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Issued July 2016

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# BASECAMP OWNER'S SERVICE AND WARRANTY HANDBOOK

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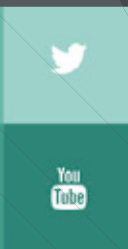
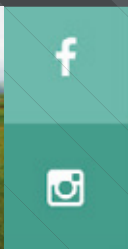
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levels

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We know that your caravan holiday starts the moment that you pull off your drive. So at AL-KO we have designed a high quality premium range of accessory products to ensure that your holiday starts and ends safely and securely.

For more information on the range of AL-KO accessories available for your caravan, visit our website or email us at [marketing@al-ko.co.uk](mailto:marketing@al-ko.co.uk).



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**Dear owner**

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

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 caravan. Whether you are a new or an experienced caravanner 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.

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

Customers should note that all caravans 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.

**Dealer Name:**

.....

**First Service Due:**

.....

**Telephone Number:**

.....

**Dealer Contact Sales:**

.....

**E-mail:**

.....

**Dealer Contact Parts:**

.....

**Serial Number:**

.....

**Dealer Contact Service:**

.....



## Swift Talk

Swift Talk is the 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 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](http://www.swift-talk.co.uk) and become part of a unique online experience.**

Warranty .....	5
Towing code .....	13
Safety & security .....	37
Services .....	55
Electrics .....	77
Fitted equipment .....	103
Maintenance .....	157
Useful information .....	203
Index .....	210





## WARRANTY INFORMATION

Warranty and guarantee cover .....	6
Change of ownership .....	8
Swift Connect Direct.....	8
What to do if you require assistance .....	8
Supplier contacts .....	9
Touring caravans - annual service/inspection record .....	10
Annual service / inspection record stamps .....	11

All the illustrations and descriptive matter in this handbook are intended to give a general idea of the caravan. 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 caravan has three warranties:**

### **SuperSure Warranty**

For all parts or fittings of your caravan other than the body shell, Swift will repair (or at its 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**

For the body shell, Swift will repair (or at its option, replace) any defects with the 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**

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

### **Conditions**

1. You must ensure that your caravan has had 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 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 Services have been carried out.
2. The Annual Service 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 caravan 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 caravans must be registered with Swift within 6 weeks of purchase as new.
4. The benefit of the SuperSure Warranty and Body Shell Warranty may be transferred to a new owner if the caravan is re-sold, provided that the caravan 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 owner.
6. If any repairs are identified as being necessary during an Annual Service or

otherwise, Swift will only pay for Warranty work performed by an authorised Swift Group Service Centre. The caravan 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 caravan by any means to or from the place of repair is the responsibility of the owner.

7. The SuperSure Warranty, the Body Shell Warranty and/or the Extended Body Shell warranty only apply to caravans purchased and used primarily within the UK.

### Terms

8. The Body Shell Warranty and Extended Body Shell Warranty cover any defect with the panels and seams of the caravan. This includes body leaks, delamination of panels or floor, water ingress through any permanently sealed seam joints.
9. The SuperSure Warranty will cover in the first 12 months any defect other than those specified in the Exclusions below.
10. In years 2 and 3 of the SuperSure Warranty, the Warranty will only cover any defect with the following components:
- **Chassis Components:** all chassis members, including corner steadies, overrun device, axle and braking system (excluding brake drums and shoes)
  - **Electrical System:** PSU, battery charger, Smart Command and interior lighting units (excluding bulbs).
  - **Water System:** water heater, fresh water tank, water pump, water gauges, taps and shower head.
  - **Cooker:** the cooker unit including grill, oven, burners, igniter and flame failure device.
  - **Refrigerator:** gas igniter, flame failure device, door seal condenser, gas control valve, 12V and 230V heater elements, gas thermostat, 230V thermostat and 230V temperature control switch
  - **Cassette Toilet:** the cassette toilet (excluding seals, valves and glands)

- **Heating System:** thermostat, motor, switches, control unit, gas heater, flame failure device and igniter (excluding ducting and fittings)
- **Windows:** the functionality of the opening and closing system (stays, handles and catches) and a warranty against the cracking of the acrylic. Excludes fading.
- **Upholstery:** zips, seams and colour fastness

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

### Exclusions

11. Swift shall not be liable under this Warranty 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 caravan;
  - 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.
  - Damage caused by any abrasive cleaners
  - Issues related to condensation in normal use;
  - Routine maintenance items which are part of the annual service including brake shoes, one shot nuts, lubricants, AKS pads, 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.

## ASSISTANCE

12. In addition to the exclusions above, in years 2 and 3 of the SuperSure Warranty Period, Swift Group Limited shall not be liable under this Warranty for any defects related to:

- **Alloy wheels:** after 24 months from date of purchase, this excludes wear and tear, (tyres & valves excluded).
- **Wall and Roof GRP sheeting material:** after 24 months from date of purchase only

### WARRANTY INFORMATION 8

Swift shall also not be liable under the SuperSure, Body Shell and Extended Body Shell Warranties if the Caravan has been neglected, misused, modified or use for hire or reward or if the identification marks (chassis/VIN numbers) have been removed or defaced. The caravan 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. These warranties do not affect your legal rights.**

The name and address of the warranty and Guarantee provider is: Swift Group Limited, Dunswell Road, Cottingham, East Yorkshire, HU16 4JX. In the unusual event that a fault develops and you need to claim under Body Shell Warranty or the SuperSure Warranty, your first contact should normally be made through the dealer from whom the caravan was purchased. If this is not feasible then a claim may be dealt with by a different authorised Swift Group Service Centre, please contact the Swift Group Customer Service Department on 01482 875740 or enquiring on our website: [www.swiftgroup.co.uk](http://www.swiftgroup.co.uk) directly for details.

### Change of ownership

You can 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 Body Shell Warranty' is non transferable.

### Swift Connect Direct

You have access to a new online system which is specific to your new caravan. A password will be issued to you, to enable you to interact with us. To access the system, called 'Swift Connect Direct', your initial log in details will be emailed to you once your supplying dealer has registered your ownership with us. Please log in and create your own profile. Should you have issues with accessing Swift Connect Direct, please contact our Customer Services Team.

### What to do if you require assistance

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 caravan, 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 Service, please quote your name, postcode and serial number of your caravan.
2. In most instances, the Customer Service Team will involve your dealer in resolving the issue you are experiencing.
3. Check our website [www.swiftgroup.co.uk](http://www.swiftgroup.co.uk) and enter the 'Owners' section which provides answers to frequently asked questions and how to contact us.
4. If you are contacting the company by email, letter or fax, the Customer Service Team will respond to you within five working days from the date of receiving the correspondence.

5. If you are calling the Customer Service Team, please avoid where possible, Mondays and lunch times.

6. 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

### 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

### AL-KO Kober Limited

South Warwickshire Business Park  
Kineton Road, Southam,  
Warwickshire, CV47 0AL  
Fax: 01926 818562  
Email: mail@al-ko.co.uk

# Truma

### Truma UK Ltd.

Park lane, Dove Valley Park,  
South Derbyshire, DE65 5BG  
Phone: 01283 586020  
Fax: 01283 586029  
technical@trumauk.com

# THETFORD Corporation

### Thetford Ltd.

Unit 6, Brookfields Way, Manvers,  
Deane Valley, Rotherham,  
South Yorkshire, S63 5DL  
Phone - 0844 997 1960  
Fax - 0844 997 1961  
Email - infogb@thetford.eu

# Alde

### 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

### Dometic (UK) Ltd

Dometic House, The Brewery,  
Blandford St Mary, Dorset, DT11 9LS  
Phone: 0844 626 0133  
Email: technical@dometic.co.uk

# Whale

### Whale

2 Enterprise Road, Bangor,  
Co. Down, Northern Ireland BT19 7TA  
Phone: 0845 217 2933  
Email: info@whalepumps.com

## Touring caravans - annual service/inspection record

In order to comply with the warranty, you must have your caravan inspected and serviced at least once per year.

We highly recommend that you have your Touring Caravan serviced by a Swift Group Approved Service Centre who have direct access to our online Customer Service system, Connect. This system provides them with the ability to order approved parts and ensure that any product upgrades which may be available for your Touring Caravan can be offered to you and carried out as part of the service. In the unfortunate event that an issue requires attention under warranty then a Swift Group Approved Service Centre are able to submit a warranty claim to the Swift Group for processing, and deal with the issue for you from start to finish. All of our Swift Group Approved Service Centres are provided with up to date technical information and have access to current repair methods giving you peace of mind that any defect has been repaired effectively.

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. This is a visual inspection of body work and seals.
2. Coupling head and breakaway cable.
3. Jockey wheel.
4. Chassis and chassis to body security.
5. Corner steadies.
6. Tyres and tyre pressures.
7. Torque wheel nuts.
8. Brake rods and linkages.
9. Hub bearings, brakes and brake shoes.
10. Handbrake operation and performance.
11. Suspension and shock absorbers (if fitted).
12. 13 pin plug and cables.
13. Road lights, wiring and reflectors.
14. Internal lights and 12V DC system.
15. Water heater - gas and 230V AC (if fitted).
16. Hob, grill and oven (if fitted).
17. Refrigerator 230V AC, 12V DC and gas.
18. Gas system.
19. Water pump, taps and water system.
20. Mains 230V AC system.
21. Windows and fittings.
22. Smoke alarm and battery.
23. Roof lights.
24. Furniture hinges/stays etc.
25. Exterior locks and hinges.
26. Grab handle security.
27. All internal vents.
28. Oil seals.
29. Blinds and fly screens (if fitted).
30. Carbon Monoxide detector and battery

<p>Annual service / inspection record stamps</p> <p>Caravan model: .....</p> <p>Year: .....</p> <p>Chassis Number: .....</p>	<p><b>1st service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>2nd service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>3rd service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>4th service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>5th service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>6th service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>7th service</b></p> <p>Date:</p> <p>Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>

SERVICE INSPECTION

<p><b>8th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>9th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>10th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>11th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>12th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>13th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>
<p><b>14th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>	<p><b>15th service</b></p> <p>Date: Dealer's Stamp</p> <p>We certify that an annual service has been carried out in accordance with the handbook.</p>



Caravan towing code .....	14
Caravan terms .....	14
Towing vehicle terms .....	16
Measurement of nose weight .....	16
Type of driving licence held .....	17
Glossary & checklist .....	17
Useful memory aid .....	19
Preparing for the road .....	20
Tyre Maintenance .....	23
The Tyre Law .....	24
Hitching up for AK160 .....	24
Hitching up for AKS3004 stabiliser.....	25
Pre tow check list .....	26
13 Pin Socket .....	27
Towcar electrics .....	28
Breakaway Cables .....	29
Mirrors .....	31
Moving off .....	31
Reversing .....	31
Speed limits .....	31
Caravan handling .....	32
Motorway driving .....	32
Spare wheel .....	32
Changing a wheel .....	33
Wheel Bolt tightening .....	33
Jacking points .....	33
Stopping on a hill .....	34
Arrival on site .....	34
Exterior Door .....	35

## TOWING CODE

**Caravan towing code**

**This Code of Practice contains recommendations jointly reviewed and agreed by the following organisations:**

The National Caravan Council  
 The Caravan Club  
 The Camping and Caravanning Club  
 The Caravan Writers Guild  
 The Department for Transport

**Scope of the Code**

The Code applies to all trailer caravans of maximum laden weight not exceeding 3500 kg (7,700 lbs), overall width not exceeding 2.3m (7ft 6in approximately) and overall length not exceeding 7m (23ft approximately), excluding the drawbar and coupling.

This is legally the maximum size of trailer that can be towed by a motor vehicle with a maximum gross weight of less than 3500 kg.

**Caravan terms****Empty Weight**

The empty weight of the caravan includes all loose items supplied by Swift e.g. Electric hook cable, kit bag, entrance step, portable waste tank and central heating fluid (where applicable).

**Mass in Running Order:**

The mass of the caravan equipped to the caravan manufacturer, standard specification.

The MRO comprises the empty weight of the caravan and includes an allowance for gas.

**Note:** The mass of the caravan in running order contains provision for the masses of liquids, gas etc. (see Mass in Running Order in the Technical Handbook). Part of this provision can also be utilised as additional payload, if for example, you wish to travel with no gas cylinders.

**Maximum User Payload:**

The maximum allowable weight to be put into the caravan whilst it is being towed.

This is made up of the personal effects and the optional equipment payloads.

The user payload is the difference between the Maximum Technically Permissible Laden Mass and the Mass in Running Order.

The Mass in Running Order + Personal Effects + Optional Equipment = Maximum Technical Permissible Mass or MRO + PE + OE = MTPLM

**Personal Effects**

Those items which a user can choose to carry in a caravan.

**Note:** The Personal effects payload includes an allowance of 20kg for a leisure battery.

**Optional Equipment**

Items made available by the manufacturer over and above the standard specification of the caravan for factory fitted options.

**Maximum Technically Permissible Laden Mass (Lower Limit):**

The fully laden mass of the caravan in the manufacturers standard specification which is stated in the publications, technical handbooks, brochures and weight plate and used for car matching.

**Maximum Technically Permissible Mass (Upper Limit):**

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

**Payload Definition**

The method of calculating the Mass in Running Order (MRO) and user payload figures are in line with European Vehicle Directives.

**Allowances for essential equipment is now contained within the MRO of the caravan and as per NCC code of Practise (CoP) 304.**

This includes the following;

LPG 1 x cylinder = 10kg

The MRO is calculated with the fresh water tank empty.

\*Weights are typical figures and are dependent on specification.

**Note:** If you travel with water in the fresh water tank, the payload will be reduced accordingly.

The leisure battery is considered to be included in the personal effects and an allowance of 20kg has been made for this. Items fitted at the point of manufacturer (wheel locks, hook-up cable, plastic steps, waste containers, etc.) are included within the vehicle MRO.

**⚠ WARNING:** Under no circumstances should the maximum technically permissible laden mass (MTPLM) be exceeded.

#### Upgrading of maximum technically permissible laden mass:

The lower (or standard) MTPLM is quoted in the Technical Handbook, in brochures and on the caravan weight plate. However, in some cases it may be possible to increase this to a higher (upper) MTPLM. (See Technical Handbook for details).

If extra user payload is required, an upgrade maybe available (model dependant), this must be requested via your dealer and is chargeable.

If required you will be issued with the following:

- (i) New weight plate giving upgrade weight details.

- (ii) New NCC certificate (declaring the upgraded MTPLM)
- (iii) Manufacturers letter confirming the upgrade for that Vehicle Identification Number.

**Note:** Tyre pressures may increase when upgrading the MTPLM.

#### Nose weight:

The vertical weight transferred to the towing vehicle through the coupling head.

Notes:

- (i) When measuring the noseweight it is important that the caravan is fully loaded. Do not place extra items indiscriminately into the caravan after this adjustment has been made.
- (ii) The caravan is intended to be towed slightly nose heavy. The nose weight can be adjusted by distribution of the load within the caravan. The nose weight should be approximately 5%-7% of the actual laden weight (but not greater than the hitch capacity) and at the same time suit the towing vehicle. See section on Measurement of Nose Weight.
- (iii) It is not recommended that you tow with just a battery, spare wheel and gas bottles as this may exceed the permitted nose weight. Additional payload must be placed behind the axle to compensate for this.

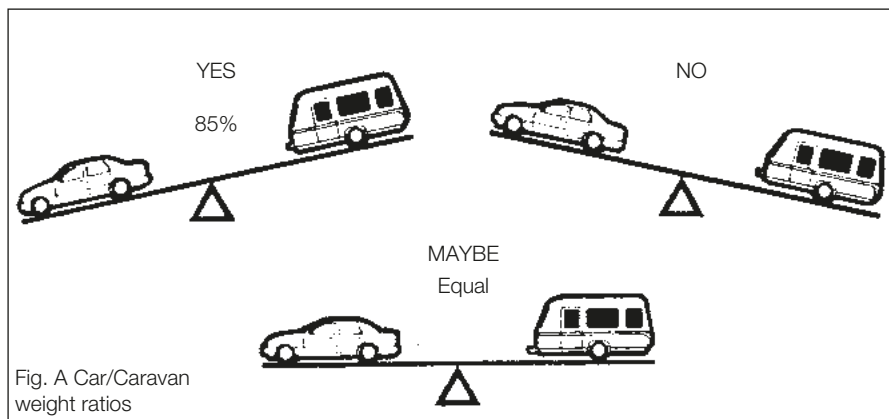


Fig. A Car/Caravan weight ratios

## TOWING VEHICLE TERMS

**Towing vehicle terms****Kerb weight****(Mass of Vehicle in Running Order):**

The weight of the towing vehicle as defined by the vehicle manufacturer. This is normally with a full tank of fuel, with an adequate supply of liquids incidental to the vehicles propulsion, without driver or passengers, without any load except loose tools and equipment with which the vehicle is normally provided and without any towing bracket.

Caravan to Towing Vehicle Weight Ratio:

The towing vehicle to caravan weight ratio can be determined by calculation and is equal to:

$$\frac{\text{Actual laden weight of caravan}}{\text{Kerb weight of towing vehicle}} \times 100\%$$

The law requires that caravans & their towing vehicles & the loads they carry must be in such a condition that no danger or nuisance is caused.

(Regulation 100 of the Road and Vehicles [Construction and Use] Regulations 1986).

**Note:** The towing vehicle manufacturer's limit is, in some cases, less than the kerb weight.

**Mass in Running Order:**

Caravanners can use a public weigh bridge to establish the mass in running order.

**Note:** Weigh bridges have varying weight tolerance levels.

**Maximum Permissible Towing Mass:**

The weight defined by the vehicle manufacturer as being the maximum that the vehicle is designed to tow at.

**Train Weight (Combination Weight):**

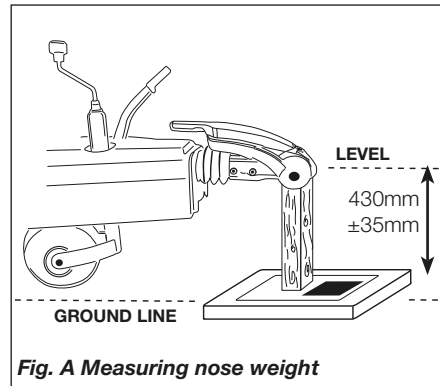
The maximum combined weight of the towing vehicle and trailer combination as specified by the towing vehicle manufacturer.

**Measurement of nose weight**

Nose weight may be measured using a propriety brand of nose weight indicator. Such equipment is obtainable at your Caravan Dealer.

**Note:** These indicators have a varying tolerance level and may not be accurate.

Another simple method is to use bathroom scales under the coupling head with a piece of wood, fitted between the coupling head and the scales, of such length that the caravan floor is horizontal with the jockey wheel raised clear of the ground. (Fig. A)



**Fig. A Measuring nose weight**

Nose weight can be adjusted simply by distribution of weights in the caravan.

Always lower jockey wheel before entering the caravan and then raise before measuring again. (See Loading).

**Note:** The height of the towball on the towing vehicle, when laden, is also critical.

**⚠ WARNING:** Do not lift the coupling head by hand when hitching the caravan to the car. Always raise and lower the coupling head by winding the handle on the jockey wheel up and down.

## Driving licence

If you passed your car test before 1st January 1997 you are generally entitled to drive a vehicle and trailer combination up to 8,250kg maximum authorised mass (MAM). This is the weight of a vehicle or trailer including the maximum load that can be carried safely when it's being used on the road.

You can also drive a minibus with a trailer over 750kg MAM.

If you passed your driving test after 1st January 1997 and have an ordinary category B (car) licence, you can:

- Drive a vehicle up to 3,500kg MAM towing a trailer of up to 750kg MAM
- Tow a trailer over 750kg MAM as long as the combined MAM of the trailer and towing vehicle is no more than 3,500kg

For anything heavier you need to take a category B+E driving test.

From 19th January 2013, drivers passing a category B (car) test can tow:

- Small trailers weighing no more than 750kg
- A trailer over 750kg as long as the combined weight of the trailer and towing vehicle is no more than 3,500kg MAM

If you want to tow a trailer weighing more than 750kg, when the combined weight of the towing vehicle and trailer is more than 3,500kg, you'll have to pass a further test and get B+E entitlement on your licence.

## Glossary & checklist

**Awnings** - Can consist of just a simple top sheet but may extend to a five sided frame tent attached to the side of the caravan.

**Fire blanket** - approved to BS 6575 is ideal for dealing with 'fat pan' fires.

**Fire extinguisher** - It is strongly recommended that a fire extinguisher is carried in the caravan. (For suitable types see Safety and Security).

**Gas bottles** - Bottled L.P. gas is the most convenient portable source of fuel. Ideally, two bottles are required for a constant supply.

An initial deposit is payable on each cylinder. We recommend the use of 6kg Calor Light Propane bottles. One position for use and one for storage only. (For detailed information see Services - Gas).

**Jack** - A suitable jack is essential (screw, scissor, side mounted or air jack type). Many car jacks are unsuitable. Ensure the lifting capacity of the jack is suitable for your caravan.

**Levellers** - Levellers help level the caravan from side to side before unhitching. Proprietary products can be purchased from your caravan dealer and need to be positioned as indicated by a spirit level.

**Spare Wheel** - It is always advisable to carry a spare wheel with your caravan.

**Spirit Level** - A spirit level is extremely useful when siting the caravan.

**Stabiliser** - Stabilisers help to dampen the side to side movement of the caravan.

**Torque Wrench** - A torque wrench is the only way that the exact recommended torque can be achieved for wheel nuts and bolts. (See Preparing for the Road).

## GLOSSARY AND CHECKLIST

**Towing Bracket** - Never use cheap alternatives, obtain one manufactured by a reputable company complying with the relevant standards.

Any light passenger vehicle registered in the UK on or after August 1st 1998 will require a type approved towbar and towball (to 94/20/EC or UN ECE R55).

