will be fitted and connected within the motorhome, from the back of this connection, to the primary TV position within the motorhome. At the same time, further co-ax cable or cables will be fitted which route from a likely TV aerial position (i.e. within the wardrobe) to each of the TV positions within the motorhomes.

The primary TV position will feature a socket marked 12v, TV, and SAT. The co-ax from the external connection point will route to the socket output marked SAT, whilst the co-ax from the wardrobe or similar will route to the socket output marked TV. At any secondary TV positions, if present, the co-ax from the wardrobe will route to the socket output marked TV.

An external TV aerial or site TV feed can be connected to the external connection point; signals from that connection will then be available at the primary TV position within the motorhome. As the connections are of the screw-on type, it is also possible to use this co-ax to route from an externally mounted satellite dish, to a satellite receiver.

Co-ax connection point within the mains inlet enclosure, Satellite decoder position within the motorhome (Kon Tiki and E700)



A short co-ax lead featuring a screw on co-ax connection will be present behind the Blue mains inlet connector. A co-ax cable will be fitted and connected within the motorhome, from the back of this connection, to the location intended for the later fitment of a satellite decoder or similar receiver. At the same time, further co-ax cable or cables will be fitted which route from a likely TV aerial position (i.e. within the wardrobe) to each of the TV positions within the motorhome.

The external connection can be used to link a dish or external aerial, to the decoder / receiver position, and the co-ax leads from each TV point can then be used to link the decoder / receiver to each TV.

Depending on the type of decoder / receiver, it is possible that a modulator or similar component would be required to convert the output from the device (SCART or HDMI) into a signal that can be sent through co-ax cable.

Shower

When using the shower, always ensure that the shower door is fully closed thus avoiding water spray on unprotected areas

Trigger shower heads

- Squeeze trigger to release water. Release trigger to stop. Twist trigger up to gain permanent water flow, lower to stop.
- Care should be taken as water may become hot temporarily when switched on until it mixes and regulates.
- Small children should be surpervised at all times when using the shower.
- We recommend unfastening the trigger shower head before travelling and storing safely to prevent it becoming detached whilst travelling.

Motorhomes with external BBQ point

Models equipped with an external barbeque point can be used to power any gas appliance suitable for the gas used in the motorhome, at the working pressure shown on the label in the barbeque outlet box. Please note when using the outlet that the fitted regulator will allow a maximum of 1.5kg per hour of gas to be taken from the gas bottle. Therefore the consumption of gas from both the appliances within the motorhome and the appliance connected to the barbeque point cannot exceed a total of 1.5kg per hour at any one time. If you are in any doubt please consult your dealer for advice. To use point proceed as follows.

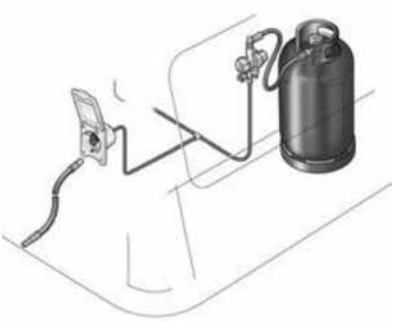
When external gas equipment is being connected, the operating pressure of the gas supply of 30 or 50 mbar must correspond with the operating pressure of the equipment that is being connected (see data plate).

The plug-in connection can only be made if the quick-acting valve is closed. The safety locking mechanism can be released by sliding back the coupling sleeve.

The coupling K-valve is designed such that the quick-acting valve can only be opened if the connection is being made via the plug-in connection. The connection is made by inserting the plug-in connection into the safety coupling.

This operation can be carried out using one hand. After uncoupling the equipment, seal off the valve opening using the protection cap.

Note: The external gas socket is only suitable for removing gas, not for feeding gas into the gas system.



⚠ **WARNING:** Care should be taken when using the external barbeque point. Never barbeque next to an awning or tent.

⚠ **WARNING:** The caravan barbeque point should only be used as an outlet point for gas, never connect a gas bottle direct to the outlet.

External shower point

The external shower point, if fitted, will be supplied with a separate shower head and hose assembly.

To connect the shower, simply align the plug with the socket and push into position.

To remove, pull the lower trigger and pull the plug from the socket.

Colour reference

The colour code for touch ups or resprays for all white Fiat/Peugeot cabs and Swift coach built habitational body components is Fiat White 249. For silver cabs the colour reference is silver metallic 611 and metallic black 632. For Fiat/Peugeot cabs other than white, contact your Fiat/Peuget dealer or obtain a colour match.