Failure to fit a homologated towbar and towball could result in a prosecution and invalidation of your insurance cover.

Always check with your car manufacturer or towbar manufacturer if in doubt.

**Wooden Blocks** - Wooden blocks typically 25cm square and 2cm thick are ideal for placing under corner steadies and jockey wheel when the ground is uneven or soft.

**Water Containers** - Two containers are required, one to carry fresh water to the caravan and one for waste water, which needs to be disposed of properly. Several types are available including jerry cans, Aquarolls, wastemaster, etc .

**13 Pin Socket** - One socket fitted to the car to accept corresponding plugs from the caravan this energises the road lights and caravan auxiliary circuits.

**12 Volt Battery** - A deep cycling, heavy duty rechargeable leisure type battery should be purchased to provide back-up power for lights and other electrical appliances. (See Battery). The securing arrangements for the battery compartment require a leisure battery complying with EN 60095-2 in particular those with ledges for fastening to the lower edge of the long sides. 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.

**⚠ WARNING:** Your caravan dealer should be consulted if additional equipment is to be fitted as strong points may or may not be provided in the design.

### Caravan motor movers

The design and fitment of a caravan motor mover shall be in accordance with the NCC Code of Practice 305 and you should ensure you receive a signed installation certificate of compliance from the installer.

### Failure to do so may invalidate your warranty.

**Note:** Fitting additional equipment, such as a motor mover will reduce the caravan allowable payload.

**Note:** The fitting of a motor mover may require a larger capacity battery fitting.

**Note:** If a towing cover is fitted, care should be taken not to obscure lights, reflectors and protect against rubbing or damaging the bodywork.

**Useful memory aid****Car**

External mirrors  
 Fire extinguisher  
 Jack  
 Petrol can  
 Spare bulbs  
 Spare keys  
 Spare wheel  
 Tool kit  
 Towball cover  
 Tyre pressure gauge  
 Warning triangle  
 Tyre pump  
 Hi-Vis tabard(s)  
 Breathalyser kit (some Euro countries)  
 Headlight stickers (Beam deflectors)

**Caravan**

Awning pegs and poles  
 Awning ground sheet  
 Bucket  
 Corner steady brace  
 Corner steady pads  
 Coupling lock  
 Door mat  
 Fire blanket  
 Fire extinguisher  
 Fresh water container  
 Gas cylinders  
 Jack  
 Levelling boards  
 Mallet  
 Site/caravan mains lead  
 Spare bulbs - (Mandatory in E.C.)  
 Spare 12v fuses  
 Spare high pressure gas hose  
 Spare wheel  
 Spirit level  
 Toilet fluid  
 Waste water container  
 Wheel brace

**Personal**

After sun cream  
 First Aid Kit  
 Flannels  
 Hairbrush and comb

Make up. etc.  
 Raincoats  
 Toothbrush  
 Toothpaste  
 Scissors  
 Shampoo  
 Shaving kit  
 Shoe cleaning kit  
 Soap  
 Sun tan oil  
 Wellington boots

**Domestic**

Adhesive tape  
 Air freshener  
 Aluminium foil  
 Ashtrays  
 Bedding  
 Bin liners  
 Binoculars  
 Bottle opener  
 Breadboard  
 Brush and dustpan  
 Butter dish  
 Camera  
 Carving knife  
 Chairs  
 Clock  
 Clothes brush  
 Clothes line  
 Coat hangers  
 Coolbox  
 Colander  
 Crockery  
 Cruet  
 Corkscrew  
 Cutlery  
 Dish cloth and brush  
 Dusters and polish  
 Disposable cloths  
 Egg cups  
 Floor cloth  
 Fly spray  
 Food  
 Food mixer  
 Frying pan  
 Glasses  
 Grill pan  
 Jugs  
 Kettle  
 Kitchen roll  
 Kitchen tools

Matches  
 Measuring jug  
 Milk jug  
 Mixing bowl  
 Needles and thread  
 Oven gloves  
 Pegs  
 Piezo Gas lighter  
 Potato peeler  
 Radio  
 Rubbish bin  
 Saucepans  
 Scissors  
 Sieve  
 Sugar bowl  
 Shopping bags  
 Sleeping bags  
 Tea pot  
 Tea strainer  
 Tea towels  
 Table cloths  
 Table mats  
 Television  
 Tin opener  
 Tissues  
 Toilet paper  
 Torch  
 Towels  
 Toys & Games  
 Vacuum cleaner  
 Washing up bowl

**Documents**

Bank and credit cards  
 Caravan Certificate  
 Cheque book  
 CRIS document  
 Driving licence  
 Green Card  
 Insurance (some Euro countries)  
 Maps and guides  
 Money  
 MOT Certificate  
 Vehicle Registration  
 Documents

## PREPARING FOR THE ROAD

**Preparing for the road****Pre-load checklist**

**⚠ WARNING:** Never enter the caravan without first lowering the four corner steadies with the brace provided.

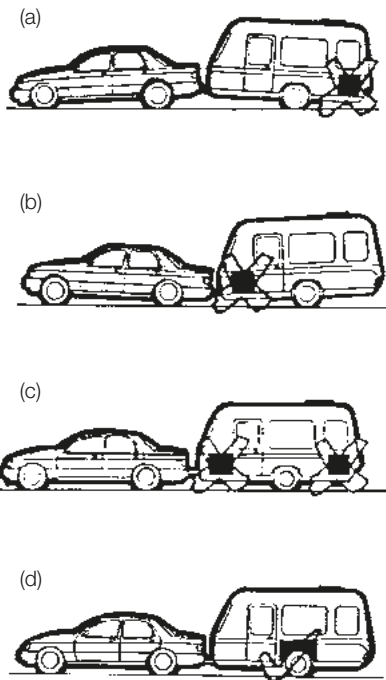
**Before loading check:**

- loose articles are stowed securely. Do not stow tins, bottles or heavy items in overhead lockers prior to towing.
- all lockers and cupboard doors are closed and secured, including the bathroom door.
- all bunks are secure.
- ensure shower door is secure
- all rooflights are closed and secured.
- main table is stored in its transit position.
- television aerial is lowered and locked where applicable
- fridge is on 12V operation and door lock is set.
- all windows and service doors are fully closed and latched. Never tow with windows open on night setting. Leave all curtains and blinds open to aid rear visibility.
- gas cylinders are correctly positioned, secured and turned off, unless using en route heating.
- battery is secure and mains connecting cable is disconnected and stowed.
- Ensure control panel settings are correct for 12v fridge operation. See control panel instructions for detail.
- Exterior door is closed and locked

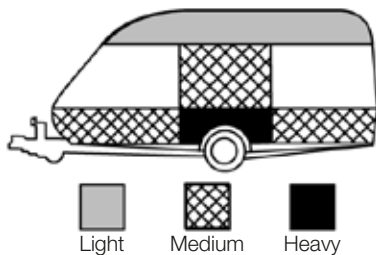
**⚠ WARNING:** Turn off gas appliances except en route heating (if fitted).

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

**⚠ WARNING:** Always disconnect the electrical connector between the towing vehicle and the caravan before connecting a LV supply to the caravan.



**Fig. A Loading your caravan**



**Fig. A Sensible loading**



### How to apportion it

1. Load heavy items low down near the floor and mainly over or just in front of the axle(s) (Fig. A).
2. Load evenly right to left so that each caravan wheel carries approximately the same weight.
3. Do not load items at the extreme front or rear since this can lead to instability due to the 'pendulum effect'.
4. Load remainder to give a suitable nose weight at the towing coupling.

Check nose weight.

**Note:** Do not overload car boot.

**⚠ WARNING:** All heavy and/or voluminous items (e.g. TV, radio etc) must be stored securely before travelling.

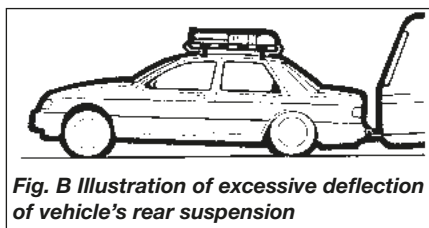
**⚠ WARNING:** Please take care to ensure that you have allowed for the masses of all items you intend to carry in the caravan. e.g. optional equipment, and personal effects such as clothing, food, pets, bicycles, sailboards, sports equipment etc.

**⚠ WARNING:** under no circumstances should the MTPLM of this caravan be exceeded

### Towing vehicle's rear suspension

It is important that the towing vehicle's rear suspension is not deflected excessively by the nose weight on the tow ball. If it is excessive the steering and stability will be affected. (Fig. B)

The greater the towing vehicle's tail overhang (the distance between the rear axle and the tow ball), the greater the effect the nose weight will have on the towing vehicle's rear suspension.



**Fig. B Illustration of excessive deflection of vehicle's rear suspension**

After trying out the caravan it may be found that a stiffening of the rear suspension is necessary - but note that this may give the towing vehicle a firmer ride when not towing.

There are a number of suspension aids available and advice should be sought on which to use and how to fit. It is important to ensure that the caravan is towed either level or slightly nose down.

If you have any doubts about the suitability of your towbar for towing a caravan consult the towing bracket manufacturer.

#### Do not exceed the:

- Gross Vehicle Mass (G.V.M. on car plate).
- Maximum Technically Permissible Laden Mass (M.T.P.L.M.) on the caravan.
- Gross Vehicle Combination Mass (Train Weight) (G.V.C.M. on car plate).
- Maximum Permissible Towing Mass.
- Vertical Static Load on the caravan coupling (noseweight).
- Maximum Vertical Load on the car towball as specified by towing vehicle manufacturer (noseweight).
- Driving licence limitations

## STABILITY

**Stability**

All our models are of a well balanced design and should be exceptionally good towers. The common causes of poor stability include:

- a. Worn springs or loose spring fixings on the towing vehicle.
- b. Towing vehicle springs too soft.
- c. Insufficient nose weight.
- d. Nose of caravan is towing too high or too low.
- e. Unsuitable towing vehicle.

**Galvanised steel chassis**

Drilling of the galvanised steel chassis will invalidate the warranty and must not be done.

**Towball**

The AL-KO AKS 3004 (where fitted) stabiliser is designed to be used with a swan neck, fixed or detachable towball. If you use a 'bolt on type' towball you may need to replace your towball with a special extended neck towball.

If you have a bolt on type towball you should ask your dealer to check clearance around the towball to allow for the stabiliser to articulate.

The AL-KO extended neck towball (available from your dealer) is approved to 94/20/EC or UN ECE R55. Failure to provide enough clearance around the towball may invalidate your stabiliser warranty.

**Stabiliser friction pads**

The AL-KO AKS 3004 (where fitted) stabiliser uses 'friction pads' inside the coupling head to clamp the towball.

These pads must be kept free from grease and contamination from the towball.

The friction pads should last approximately 50,000km (30,000 miles) under normal use, if correctly maintained.

**Suitable towing vehicles**

The caravan is manufactured for towing behind normal road cars and is not suitable for towing behind commercial vehicles.

It is strongly recommended that whenever a caravan is to be towed over rough terrain, e.g. a field or track, great care should be taken to ensure that no undue stress is placed

upon the caravan via the hitch mounting, i.e. reduce speed. If in doubt, please consult the chassis manufacturer and the towing vehicle manufacturer who will advise.

Touring caravans based on standard AL-KO chassis can be towed by four wheel drive off road leisure vehicles providing the unit is used to tow in a like manner to a conventional road-going car and driven in the same considered manner.

Towbar manufacturers should be consulted before towing an uncompensated twin axle caravan.

**Snaking**

This is a term used to denote an unstable car and caravan combination where the caravan 'weaves' from side to side often causing a similar swaying movement in the car itself.

**Causes:**

1. Unsuitable or unbalanced outfit.
2. Incorrect loading or weight distribution.
3. Excessive speed especially downhill.
4. Side winds.
5. Overtaking.
6. Being overtaken by a large fast moving vehicle.
7. Erratic driving.
8. Incorrect tyre pressures, car and caravan
9. Incorrect vehicle towball height
10. Worn stabiliser pads or towball

**Cures**

Cases of persistent snaking can be alleviated by the use of a stabiliser.

**On the road**

If you do find your outfit snaking, try to keep the steering wheel in a central position as far as possible, decelerate and avoid braking if possible.

## Types of tyres fitted

The original tyres fitted by the manufacturer are suitable for towing at a maximum speed of up to 81 mph (130 kph).

## Tyres

Caravan manufacturers choose the type, size, profile, load carrying capacities and speed ratings to match the design masses of their vehicles, adjusting the tyre pressures to suit. Only change the type of tyres on your caravan on expert advice from the caravan manufacturer, or tyre manufacturer.

## Tyre maintenance

### Tread depth

Pay special attention to the amount of tread remaining on your tyres, and measure them regularly. Always replace tyres before they reach the minimum legal limit of 1.6mm. Periodically tyres should be rotated to equalise wear in the same manner as car tyres.

### Pressures

The caravan manufacturers plate (fixed adjacent to exterior door) and Technical handbook contains information about caravan loading and the required adjustments to tyre pressures, which should be followed for safety (these pressures relate only to the tyres originally fitted to the caravan). Tyre pressures should always be checked and corrected prior to each journey. It is vital that tyre pressures are maintained at the levels recommended by the manufacturer to ensure maximum tyre life, safety and handling characteristics.

Over or under-inflating tyres is likely to seriously impair their performance and may compromise the safe use of the vehicle.

Over-inflation increases overall tyre diameter, decreases the amount of tread in contact with the road, decreases sidewall flexibility and affects road-adhesion.

Under-inflation decreases overall tyre diameter, increases sidewall flexing, generates higher tyre operating temperatures and difficult vehicle handling characteristics. Running an under-inflated tyre may cause premature tyre failure. Both over and under-inflation adversely affect tyre life.

## Tread

Keep tyre treads clean of stones and other foreign bodies, and check regularly for damage to the tread and sidewalls. It is vitally important that any damage is checked out by a tyre expert and any necessary repairs or replacements are carried out immediately.

## Tyre valves

Check tyre valves carefully. Ensure the caps are in place free from dirt/ debris and that there is no evidence of cracking or damage to the valve stem.

## Tyre Ageing

Rubber compounds used in tyres contain chemicals that help to slow down the natural aging process of untreated rubber. However, tyres do deteriorate with age, which increases the risk of tyre failure, and there are many ways in which this can be spotted:

- Cracking/crazing on the side wall of the tyre, caused by its flexing
- Distortion of tyre tread
- Deformation of the carcass of the tyre

There will also be a deterioration of the ride quality caused by vibrations through the tyre. This may signify the tyres performance has been affected by age and should be investigated as soon as possible

**Note:** It is recommended that tyres are replaced after 5 years from the date of first inflation. The date of first inflation is normally within a few days of the date of manufacture of the vehicle they are fitted to, and this date can be determined from the gas and / or electrical certificate supplied with the caravan.

We recommend that tyres that are over 5 years old (from first inflation) are inspected and passed as fit for use by a qualified technician. It is possible that in the event of a tyre failure, an insurer may not cover any losses incurred if the tyre is over 5 years (from first inflation) and was not inspected no more than 12 months prior to the incident.

## THE TYRE LAW

Tyres that display signs of aging should be removed and not put to further use.

The effects of aging can be brought about prematurely in several conditions. Tyres fitted as spare wheels may age prematurely. If tyres on caravans are not in regular use they should be inspected before every journey, several cleaning products may also harm the chemicals in the rubber. However, the age of a tyre will affect its safety and increase the risk of failure, and you should inspect tyres for the signs of aging regularly.

**Note:** The use of some motor movers can damage or increase wear on the tyres prematurely.

### The tyre law

**Note:** Sales literature/ Technical Handbooks publish recommended tyre pressures for the MTPLM only (fully laden condition). It is not possible to publish tyre pressures for any other load condition other than the MTPLM.

### Tyre types

It is illegal to mix tyres of a different construction on the same axle.

**Note:** Although the caravan may be fitted with the same type of tyre as the towing vehicle, the pressures specified are different. All charts show values for cars and are therefore not applicable for caravans.

Pressures displayed on tyre walls apply ONLY in North America and Canada.

### Wheels

Caravan wheel bolts supplied with your caravan should be tightened to a torque of 88Nm (65lb/ft) on steel wheels or 130Nm (96lb/ft) on alloy wheels and should be checked with the use of a torque wrench regularly. Only use a spare wheel and tyre of the type and size provided with you caravan.

**Note:** Please remember to check the wheel bolt torque setting regularly.

### Wheel rims

Two sizes of wheel rims are used 5.5J x 14 and 6J x 15, the rim sizes are the same for both steel and alloy rim, incorporating a double safety hump which conforms to European safety standards. Check the size on your caravan before replacing a rim.

### Hitch head load capacity

The maximum vertical static load which can be put upon the hitch head when connected is 100kg. Please refer to the technical data in your handbook. (But see also vehicle manufacturer's weight limits on towball loading.)

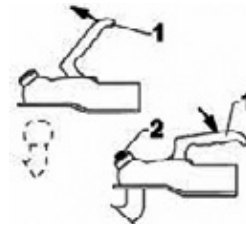
### Hitching-up

An assistant can help in the hitching operation by standing on the left hand side of the drawbar (facing rear of car) and extending an arm horizontally to indicate position of the coupling. When reversing aim the towball of the car directly at the caravan drawbar. Remove towball cover and keep in car.

Adjust the jockey wheel to ensure the hitch head is high enough to slide over the towball.

**⚠ WARNING:** Do not lift the coupling head by hand when hitching the caravan to the car. Always raise and lower the coupling head by winding the handle on the jockey wheel up and down.

### AK160 Type Hitch head



**Fig. A**

Open the locking mechanism by pulling the coupling handle upward in the direction of the arrow (Fig.A item 1). The handle will remain in the open position until the hitch head is positioned onto the towball.

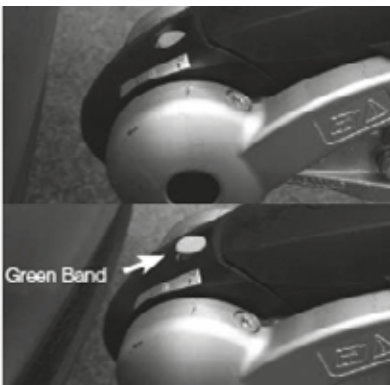
Release the caravan handbrake and manoeuvre the hitch head over the **greased towball** and re-apply the handbrake. Using the jockey wheel winding handle, lower the hitch head carefully onto the towball. The pressure of the towball within the hitch head will release the locking tongue with an audible click and the coupling handle should drop down. For safety check that the coupling handle is fully down by pushing the handle down manually. When the hitch head is correctly coupled to the tow ball the green collar of the locking display button will be visible. (Fig A item 2). If the green collar is not visible it is not safe to tow the caravan. Contact your dealer for advice.

**AKS 3004 Hitch head (where fitted)**



**Fig. B**

Release the caravan handbrake and manoeuvre the hitch head over the **ungreased towball** and re-apply the handbrake. Lift forward the large stabiliser handle (Fig. B) lift forward the exposed smaller handle (Fig. B) until it clicks up.



**Fig. C**

The hitch head is fitted with a visual indicator to show whether or not it is properly connected to the towball. A green band will show immediately below the red indicator button on the hitch head when a proper connection has been made. (See Fig. C)

If the green band is not visible it is not safe to tow the caravan. Contact your dealer for advice.

Adjust jockey wheel to lower the hitch head onto the ball. A click indicates it is fully engaged. Ensure the smaller handle has returned to its free position.

Firmly push down the large stabiliser handle to engage the friction pads. (Fig D)



**Fig. D Stabiliser Handle**

Connect breakaway cable as described on page 29.

Ensure that the jockey wheel is fully wound up and properly located in the slots in the jockey wheel tube, then release the clamp handle, lift the whole unit as high as possible ensuring the wheel is pointing directly backwards and retighten the clamp handle.

**Note:** Ensure jockey wheel locates in recess provided. Carelessness could result in damage to the A-frame cover.

**Note:** Ensure the hitch is secure by checking the visual indicator (figure C).

**⚠ WARNING:** If the green band is showing when the hitch head is not connected to the towball there is a fault- contact your Dealer.

## PRE-TOW CHECK LIST

Connect the 13 pin plug to the car socket by inserting and rotating it slightly ensuring there is enough loose cable for cornering and that they won't also drag on the ground. (See page 28 for further details)

### Pre-Tow Check List

Check gas locker, battery locker and cassette toilet doors are secure.

Check wheelnuts, tyre pressures and tyre conditions.

Fully raise all four corner steadies. (Fig. E & F).



**Fig. E**



**Fig. F**

Pick up any levelling pads or levelling boards.

Check windows/rooflights/vents are securely closed.

Ensure television aerial is lowered (where applicable).

Switch off gas supply and change fridge to 12V operation.

Lock the caravan exterior door.

Check all car and caravan roadlights are working.

Check round the caravan for anything left behind.

### Fit extending mirrors

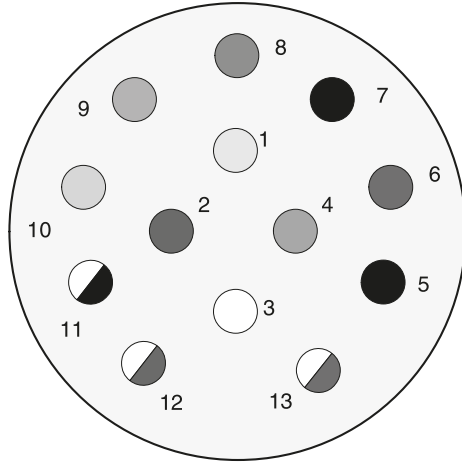
Release caravan handbrake, adjust all mirrors from driving seat and proceed.

- All road lights must be in working order.
- Lenses and reflectors must be in good condition
- Bulbs must be of correct wattage for the application (see Service handbook).

**⚠ WARNING:** Do not cause any road lighting to be obstructed by the addition of any options or accessories to your caravan.

**13 Pin socket**

Please be aware that some car manufacturers and towbar manufacturers do not wire up all 13 pins as standard, unless requested.



11446 Plug Connector viewed  
from cable entry on plug

Pin No	Core Colour	Core Size	Function
1	Yellow	1.5	Left Hand Indicator Light
2	Blue	1.5	Rear Fog Warning Light(s)
3	White	2.5	Earth for pins 1 - 8
4	Green	1.5	Right Hand Indicator Light
5	Brown	1.5	Right Hand Tail Light
6	Red	1.5	Brake Lights
7	Black	1.5	Left Hand Tail Light
8	Pink	1.5	Reverse Light(s)
9	Orange	2.5	Car +ve
10	Slate (Grey)	2.5	Fridge +ve
11	White/Black	2.5	Earth for pin 10
12	White/Blue	1.5	Not Yet Allocated
13	White/Red	2.5	Earth for pin 9

## TOW CAR ELECTRICS

**Tow Car Electrics**

In all cases, The Swift Group assumes that the tow car harness and electrics have been fitted with the specific requirement of connection to a caravan, which may contain AL-KO trailer control (ATC), a 12V powered fridge and charging circuits.

Most modern retro-fit towbars contain a relay, located somewhere within the boot of the tow car, which may have a selectable power output for the fridge supply.

If a customer is experiencing issues with the fridge supply it is possible the relay requires adjustment and they should contact their tow vehicle electrics installer or an auto electrician to verify the installation.

**LED Road Lighting**

Your caravan maybe fitted with LED road lighting, including the directional indicators and stop lamps. LEDs consume very little power, offer excellent light output and longevity when compared to traditional tungsten bulbs.

Some more advanced tow cars are fitted with Vehicle Light Monitoring Systems {VLM}, where the car monitors the condition of the trailer/caravan road lights and advises the driver of any bulb failures. To do this, some tow cars expect to see a load on the caravan lighting circuit similar to a tungsten bulb while others may send a pulse of energy to each light to confirm that the resistance of a bulb is present.

The result of the above is that some tow cars may incorrectly advise the driver of a bulb failure, due to the use of LED lights while others may flash or pulse the lights during use.

Recognising this, The Swift Group have developed an additional towing fusebox, which when connected to the existing towing fusebox and is used to assist the towcar in recognising the VLM System. Depending on the type of car and system used the fusebox maybe model specific.

The secondary fusebox is chargeable and available through any Swift Group Dealer.

**Note:** This will change updates will be required.

**Caravan 13 Pin Connection - care advice**

All caravans since 2008 have been supplied with a 13 pin plug to connect to the towcar. The 13 pin plug has an inner ring assembly that is independent from the outer body.

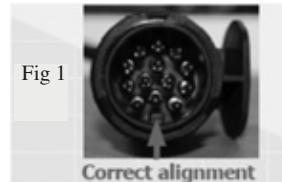
Plug Inner Ring (containing male pin terminals) - fitted to the caravan

Plug Outer Body with locating groove and hood - fitted to the caravan

Socket Body (containing female socket terminals) - fitted to the car



Under normal circumstances the inner ring and the outer body will be locked in one position (see fig 1).



When the plug is first inserted in the socket body ensure that the locating protrusion (key) matches the groove (keyway) in the socket body. The outer body can then be rotated a full 90 degrees clockwise until a click is felt or heard, at this point the cover flap can be allowed to fall over the circular surface of the plug top.

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



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



If this situation does occur then it can be corrected by inserting the edge of the protrusion on the plug into the groove in the socket (see Fig 4) and rotating the plug body anti-clockwise until a click is felt. This process will re-establish the lock between the inner and outer parts allowing the correct insertion of the plug into the socket.



**Note:** Customers should note that the towbar and towcar electrical socket will be checked as part of the standard MOT regulations, under directive 2009/40/EC. This not only applies to tow cars but also all Motorhomes fitted with a tow bar and socket. Inappropriate repair or modification to either maybe deemed a failure of the vehicle if it is likely to affect the road worthiness of the vehicle.

### Passengers

Passengers are forbidden to ride in a caravan.

### Breakaway cables

UK law requires that all caravans are fitted with a safety device to provide protection in the unlikely event of separation of the main coupling while in motion. A device referred to as a 'breakaway cable' fulfils this requirement and when fitted as on your caravan is mandatory.

#### Purpose

To apply the caravans brakes if it becomes separated from its towing vehicle. Having done this, the cable assembly is designed to part allowing the caravan to come to a halt away from the towing vehicle.

#### Construction

A thin steel cable with a red plastic coating fitted with a means of attachment for connection to the towing vehicle. Located directly beneath the coupling head.

#### Operation

In the event of the main coupling of the caravan separating from the towing vehicle, the cable should be able to pull tight, without any hindrance, engaging the caravan brakes. The breakaway cable should not become taut during normal driving.

#### Correct procedure for use

Regularly check the cable and clip for damage. If in doubt contact your Swift Group dealer.

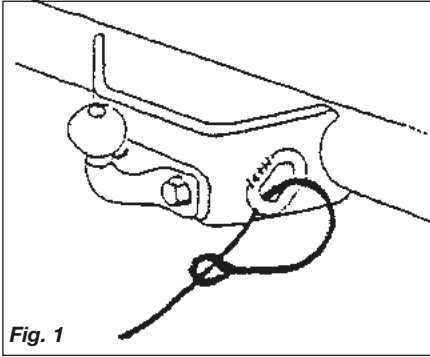
Make sure the cable runs as straight as possible and goes through the cable guide fitted underneath the caravan coupling head.

## BREAKAWAY CABLE

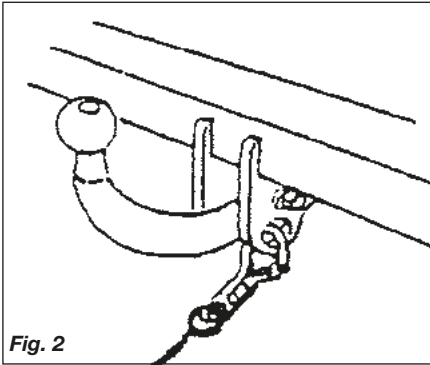
Determine whether or not the towing vehicle towbar has a designated attachment point (i.e. a part specifically designated for a breakaway cable).

Where a point is designated on the towbar:

- Either pass the cable through the attachment point and clip it back on itself (Fig 1) or attach it directly to the designated point (Fig 2).



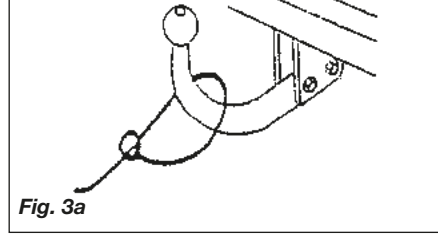
**Fig. 1**



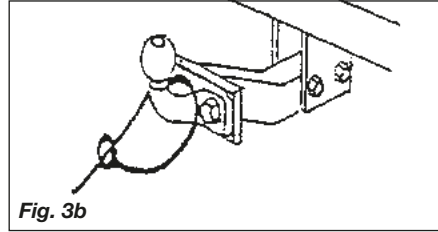
**Fig. 2**

Where there is no designated attachment point on the towbar:

- Fixed ball: Loop the cable around the neck of the towball in a single loop only. See figure 3A and 3B.



**Fig. 3a**



**Fig. 3b**

In some instances it may be possible to attach the cable assembly either to a permanent part of the towbar structure, as long as this meets the approval of the towbar manufacturer/supplier, or to an accessory sold for the specific purpose of breakaway cable attachment. For vehicles fitted with detachable towbars, guidance must be sought from the towbar manufacture/supplier on the correct method for attaching the breakaway cable.

When the breakaway cable is attached it must not snag in use on the trailer coupling head, jockey heel or any accessories, e.g. a stabiliser, bumper shield, cycle carrier, etc. There should also be sufficient slack in the cable to allow the towing vehicle and trailer to articulate fully without applying tension to the cable which could otherwise cause the trailer brakes to be inadvertently applied.

The cable must not be allowed to drag on the ground. If there is too much slack, the cable might drag on the ground and be weakened so that it has insufficient strength to apply the brakes in the event of the trailer becoming detached when in motion. Excess slack may also lead to the cable being caught on an obstacle when in motion, leading to inadvertent application of the trailer brakes. Care must be also taken to ensure that the cable cannot be entangled with the electrical cables.

## Mirrors

The driver of the towing vehicle must have an adequate view of the rear.

If there is no rear view through the caravan it is essential that additional exterior towing mirrors are fitted. This is mandatory in some European countries and drivers can face instant fines if extension mirrors are not fitted.

**⚠ WARNING:** Any rear view mirror must not project more than 250 mm outside:

- the width of the caravan when being towed.
- the width of the towing vehicle when driven solo.

**Note:** Any rear view mirror fitted shall be 'e' marked and cover the field of view as stipulated by type approval requirements (Community Directive 2003/97 or 2005/27 or ECE Regulation 46.02 or Regulation 33 of the Road Vehicles (Construction & Use Regulation 1986).

## Moving off

Let the clutch in smoothly.

Allow more engine speed to produce the power to move the additional weight of the caravan.

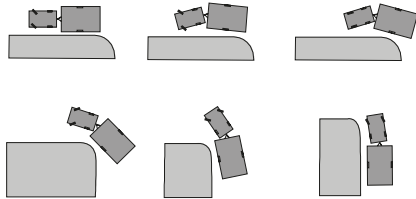
Reduce wear and tear on clutch and transmission by taking extra care.

Change gears smoothly.

Try not to jerk the clutch.

## Reversing

When the towing vehicle is reversing, the overrun device shaft is pushing in, applying the brakes via the overrun lever, brake rod system, bowden cables and the expander mechanism.



**Fig. A Reversing**

The backwards rotation of the brake drum causes the secondary brake shoe to collapse cancelling out the braking effect, allowing the caravan to move backwards. At the same time the transmission lever swings back and compensates for the entire travel.

When reversing up a slope or on a loose surface the brakes may apply themselves. Correct maintenance and set up of the brakes will help prevent this. Incorrect adjustment of the wheel brakes or linkages will result in making reversing difficult.

Proficiency at reversing can only be achieved with practice and should be first attempted in a large open area (Fig. A).

## Speed limits

**Single carriageways: 50mph**

**Motorways (including dual carriageways): 60mph**

## CARAVAN HANDLING

### Caravan handling

Allow for caravan being wider than car.

Do not bump kerb with caravan wheels.

When passing other vehicles allow more than the normal clearance for driving solo.

Allow longer to build up speed to pass.

Allow for the outfit being twice its normal length.

Do not suddenly swing out.

Carry out all manoeuvres as smoothly as possible.

Use nearside wing mirror to check caravan has cleared when overtaking.

**⚠ WARNING:** Take care not to foul or ground caravan chassis whilst traversing ramps or other obstacles.

### Motorway driving

#### Important points

1. Caravans may not be towed in the out- side lane of a three or four lane motorway. (Reg. 12(2) of the Motorway Traffic [England and Wales] Regulations 1982).
2. Reduce Speed:
  - a. In high or cross winds
  - b. Downhill
  - c. In poor visibility
3. High sided vehicles cause air buffeting so extra care must be taken when passing or being passed. As much space as possible should be given.

### Spare wheel

The spare wheel is located in the gas locker at the front of the caravan.

**Note:** The side-lift jack (when fitted) has a maximum lifting height of 375mm and the scissor jack a maximum lifting height of 340mm.

## Changing a wheel

1. Leave caravan hitched to towing vehicle and ensure that the caravan and towing vehicle handbrakes are applied.
2. Lower corner steadies (as safety measure) on the side that is being jacked up.
3. Remove wheel trims (if fitted).
4. Use wheel brace to slacken off wheel nuts on the wheel to be changed.
5. Position jack under the axle at the appropriate jacking point (see Fig. B, page 34)
6. Jack up the caravan until the wheel for removal is just off the ground.
7. Remove the wheel nuts and remove the wheel.
8. Fit spare wheel and reverse the above procedure. Ensure clean, dry mating surfaces and clean, dry bolt/nut sealing areas.
9. Ensure the spare wheel is free from damage and distortion
10. Tighten all five bolts, according to Fig. A, to 88Nm (65lb/ft) for steel wheels or 130Nm (96lb/ft) for alloy wheels using a torque wrench or have checked as soon as possible. Ensure the correct wheel fixings are used, as supplied with your caravan.

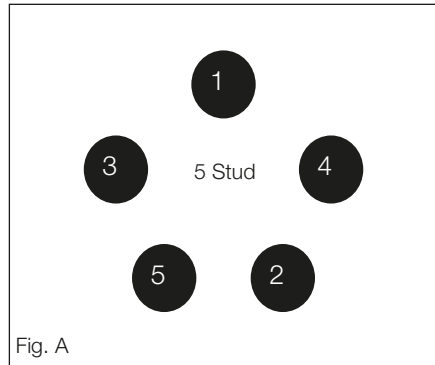
**⚠ WARNING:** When a wheel has been removed and replaced the torque of the wheel nuts should be re-checked after approximately 50 miles.

## Wheel bolt tightening

When refitting a wheel it is ESSENTIAL that the wheel bolts are tightened to the recommended torque figure and in the correct sequence.

**Note:** Only use a suitable wheel brace to loosen and tighten the wheel bolts. Do not use the corner steady brace for this application.

The sequences necessary to correctly carry out this work on a 5 stud wheel is as follows:



Please note the correct torque settings.

## Jacking points

**⚠ WARNING:** Only jack up your caravan when it is coupled up to the car with its handbrake applied and in 1st gear (engine off).

Ensure that the jack is located in the correct position, i.e. on the jacking bracket on the chassis for the AL-KO side mounted jack (Fig.B). Alternatively the reinforced axle mounting plate can be used but the chassis member itself MUST NEVER be used as a jacking point.

All caravans are provided with the facility to fit AL-KO side jacking points and although a scissor, trolley or bottle jack may be used.

Ensure the lifting capacity of your jack is suitable for your caravan.

## STOPPING ON A HILL



**Fig. B Side lift jack**

## Stopping on a hill

Pulling off again can sometimes present a problem. The easy solution is

1. Carry a good sized wedge shaped piece of wood with a rope or light chain attached.
2. Attach the other end of the rope to the nearside rear grab handle.
3. Place the wood behind the nearside caravan wheel.
4. Carefully reverse the car slightly back down the hill, the caravan will stop against the wedge and turn.
5. Drive forward since this attempt to move up the hill will now not involve pulling the full weight of the caravan until the car has gained some traction.
6. When reaching the top of the hill retrieve the wedge.

## Arrival on site

**Note:** Check and observe site regulations.

## Manoeuvring your caravan by hand

**Note:** Care must be taken when manoeuvring your caravan into position. Pressure placed on unsupported parts of front and rear GRP panels may cause surface damage/ cracks to appear. Use the grab handles provided.

### 1. Selecting a pitch

Do not pitch in such a position that your outfit 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 ensure that, for when you leave, you are facing down the slope.

It is good practice to chock the wheels of the caravan when parked on a slope even though the caravan brakes are applied.

### 2. Levelling the caravan

Levelling must be carried out in both directions in order for the refrigerator and other equipment to function correctly. This should be done before unhitching the caravan. Levelling boards (Fig. C) can be used to raise one side of the caravan by driving or reversing the caravan onto the boards. Apply the handbrake and chock the wheels.

The positioning of the jockey wheel can be used to help level the caravan.

Lower the corner steadies until they are in firm contact with the ground.

**⚠ WARNING:** DO NOT use the steadies as a jack they are only a means of stabilising the caravan.

Levelling pads or boards should be used under the steadies where the ground is soft or uneven.

In extreme cases where it is necessary to raise a wheel off the ground for levelling purposes, further adequate support should be applied so that the steadies do not take any undue strain.



**Fig. C Levelling board**

**Exterior door**

To prevent distortion of the body, the caravan must be always correctly sited and levelled. Failure to site the caravan correctly may prevent the exterior door from closing properly.

**3. Unhitching**

Before applying the handbrake ensure the hitch is fully extended and not compressed behind the tow vehicle otherwise the hitch will not release from the tow ball.

Apply the caravan handbrake.

Lower the jockey wheel to the ground.

Disconnect the breakaway cable and road lighting plugs.

**AK160**

Lift the coupling handle to release the locking tongue (fig A page 24), whilst simultaneously winding down the jockey wheel, to lift the caravan hitch head clear of the tow ball.

**AKS 3004 (When Fitted)**

Release the stabiliser by lifting the large handle. Then lift the exposed small handle forward until it clicks up, at the same time winding down the jockey wheel, to lift the caravan clear of the tow ball.

TOWING CODE



Fire .....	38
SI 601 Smoke Alarm Operation .....	38
Alarm Test .....	39
Fire extinguisher .....	40
Escape paths .....	40
Children .....	41
CO Alarm - Fireangel CO-9X Carbo Monoxide Alarm operation .....	41
Ventilation .....	48
Security .....	48
Swift Command tracker.....	49
AL-KO Secure immobiliser.....	50
Mobile Alarm System .....	51

## FIRE AND FIRE ALARM

### Fire

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

#### In case of fire

1. Get everyone out of the caravan 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

**Important:** 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

**Important:** 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't 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 above list, 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 the alarm user manual). Ensure the unit is securely fitted.



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

### Alarm test

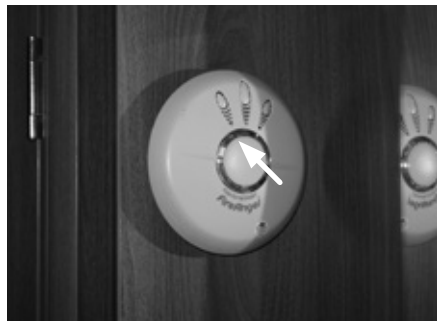
1. Press the test button in the centre and release.



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.



## FIRE ALARM

**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 alarm user manual.

**⚠ 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:** Your 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.

**Testing:** Test your smoke alarm once every week, see page 39 on how to do this.

**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 caravan at all times.

When using a dry powder extinguisher it is suggested that the caravan 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 EN 3-7, 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 caravan in any event. Keep potentially dangerous items out of reach, as at home e.g. matches, medicine etc.

## CO alarm

### Fireangel CO-9D 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 and may 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

**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 caravan.
- Stop using all fuel burning appliances and ensure, if possible, that they are turned off.
- Evacuate the caravan leaving the doors and windows open.
- Do not re-enter the caravan 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.

**⚠ WARNING:** A loud alarm is a warning that unusually high and potentially lethal levels of carbon monoxide are present. Never ignore this alarm, further exposure can be fatal. Immediately check residents for symptoms of carbon monoxide poisoning, and contact the proper authorities to resolve all CO problems.

**NEVER IGNORE ANY ALARM.**

Please carefully review this owner's manual to ensure that you know what actions to take in the event of an alarm.



**Note:** If the level of CO in the sensor doesn't reach 50ppm then the Sensor Test mode will time out and finish automatically after 3 minutes. Even if the level doesn't reach 50ppm, as long as the display shows a reading of CO then you can be confident that the alarm is working correctly. If you have any questions about testing the sensor please contact the technical support team.

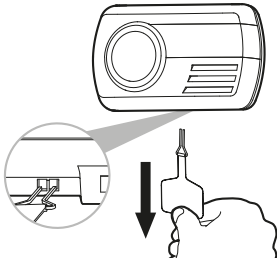
## CO ALARM

**Power Pack Activation**

See diagram below

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 22 of the CO-9D user manual.

When the detector is activated the screen will display all of the icons, then after a few seconds will show the current CO level. The power indicator LED below the  symbol will also flash green once every minute to indicate that the detector is receiving power from the power pack and is fully operational. A  symbol will also flash briefly on the LCD screen approximately once every minute.



Test the sounder, power pack and circuitry by pushing the centre of the Test/Mode 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. You'll notice that the display will switch to temperature mode, this is explained later in the manual, press button again to return to the CO display. 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.

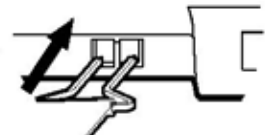
Under normal operating conditions, the power pack will last for the lifetime of the product i.e 7 years. The detector will not protect against the risk of carbon monoxide poisoning when the power pack has drained.

**⚠ WARNING:** Prolonged exposure to extreme high or low temperatures may reduce the life of the power pack.

**Power Pack Deactivation**

Your CO-9D is portable making it ideal for taking with you on holiday. You will need to deactivate your detector when travelling or even when storing e.g when decorating. Fitting is reverse of removal. To deactivate the detector the two ends of the metal clip must be inserted into the corresponding holes in the disabling socket located on the underside of the detector (see image). You can ensure that the product is disabled by pressing the test button- If there is no sound from the sounder then the clip has been fitted correctly.

The clip must remain in the disabling socket to keep the power pack deactivated.

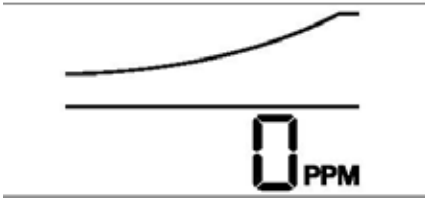


**Note:** If the disabling tab is no longer available then the clip can be replicated by opening out a thin metal paper clip into a U-shape.

**Operating Features****Standby Mode**

The alarm can display two views when in normal standby mode, the current level of CO or the current room temperature in degrees centigrade (°C). When the alarm is showing the

current CO Level you will see something similar to the following.




FireAngel's unique digital read out displays the amount of CO that the sensor is detecting shown in parts per million (PPM). It is designed to indicate levels from 10PPM to 999PPM.

**Note:** Ambient background levels between 0PPM and 10PPM will show as 0PPM

When the alarm is showing the current temperature you will see something similar to the following.