Please be aware that colours can fade over time, and therefore, if the vehicle is more than a few years old, it is suggested a colour match be obtained.

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Vehicle modifications & non-standard parts

As the owner of a Swift Group Product, you are able to make any modifications you wish, either by yourself or through a dealer, without affecting the Swift 3/6 Year Warranty.

However, please be aware that any issues, resulting directly or indirectly, from a modification or fitment of a non-standard part, will not be covered by The Swift Group Warranty.

WD40 is not recommended for external or internal use

WD40 attacks paintwork and sealants.

If a lubricant is required for Interior hinges, Sliding door tracks, Exterior door hinges, Plastic tracking etc. We recommend "Ambersil 40+" this is readily available from most DIY/ Automotive spare part retailers

Before carrying out any DIY work within the warranty period (3/5) years please check with your Swift Group dealer.

Motorhome exterior

Aluminium Panels

The stove enamelled paintwork is very durable and easy to clean owing to the high gloss properties.

Plastic Panels (GRP/ABS)

These are used for front and rear panels and, in some cases for the roof.

Cleaning

For both aluminium panels and plastic panels.

1. Wash the motorhome regularly with mild detergent. Rinse with cold water and leather off.
2. For better protection a similar coloured good quality car wax may be applied.

For sealed areas a mild soap is the best way to clean without affecting the sealant.

Acid or alkaline based cleaners or solvents should not be used.

⚠ **WARNING:** Under no circumstances use any abrasive cleaning agents or solvents on the exterior. Do not wash your motorhome with a high pressure washer as these can permanently damage the seals of your motorhome.Care should be taken as the silicon in some polishes can attack the rubber used on the exterior for seals and gaskets.

Acrylic Windows

Wash windows carefully, as you would with the paintwork of your car, do not scrub windows prior to removing surface dirt and film with a hose pipe - trapped dirt could cause scratching.

Wash with a solution of warm soapy water, windows can then be dried off with a leather.

Small scratches can be removed, consult your dealer.

Catches and stays do not require any special attention or lubrication.

Unlike domestic double glazed windows, your caravan / Motorhomes window are not vacuum sealed instead the double panes of acrylic plastic with are fitted with a breathable plug on the inner pane.

It is possible, in weather where extremes in temperatures occur between night and day, that customer will notice condensation between the panes. The same phenomenon may also occur when washing your vehicle on a hot day.

The condensation should clear itself when the ambient conditions return to normal and the air between the panes dries. However, if this is taking a longer time than required, the breathable plug (normally located in the top corner of the window) can be removed, with a pin or sharp object, and replaced when the panes are dry. Care should be taken when doing this.

Acrylic (Plastic) Window Cleaning

The material used to produce most caravan and Motorhome windows is acrylic plastic. While the acrylic used is very durable, it is able to be scratched with relative ease and therefore, care must be taken when clearing your vehicle not to use aggressive clearing products. Equally, care should be taken when using a drying cloth that it is clean and free from grit.

Condensation

What is condensation

Condensation is the process of change of water from its gaseous form (water vapour) into liquid water when it comes into contact with a surface that is cold. Condensation generally occurs when warm air cools quickly and looses its capacity to hold water vapour, and as a result water vapour condenses to form droplets.

Why condensation occurs

Condensation occurs when warm moist air meets a cold surface. The level of condensation will depend upon humidity levels, how moist the air is and how cold the surfaces are they come into contact with.

If the temperature falls below the dew point temperature, it is quite normal for condensation to occur on any material within the caravan that is cold, for example the external walls, plastic windows etc.

When condensation occurs

Condensation occurs usually in winter months, because ambient temperatures are colder (leading to cold surfaces) and windows and roof vents are opened less so the moist air cannot escape.

Where condensation occurs

Condensation will occur where warm moist air is put into the atmosphere in areas such as in bathrooms (during showering) and in kitchen areas (during cooking).

In the enclosed space of a motorhome, the moist air from the kitchen or bathroom areas will inevitably transfer to the rest of the vehicle, which in turn condenses on cold surfaces leading to visible water droplets. This issue is compounded by warm moist air being generated from normal breathing.

Condensation will also form in cold areas where air movement and ventilation is restricted (e.g. cupuboards, wardrobes, under beds, etc.)

What is important

It is important to provide ventilation and air flow, so that warm moist air can escape, or be externally cooled, and to use the heating reasonably by not making the motorhome too warm such that people perspire, as this will only serve to generate more moist air and therefore more condensation.