In both modes you will notice a  symbol appear briefly in the top left hand corner of the screen once every minute. This is an additional indication to show you that the alarm is operating as well as the flashing green LED.

To switch between CO and temperature view, simply press the Test/Mode button briefly. The unit will also sound when pressing the button to switch between the two display modes.

You will also notice that when switching between modes the display will change slightly, this is because the alarm is displaying the Peak Level CO reading that it has recorded in the last 4 weeks, please see the following peak level reading feature section for further description.

**Note:** If the alarm is in temperature view and detects CO it will automatically switch back to CO display mode.

### Power pack, sounder and circuitry test

Pressing the Test/Mode button will also test the power pack, sounder and circuitry of the alarm. The unit will sound and the alarm LED below  will illuminate red. You should perform this test once per week.

### Peak Level Reading feature.

The alarm will record the highest reading of CO that it has detected in the last 4 weeks. This information is useful if your alarm has sounded so you can see the highest level of CO detected during that time. It is also useful to check periodically to see if a readable level of CO has been detected for a short time, but not long enough to trigger a full alarm. The peak level reading is shown briefly every time you press the Test/Mode button and will look something like the image below.



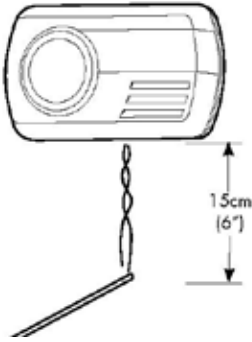
**Note:** It is possible and quite normal for the peak level to remain at 0ppm, i.e. this simply means that the alarm has not detected any CO in the last 4 weeks.

The Peak Level reading will be reset to 0ppm whenever a Sensor Test is carried out. (See the next section for Sensor Test).

### Sensor Testing

**CAUTION:** Sensor testing should only be performed by a responsible adult. This test should only be performed once a month. Excessive testing will shorten the life of the power pack.

## CO ALARM



**Note:** We suggest the use of an incense stick or cigarette as the way in which these products burn produces a readable localized amount of CO. A readable level of carbon monoxide will not be given off by other sources of smoke, for example an extinguished candle or match.

Step 1: If the alarm is wall mounted unhook it from the fixing screws.

Step 2: Hold the Test/Mode button down until the spanner icon appears in the bottom left hand corner of the screen and the bar graph 'scans' from left to right. This indicates the alarm is in sensor test mode where the sampling rate of the sensor has increased and the alarm can be tested using a known source of CO.

Step 3: Light an incense stick or cigarette using a match or lighter. Extinguish the lighter, or put out the match and place it into a dish of water.

Step 4: Hold the incense stick or burning cigarette 15cm (6 inches) below the detector, so that the smoke goes into the holes at the bottom of the detector. As the smoke gets into the alarm the display will show the amount of CO being detected. When the level of CO in the sensor reaches 50ppm the alarm will sound a single alarm cycle, this confirms that the sensor is working correctly and is the end of the sensor test. The alarm will return to normal standby mode.

Step 5: Put out the incense stick or cigarette by placing it into a dish of water. Ensure that all flames have been extinguished.

**Note:** If the level of CO in the sensor doesn't reach 50ppm then the Sensor Test mode will time out and finish automatically after 3 minutes. Even if the level doesn't reach 50ppm, as long as the display shows a reading of CO then you can be confident that the alarm is working correctly. If you have any questions about testing the sensor please contact the technical support team

## Understanding the Product's Indicators

### Digital Display

The LCD screen has many icons with one or more being shown at any one time.



### Bar Graph to show early build up of CO.

To understand the role of the product indicators please refer to section 'Carbon Monoxide and how it can affect your family' on page 3 of the CO-9D User Manual. The alarm has a bar graph which mimics the way CO levels build up in the blood stream. The response times of the alarm are determined by the European Standard BS EN 50291:2001 so the alarm will only sound when it has detected CO for a prescribed length of time, the higher the level of CO the quicker the alarm must sound. However with FireAngel's CO-9D there is an early visual warning that CO is present. When CO is first detected the alarm indicates it's presence by displaying the level on the screen in parts per million (ppm). If CO continues to be present additional bars will appear on the graph. When the graph is full



(i.e. the 6th segment is shown the unit will sound a loud audible alarm (85 dB at 1m (3 feet)) and the Alarm LED below the symbol on the front of the detector 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.

### Alarm silence



It is possible to temporarily silence the alarm up to two times if the level of CO that triggered the alarm is less than 200ppm. After ventilating the caravan you can temporarily silence the alarm by pressing the Test/Mode button, the alarm will stop and the silence mode symbol will appear on the screen. The silence mode will last for up to 3 minutes. If the CO level remains too high the alarm will trigger again or if the level of CO rises above 200ppm then the detector will automatically re-enter alarm mode. If the level of CO has fallen to a satisfactory level the silence mode icon will disappear, the unit will exit alarm mode and the segments of the bar graph will slowly disappear as the CO in the sensor clears.

### Alarm in absence:



If the Peak level reading symbol is showing on the screen but there is no full alarm sound and you are not pressing the test button, then your detector is warning that it has detected Carbon Monoxide in your absence. Immediately vacate the caravan and seek medical attention for anyone suffering the effects of CO poisoning (headache, nausea). Treat this as a serious warning. Call a qualified

technician and have the problem investigated and rectified immediately.

### Error signal

**Err** The unit continuously checks the settings of its sensor and circuitry. If any of these settings are found to be incorrect, the detector will emit a **single chirp** once per minute and the display will show "Err" for error and an error code, cycling between "Err" and the particular error code.

### Low power pack signal



If the power pack becomes low then the detector will emit a single chirp once per minute and the low power pack icon will flash on the screen.

**⚠ IMPORTANT:** A single chirp once per minute together with an error signal 14 or low power pack warning does NOT mean that the detector has detected carbon monoxide.

If you experience an error condition or low power pack warning and the product is still within warranty then contact technical support. If the product is no longer in warranty **replace immediately!**

## CO ALARM

**⚠ IMPORTANT:** The selected power pack was chosen to provide power beyond the lifetime of the product, in particular the sensor (under normal operating conditions). The operational life of the sensor is seven years, for this reason, the detector should be replaced after seven years from the date of installation.

#### FireAngel Technical Support Line

9.00am – 5.00pm, Monday – Friday

**Telephone: 0800 141 2561  
(1-800 523171 in EIRE)**

e-mail: [technicalsupport@fireangel.co.uk](mailto:technicalsupport@fireangel.co.uk)

### Maintenance

Your detector will alert you to potentially hazardous CO concentrations in your caravan 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 p43).
- 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.
- Move the detector to a safe location and store in a plastic bag before painting, wall

papering, or performing any other activities using substances that emit strong fumes. Remember to remove it from the bag and replace the detector when these activities are finished.

Failure of any test should be reported to the Fireangel Technical Support Team. Do not attempt to repair your CO detector. Do not remove any screws or open the main casing of your detector. Any attempt to do so may cause malfunction and will invalidate the warranty.

### Disposal

Waste electrical products should not be disposed of with regular household waste. Please recycle where facilities exist. Check with your local authority, retailer or manufacturer for recycling/disposal advice as regional variations apply. The power pack should be deactivated before disposal. To do this, insert the two ends of the metal clip on the end of the disabling tab back in to the socket located on the underside of the detector.

If the disabling tab is no longer available then the clip can be replicated by opening out a thin metal paperclip into a U-shape. You can also return your carbon monoxide detector to Fireangel for disposal. For return address contact Fireangel Technical Support. Please include a note confirming the product is being returned for disposal.

### Technical Information

Detector Specifications: Model CO-9D  
 Sensor Type: Electrochemical  
 Sensor Life: 7 Years  
 Alarm Sound Level: 85dB at 1 metre (3 feet)  
 Power Pack Life: 7 years (Life of product)  
 Temperature Range: -10°C (14°F) to 40°C (104°F)  
 Operating Humidity Range: 30 - 90% RH  
 Weight: 120 grams (4.23oz)  
 Certified to: BS EN 50291:2001

This FireAngel carbon monoxide detector is designed to continuously monitor for CO. Its response times meet the requirements of BSI standard BS EN 50291:2001.

**⚠ WARNING:** DO NOT ATTEMPT TO OPEN - DO NOT BURN



**⚠ WARNING:** APPARATUS CONFORMING TO THIS STANDARD MAY NOT PROTECT PEOPLE WHO ARE AT SPECIAL RISK FROM CARBON MONOXIDE EXPOSURE BY REASON OF AGE, PREGNANCY OR MEDICAL CONDITION. IF IN DOUBT, CONSULT YOUR DOCTOR.

**A CARBON MONOXIDE DETECTOR IS NOT A SUBSTITUTE FOR A SMOKE ALARM OR A COMBUSTIBLE GAS DETECTOR.**

**REPLACE UNIT AFTER 7 YEARS OF OPERATION.**

## 7 Year Warranty

FireAngel Ltd warrants to the original purchaser that its enclosed carbon monoxide alarm be free from defects in materials and workmanship under normal residential use and service for a period of 7 (seven) years from the date of purchase. Provided it is returned with postage paid and proof of purchase date, FireAngel Ltd hereby warrants that during the 7 (seven) year period commencing from the date of purchase FireAngel Ltd, at its discretion, agrees to replace the unit free of charge. The warranty on any replacement CO-9D alarm, will last for the remainder of the period of the original warranty in respect of the alarm originally purchased – that is from the date of original purchase and not from the date of receipt of the replacement product. FireAngel Ltd reserves the right to offer an alternative product similar to that being replaced if the original model is no longer available or in stock. This warranty applies to the original retail purchaser from the date of original retail purchase and is not transferable. Proof of purchase is required.

This warranty does not cover damage resulting from accident, misuse, disassembly, abuse or lack of reasonable care of the product, or applications not in accordance with the user manual. It does not cover events and conditions outside of FireAngel Ltd's control, such as Acts of God (fire, severe weather etc.). It does not apply to retail stores, service centres or any distributors or agents. FireAngel Ltd will not recognise any changes to this warranty by third parties.

FireAngel Ltd shall not be liable for any incidental or consequential damages caused by the breach of any expressed or implied warranty. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration for 7 (seven) years.

This warranty does not affect your statutory rights. Except for death or personal injury, FireAngel Ltd shall not be liable for any loss of use, damage, cost or expense relating to this product or for any indirect, or consequential loss, damages or costs incurred by you or any other user of this product.

## VENTILATION/SECURITY

## Ventilation

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

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


High level ventilation is achieved by means of the roof lights and washroom roof ventilators. The low level ventilators are positioned underneath the oven housing.

Under no circumstances must these vents be blocked or 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<sub>2</sub>) build up leading to 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.

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 models requirements there should be no modifications made which may result in reduced ventilation levels.

 **WARNING:** Do not obstruct ventilation

### Petrol/Diesel Fumes

The fitting of a tail pipe extension to your car exhaust will reduce the possibility of fumes entering your caravan through the ventilation points.

## Security

### Caravan theft

The theft of a caravan can occur in the most unlikely circumstances; from a motorway service area, even from an owner's driveway.

Secure all windows and doors when your caravan is unoccupied even if only for a short length of time.

### Security chips

A special security chip is concealed within the body of every caravan. This chip contains the individual identity of your caravan and can only be read using a special decoder by police officers.

### Chassis number

Your 17 digit serial number chassis number can be found on your windows and on the offside chassis member of the drawbar. It is also stated on the manufacturers weight plate next to the doorway.

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

### Additional security

Consider fitting any device which might deter or prevent intrusion by thieves.

A hitch lock cover prevents towing of the caravan.

A wheel lock prevents towing of the caravan and removal of the wheel (some models are provided with an AL-KO Secure device).

Customers are advised to identify their caravan with a method for subsequent identification if other forms of identification have been altered or removed.

Free crime prevention advice about securing your caravan, 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.

### Caravan insurance

It is recommended that the caravan and its contents should be insured against theft.

It is essential to check with your car insurance company to ensure you are covered when towing your caravan.

### Swift Command Tracker by Sargent

A Swift Command Tracker is built in to your vehicle and forms part of the Swift Command system.

The unit is Thatcham Category 6 certified and is monitored by an approved monitoring centre which operates 24 hours a day 7 days a week and provides European coverage and direct police liaison.

This system is ready for use, all you need to do is purchase a tracking subscription by visiting [www.swiftcommand.co.uk](http://www.swiftcommand.co.uk) or calling Sargent on 01482 881655.

The subscription cost is £95 per year including VAT.

For more information please visit [www.swiftcommand.co.uk](http://www.swiftcommand.co.uk)

### Operation

The Swift Command Tracker is easy to operate as it is controlled by the vehicle systems.

In a caravan the tracker is armed when the Stinger 310 / 350 Alarm System is armed. It is disarmed when the alarm is disarmed.

If the caravan doesn't have an alarm system fitted, a simple numeric keypad is used to arm / disarm the tracker. Enter your code followed by the ON button to arm the tracker.

Enter your code followed by the OFF button to disarm the tracker.

In a motorhome the tracker is armed / disarmed by the ignition key.

When the ignition is turned off the tracker is armed. When the ignition is turned on the tracker is disarmed.

### Event of a Theft

If the vehicle is moved whilst the tracker is armed the geo-fence monitoring will trigger a theft event.

In addition to the above, in a caravan with the Stinger 310 / 350 Alarm System fitted, if the alarm is triggered by internal movement or caravan tilting the alarm monitoring will also trigger a theft event.

The monitoring station will now contact you to confirm the theft or false alarm. You will be required to confirm your identity against the information you provided when you subscribed.

If a genuine theft is confirmed the monitoring station will liaise with the police and keep you informed of progress.

Note; during a theft event to comply with legislation you will not be able to manually locate your vehicle using the Swift Command locate feature.

### Contact

Before contacting any of the following please ensure you know your caravan or motorhome serial number. For caravans this is the last 10 digits if the CRIS number (like SWG0123456). For motorhomes this is the unique MH number (like MH01234).

The Swift Command Tracker monitoring station can be contacted on 0345 6027302. The stations operates 24 yours a day 7 days a week.

Sargent customer support can be contacted on 01482 678981 or via [support@swiftcommand.co.uk](mailto:support@swiftcommand.co.uk)

Telephone lines are manned during normal office hours.

Swift customer support can be contacted on 01482 875740 during normal office hours.

cont...

## SWIFT COMMAND TRACKER / AL-KO SECURE IMMOBILISER

### Precautions

The Swift Command Tracker monitors the leisure battery supply and if the voltage falls below a set level or the battery is removed this will trigger a fault event.

If you plan to remove your battery for maintenance or external charging please contact the monitoring station BEFORE removing the battery.

If you lose an alarm key fob you need to contact Sargent for a replacement and follow their instructions to remove the 'lost' fob from the system.

If you lose an ignition key you will need to visit a Fiat dealer for key replacement and removal of the 'lost' key.

### AL-KO Secure immobiliser (when fitted)

The AL-KO immobiliser is fitted as standard on some models, optional on others. This is special to the alloy wheel design and not compatible with steel wheels. The AL-KO part number for the 14" Scorpion design of wheels is 1557076 (number 36). When fitted the 4 part kit specified below is supplied with your caravan. Your kit will contain : -

#### Part A

Box containing security components. consisting of:

- 1off High security locking bolt.
- 1off High security locking bar socket key.
- 1off Barrel lock.
- 2off Barrel lock keys.
- Instruction manuals in CD and paper format.
- Security registration card and reference number.

#### Part B

Wheel specific insert assembly consisting of:

- Red coloured wheel insert lozenge assembled with the locking bar and clip.

#### Part C

- 1off Wheel spanner.

#### Part D

- Kit bag.

**Note:** Two lock kits will be supplied with twin axles

**You must register your key within one month of the date of purchase. Should you fail to do this, you will not be able to order a spare key!**

- Within your AL-KO kit you will find an exclusive security number.
- Please register your card by telephoning 0870 7576788 or 0044 1926 818500.

### Safety information (AL-KO Secure)

- Always secure the caravan against rolling away (chock or couple to a towing vehicle).
- Always remove AL-KO Secure before moving the caravan.
- After any attempt of theft has been made on a locked AL-KO Secure, the caravan must be inspected at an AL-KO Approved Service Workshop.
- Always keep the key in a safe place.
- Keep the lock set and registration card separate from the key.
- The lock parts and key do not have a registration number, therefore keep the registration card in a safe place.
- Caravans with twin axles have two locks, keep each lock set in a separate place.

The sets are not interchangeable!

### AL-KO operating instructions

- Read the AL-KO operating instructions and act in accordance with them.
- Follow all safety instructions as well as the warning information.
- It is recommended for ease of fit that a side-lift jack be used.
- Keep the operating instructions

## The AL-KO side lift jack

(Supplied as standard on specific models only).

The AL-KO Side Lift Jack has been specifically developed to aid the often difficult process of changing a wheel on caravans. It is suitable for fitment to the AL-KO chassis, located in the pre-drilled holes in the longitudinal members.

**Note:** The fitment of some aftermarket motor movers may inhibit the use of the AL-KO jacking system.

## Mobile alarm system

### Stinger 310 alarm (if fitted)



To ensure your STINGER 310 system is operated correctly, please read all sections of these instructions before attempting to use the alarm. If you are unsure of any content, please contact your dealer in the first instance or Sargents Electrical direct.

#### Operation - using the key fob

Each STINGER 310 is supplied with two key fob style radio controllers, which are used to operate the alarm system. Each key fob has four buttons which can be used as follows;



#### LED Torch button

Press and hold the button to use the torch for night time convenience



#### Arm / Disarm button

Press and release the button to arm the alarm (one beep)

Press and release the button to disarm the alarm (two short beeps)

To arm the alarm without the PIR movement sensor (if you leave pets inside etc)

Press and hold the arm button and release after you hear one beep followed by two beeps



#### Awning Light button

Press and release the button to turn the awning light on or off (note: awning light control is an optional feature not present in all caravan models)

P

#### Programming Mode button

Press and hold the button for 10 seconds to access the 3 programming modes, which are indicated by series of long beeps, as follows:

#### One long beep

##### - Tilt sensor sensitivity adjustment

Press the arm/disarm button to select the required setting. 1 beep = low sensitivity for windy conditions. 2 beeps = standard sensitivity (default). 3 beeps = High sensitivity. Press the program mode button to move to the next setting.

#### Two long beeps - Beeper volume

Press the arm/disarm button to cycle through the 7 available volume levels. When you are happy with the selected volume, press the program mode button to move to the next setting.

#### Three long beeps

##### - PIR movement detector sensitivity

Press the arm/disarm button to select the required setting / pulse count. 1 beep = high sensitivity 2 beeps = standard sensitivity (default). 3 beeps = Low sensitivity for hostile environments.

**Press the program mode button again to exit programming mode, which is indicated by one extra long beep.**

## ALARM SYSTEM

### Operation - the PIR internal movement sensor

The STINGER 310 comes complete with a 120° Passive Infra Red (PIR) internal movement sensor that detects body movement within the vehicle.



If you are leaving pets within the vehicle the system should be armed without the PIR sensor active (see key fob arm/disarm section) to prevent your pet from triggering the alarm.

Please be aware that direct sunlight onto the PIR lens, or extremes of temperature (above 30 deg C) may affect the operation of the detector. Always ensure roof light blinds are closed if sunlight could shine directly onto the PIR.

### Operation - the tilt sensor

The STINGER 310 incorporates a new electronic tilt and motion sensor with automatic calibration and easy sensitivity adjustment from the key fob. This feature provides excellent tilt detection with no moving parts.

The tilt sensor works automatically and does not need adjustment for normal use even if you park on a steep incline. The sensitivity of the sensor can be adjusted as described in the key fob programming section.

### Operation - awning light (model specific)

When the STINGER 310 alarm system is armed or disarmed the Awning light will be activated for a period of one minute to provide illumination whilst entering or exiting the caravan. The Awning light can be turned off during this period by pressing the Awning light button on the key fob if required. (Note: awning light control is an optional feature not present on all caravan models)

The Awning light can be turned on or off at any time by pressing and releasing the Awning light button.

### Battery - system base unit

The STINGER 310 system unit uses a special 4.8 volt Nickel Metal Hydride battery pack that supplies backup battery power to the system should the supply from the leisure battery fail or be disconnected.

It is recommended that the alarm system is permanently connected to a 12 volt supply. When fully charged the battery will provide approximately 6 months stand-alone operation, depending on temperature conditions. It is recommended that this battery pack is replaced every 3 years.

Before placing your caravan in storage please ensure the caravan has had a fully charged leisure battery fitted or the mains charger switched on for at least 14 days prior to storage to ensure the internal backup battery is fully charged. It is recommended that a leisure battery remains connected to the caravan during storage.

Always dispose of old batteries in accordance with local regulations.

### Battery - key fob

The STINGER 310 key fob controllers use two lithium button cells (CR 2032) in each key fob. Please note that excessive use of the LED torch will reduce the life of the batteries considerably.

To replace the batteries, firstly remove the four cross head screws from the underside of the fob, then pull apart the two halves of the fob. Remove the used batteries from the lower half of the case, then insert the new batteries in the same manner, noting that the battery positive faces away from the green circuit board. Now reassemble the fob casing and refit the screws, taking care not to over tighten.



## Alarm siren

The STINGER 310 contains a dual sounder unit that provides the loud alarm siren and the volume adjustable beeper sound.

When the alarm is triggered the siren will sound for 2 minutes. Following the 2-minute period the alarm will then deactivate for 15 seconds and then rearm.

The alarm siren can be turned off at any point by pressing the key fob arm/disarm button.

When the alarm is disarmed the Beeper will sound two beeps to confirm the disarm. If the alarm has been triggered during the armed period the beeper will sound three beeps if the PIR triggered the alarm or four beeps if the Tilt Sensor caused the alarm. If you hear multiple pips (short beeps) when you disarm the alarm, this indicated that the internal backup battery is low and therefore should be charged.

The beeper volume can be adjusted using the key fob programming feature described earlier.

## System specification

### System base unit:

- Supply voltage 6 to 15v DC
- Supply current 500mA max 5mA typical
- Operating temperature -5 to +30 deg Celsius
- Battery capacity 9Ah at 4.8v
- Siren output 110dB +/- 10% @ 1M
- Comprehensive interface connector (details on request)

### PIR movement sensor:

- Range 120 deg x 6M

### Key fob controller:

- Range 6M typical
- Battery 2x CR2032 lithium button cell
- Typical battery life 1 year

## Spare parts & service

The STINGER 310 system is supplied with two key fob controllers as standard, but can accommodate up to four controllers per system. Extra fob can be purchased from your supplier of direct from the manufacturer, and can be added to the system by following a simple procedure.

For accessories, interface harnesses, installation documentation, spare parts, local supplier contact details or other service information please contact: Sargent Electrical Services Ltd. service desk on 01482 678981 during normal office hours.

Further technical information is available at [www.sargentltd.co.uk](http://www.sargentltd.co.uk)

For future reference it may be useful to note your alarm system serial number below, which can be found on the sticker attached to the alarm system base unit.

Serial number:

.....

SAFETY AND SECURITY

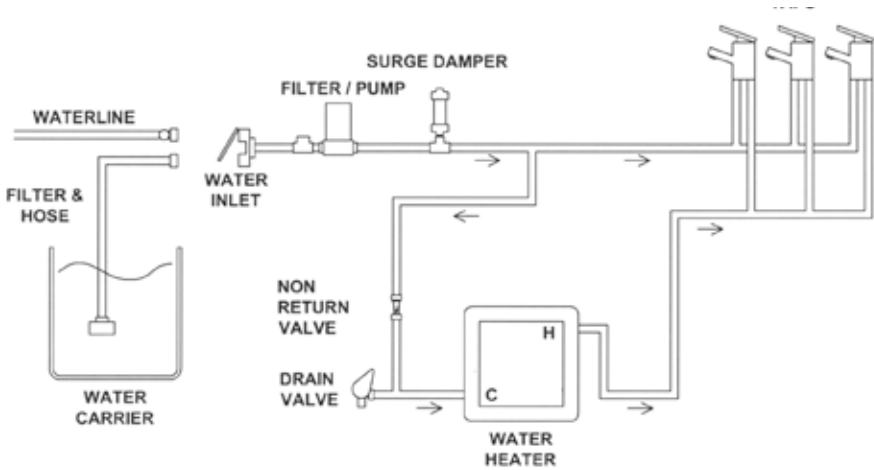
Water System.....	56
Plumbing connections .....	58
Plumbing troubleshooting.....	58
Pressure switch adjustment.....	60
Ultraflow Water Intake Housing.....	60
Sanitising water system.....	61
Water Fault Finding.....	63
Typical gas schematic drawing.....	65
Gas .....	66
Types of gas .....	68
Gas safety advice .....	68
Awning space ventilation .....	68
Changing a gas cylinder .....	69
Gas Fault Finding .....	70
Electrical system .....	71
Overseas connection .....	71
13 Pin tow vehicle connections .....	72
230V mains electrical equipment power consumption .....	73
Wiring of connecting cable and caravan mains inlet .....	74
Typical appliance consumption figures .....	75

## WATER SYSTEM

**Water system- Introduction**

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

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



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

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

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

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

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

Water from the pump enters the bottom of the water heater. Once the water fills the water heater (approx 8.5 litres), water then leaves the water heater via a connection at the top of that water heater. This water, which is still under pressure, then routes to the hot connection of each tap via red pipes.

**On Arrival at the campsite /  
Priming the system**

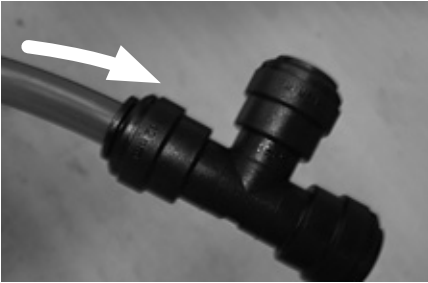
- Ensure that the external water container is full. An umbilical hose with baffle is supplied with your caravan to connect between the inlet and aqua roll or similar container.
- Close all of the taps (kitchen sink, bathroom, shower) except one, which should be open in the hot position.
- Ensure that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

## WATER SYSTEM

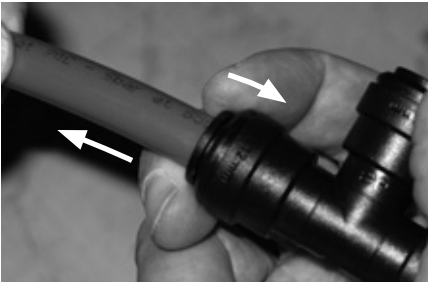
## Plumbing Connections

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

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



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



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

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

## Troubleshooting

### Pump will not start, when the tap is opened:

- Check fuse(s).
- Check power source(s), and ensure there is sufficient voltage to run the pump.
- Ensure 'pump' LED is illuminated.
- Using a multi-meter, ensure there is power at the pump. If not, refer to your dealer as there maybe damaged cabling or a fault with the fusebox.
- Is the pump hot? If so, allow to cool before retrying.
- Has the vehicle been stored over winter? Was it correctly winterised? If no, the pump may have frozen, causing permanent damage.
- The pressure switch may need adjusting. See page 60 on how to do this.

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

- Ensure water in source is present (onboard tank or aqua roll).
- Check in-line pump filter is free from debris and correctly fitted.
- Ensure water system has been primed correctly, (see page 57) and there are no air-locks present.
- Ensure there are no restrictions in the plumbing.
- Using a multi-meter, ensure there is power at the pump. If not, refer to your dealer as there maybe damaged cabling or a fault with the fusebox.
- Ensure the inlet side of the pump (including Truma inlet and in-line filter) are watertight and not allowing air into the system.
- Ensure the pump has good voltage.
- Check (using a multi-meter) that the voltage at the pump is between 10v-14.5v.

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

- Check for leaks on the high pressure side of the pump.
- Ensure water system has been primed correctly, (see page 57) and there are no air-locks present.
- Ensure the pump is securely mounted.
- Ensure the piping on the high pressure side of the pump is in good condition (not blowing or deforming).
- The pressure switch may need adjusting. See page 60 for information on how to do this.

**Noisy or rough operation**

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

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

- Check for leaks on the high pressure and low pressure side of the pump.
- Ensure there are no restrictions in the plumbing
- The pressure switch may need adjusting. See page 60 for information on how to do this.

## WATER SYSTEM

**Water pump pressure switch**

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

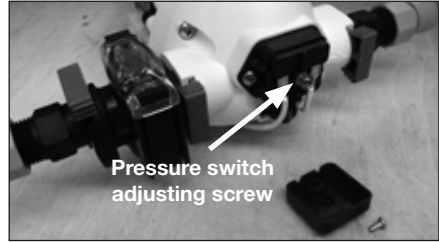
**Water pump pressure switch adjustment**

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

- All of the Truma/Flo-Jet pumps used by Swift are pre-set at 25psi - 31psi.
- To further adjust the pressure switch setting, a cover cap must be first be removed from the end of the pump to reveal a pressure adjusting screw, as shown in the photos. A maximum of 1/4 turn clockwise or anti-clockwise, from the factory setting, is advised. Turning the screw clockwise 1/4 turn will increase the pressure switch cut-out pressure, turning the screw anti-clockwise will reduce the pressure setting.
- Please note a second screw mounted below the cover cap is set in position with threadlock, this should not be disturbed.



Cover cap

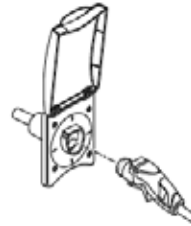


Pressure switch adjusting screw

**Ultraflow water intake housing****Operating instructions**

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

Plug the intake connector into the socket.



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

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

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





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

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

### Routine maintenance

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

### Notes

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

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

### System care

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

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

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

## Sanitising

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

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

### Separate Water Containers

1. All water remaining in the container should be disposed of so that the container is empty.
2. The outside of the container should be thoroughly cleansed and washed down to remove any dirt, dust or other contaminant. Water at a suitably hot temperature containing an appropriate detergent is recommended for this purpose.
3. Water should be put in the container, swirled around, then emptied out.
4. The container should then be totally filled with water containing an appropriate sterilant solution and allowed to stand for the recommended contact time.
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.

## SANITISING WATER SYSTEM

### For Systems:

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

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

Do not use products that contain aggressive agents for sterilising the water system. Always use a product designed for use within stainless steel tanks available from your caravan accessory superstore.

**NOTE:** Never use the water heating system when disinfectant/sterilising fluid is present. Doing so may damage the system.

**Water**

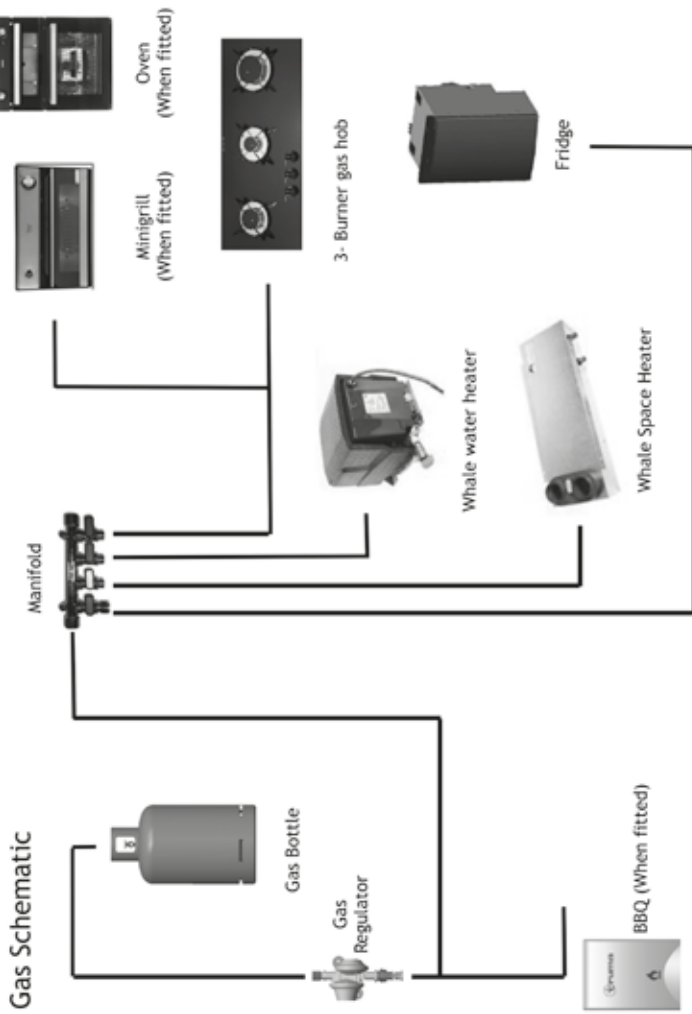
Fault	Cause	Remedy
Water not flowing from any tap when operated but pump runs	Freshwater tank empty Pump wired in reverse Pipe inlet or outlet pipe disconnected Pump pipes restricted by kinking Blockage in pump inlet or outlet pipe Blocked in-line filter of pump filter Air leak in suction line to pump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

## WATER FAULTS

**Water**

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
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
If pump motor runs steadily and will not stop	Battery voltage may be too low (below 10.5 volts) Pressure Switch setting problem	Check that there is water in the container Adjust switch and/or re-charge battery Check all connections in pipework. Adjust settings.

## Gas schematic



GAS SCHEMATIC

## Gas

### General information

#### Gas Cylinders

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

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

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

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

#### Gas Hoses

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

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

The pressure regulator relies upon a sealing washer(s) to maintain a gas tight joint, and it is essential to check that the washer is present, sound and correctly positioned prior to making the connection. The gas cylinder connection relies on a metal seating or bull nose connection to obtain a gas tight joint, therefore it is essential that the mating surfaces are clean and undamaged. In no case should a damaged valve or connection be used.

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

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

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

#### Cylinder compartment

All cylinder compartments have two universal plastic mouldings fitted to the floor of the compartment that are designed to fit both steel and BP Gas Light cylinders and two universal support cradles with straps for retaining the bodies of the cylinders at mid to high level and two universal support cradles with straps for retaining the bodies of the cylinders at mid to high level.

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

#### Regulators



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

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

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

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

**Note:** Never allow modification of electrical or LPG systems and appliances except by qualified persons.

### DuoControl (Model Specific)



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

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

### The Truma Drive Safe Regulator approved for en-route heating (model specific)



Fig. 1

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

#### To use safety devices:

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

**⚠ WARNING:** Isolate cylinders when re-fuelling

#### General

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

The LPG system should be inspected annually by a competent person.

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

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

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

## TYPES OF GAS

### Types of gas

#### Propane

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

Scandinavian countries use the same connector.

Germany and Austria supply propane with a male connection.

Propane will work at temperatures as low as  $-40^{\circ}\text{C}$  and is therefore suitable for all winter caravanning.

#### Butane

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

All these have a male left hand thread

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

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

Butane is only suitable for use at temperatures down to  $2^{\circ}\text{C}$  and will not work below that.

### Gas safety advice

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

#### Facts about LPG

- LPG is not poisonous.
- Bi-products are harmless.
- There is danger if all air and oxygen were excluded.
- (Ventilation holes must be kept clear at all times).
- LPG has been given a smell by the manufacturers in order to identify leaks.

### Awning Spaces LPG Appliance Exhaust

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

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

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

#### Precautions

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

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

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

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

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



**⚠ WARNING:** Always read individual appliance instructions

### 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.

- Turn off gas appliances
- 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

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

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

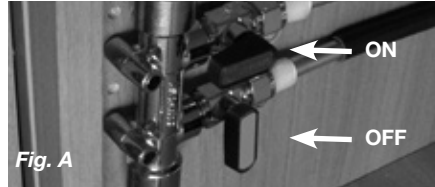
**⚠ WARNING:** If using cylinders other than those recommended, the user must ensure these are adequately supported, ventilation openings must not be obstructed and the cylinders must not cause damage to other fixtures and fittings located in the compartment.

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

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

All gas equipment (except barbecue and some water heaters) is supplied through a central Gas Manifold System which

has individual isolation taps for each appliance (Fig A), as follows:



WHITE -Space Heater

BLUE -Fridge

GREEN - Oven

RED - Water Heater

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

### 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 and fitted by a qualified and competent person.

**⚠ WARNING:** Flues which terminate below the floor, where appropriate, require that free evacuation of the products of combustion is always maintained and at least three sides of the underfloor space shall always be kept open and unobstructed especially by snow, and no additional opening in the floor is to be made.

## GAS FAULTS

**Thermal insulation heating**

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

The classifications are as follows:

**Grade 1**

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

**Grade 2**

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

**Grade 3**

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

**GAS**

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

## The electrical system

### General Information

It is strongly advised that the mains installation is inspected periodically to ensure safe use. The IET (BS7671) wiring regulations recommend that mains installations in touring caravans are re-inspected every 3 years. The National Caravan Council lists the qualifications necessary to perform this inspection, but an NICEIC approved contractor is probably the first choice.

### On arrival at the campsite

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



*13 pin plug example*

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

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

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

### On departure from the campsite

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

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

### Overseas connection

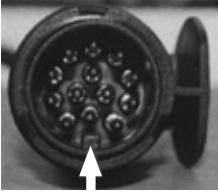
- Connection to a mains voltage overseas requires particular attention.
- Overseas supplies can be of reverse polarity.
- Reverse polarity results in equipment not necessarily being isolated when turned off, reverse polarity indicator on the PSU will light in the event of reverse polarity.
- The only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

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

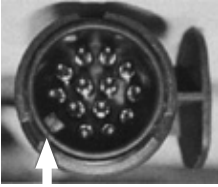
## 13 PIN CONNECTION

**13 pin connection**

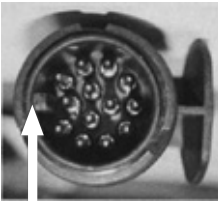
When using the 13 pin connector system for the first time it is worth taking a few minutes to familiarise yourself with the basic features of the connectors.



**Fig. 1 - Correct alignment**



**Fig. 2 - Incorrect alignment**



**Fig. 3 - Incorrect alignment**



**Fig. 4 - Alignment marks**

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

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

degrees clockwise until a click is felt or heard, at this point the cover flap can be allowed to fall over the circular surface of the plug top (figs 6 & 7).

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

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

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



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



**Fig. 6**



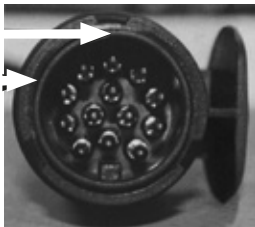
**Fig. 7**



**Fig. 8**

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

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



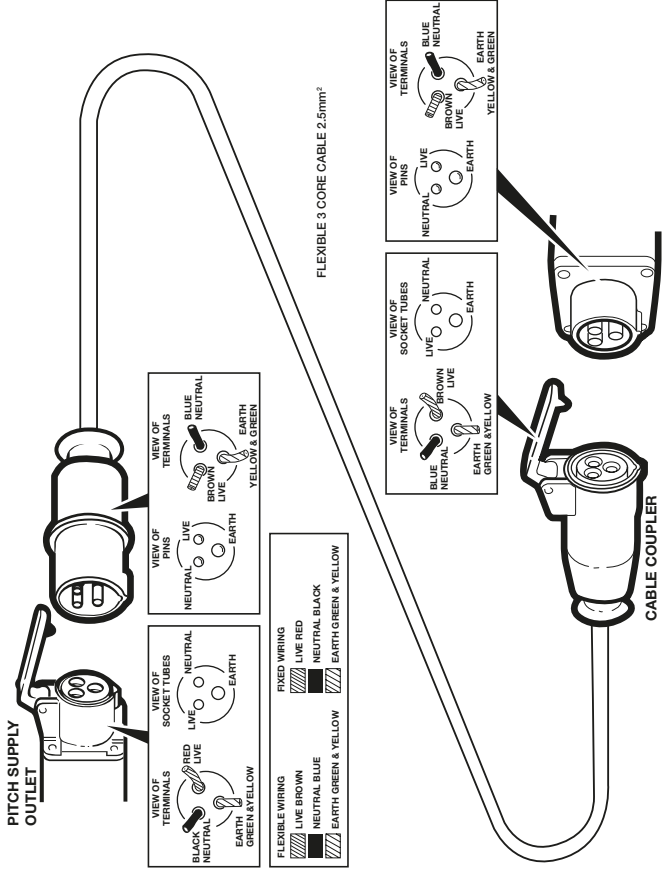
**Fig.9**

## 230V mains electrical equipment power consumption

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

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

## Wiring of connecting cable and caravan mains inlet



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

## TYPICAL APPLIANCE CONSUMPTION FIGURES

### Typical appliance consumption figures

Appliance/ Item	230 Volt		12 Volt		LP Gas grams/hour
	Watts	Amperes	Watts	Amperes	
Domestic Refrigerator	190 W	0.8 amp	Only when driving		16 g/h
Whale Space Heater	500 / 1000 / 2000 W	2.2 / 4.4 / 8.7 amp	20 W - 26.4 W	1.7 - 2.2 amp	150 g/h
Whale Water Heater	600 / 1200 W	2.6 / 5.2 amp	4 W	0.36 amp	g/h
Hob burners	Not applicable		Not applicable		70 - 161 g/h
Grill	Not applicable		Not applicable		117 g/h
Battery Charger	690 W	3.0 amp	Not applicable		Not applicable
Omnivent	Not applicable		2 w - 8.6 w	0.2 - 7.2 amp	Not applicable
12V LED Lights (each, depending on size of light)	Not applicable		0.4W - 6.1W	0.05 - 0.5 amp	Not applicable
Pressure switched water pump	Not applicable		48 W	4.0 amp	Not applicable

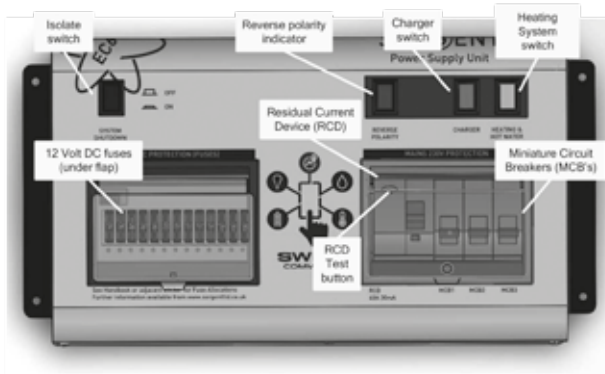
**Note:** These are approximate figures for guidance only, and are subject to changes in specification. The figures show energy consumption when an item or appliance is operating – i.e. a light is illuminated, or a heating system is providing space heating or water heating. Appliances which feature LCD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





Swift Command Power Control System.....	78
Control Panel Operation .....	80
Residual Current Device & Miniature circuit breakers .....	83
Battery charger.....	84
Leisure Battery .....	84
12 Volt DC Fuses .....	86
System warnings.....	91
Technical Data & Approvals .....	96
Battery compartment .....	98
Solar panel connection point .....	99
Generator usage .....	100
Habitation relay.....	101
Exterior 230v socket.....	101

# SWIFT COMMAND 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 technical manual available from [www.sargentittd.co.uk](http://www.sargentittd.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 EC601 & EC651 Power Supply Unit (PSU) - a combined mains consumer unit and 12V controller located in the bed box or mounted in furniture.
- The EC620 Control Panel (CP) - a remotely located user control panel used to turn circuits on and off and to display battery, water tank and other system information. This panel uses simple straightforward controls and reliable data communication to the PSU.