However, in particularly cold periods, where the external ambient temperatures are low, condensation may still form on external walls as the insulation levels may well not be thermally able to cope with the difference between the internal and external temperatures.

How can you prevent condensation

Provide ventilation so that moist air can escape.

a. Good ventilation of the vehicle when cooking or when drying clothes, footwear or pets is essential. Observe when windows begin to show signs of misting and increase ventilation by opening slightly by 1cm or opening a roof vent, as these will help, but keep the habitation door closed as much as possible to retain heat.

b. If drying damp clothes or towels, open a window to ventilate the area and allow the moist air to escape.

c. Try to make sure that the caravan is partially heated. It can take a long time for a cold caravan to warm up, so it is better to have a small amount of heat for a long period then a lot of heat for a short time.

d. After showering, keep the bathroom window or skylights open, and shut the bathroom door long enough to dry off the room.

CONDENSATION

e. Fixed ventilation is provided in the vehicle, specifically through the floor, it is important not to block these.

f. Electrical heating is dryer than gas heating, and introduces less moisture into the atmosphere. Do not use additional portable paraffin or flue-less gas heaters at all.

g. If left unoccupied and unheated for long periods of time the temperatures can soak down thermally into the entire product and become very cold. Whenever possible, put the heating on at a low level before use by pre heating in cold weather.

h. Even with reasonable ventilation it is likely if the temperature is less than 5°C and the humidity is high that condensation will occur. Ideally the temperature should be kept about 20°C when occupied.

Mould Growth

Any sign of mould growth is an indication of the presence of moisture and if caused by condensation gives warning that heating or ventilation may require improving.

New vehicles

New products take a long time before they are fully 'dried out' because of the moisture in the materials used during manufacture. While this is happening extra heat and ventilation will be required.

How can you prevent condensation

Provide ventilation so that moist air can escape.

a. Good ventilation of kitchens when washing, cooking or drying damp clothes is essential. Open the skylights or windows slightly, but keep the door closed as much as possible.

b. After showering, keep the bathroom window or skylights open, and shut the bathroom door long enough to dry off the room.

c. In all other areas provide some ventilation. Fixed ventilation is provided in accordance with BS EN 721: 1998 this is through skylights and 'Heki roof lights' in the roofs and from ventilators through the floor under cookers, doors and in bed boxes it is important not to block these.

Too much ventilation in cold weather is uncomfortable and wastes heat. All that is needed is a very slightly opened window or skylights. Opening a skylight or 'Heki; rooflights partially or windows opened to about 1cm will usually be sufficient.

Provide reasonable heating

a. Do not use portable paraffin or flueless gas heaters at all.

b. If drying damp clothes or towels, open a window enough to ventilate the area and turn on the electric element of the space heater but do not hang items over the heater.

c. Try to make sure that all areas are at least partially heated. Condensation most often occurs in unheated areas.

d. To prevent condensation, the heat has to keep room surfaces reasonably warm. It can take a long time for a cold motorhome to warm up, so it is better to have a small amount of heat for a long period than a lot of heat for a short time.

Motorhomes use only carefully selected insulation materials but unlike most rooms at home all walls are exterior walls, so they lose heat through all walls as well as the roof and floor.

Even in a well insulated motorhome with reasonable ventilation, it is likely that during cold weather (less than 10 deg C) condensation will occur. Ideally the temperature should be kept about 20°C although this is not always possible.

Mould growth

Any sign of mould growth is an indication of the presence of moisture and if caused by condensation gives warning that heating or ventilation, may require improving.

New vehicles

New motorhomes often take a long time before they are fully 'dried out' because of moisture in the materials used in the manufacture. While this is happening they need extra heat and ventilation. At least during the first winter trips and may require more heat than they will need in subsequent winters journeys. Allowance should be made for this.

Changing Exterior Bulbs

Always replace like for like.

For individual replacement bulb specification, refer to your Service Handbook.

Motorhome interior

Follow these guidelines to ensure your investment is receiving the very best attention.

Side Walls, Roof Lining

A simple wipe over with a damp cloth and a very mild detergent is all that is needed.

Bulb Replacement and Type

Full details of the bulbs used with your Swift Group product can be found in your Technical Handbook. Details of how to change the various bulbs can be found within our Practical Guides, located on Swift Talk (http://www.swift-talk.co.uk/forum/topics/swift-group-practical-manuals)/

Soft Furnishings

Should be vacuumed occasionally to remove grit and sand and help to keep its smart appearance over the lifetime of the upholstery. The upholstery can be cleaned with a mild, reputable upholstery cleaner. It is recommended that the curtains and pelmets are specialist cleaned only. The foam used in cushions is manufactured to meet fire regulations. It requires time to return to its normal position after prolonged use.