- The PX300 Intelligent Battery charger 300W
- The C44 Road Light Fuse Box - This small unit, is located in the front bed box. The unit houses fuses for the road lighting circuits and supplies from the tow vehicle, and also has connectors for the optional alarm system and Automatic Trailer Control (ATC) unit.

## 2. Using the System

### 2.1 Power Supply Unit - Component Layout

The PSU is located in the front offside bed box or is mounted into furniture.

### 2.2 Activating the System

The EC600 system has a shutdown feature that can be used when the vehicle is in storage. 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, all other supplies are turned off.

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

### 2.3 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 3.18.

**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 3.18.

**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 3.18.

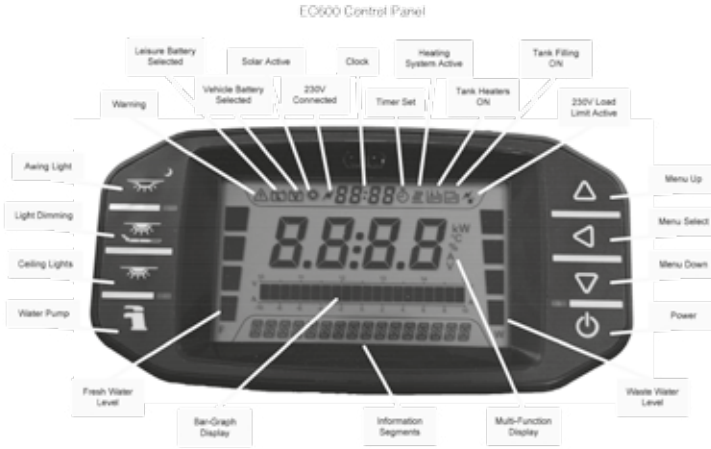
**H) Check operation of equipment.**

It is now safe to operate the 12V and 230V equipment.





# SWIFT COMMAND POWER CONTROL SYSTEM

## 2.4 Control Panel - Component Layout

Your control panel will have an appearance as below, but depending on your type of vehicle features will vary. Not all features are present in all vehicles.



## 2.5 Control Panel Operation

	<b>Power Button.</b> 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, the screen backlight will turn on and system information will be shown on the LCD display. To avoid night time nuisance the LED and backlight will be turned off after a preset time, see note below.
	<b>Menu Navigation Up Button.</b> Use the menu up and down buttons to scroll through the various functions. The menu operates on a continuous loop arrangement so you can go up or down to reach all menu items. It is recommended to start in the down direction.
	<b>Menu Navigation Select Button.</b> Use the select button make a selection or to change a value or setting. This button is also used to select the display or toggle the display information on many menu items.
	<b>Menu Navigation Down Button.</b> Use the menu up and down buttons to scroll through the various functions. The menu operates on a continuous loop arrangement so you can go up or down to reach all menu items. It is recommended to start in the down direction.







## Menu Tree



- **Leisure battery**, the leisure battery voltage and charging or discharging current is displayed. Use the select button to toggle the display, with voltage on the main display whilst current (in or out of the battery) is shown on the bargraph and vice-versa, current on the main display and voltage on the bargraph.
- **Vehicle battery**, when connected the vehicle battery voltage and charging or discharging current is displayed. Use the select button to toggle the display, with voltage on the main display whilst current (in or out of the battery) is shown on the bar-graph and vice-versa, current on the main display and voltage on the bar-graph.
- **Solar Power**, the charging current from the solar panel along with the voltage of the battery it is charging is displayed. Use the select button to toggle the display, with voltage on the main display whilst current is shown on the bargraph and vice-versa, current on the main display and voltage on the bargraph.
- **Select Battery**, press the select button toggles between the Leisure and Vehicle batteries as the power source (or battery to be charged). The selected battery is shown in the header area.
- **Tank-Fill on/off**, Turn tank fill on to start the external water pump and to start transferring water from the external water container to the internal water tank. Tank filling will stop when the onboard tank is full or if more than 7 minutes have elapsed.
- **Tank Heaters on/off**, is not applicable to caravans and will appear on the menu.
- **AC Limit**, the AC current limiter, when enabled, will monitor the incoming AC current and if the set limit is reached the 230V heating element within the heating system will be temporarily turned off until the current falls below the set limit. Use the select button to set the limit or to turn the feature off. The AC Limit icon in the header indicated that a limit is set and will flash if the limiter is active.
- **Temperature & Humidity**, Pressing the select button scrolls through the internal temperature, internal humidity & external temperature readings. Please note that due to the location of the internal temperature sensor there may be slight differences to the temperature shown on the heating system.
- **Dimmer %**, this display shows the lighting dimming level and is adjusted in 5% increments. The display commences where the level was last set. Press the select button to increase the level up to 100% and then back down again to 5%. Pressing the dimming button on the control panel immediately shows this dimming value.
- **Heater Settings**, this sub menu allows the heater controls and associated settings to be adjusted. A full explanation of the controls can be found in the heater section.
- **System Settings**, this sub menu allows a number of system features to be configured like the Clock, Date, Key beep, Backlight time, LED time, Tank Alarms, Bluetooth Pairing etc.

## SWIFT COMMAND POWER CONTROL SYSTEM

	<b>Pump Button.</b> 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 the level of the water tank will be shown on the screen.
	<b>Interior Lights Button.</b> With the power on, press the lights button to turn the main lighting supply on or off.
	<b>Light Dimming Button.</b> With the power on, press the dimmer button to turn the dimmed lighting on or off. Press the select button to adjust the dimmer level (the menu automatically changes to the adjustment screen). The last setting is remembered.
	<b>Awning Light Button.</b> With the power on, press the awning light button to turn the awning light on or off. The Adjacent LED will illuminate when the awning light is on. The awning light may also be controlled by a door slide, or caravan alarm system if fitted.

**Note, display illumination.** The LCD back light will illuminate for the pre-set time (default time is 30 seconds) adjustable between 5 and 120 seconds. Setting the timer to 0 seconds will force the backlight to be permanently on. The illumination of the blue LED's adjacent to the power, pump & awning light buttons can be configured in the same way as the backlight. The screen will wake up if your hand is placed near the panel or if a button is pressed.

## 2.6 Operation while driving

The EC600 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.

Please ensure the system shutdown switch on the PSU is in the on (button in) position before towing (see 2.2). 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.

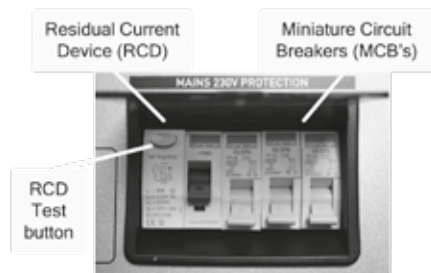
With the engine running the screen will show ENGINE RUNNING, the leisure and vehicle battery icons will be displayed to indicate they are being charged and the charging voltage will be shown in the main display.

### 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](http://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 2.3)

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	16 Amps	White (Yellow for heater)	Extra 230V Sockets / Alde or Truma Heating System / Whale Space Heater
3	10 Amps	Black (Blue for Whale water heater)	Fridge / Charger / Auxiliary devices / Whale Water Heater

#### 3.2 Generator Usage

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

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

Whilst some generators use electronic inverter 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 on the PSU may illuminate when using a 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 safe to use a generator, but please consult the generator handbook for further information.

## SWIFT COMMAND POWER CONTROL SYSTEM

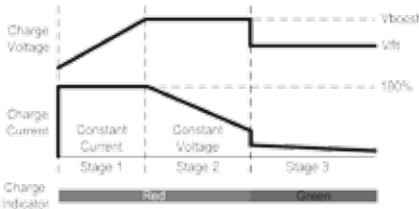
### 3.3 Battery Charger

The system incorporates an intelligent three-stage battery charger.

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:

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



**⚠ WARNING:** Under heavy loads the Battery 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.

### 3.4 Leisure Battery

#### A) Type / Selection

For optimum performance and safety it is essential that only a proprietary brand LEISURE battery is used and it is suggested to select a battery from the NCC Verified Battery Scheme with a typical capacity of 75 to 120 Ah (Ampere / hours). Depending on the prospective use of the caravan the correct type should be selected (A, B or C). 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 3.3 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 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.



**⚠ WARNING:** Your caravan is fitted with Swift Command Tracker (by Sargent) which monitors battery voltage. If you plan to disconnect or remove your leisure battery for maintenance or external charging, then please contact the monitoring station before you remove or disconnect the battery. If a leisure battery is not fitted, please also contact the Tracker monitoring station before removing the mains hook up. The Swift Command Tracker monitoring station can be contacted on 0345 6027302.

**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 EC600 system incorporates a battery protect circuit that warns the users and then disconnects the batteries when they fall below set values.

If a warning is active a beep will be emitted by the control panel and information will be shown on the screen. To cancel the warning, press the select 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.

### 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.

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 about 11.5V.  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.

## SWIFT COMMAND POWER CONTROL SYSTEM

### 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.

Fuse	Rating	Fuse Colour	Description
1	25 Amps	White	Charger
2	7.5 Amps	Brown	Permanent 12V / Alarm / Fridge Electronics / Alde Heating
3	10 Amps	Red	12V Sockets / TV Amplifier / Radio
4	10 Amps	Red	Extractor Fans / Truma Heating / Whale Space Heater
5	5 Amps	Tan	Appliances / Hob Ignition / Toilet / Whale Water Heater
6	10 Amps	Red	Water Pumps
7	7.5 Amps	Brown	Lighting, Main Lights & Dim Channel 1.
8	5 Amps	Tan	Lighting, Entry Light & Dim Channel 2.
9	10 Amps	Red	Spare Outputs / Motorhome only
10	10 Amps	Red	Auxiliary / Awning Light / Electric Step (Motorhome only)
11	20 Amps	Yellow	(Motorhome only)
12	15 Amps	Blue	(Motorhome only)
13	15 Amps	Blue	(Motorhome only)

**Note:** Fuses (2-13) have a Red LED below them which provides indication that the fuse has blown. The charger fuse has a green LED which indicates that the charger is working.

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

Fuse	Rating	Fuse Colour	Description
Battery	20 Amps	Yellow	Fuse remotely located near battery

The following table shows details of the fuse(s) located at the Road Light fuse box.

Fuse	Rating	Fuse Colour	Description
1	20 Amps	Yellow	Fridge Supply
2	5 Amps	Tan	Left Hand Tail Lights
3	5 Amps	Tan	Right Hand Indicators
4	5 Amps	Tan	Fog Lights
5			Spare location
6	20 Amps	Yellow	Car Battery Supply
7	5 Amps	Tan	Right Hand Tail Lights
8	5 Amps	Tan	Left Hand Indicators
9	7.5 Amps	Brown	Stop Lights
10	5 Amps	Tan	Reverse Lights

### 3.6 Solar Charge Management

The EC601/651 PSU incorporates a built-in solar charge management feature, which will monitor the input from a separate solar panel and regulator. The Solar Active symbol will be displayed on the control panel when there is an amount of energy available to charge the battery. The voltage and current produced from the regulator can be viewed on the multi-function display by selecting the Solar Power menu item. A maximum of 150w of Solar Charge can be connected in this way.

### 3.7 Smart Charging

Distribution of charger output to vehicle and leisure batteries is not applicable to caravans.

### 3.8 Water Pump Operation

The EC620 control panel pump button operates the internal water pump drawing water from an internal tank if fitted, or an external container when no internal tank is fitted.

The system incorporates an automatic tank fill feature. When turned on this will automatically fill the onboard water tank from the external container and will switch off automatically when full. To enable tank fill, select 'Tank-fill on' on the control panel.

To ensure the external pump is not damaged if the external tank runs dry, the pump runs for a maximum of 7 minutes.

When an inboard fresh water tank is fitted, the water tank incorporates a level warning feature to warn the user when the fresh water level drops below 25%.

If the water pump power is turned on and the fresh water level drops to below 25% a warning beep will be heard and a message will be displayed on the control panel. To cancel the warning, press the select button.

This warning 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.

The Swift Command App can be used to control the pump.

### 3.9 Water Tank Heaters (frost protection) Operation

Tank heater fitment is not applicable to caravans

### 3.10 AC Current Limiter Operation

The EC600 system features a 230V current monitoring system which allows the mains hook up current to be displayed on the control panel. The resolution of this reading is 0.5A. A current limit setting can be activated which if reached will switch off the electric elements in the heating system, until such time as the current drops and the elements will be switched back on. An example of this is if a kettle was to be operated whilst the heating was on and the current limit was reached: The heater electric element would be temporarily switched off, when the kettle had boiled then the heater element would be switched back on automatically.

This feature is particularly useful when abroad on a low current supply. A warning that the limit has been reached is displayed on the control panel.

Setting the value to OFF will disable this feature. The Smart Command App can be used to adjust this feature.

### 3.11 Lighting & Dimming Operation

The system contains up to two dimming channels for groups of lights which can be controlled by the light dimming button on the control panel, and the furniture mounted controls for those lights.

Some caravan layouts have only one group of lights which can be dimmed. The awning light on a caravan can be controlled by a number of items within the caravan, the local switch adjacent to the entry door, the alarm system lighting button, the control panel awning light button and the App. Each item can toggle the light on and off.

The Smart Command App can be used to both configure and adjust the lighting and dimming.

### 3.12 Heating Controls

The heating system can be controlled by the EC600. The system will be preconfigured by the manufacturer. The following menu items are only available in Timer control mode.

Scroll to the Heating Settings and press select to set or adjust the following items:

<b>WHALE</b>	
<b>Menu Item</b>	<b>Description</b>
Control	Set to MANUAL to use the controls supplied by the heating appliance manufacturer. Set to TIMER to control the appliances by the control panel with the settings below. <i>Set to APP control the appliance by the Smart Command app Please note use of the Whale Duo control panel may over-ride the Swift Command control of the Whale appliances.</i>
<i>The following menu items are only available when in Timer control mode</i>	
WH Energy	Set the energy setting to OFF, GAS, EL1, EL2, MIX1 or MIX2. GAS provides heating of the water heater using gas as an energy source. EL1 uses a 230v 600w element as a heat source. EL2 uses a 230v 1200w element as a heat source. MIX1 uses a combination of gas and 600w element. MIX2 uses a combination of gas and 1200w element.
AH Energy	Set the energy setting to OFF, FAN, GAS, EL1, EL2 or EL3. FAN provides air recirculation only. GAS provides heating using gas as an energy source. EL1 uses a 230v 500w element as a heat source. EL2 uses a 230v 1000w element as a heat source. EL3 uses a 230v 2000w element as a heat source.
Timer 1	Set the timer 1 event time This setting adjusts in 15 minute increments and uses the 24 hour clock
	Example 07:30
T1 Heating	Set the timer 1 heating temperature. This setting can be off, or 5 through to 30 degrees C
	Example 22 deg C
T1 H/Water	Set the timer 1 hot water temperature. This setting can be OFF or ON
	Example On
<i>The menu now repeats for timer 2 through to timer 4</i>	
Exit settings?	When timer 4 is completed the exit settings item is reached. Press the select button to exit and save the settings.

The timer example above will set the heating to 22 degrees C and the hot water to eco at 7:30 in the morning.

### 3.13 Other Controls

The main control panel will display the software version number of both the Control Panel and the PSU. On the EC620 menu item press the select button to display software information.

### 3.14 Electric Step operation

Electric step operation is not applicable to caravans

### 3.15 Additional CI Bus Enabled Devices

The Swift Command system will continue to develop enabling the control of additional devices such as air conditioning and control units. When selecting additional equipment check for CI Bus compatibility markings, and check with Sargent Electrical for details of the latest compatible devices.

### 3.16 Bluetooth Pairing

Using the control panel, access the System Settings menu and then scroll to the Bluetooth pairing section. Press the select button to start pairing, the power button LED will flash to indicate the pairing mode. You can now pair your device to the system following the devices instructions to add a Bluetooth item. Pairing remains on for 1 minute and is then turned off automatically.

### 3.17 System Warnings

The system incorporates a number of warnings that are active at specific times. These are summarised below, and also covered by relevant sections of this manual. When a warning is active a triangle will be displayed in the control panel header area.

Warning	When	Type
Fresh water level low	With pump turned on and fresh water level low (less than 25% full). Only available when an on-board tank is fitted.	Message on screen and 30 second audible beep.
Leisure battery voltage low	With control panel power on and leisure battery selected (as active battery) and the voltage level falls below 10V	Message on screen and 30 second audible beep.
	With control panel power on and leisure battery selected (as active battery) and the voltage level is below 9V	Message on screen and 30 second audible beep. If no action taken after 30 seconds then the system will switch the power off to prevent severe discharge of the battery
	<p><b>Note:</b> 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 11.5V or above.</p> <p>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.</p>	
Leisure battery voltage high	With control panel power on or off and leisure battery is selected (as active battery) and the voltage level rises above 15V.	Message on screen and repeated beeps from the control panel. The power is automatically turned off. The beeping will not stop until the fault is cleared.
Vehicle battery warnings	If the vehicle battery is selected instead of the leisure battery, with the towing vehicle connected, then similar warnings to those described above are applied to the vehicle battery. The vehicle battery low warning level is 10.9V	
Engine running	When the engine is started the system power will be turned off.	Message on screen, Leisure & Vehicle battery symbols indicating both batteries are connected for charging. The charging voltage is also shown on screen.
Mains lead (hook-up cable) still connected / plugged in	When the engine is started and the mains cable is still plugged in and the charger is switched on.	Message on screen and repeated beeps from the control panel. The beeping will not stop until the hook-up lead is removed.

**3.18 Common Fault Table**

<b>Fault</b>	<b>Possible Cause</b>	<b>Proposed Fix</b>
No 230 volt output from PSU	Connecting lead between the site and Leisure Vehicle not connected	Check and connect lead as per 2.3C
	RCD switched off	Reset RCD as per 2.3D
	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.
	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 isolate 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  Over voltage protection has been activated, the control panel will display a warning. A number of things can cause this but the most common is the solar panel, it is worth checking the regulator is connected correctly and operating within the correct parameters. Engine has been started, all equipment has been disconnected to meet EMC requirements. See 2.6
	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
	Other fault	Contact your Dealer

## SWIFT COMMAND POWER CONTROL SYSTEM

Pump not working illuminated on PSU	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.
<b>Fault</b>	<b>Possible Cause</b>	<b>Proposed Fix</b>
Lights not working	Fuse/s blown	Replace fuse with correct value as per fuse table.
	Lights turned off	Turn Lights on by pressing the lights button, use dimmer at the control panel.
Bluetooth Communications not working illuminated on PSU	Bluetooth not paired	Using System Settings menu, select Bluetooth Pair option
	Bluetooth not active on Device	Ensure that the handheld device has Bluetooth switched on and that the device supports the Bluetooth 4 standard (BLE)
	Bluetooth out of range	Ensure the handheld device is within 7M of the middle of the caravan/motorhome switch see section 3.8. Ensure the setting matches your desired requirement.
	Bluetooth connection issue	See App user guide for further details
Remote Communications not working	Account details not entered on App	Enter details in Account page of App settings menu
	Account not registered at time of vehicle delivery	Check with supplying dealer or Sargent Electrical that an account has been registered.

### 3.19 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](http://www.sargentltd.co.uk).

## 4 Remote Access & Control

### 4.1 Swift Command App

The Swift Command app can be down loaded from the Apple App Store, the Android Play store or the Windows store (when available).

A separate Swift Command User Guide is available which covers the operation of the app. The app will update as features are continuously developed or added.

Before you can use the App with your caravan you will need to create an account and sign up to the free communication service. This is a simple process and will be explained further by your dealer at the vehicle handover. Additional information is available at [www.swiftcommand.co.uk](http://www.swiftcommand.co.uk)

### 4.2 Swift Command Web usage & Description

In addition to the mobile App, you can also use the same account and login details to access the Swift Command web site.

Here you can update and amend your details, look at location information and history, review system information and historical data as well as changing some system options and settings.

Additional information is available at [www.swiftcommand.co.uk](http://www.swiftcommand.co.uk)

### 4.3 Swift Command SIM Coverage & Usage information

The EC600 system, when delivered for mainly UK use, contains Mobile SIM with 36 month contract, which commences upon activation at the Dealership when a customer is assigned to the caravan. Below is a list of the countries covered by the SIM under a fair usage policy, a complete list is available at request.

Austria, Belgium, Bulgaria, Cyprus, Czech

Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Netherlands, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

For continued use outside of the countries listed above, a change of SIM card should be arranged by your supplying dealer.

### 4.4 Replacement parts

The Control panel contains a small lithium battery to maintain the clock when no other energy supplies are available this will last in excess of 5 years under normal conditions. The battery is a CR2032 3.0V

The EC630 Communication module contains a special backup battery pack which should last in excess of 3 years under normal conditions. The pack part number is 16308 available from Sargent.

### 4.5 Updates

From time to time there may be updates to the system software; these updates will be done at service intervals by your dealership.

## 5 Technical Data & Approvals

### 5.1 Equipment – EC601, EC602, EC651, EC620, EC630 & PX300 Control Equipment

Outline Specification		
INPUT 230V	230 Volts / 0 to 16 Amps	+ / - 10%
OUTPUT 230V	RCD protected, 2 x MCB outputs of 10A & 1 x MCB output of 16A  Separate switched channels for heating system and charger	
INPUT 12V	2 x 20A battery inputs via 2 x 4 way connectors	
SOLAR INPUT	1 X Dedicated solar panel input (20 to 150W panel) via a 2 way connector	
OUTPUT 12V	25A total output via multiple switched channels protected by 13 fused outputs	
Integrated 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).	
Signal INPUT	4 x Fresh water level, 4 x Waste water level, 1 x Engine running, plus multiple vehicle connections, sensor inputs for temperature & humidity	Fresh water negative sensed Waste water negative sensed
Data IN / OUT	CANBUS Data communication and power to Control Panel via 6 way connector  CI-Bus Data communication to CI-Bus enabled devices via RJ11/12 connector	
IP rating	IP31	
Operating temperature	Ambient 0 to 35° Celsius  Charger case temperature with full load 65° C Max	Automatic shutdown and restart if overheated / overloaded
Dimensions		
EC601 & EC651 PSU	Overall size (HxWxD) 180 x 305 x 135mm Clearances 75mm above, 50mm left & right	Weight 3.8 Kg
EC620 Control Panel	Overall size (HxWxD) 93 x 180 x 32mm Cut-out size (HxW) 82 x 165mm	Fixing centres 166mm X 26MM Weight 150 g
EC630 Comms Module	Overall size (HxWxD) 55 x 116 x 85mm	Weight 550g
EC640 Sensor	Overall size (HxWxD) 60 x 27 x 14mm	Weight 80g

**5.2 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

**5.3 Declaration of Conformity**

**Equipment: Leisure Power Control System**

**Model name: EC601, EC602, EC651,  
EC620, EC630 & PX300**

I hereby declare that the equipment named  
above has been designed to comply with  
the relevant sections of the above referenced  
approvals. The unit complies with all essential  
requirements of the Directives.