Leather care

Leather furniture, in a normal contract and domestic environment, requires little maintenance, although obviously leather in lighter shades will need more attention.

Regular care of leather does ensure its lasting quality and some general rules for regular cleaning and maintenance are:

- Clean the leather with a soft damp cloth taking care not to soak the leather.
- For a more thorough clean, use the Bridge of Weir Leather Cleaning and Protection kite available directly from the distribution centre.
- Do not use saddle soap, wax polishes or spray polishes.
- Do not use any product or any method of cleaning not recommended by the manufacturer.
- Avoid letting any buckles, studs and zips come into direct contact with the furniture.
- Avoid drying out the leather by taking extra care where there is heating or an open fireplace.

Note: The above cleaning instruction DO NOT apply to Nubuck Suede or any other uncoated leather.

Impala Fabric (Model specific)

The Impala fabric fitted to some Swift Group products is a luxury stain resistant durable fabric.

In most cases, wet wipes are enough to clean a stain from the fabric, however, for certain stains stronger solutions are required.

Care Instructions

General dirt and stains

1. Firstly, excess liquid should be blotted with an absorbent paper or cloth so as to remove most of the liquid from the surface. After this, rub the fabric gently with a white paper or white cloth to absorb the remaining dampness.
2. The easiest way to clean is using a wet wipe or using a clean white cloth dampened with plain water. Gently rub the area of stain using small circular motions. Do not soak the fabric in the solution as excessive soaking can cause damage. More persistent

stains may need a solution of 95% water and roughly 5% soap (a gentle washing up liquid is recommended).

3. Allow the cleaned area to dry completely and then gently brush or vacuum with a soft brush the area that was cleaned using strokes in the direction of the pile of the fabric.
4. More persistent stains may need a second treatment after allowing the fabric to dry. Stains of ballpoint pen, grease etc may not come out easily using the above treatment and cleaning with a diluted solution of ISOPROPYL ALCOHOL (sometimes known as “rubbing alcohol” available from pharmacies) using a white cloth will then usually help.

Cleaning Solutions

Please refer to the table below for the best cleaning solutions for different types of stains:

Staining agent	Clean water	95% water / 5% washing up liquid	Diluted IPA Alcohol	Wet wipes
Black ink		●	●	
Blue ink			●	
Marker pen			●	●
Coffee			●	●
Tea				●
Red wine				●
Soft drinks	●	●	●	●
Milk	●	●	●	●
Ketchup			●	
Mustard			●	
Steak sauce		●		
Soy sauce				●
Mayonnaise	●	●	●	●
Butter				●
Salad oil				●
Chocolate				●
Make-up			●	●
Face cream	●	●	●	●
Suntan Oil		●	●	●
Suntan Lotion				●
Lipstick			●	
Urine				●
Shoe Polish			●	
Engine Grease			●	

Note: Impala fabric resists most household stains. Whilst Impala fabric is resistant to and drastically reduces household stains it comes in contact with it, it may not be resistant to all liquids, chemicals or other materials whether containing toxic substances or otherwise and in particular the fabric is not resistant to bleaches, acids or other liquids or materials containing destructive or toxic substances. We therefore cannot accept any responsibility for misuse of Impala fabric by allowing such liquids, materials or substances coming into contact with it.

Further details of this material can be found on the manufacturers website: http://www.impalafabrics.co.uk/

Work Surfaces

You should not stand very hot items on any of the work surfaces, especially models with polycarbonate moulded sinks and drainers.

Cupboard Catches

It is advisable to lubricate all cupboard catches, sliding bolts and hinges from time to time. We recommend “Ambersil 40+” this is readily available from most DIY/ Automotive spare part retailers

Kitchen Equipment

All the thermoplastic parts in these areas have easy clean surfaces. To ensure long life and to prevent damage you must not use any cleaning materials at all and ensure water temperatures do not exceed 70ºC (putting cold water in first is suggested). After every use it is essential that you rinse with clean water only and wipe with a soft damp cloth. Failure to follow these simple instructions may result in premature failure or cracking which will not be covered by any guarantees (including extended warranties).