Signed	Name	Position	Manufacturer
Date:	I L Sargent	Technical Director	Sargent Electrical Services Ltd Unit 35, Tokenspire Business Park Woodmansey, Beverley East Yorkshire, United Kingdom

Whilst every effort has been made to  
ensure the accuracy and completeness of  
this document, no guarantee is given against  
errors or omissions. This document may be  
updated / improved over time therefore please  
check with your dealer / supplier for update  
information or visit:  
[www.sargentltd.co.uk](http://www.sargentltd.co.uk)

## BATTERY COMPARTMENT

**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. Please also take into consideration when manoeuvring a battery, that the weight may be in excess of 20kg.

Your caravan is fitted with a floor mounted battery compartment (Batteries not supplied)

Floor mounted compartments are designed to hold the battery securely and to contain any electrolyte (acid) spillage. 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 any replacement batteries are also fitted with a breather pipe. The battery should only be positioned in the appropriate compartment, and be properly secured before travelling.

**Note:** Batteries fitted in the floor mounted compartment must be kept upright to prevent the electrolyte spilling out.

It is recommended that a good quality leisure battery is always connected when the 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. It should be remembered that batteries suitable for the electrical demands of a caravan 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 (charged) at all times.

Batteries should be a proprietary brand leisure battery with a minimum 75Ah capacity. Batteries should be checked dimensionally before purchasing, to ensure fitment within the battery compartment, as brands vary in size.

**⚠ 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'.

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

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

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

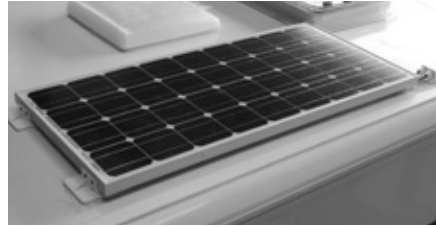
To preserve the life of your leisure battery and charger please observe the following:

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.

**⚠ WARNING:** Your caravan is fitted with Swift Command Tracker (by Sargent) which monitors battery voltage. If you plan to disconnect or remove your leisure battery for maintenance or external charging, then please contact the monitoring station before you remove or disconnect the battery. If a leisure battery is not fitted, please also contact the Tracker monitoring station before removing the mains hook up. The Swift Command Tracker monitoring station can be contacted on 0345 6027302.

### Cleaning and maintenance (Floor mounted battery compartment)

- 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.
- The cleaning of the Battery Box should only be done after all power sources have been switched off, in order to prevent a hazardous situations.



### Factory fitted Solar Energy System

Depending on specification, your tourer may be fitted with a solar panel and regulator. This solar panel and regulator may provide additional 12v power whenever sunlight is available to the panel, and this will be directed to the leisure battery whether the control panel is ON or OFF, and regardless of the position of the SYSTEM SHUTDOWN button. If a factory fitted alarm system is present, that alarm will in turn be able to use the leisure battery as a power supply. Conditions allowing, the system keeps the leisure battery 'topped up' during storage, and will provide a daily boost to the leisure battery when camping without a mains 230V supply.

### Battery power

As a guide an 80W panel is capable of supplying up to 4.8 amps, +/- 1.5%.



## BATTERY CHARGING / GENERATOR

**Regulator**

Unlike typical regulators, the factory fitted solar panel regulator has been specially designed to draw no power from the leisure battery when the solar panel is not generating power. This feature is desirable especially in winter months when a normal regulator can gradually discharge the leisure battery.

**Regulator operation**

The regulator operates automatically, turning on and off as required to charge and maintain the leisure battery. When the solar panel is exposed to a source of sunlight the regulator starts 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 on next page). 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 and 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.

**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 to turn off.

**Power Supply Unit**

The PSU does not need to be switched on (shutdown button in) for the solar panel to charge the battery. During caravan storage the PSU should be shutdown (shutdown button out).

**Control Panel**

When the solar panel is operating the voltage display on the leisure battery will increase if the loads placed on the battery are sufficiently light.

**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; no abrasive cleaners should be used.

**Generator usage**

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

**⚠ 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 inverter 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 caravans by manufacturers to comply with the following legislation:

1. The Road Vehicles (Construction and Use) Regulations 1986 Regulation 60 - Radio interference suppression
2. European Community Whole Vehicle Type Approval (ECWVTA) framework directive 2007/46/EC and EU Regulation 661/2009 (General Safety) mandates UNECE Regulation 10 (Vehicles with regard to Electromagnetic compatibility).

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 towing vehicles electronic systems/components, including safety critical items such as air bags, ABS braking etc.

### Exterior 230V socket (when fitted)

The recessed electric socket is designed to give you a convenient electrical access point on the outside of the caravan, which is completely protected from the weather, even when in use.

With the caravan stationary and connected to a 220v/240v supply, raise the front cover of the socket and insert the plug of the equipment to be used. Close and latch the cover into place to provide a weatherproof seal.

Please remember that the equipment plugged into the socket may or may not be weatherproof.

**Note:** Care should be taken when opening the socket cover.

To disconnect equipment, raise socket cover and remove plug, then close and latch the cover into place to ensure a weatherproof seal.

Before moving the caravan from a pitch ensure that all accessory points are disconnected and latched in the closed position to prevent the ingress of water or other foreign matter from causing damage to the point or any of the caravans services.

Any item plugged into this socket will be supplied by the same 10A breaker (MCB) as the other items plugged into sockets within the caravan. Please take into account the total loading placed on the socket circuit and the site supply before switching equipment on. The socket should be used to power a single appliance with an appropriate power consumption rating – **the socket is NOT suitable for use as a supply to power an adjacent caravan or motorhome.**



Whale Water Heater .....	104
Whale Space Heater .....	108
Dometic absorption refrigerator .....	113
Thetford Hob .....	135
Thetford Grill.....	141
Thetford Oven .....	142
Thetford C402 cassette toilet .....	144
Caravans with external BBQ point .....	150
Caravans with external shower point .....	151
TV antenna .....	151
Bedding .....	152
Doorscreen .....	152
Exterior door key .....	152
Exterior door .....	152
Windows / Roller blinds .....	153
Rooflights .....	153
Table / storage .....	155
Shower use .....	155
Awning .....	155
Paint colour reference.....	156
TV brackets.....	156
Bonded roof .....	156
Step on hitch cover .....	156
Caravan motor mover.....	156

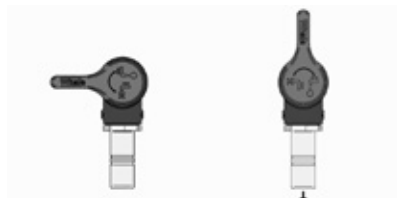
## WHALE WATER HEATER



### Whale Water Heater

Your caravan is equipped with a Whale 8.0 litre Gas / Electric water heater. In addition to the instructions below, the water heater can be controlled by the Swift Command system. Please see Swift Command instructions for further details.

### Whale Water Heater Drain Valve



Closed

Open

### Instructions for use

Never operate the Water Heater without water in it. This appliance **must not** be connected directly to the mains water supply without a pressure regulator fitted, or any water supply greater than 190 kPa (1.9 bar). Ensure the caravan water system including Water Heater is full of water, and the vehicle is level before operating.

### Operating Instructions

To operate the Water Heater's electric elements, it must be connected to a suitable 230V a.c supply.

Upon initial operation, or to refill after the system had been drained, check the drain valve is closed then fill the system with clean fresh water. To fill, open one hot tap and

switch on the water pump. Leave the tap open to allow air to escape while the Water Heater is filling. Once water flows smoothly out of the hot tap, the water heater is filled. To allow the remainder of air to escape from the system, open each hot water tap in turn until water flows smoothly.

**Note:** In cold temperatures, the water in the supply pipework may freeze and prevent filling.

Check that all the gas and/or electricity supplied are turned on.

### For Gas Operation - Water Heater

Press the Water Heater Function key until the 'gas' icon is illuminated. There will be a pre-purge of approx. 5 seconds to allow any un-burnt gas to leave the flue and will extinguish when the water is up to temperature. A green LED will light upon successful flame ignition. If there is air in the gas supply line, it may take a few attempts for the gas to ignite. See Trouble Shooting guide for gas lockout re-setting. If the ignition is not satisfactory, the red diagnostic LED will flash - refer to the Trouble Shooting Guide (see pg100).

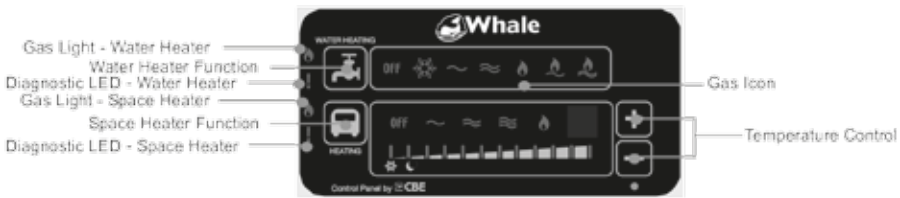
### For Electric Operation - Water Heater

The Water Heater is equipped with twin 750W / 1500W immersion heater elements offering operation at 750W or 1500W

For 600W, press the Water Heater Function Key until the 'low power setting' icon is illuminated

For 1500W, press the Water Heater Function key until the 'high power setting' icon is illuminated.

**Note:** The electric elements will still operate if the appliance is in gas ignition lock-out.



## Gas and Electric Operation

For faster heating, the appliance can be operated with both gas and electric.

Press the Water Heater Function key until the desired function is illuminated.

For 750W and Gas, press the Water Heater Function key until the desired setting is illuminated.

For 1500W and Gas, press the Water Heater Function key until the desired setting is illuminated.

## Switching Appliance Off

Press the Water Heater Function key until 'Off' is illuminated.

**Note:** The Control Panel incorporates a low temperature/frost protection setting. This can be activated by pressing ' - ' until the frost icon is illuminated.

**⚠ WARNING!** The operating pressure of the gas supply to the Water Heater **must be** 28-30mbar Butane or 30mbar-37mbar Propane.

## Maintenance

To clean and sterilise inside the Water Heater, use diluted sterilising fluid and fully rinse through with clean water afterwards.

The outside of the appliance should not normally require cleaning. If it does, isolate the electric supplies and wipe down with a soft, damp cloth only. **Do not** use abrasive cleaners. Allow to fully dry before reconnecting the electrical supplies. If descaling of this appliance is required, this can be done using 'Kettle Klear' or an equivalent product and fully rinsed through with clean water afterwards.

The Whale® Water Heater **must be** checked periodically by a Whale® Authorised Service Engineer, or competent person, at least annually. This **must be** completed according to the practise in the country where it is used and according to the Whale® instructions. Whale recommends annual testing of gas soundness and combustion by an accredited LPG gas engineer.

## Troubleshooting

The Water Heater is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas supply or d.c supply to internal Water Heater malfunctions. In the unlikely event of a failure, the red LED on the Control Panel will light. To diagnose the problem please refer to the table below:

In the unlikely event of failure, the red '!' LED on the Control Panel will light. To identify the lockout press and hold, the Water Heater Function Button. The temperature control bars will light to indicate the fault code e.g if 1 bar lights, the fault code is 1, if 2 bars light, the fault code is 2 etc. Please refer to the table over the page:

## WHALE WATER HEATER

**Note: To clear a lock out.**

If 3 or 5 bars are lit on the Duo Control Panel indicating a lockout - turn the d.c. power 'off' and then 'on' again at the vehicle's power supply unit.

If this does not clear the lockout, or any other lockout is displayed (i.e. 1,2 or all 12 bars lit on the Duo Control Panel) - please press the red Reset Button on the Water Heater once for one second.

If the problem persists contact:

**Whales Support on +44 (0)845 217 2933.**

### Winterising/Draining

When using the Water Heater in winter, ensure the flue is not blocked by snow or fallen leaves etc. When not in use, the Water Heater must be fully drained. This is particularly important during the winter months as a precaution against freezing.

To drain, switch off the water pump at either the pump switch of main switch. Open all the hot water taps in the vehicle and operate the drain valve fitted in the system. The drain valve **must be** left in the "open" position to ensure all the water drains out.

Number of flashes	Fault	Remedy
1	No flame detected	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. At temperatures below +5°C use Propane gas rather than Butane. Clear lockout as described above.
2	Overheat	Check that there is water in the appliance. Whale recommends that you wait at least 5 to 10 minutes to allow the Water Heater to cool before clearing the lockout as described above.
3	Low/high supply voltage	Minimum operating voltage is 10V d.c., maximum is 15V d.c., when measured at the Water Heater. Check battery voltage. If between 10V d.c. and 15V d.c., check connections between Water Heater and battery. Check alternator or external battery charging. Clear lockout as described above.
5	Other/ Internal fault	Attempt to clear lockout as described below. If this fails, contact Whale Support on +44 (0)845 217 2933.
12- all bars lit	General Fault	Two faults have occurred at the same time OR at least five or more lockout clearing attempts have been unsuccessful. Clear lockout by pressing the red Reset Button on the Water Heater as described above.

## Service Support Details

For installation or serviceable parts advice please contact Whale® Customer Support:

**Tel: +44 (0)845 217 2933**

**Email: [info@whalepumps.com](mailto:info@whalepumps.com)**

## Eu Declaration of Conformity

Description of Equipment: **Gas and Electric Storage Water Heater**

### Manufacturer's Declaration

We hereby declare, under our sole responsibility, that the above equipment complies with the provisions of the following EC Directives.

Gas Appliance Directive 2009/142/EC on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.

Low voltage Directive 2014/35/EC on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

Electromagnetic Compatibility Directive 2014/30/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility.

CE mark first: **June 2009**

### Basis on which conformity is declared.

The above equipment meets the protection requirements of the EMC Directive and the principle elements of the safety objectives of Low Voltage Directive. Please contact Whale® if further details are required.

## Patents and Trademarks

The Whale® Water Heater is protected by the following patent and design registration:

Patent Number: EP2438364

WHALE® is a registered trademark of Munster Simms Engineering Ltd trading as Whale.

## Warranty

The Whale® Water Heater is covered by a 3 year warranty.

Please complete the enclosed warranty card and return to Whale. For warranty details, please see the enclosed warranty statement.

**Munster Simms Engineering Ltd.  
2 Enterprise Road, Bangor  
N. Ireland**

**BT19 7TA**

**Tel:+44 (0)28 9127 0531**

**[www.whalepumps.com](http://www.whalepumps.com)**

**Email: [info@whalepumps.com](mailto:info@whalepumps.com)**

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Whale's policy is one of the continuous improvement and we reserve the right to change specifications without prior notice.

Illustrations are for guidance purposes only. Please note that by contacting Whale Support you will be indicating your consent to receiving product updates, recall information, help guides and appropriate marketing messages from us via post, email or telephone unless you indicate an objection to receiving such messages.

## WHALE AIR HEATER



### Whale Space Heater

Your caravan is equipped with Whale Gas / Electric space heater, mounted below the floor of the caravan with blown air outlets mounted in the furniture. In addition to the instructions below, the air heater can be controlled by the Swift Command system. Please see Swift Command instructions for further details.

### Instructions for use:

To the User:

Read the following instructions carefully.

**⚠ WARNING!** In the unlikely event of leaks in the gas system, or if there is a smell of gas:

- Extinguish all naked flames
- Do not operate any electric switches
- Turn off all gas appliances
- Open windows and doors for ventilation
- Do not smoke
- Shut off gas connection

Ensure that the system is thoroughly checked by a Whale® Approved Service Centre or Whale Service Engineer.

The Space Heater **must not** be operated in the following situations:

- When refuelling the vehicle towing the caravan or refuelling any other appliances.
- When the vehicle in which the Space Heater is installed is in motion.
- When the vehicle in which the Space Heater is installed is in a confined space (such as a garage).

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or

lack experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children **must be** supervised to ensure that they do not play with the appliance.

Ensure that a minimum of one hot air outlet vents is permanently open.

When using gas to operate the Space Heater, the combustion air flue and outlet openings for the products of combustion (exhaust flue) **must never be obstructed**. They **must be** checked regularly and if necessary cleaned by the user (e.g snow or fallen leaves must be removed from the combustion outlet and air intake).

Where the open end of the exhaust flue terminates, three sides of the under floor space must be kept open and not obstructed, and **must not** contain through-floor ventilation openings.

The Space Heater, its gas supply and flues for the products of combustion must be inspected in accordance with national regulations or if these do not exist, the Space Heater manufacturer's recommendations. Whale advises that this **must be** carried out at least annually.

The Whale® Space Heater **must be** checked periodically by a Whale® Approved Service Centre/Technician, or competent person, at least annually. This **must be** completed according to the practise in the country where it is used and according to the Whale® instructions. Whale recommends annual testing of gas soundness and combustion by an accredited LPG gas engineering. The appliance contains ESD sensitive components and therefore **must only** be opened by a Whale® Approved Service Centre/Technician (contact Whale® Support).





The inlet vents of the Space Heater must never be blocked and at least one hot air outlet vent must be permanently open. To operate electric elements, it must also be connected to a suitable 230V a.c supply.

## For Gas Operation - Space Heater:

Press the Space Heater Function Key until the 'gas' icon is illuminated. There will be a pre-perge pause of approx. 30 seconds to allow any un-burnt gas to leave the flue. A green LED will light upon successful flame ignition. If there is air in the gas supply line it may take a few attempts for the gas to ignite. See Trouble Shooting for gas lockout re-setting. If the ignition is not satisfactory the Space Heater Diagnostic LED on the Duo Control Panel will light. If the diagnostic LED is lit please refer to the trouble shooting guide.

## For Electric Operation - Space Heater:

The Space Heater is equipped with 3 power settings 500W/1000W/2000W.

For 500W Press the Space Heater Function key until the 'low power setting' icon is illuminated.

For 1000W Press the Space Heater Function key until the 'medium power setting' icon is illuminated.

For 2000W Press the Space Heater Function key until the 'high power setting' icon is illuminated.

When operating on low and medium electric power settings, the blown air fan runs at a reduced speed to minimise noise and current draw.

**Note:** The electric elements will still operate if the appliance is in gas ignition lock-out. The appliance cannot be operated with both gas and electric.

## Switching Appliance Off

Press the Space Heater Function key until 'off' is illuminated.

**Note:** The fan will continue to run for 3 minutes to allow the Space Heater to cool down.







## Adjusting The Temperature

Use the temperature control buttons to adjust the temperature. Press '+' to increase the temperature. Press '-' to decrease the temperature. The Space Heater will automatically turn itself on and off to maintain the desired ambient temperature.

**Note:** The Control Panel incorporates a low temperature/frost protection setting. This can be activated by pressing '-' until the bar above the frost icon is illuminated.

# WHALE SPACE HEATER

## Duo Control Panel Functions

Symbol	Setting	Description
	OFF	Space Heater will be off.
	Gas	Space Heater will operate on gas. There will be a pre-purge time of around 30 seconds before ignition. When the gas is lit, the green LED will be illuminated. If the Space Heater fails to light for any reason, the red LED '!' will light up. Refer to Trouble Shooting below.
	Electric Low	Space Heater will operate at LOW on electric setting.
	Electric Medium	Space Heater will operate at MEDIUM on electric setting
	Electric High	Space Heater will operate at HIGH on electric setting.
	Frost Protection	Frost Protection will be enabled *Whale Duo Control Panel Only.

### Maintenance

If the Space Heater has not been used for some time, dust may have settled inside the Space Heater and the ducting. The outside of the appliance should not normally require cleaning. If it does, isolate the electrical supplies and wipe down with a soft, damp cloth only. **Do not** use abrasive cleaners. Allow to fully dry before reconnecting the electrical supplies.

The Whale Space Heater must be checked periodically by Whale Approved Service Centre/Technician, or competent person, at least annually. This must be completed according to the practise in the country where it is used and according to the Whale® instructions. Whale recommends annual testing of gas soundness and combustion by an accredited LPG gas engineer. The appliance contains ESD sensitive components and therefore must only be opened by a Whale® Approved Service/Technician (contact Whale® Support).

### Troubleshooting

The Space Heater is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas or d.c. supply to internal Space Heater malfunctions. In the unlikely event of a failure, the red LED on the Control Panel will light.

In the unlikely event of a failure, the red '!' LED on the Control Panel will light. To identify the lockout press and hold the Space Heater Function Button. The temperature control bars will light to indicate the fault code e.g if 1 bar lights, the fault code is one, if 2 bars light, the fault code is 2 etc. Please refer to the table over page.

**Note: To clear a lock out.**

**If 1, 3, 4 or 5 bars are lit indicating a lockout** - turn the d.c. power 'off' and then 'on' again at the vehicle's power supply unit. If this does not clear the lockout, or any other lockout is displayed (i.e. 2 or all 12 bars lit) - please press the red Reset Button on the Water Heater once for one second.