Bathroom/Shower

These products should be cleaned immediately after use. Apply a warm, mild soapy water solution with a soft cloth and rinse with clean water immediately. Abrasive materials must never be used. For stubborn stains “Thetford Bathroom Cleaner” is recommended as the use of other cleaners may harm these products, cause premature failure and will invalidate the warranty. “Thetford Bathroom Cleaner is available from most motorhome/caravan dealer shops.

Furniture

A simple wipe over with a damp cloth should be all that is required. Polishing with a proprietary brand of wax polish enhances and maintains furniture in showroom condition.

It must be remembered that because the frames of the doors are made of ash, which is a natural product, they can be affected by temperature and humidity and may bow under certain conditions. As conditions change they should revert to their original positions.

Kitchen Drainer and Cutting Board

You should not stand hot items on to the removable plastic kitchen drainer. To wash use only warm soapy water, do not use chemicals and bleach.

Changing interior bulbs

The majority of interior lights are LED, and in the unlikely event of a failure, the replacement of the whole unit is required. It is not possible to replace the "bulb" on these units.

For non LED lights remove the lens or lampshade to access the bulb.

Always replace like for like

Bulb Replacement and Type

Full details of the bulbs used with your Swift Group product can be found in your Technical Handbook. Details of how to change the various bulbs can be found within our Practical Guides, located on Swift Talk (http://www.swift-talk.co.uk/forum/topics/swift-grouppractical-manuals)/

In many applications LED lights are fitted which contain no user serviceable parts. In the unlikely event of failure of one of these lamps, the entire lamp will need to be replaced – several types of LED light are intended for semi-permanent installations using self adhesive mounts etc, and dealer assistance may be required should damage or other need for replacement occur.

Locker Header Fluorescent Tube Replacement

- Ensure power supply to light is switched off.
- Open locker, light is mounted above. Locate fixing screws (orientated towards ceiling) and remove.
- In the case of a side locker, a small furniture component onto which the light fitting is secured can now be removed.
- In the case of an upper welsh dresser (or similar), a larger component carrying all the lights from above that piece of furniture may detach.
- Once the appropriate light fitting has been accessed, the tube should be twisted along its length to release the tube and allow it to be lifted from the fitting.
- Please see the bulb replacement chart for details of the type of tube fitted. In addition, different ‘colour temperatures’ of bulb are available. For a consistent appearance replace tubes with those of equivalent colour temperature: This will be stated on the fitted tube in the format ‘4200K’ or similar.

Winterisation

The Swift Group recommends the following winterisation points for customers:

Servicing

Arrange (in advance) the yearly service and habitation check, if the motorhome's next service is due while the vehicle is stored.

Plumbing

Water expands as it is frozen, and so trapped water, when it expands, can damage the tap / valve /pump or pipe it is trapped within. For this reason, (in addition to reasons of hygiene), the water system should be fully drained when not in use, particularly in colder weather.

- Depending on model, open the fresh water tank drain valve to drain the tank, and leave open or remove the tank drain bung inside the tank, and leave open
- Open the drain valve (yellow handle) next to water heater, and leave open.
- Fully open all the taps and shower mixer, move mixer position to the middle, and leave all taps in the open position.
- Unscrew the shower head and shower hose, shake out remaining water and allow water to drain. It is advised to leave the shower head and hose disconnected.
- Run pump for a short time, until all water is expelled.
- After a short while the majority of water will have left the plumbing system. At this point however it is still important to ensure that the pump itself is 'dry'. During this part of the winterisation, a suitable absorbent cloth or container should be used to catch a small amount of spilled water that will result.

Disconnect the pipe work from the pump by pulling the blue quick release tabs, at either side of the pump, at right angles to the pipe work, then pulling the pipe and connectors from the pump. See Fig.1 Run the pump for a short while to expel any remaining water within the pump.

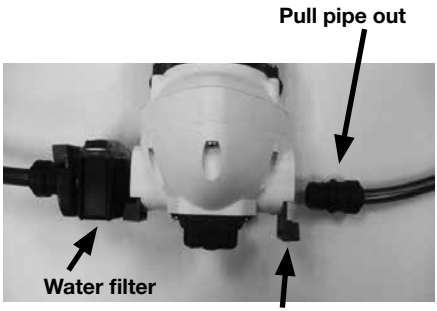

Fig.1

This is a good time to de-assemble and clean the pump filter. Squeeze either side of the filter housing to release the retaining tabs and pull the filter cassette out of the housing. See Fig 2

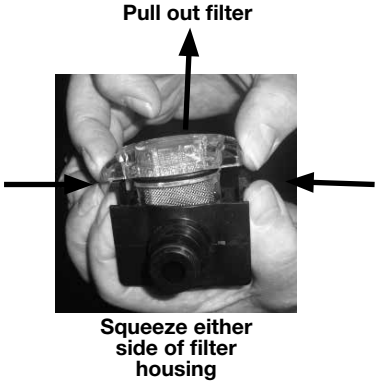

Fig.2

- Fit the cowl cover to the Truma Ultrastore, model specific.
- Open the waste tank drain valve, collecting the waste water in a suitable container, and leave open. Dispose of the waste water in a designated waste water area, clean waste pipes and tanks using a sterilising fluid. See "Waste Tank" section under services Page 46

Electrical

If vehicle is being stored while connected to 230v Mains Hook-up:

- Ensure that the leisure battery is connected and the 20A local fuse(s) is connected.
- The isolator switch on PSU should be in the 'ON' position, however. the control panel should be switched 'OFF'.
- If Alde system is installed, there is a frost protection setting, which can be used. See Alde user instruction manual.
- Vehicles can be left in this condition for extended periods, with the charger operating to maintain the battery. However, periodic maintenance and inspection is recommended, this should include the battery condition.

If vehicle is being stored not connected to 230v Mains Hook-up:

- Charge the leisure battery for 24 hours prior to placing motorhome in storage.
- Ensure the isolation button on PSU is in the 'OFF' position.
- Disconnect the negative terminal of the leisure battery or baterries.
- The battery should not be adversely affected by winter temperatures but the level of charge should be maintained to maximise the life span of the battery. This can be achieved using an automotive type battery charger as and when required.
- Disconnect the vehicle battery negative terminal. Check the charge of the battery every three months. (See Vehicle Inactivity section in the Fiat/Peugeot handbook).

Gas system

- Ensure the gas supply is isolated at the gas bottle, and ensure that the gas manifold taps are off.
- Check the age and condition of the high pressure gas hose and regulator, and replace if required.

Appliances

Check the battery expiry date on the smoke alarm and CO detector and replace or remove as required.

- Ensure the fridge is turned off.
- Clean the inside of the fridge.
- Prop the fridge door open, and if possible, the internal freezer compartment door for ventilation.
- Fit fridge vent winter covers (if available).
- Ensure all hob / oven / microwave surfaces are clean.
- If the motorhome is going to be left connected to 230v supply while not in use, ensure the microwave is unplugged.
- Clean the toilet and empty the cassette and lubricate the seals with an acid free lubricant such as Thetford High Grade Seal Lubricant. See Thetford toilet Users manual

Exterior (Body / Chassis)

- Ensure that all windows, skylights and access doors are closed and secured.
- Ensure all fixed ventilation points (high and low) are clear from debris and obstructions.
- Ensure the vehicle is not parked where falling debris (i.e. leaves, tree sap) could cause damage.
- Avoid leaving the vehicle parked in soft ground, long grass or a potential area where standing water may form.
- Lubricate relevant points on the chassis.

Wheels and Tyres

- Do not store in one position with partially deflated tyres. The tyre walls will suffer and do present a real danger of blow outs, especially when travelling at faster speeds than are allowed in the UK.
  The wheels should be turned every couple of weeks. If you are removing the wheels, follow the jacking procedure for changing a wheel. Check your tyres regularly for signs of age and deterioration, particularly wear, cracking and blistering. If in doubt consult a reputable tyre fitter.
- A purpose made cover maybe used, but please ensure the cover is a good fit, breathable and securely fitted.

Note: A poorly fitted cover can rub and damage the bodywork. Non-breathable covers will encourage mould to grow.

Interior (Furniture / furnishings)

- Open all lockers and internal doors, to ensure good circulation.
- Remove cushions and store them in a dry location or ensure all cushions are placed in a well ventilated area.
- Close all blinds and curtains. Customers are reminded to check the tension on blinds after storage if left closed for long periods.
- Thoroughly ventilate the motorhome by opening doors or windows periodically.
- Placing water absorbent crystals in the van during the winter months, will help reduce moisture levels and mould growth.
- We do not recommend leaving portable heaters in the van unattended.

Recomissioning the water system

Re-connect the water pump by positioning the pipe connectors into the pump housing and pushing the blue tabs into position. It is advisable, after a period on non-use, to flush the water system with a sterilising fluid such as Milton 2. Fill the fresh water tank with water and sterilising fluid (Refer to sterilising fluid instructions for the amount to use). Turn the pump on and open all the taps, ensuring that the water drains away safely to the waste tank. When the waste tank is full empty the fluid into a designated waste water area. Re-fill the tank with fresh water and flush through the system as described above; repeat this until all traces of the sterilising fluid have been flushed out. (See "priming the Water System" and "Waste Tank" sections on page 44/46)

Prepare the toilet system by adding water and Thetford fluid to the toilet waste tank. See "Preparing the Thetford Cassette Toilet for Use" on page 170.

Appliances

Before starting motor caravanning after storage, check all gas appliances and electrical points.

Note: Preferably not less than once a year, the electrical installation should be inspected and tested by a qualified electrician.

After storage it is advisable to air the Motorhome and clean throughout, especially cooking appliances and the refrigerator.

Replace the bedding if they were removed for storage.

⚠ **WARNING:** Always follow the manufacturers recommended procedures after use of fitted equipment in the Motorhome, before storing for any length of time.

Chassis and rear axle

Some models are built on Fiat/Peugeot base vehicles, the chassis of which has been converted by AL-KO. This conversion provides a hot dipped galvanised steel chassis coupled with a wide track rear axle utilising steel torsion bar suspension, imparting vastly improved stability and road holding.

AL-KO exhaust system

A standard Fiat/Peugeot exhaust system is fitted, utilising an AL-KO modified tail pipe, available through your approved dealer. A standard Fiat exhaust system is fitted to all other models, with the addition of a Swift Group tail pipe.

Caring for the environment

After many years of service you may decide that your motorhome has become beyond economic repair and should be disposed of. Please ensure that you comply with the end of life vehicle legislation and take it to an authorised treatment facility where it will be properly dealt with to minimise any negative environmental impact. The transaction will be logged at the DVLA, identifying that you are no longer the owner of the vehicle.

Water 204
Gas 206
Cassette Toilet 207

Water

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

Water

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

Gas

Fault	Cause	Remedy
Hob does not light	No gas	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on
	Air in pipe	Purge system Refer to hob manufacturers instructions
Oven does not light	No gas	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on
	Air in pipe	Purge system Refer to oven manufacturers instructions
Space heater	No gas	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Check exhaust outlet is clear
	Over gassed Air in pipe	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	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on
	Air in pipe	Purge system Refer to fridge manufacturers instructions
Water heater does not light	No gas	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on
	Air in pipe	Purge system Refer to water heater manufacturers instructions

Cassette toilet

Fault	Remedy
Bowl does not drain when toilet is flushed. Cassette is overfilled	DO NOT REMOVE CASSETTE. While inside the motorhome turn flush knob anti-clockwise to open valve blade and leave it in the open position. Open access door on side of motorhome. Rotate pour-out spout outward. Place appropriate size container under spout cap. Remove cap carefully. Allow bowl contents to drain into container. This will lower the water level in the bowl. Replace cap and return pour-out spout to stored position. DO NOT REMOVE CASSETTE. Go inside the motorhome and turn the flush knob clockwise to close valve blade. Now, the cassette may be removed following the normal removal and emptying procedure.
Odours	Use proper amount of holding tank deodorant specified on bottle.
Toilet tissue does not fit into compartment.	Since some tissues are supplied on larger rolls, it may be necessary to use some tissue before storing into compartment.
Soiled bowl after flushing	Partially fill bowl to cover soiled portion of bowl. Next flush will dissolve waste. Tip: Leave valve blade open during use.
No power to add water to toilet bowl	Check cassette safety sensor switch and fuse-holder for proper engagement and operation. Note: Cassette has to be removed to reach switch and fuse. Insert cassette and try adding water to toilet bowl. Toilet can be flushed manually. Add water. Add water to bowl from a separate container. Turn flush knob anti-clockwise to open valve blade. Turn clockwise to close valve blade.
Cassette cannot be removed	Check for obstacles under retaining clip. Depress retaining clip several times to check operation. Remove cassette. Flush knob and valve blade in partial open position. Close valve blade by moving knob clockwise. **CAUTION: If valve blade is open during cassette removal, severe damage to system can occur. Never force insertion or removal of the cassette tank.**
Valve blade mechanism sticks or is hard to open	Spray light film of silicone on blade.
Major unit malfunction	Contact your original Motorhome Dealer.

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Owners club

The Owners Club is a completely independent organisation run for the benefit of the motorhome owners. They have numerous rallies during the year in various parts of the country. Apart from the friendliness and companionship the Club generates it is also actively engaged in charity work for those less fortunate than ourselves. The address of the Secretary of the Owners Club can be obtained from the Swift Group website.

Spares and after sales customer care

A catalogue of spare parts are available through our Swift Group Dealer Network, from door catches through to spare wheels. Please note, all parts enquiries must be directed through your dealer, as the Swift Group does not operate a direct retail service.

We endeavour to supply parts for vehicles up to 8 years old. If the original part is no longer available your dealer should be able to source a suitable alternative.

Note: Please remember to quote chassis VIN (Vehicle Identification Number) when ordering any items from your dealer. This can be found at the bottom of the front windscreen, on the plate on the front cross member within the engine compartment and on the Swift manufacturers plate situated on the bulkhead directly behind the front driver/ passenger seat.

Repair facilities

Should you be unfortunate to encounter damage to your vehicle, we have a number of approved workshops and dealerships with workshop facilities to undertake such repairs. Details of which can be found via our website: www.swiftgroup.co.uk/find-a-dealer

The enjoyment of motorhoming can be greatly enhanced by membership of one or more of the various motorhome/caravanning, motoring and holiday clubs. Here are some useful addresses:

Caravan Clubs

The Caravan Club,
East Grinstead House,
East Grinstead
West Sussex, RH19 IUA

Tel: 01342 326944
www.caravanclub.co.uk

The Camping and Caravanning Club,
Greenfields House,
Westwood Way,
Coventry,
West Midlands.

Tel: 0845 130 7631 or 024 7647 5448
www.campingandcaravanningclub.co.uk

Motoring Associations

Automobile Association (AA)
Fanum House,
Basingstoke,
Hants. RG1 2EA

Tel: 08705 448866
www.theaa.co.uk
e-mail: customer.services@theaa.com

RAC Motoring Services
RAC Motoring Services
8 Surrey St
Norwich
Norfolk
NR1 3NG

Tel: 01922 437000
www.rac.co.uk

The Society of Motor Manufacturers and Traders Limited (SMT)
Forbes House,
Halkin Street,
London SW1X 7DS
Tel: 020 7235 7000
www.smmt.co.uk

Green Flag
RBS Insurance
Churchill Court
Westmoreland Road
Bromley
Kent
BR1 1DP

Trade Association

NCC
Catherine House,
Victoria Road,
Aldershot,
Hampshire, GU11 1SS

Tel: 01252 318251
www.thencc.org.uk
www.motorhomeinfo.co.uk
e-mail: info@thencc.org.uk

Change of ownership

Notification of change of ownership (for second owners only)

A the new second hand owner, please notify the Swift Group of the change of ownership by completing this page and sending it to:

Customer Services
Swift Group Limited,
Dunswell Road,
Cottingham,
East Yorkshire HU16 4JX.

The transfer of ownership incurs an administration charge of £50 payable to 'Swft Group Limited'.

Upon receipt of your completed form below you will be contacted by a member of the Customer Services Team who will process your payment **(please do not send payment with this form).**

The form and payment must be received within three months from date of purchase. The transfer of the warranty will not come into effect until payment has been received.

Note: Warranties are only transferable providing the terms and conditions of the warranty have been met by the previous owner(s). Please see warranty information at the beginning of this handbook for full details. The 'Extended Body shell warranty' is a non-transferable warranty.

Details of motorhome:	Model:	
	Chassis No:	
New owner:	Name:	
	Address:	
	Email:	
	Telephone:	
	Mobile:	
	Date of purchase:	
Previous owner:	Name:	
	Address:	
	Email:	
	Telephone:	
	Mobile:	
	Date of purchase:	

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All Swift Group models have been certified by the NCC for compliance with stringent European Standards, British Legislation and industry SET Codes of Practice specifically relating to health and safety issues.

The approval process covers the testing and inspection of critical areas of the product from fire safety, weights and dimensions, to gas, electrics and ventilation. Every motorhome carries the “NCC Approved Motorhome” badge.

The NCC also conduct unannounced inspections at the Swift factory to ensure continued compliance. NCC Approval gives you peace of mind that your motorhome is legal and safe.

All Swift Group motorhomes are European Whole Vehicle Type Approved.

This is your assurance that these motorhomes meet all European regulations, and have been constructed and conform to approved safety, environmental and manufacturing control standards.

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Fax **01482 840082**
email **enquiry@swiftgroup.co.uk**

For more information visit
www.**swiftgroup**.co.uk

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