If the problem persists contact:

**Whales Support on +44 (0)845 217 2933.**

Number of flashes	Fault	Remedy
1	No flame detected	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. At temperatures below +5°C use Propane gas rather than Butane. Clear lockout as described above.
2	Overheat	Check that there is water in the appliance. Whale recommends that you wait at least 5 to 10 minutes to allow the Water Heater to cool before clearing the lockout as described above.
3	Low/high supply voltage	Minimum operating voltage is 10V d.c., maximum is 15V d.c., when measured at the Water Heater. Check battery voltage. If between 10V d.c. and 15V d.c., check connections between Water Heater and battery. Check alternator or external battery charging. Clear lockout as described above.
5	Other/Internal fault	Attempt to clear lockout as described below. If this fails, contact Whale Support on +44 (0)845 217 2933.
12- all bars lit	General Fault	Two faults have occurred at the same time OR at least five or more lockout clearing attempts have been unsuccessful. Clear lockout by pressing the red Reset Button on the Water Heater as described above.

### Winterising

When using Space Heater in winter ensure the flues are not blocked by snow or fallen leaves etc. When the Space Heater is not going to be used for a long period of time, Whale recommends that the open end of the combustion air and exhaust flue are covered to prevent ingress of leaves etc.

### Service Support Details

For installation or serviceable parts advice please contact Whale® Customer Support:

**Tel: +44 (0)845 217 2933**

**Email: info@whalepumps.com**

### Eu Declaration of Conformity

Description of Equipment: **Gas and Electric Space Heater**

### Manufacturer's Declaration

We hereby declare, under our sole responsibility, that the above equipment complies with the provisions of the following EC Directives.

Gas Appliance Directive 2009/142/EC on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.

Low voltage Directive 2014/35/EC on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

Electromagnetic Compatibility Directive 2014/30/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Automotive EMC Directive 2004/104/EC (latest amendment 2009/19/EC) as per Regulation 10.03.

CE mark first: **November 2009**

### Basis on which conformity is declared.

The above equipment meets the protection requirements of the EMC Directive and the principle elements of the safety objectives of Low Voltage Directive.

Please contact Whale® if further details are required.

## WHALE SPACE HEATER

### **Patents and Trademarks**

The Whale® Space Heater is protected by the following patent and design registration:

Patent Number: EP2438364

### **Warranty**

WHALE® is a registered trademark of Munster Simms Engineering Ltd (also trading as Whale®).

The Whale® Space Heater is covered by a 3 year warranty. Please complete the enclosed warranty card and return to Whale.

For warranty details, please see the enclosed warranty statement.

**Munster Simms Engineering Ltd.**  
**2 Enterprise Road, Bangor**  
**N. Ireland**  
**BT19 7TA**  
**Tel: +44 (0)28 9127 0531**  
**[www.whalepumps.com](http://www.whalepumps.com)**  
**Email: [info@whalepumps.com](mailto:info@whalepumps.com)**

## 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

The information, texts and illustrations in these instructions are copyright protected and are subject to industrial property rights.

No part of these instructions may be reproduced, copied or utilised in any other way without written authorisation by Dometic GmbH, Siegen.

### 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](http://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 the fridge's 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.

### Environmental notice

Refrigerators manufactured by Dometic GmbH are free of CFC/HCFC and HFC. Ammonia (a

## DOMETIC REFRIGERATOR

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 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. Children may only operate the appliance, if they have been made aware of how to operate the refrigerator safely and the dangers attending incorrect operation.

### 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 caravan 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)
- 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
- Use of the refrigerator during travel with the power supply of 12V DC
- Fluctuations in the power supply at the parking place when using the energy type 230V AC (mains voltage)

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.
- Please observe the instructions and information regarding the use-by-date on the out outside packaging of the food.
- Do not leave cooled goods outside the refrigerator for too long.

## DOMETIC REFRIGERATOR

- 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.

**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 cooling performance requirements of the Climatic Class SN acc. to EN/ISO 7371 in the temperature range of the +10 to +32°C ambient temperature.

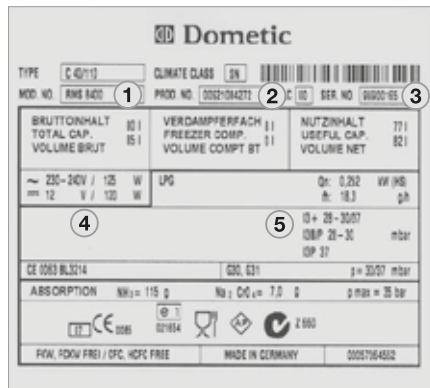
**Cold air can restrict the performance of the unit. Install the winter covers if you discover ant loss of cooling performance when outdoor temperatures are low (see operation during low outside temperatures).**

**For ambient temperatures exceeding to +32°C for longer period of time, it is recommended installing Dometic additional fan (item no.2412985-01).**

### 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

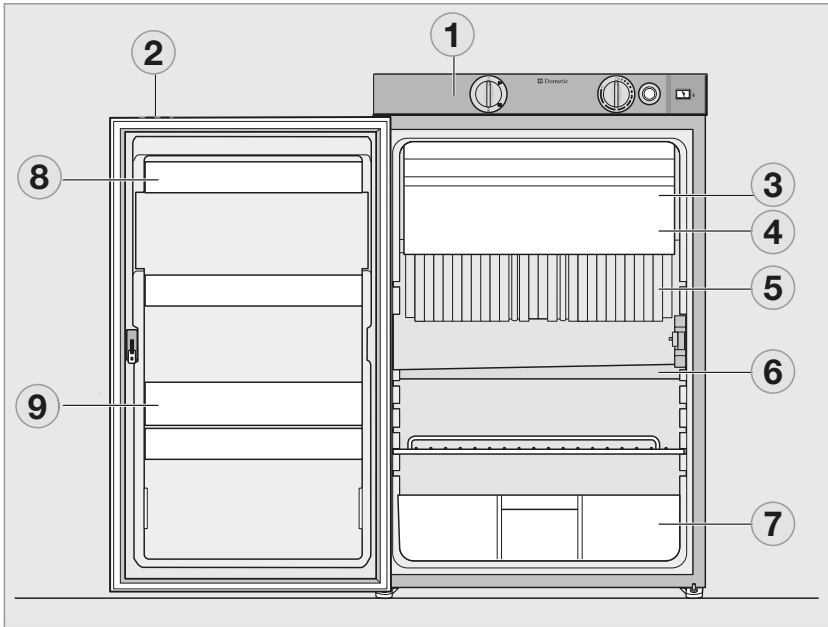
The cooling unit’s performance is influenced by ambient temperatures. Please select the medium setting for ambient temperatures between +15°C and +25°C (refer to Setting of cooling compartment temperature.) The unit operates within its optimum performance range.

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 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



(Appearance is model specific)

- 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

## DOMETIC REFRIGERATOR

**Electrical Operation****12V-voltage (on-board power supply)**

**⚠ WARNING:** The refrigerator should only be used in the 12VDC-operation while the vehicle's engine is running, otherwise the on-board-battery would be discharged within a few hours!

**Mains power (230V)**

**⚠ WARNING:** This option should only be selected where the supply voltage of the connection for the power supply corresponds to the valve specified on the data plate. Any difference in values may result in damage the appliance.

**Gas operation (liquid gas)**

- The refrigerator must be operated using liquid gas (propane, butane) (no natural gas or town gas).
- When using LPG gas, please consider that the burner needs cleaning at shorter intervals due to the gas combustion method (2-3 times per year recommended)
- In Europe, gas operation is permitted while travelling only on the condition that the gas system of the vehicle is equipped with a hose rupture protection. The natural regulations of the respective country must be observed.
- For physical reasons, gas ignition faults could occur starting from an altitude above sea level of approx. 3280ft/1000m (**no malfunction!**)
- On the initial refrigerator start-up or after a cylinder change, air may be trapped in the gas line. To purge the air from the lines, switch on the refrigerator and any other gas appliances (e.g. stove) for a short time. The gas ignites without delay.
- Each refrigerator with manual ignition is equipped with an automatic flame safety valve which interrupts the gas supply automatically after approx. 30 seconds when the flame is extinguished.

**⚠ WARNING:** As a basic rule, gas operation is prohibited in petrol stations!

**Prior to starting the refrigerator in gas mode:**

- Open the gas cylinder valve.
- Open the shut-off valve for gas supply to the refrigerator.

## Cleaning

Before starting up the refrigerator, it is recommended that you clean it inside and repeat this at regular intervals.

Use a soft cloth and lukewarm water with a mild detergent. Then wipe out the appliance with clean water and dry thoroughly.



Fig. 1

To avoid material alterations, do not use soap or hard, abrasive or soda-based cleaning agents.

Do not allow the door seal to come into contact with oil or grease.

## Maintenance

- In compliance with the applicable regulations, please note that the gas unit and the connected ventilation ducts must be checked by authorised technical personnel after first use and after every other year for compliance with the European Standard EN 1949. A test certificate has to be issued. It is the user's responsibility to arrange this test.
- The gas burner must be inspected and cleaned as necessary at least once a year. When using liquefied petroleum gas (tank or refill cylinders) the maintenance interval is reduced to half-yearly or quarterly. Keep the evidence of maintenance work carried out on your refrigerator.
- Work on gas and electrical equipment shall be carried out by qualified personnel only.

It is recommended that this is carried out by an authorised customer services department.

We recommend maintenance following an extended shutdown of the vehicle. Please contact our customer services.

## DOMETIC REFRIGERATOR

### Manual energy selection / automatic ignition (RM8xx1 or RM9xx1) MES (fridge models)



Fig. 2

- 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)

### RM8xx1 or RM9xx1 MES appliances (manual energy selection)

#### Electrical operation

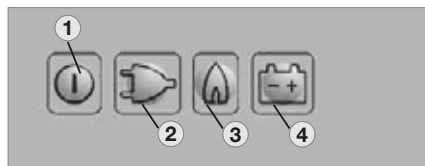



Fig. 3

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

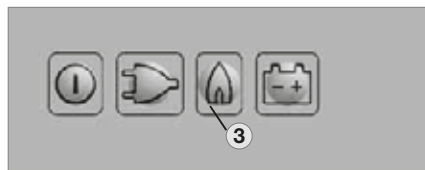


Fig. 4

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

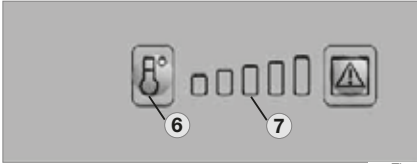


Fig. 5

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.

### Additional features

- 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 130).

### 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).



Fig. 6

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.

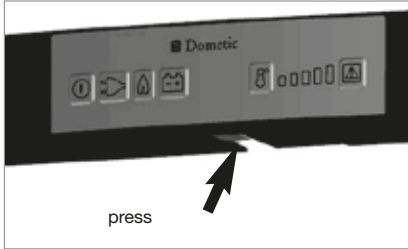
If a button is pressed, the temperature level LEDs (7) also light.

If the battery voltage is too low, an acoustic signal (whistle tone) sounds every 15 seconds. Then replace the batteries in the battery compartment.

# DOMETIC REFRIGERATOR

## Inserting / changing the batteries

- Switch off the refrigerator, as described in section 'Shutting of the refrigerator'



Opening battery compartment

Fig. 7



pull out

Fig. 8

**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

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.



Fig. 9

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.



Fig. 10



Fig. 11

## Manual energy selection / automatic ignition (RMD8xx1 or RM9xx1) MES



Fig. 12

- 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)

**RMD 85x1 or 9x1 models  
MES-appliances  
(manual energy selection)**

**Electrical operation**

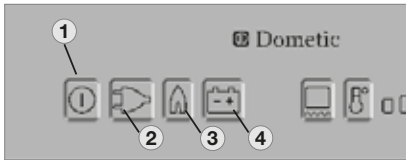




Fig. 13

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. 14

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**

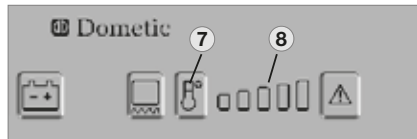


Fig. 15

Select the desired cooling compartment temperature by pressing button (7) .

The LED display (8) 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.

# DOMETIC REFRIGERATOR

## Additional features

- 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 130).

## 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).

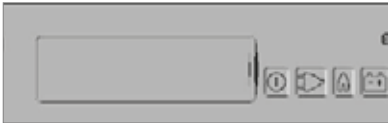


Fig. 16

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.

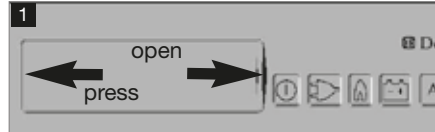
If a button is pressed, the temperature level LEDs (7) also light.

If the battery voltage is too low, an acoustic signal (whistle tone) sounds every 15 seconds.

Then replace the batteries in the battery compartment.

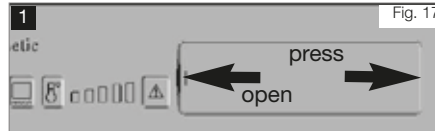
## Inserting / changing the batteries

Switch off the refrigerator, as described on page 129 Shutting of the refrigerator.



Opening left battery compartment

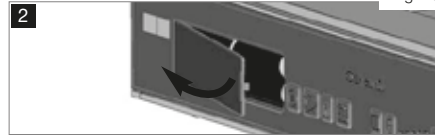
Fig. 15



Opening right battery compartment

Fig. 16

Fig. 17



2

**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 (fridge freezer models only)**

All fridge freezer 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).



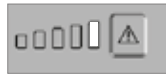
Fig. 19

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.

**Door locking**

**⚠ WARNING:** As a basic rule, shut and lock the refrigerator before you start your journey!

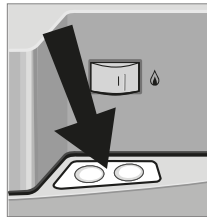


Fig. 20



Fig. 21

Open the door by pressing the locking button and pull open (see Fig. 20).

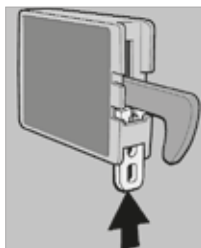
Shut the door again by pushing it to close. The snapping into the lock can be heard.

While the vehicle is parked, the locking hook may be fixed to facilitate opening of the door (Fig. 22-25).

**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.

## DOMETIC REFRIGERATOR



Fastening

Fig. 22

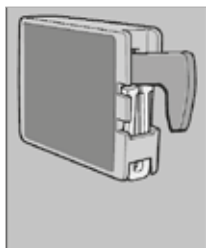
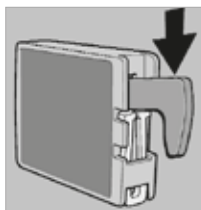


Fig. 23



Releasing

Fig. 24

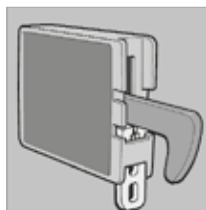


Fig. 25

### 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).**

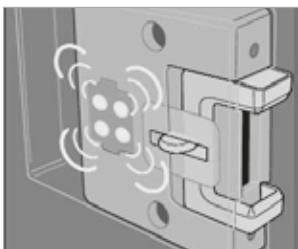


Fig. 26

**Note:** Please contact the authorized Dometic Service if a failure occurs.

### Positioning the storage racks

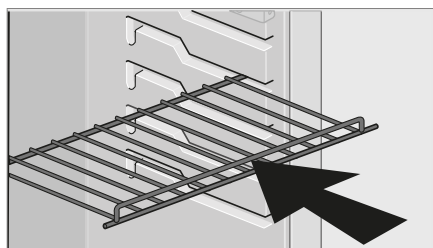


Fig. 27

The storage racks may be pulled out by smoothly lifting them and may be positioned as desired.

### Removable freezer compartment

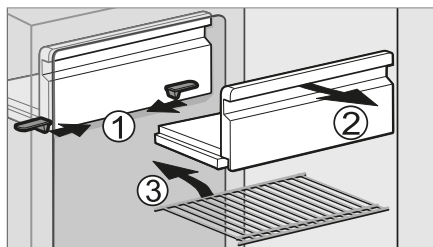


Fig. 28

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.

## Winter operation

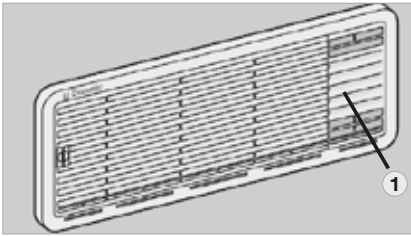


Fig. 29

In winter, check that the ventilation grilles and the exhaust duct system (1) have not been blocked by snow, leaves, etc.

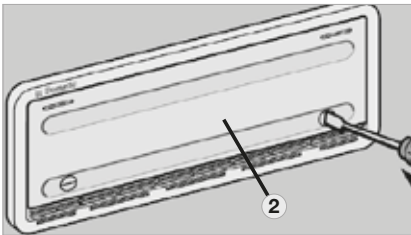


Fig. 30

When the outside temperature falls below  $+10^{\circ}\text{C}$ , 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.

Covers may be supplied as part of the specification of your caravan or alternatively are available through most Swift Group Dealers.

**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.

**⚠ WARNING:** Refrigerators up to 130L capacity\*: Do not install the top winter cover during gas operation

\*See Technical Data or information on the rating plate.

### 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.

**Note:** Winter covers are not supplied as standard on most models.

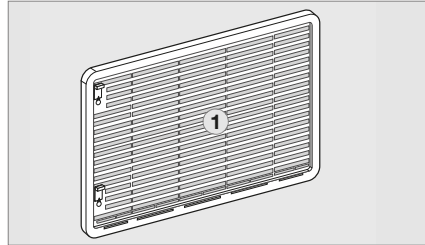


Fig. 31

When the outside temperature falls below  $+10^{\circ}\text{C}$ , the winter cover (2) should be fitted. This protects the unit from excessively cold air which could have adverse effects on the performance of the unit.

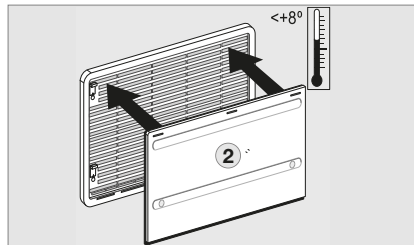


Fig. 32

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.

## 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.

## DOMETIC REFRIGERATOR

- 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.

#### Storing products in the freezer compartment

- Do not keep carbonated drinks in the freezer.
- 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.**

### Refrigerator compartments

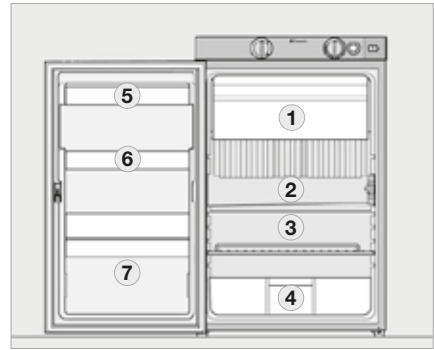


Fig. 33

- 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

#### Positioning the storage racks

The storage racks may be pulled out by loosening the two locking devices (1) underneath. For loosening pull the slider to the middle, for fastening pull them sideways.

Two of the storage racks are secured. In this way inadvertent entrapment and suffocation of children is prevented, if the storage racks are removed. To protect children it must be avoided to create space for children in the cooling compartment.

**⚠ WARNING:** Do not remove these storage racks. Thus children have no space to be entrapped in the refrigerator.

If it is necessary to remove these storage racks (i.e. for cleaning) loosen the locking pins (2) at first as shown, by means of a suitable screw driver.

Put in place the locking pins after removing the storage racks.

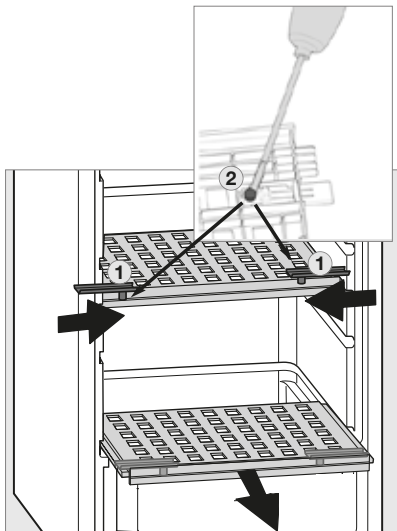


Fig. 34

### Shutting off the refrigerator

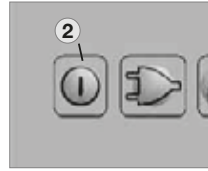


Fig. 35

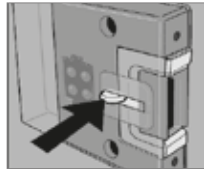


Fig. 36

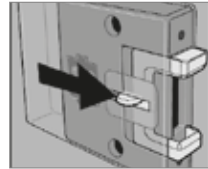


Fig. 37

- 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. 41).
- 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.

## DOMETIC REFRIGERATOR TROUBLESHOOTING

**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 occurrence 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. 38

- 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

## DOMETIC REFRIGERATOR TROUBLESHOOTING

### Operation with on-board 12 v power supply

Indicator	Fault	Remedy
<b>(2) and (8)</b> flashing and acoustic signal 20s	<b>230 V mode:</b> "230V" not available or voltage too low	Check mains power connection, mains voltage, fuse
<b>(4) and (8)</b> flashing and acoustic signal 20s	<b>12 V mode:</b> "12V" not available or voltage too low	Check 12V connection, on-board battery, fuse
<b>(3) and (8)</b> flashing and acoustic signal 20s	<b>Gas mode:</b> Flame not ignited	Check gas supply (gas bottle, gas valve) Press the <b>(8)</b> button after clearing the fault
Acoustic signal, 15s at two minute intervals	Interior lighting is switched on	Close door, check door contact
<b>(2) and (7)</b> flashing and acoustic signal 20s	<b>230 V mode:</b> 230V heating element defective	Arrange replacement of 230V heating element, contact Customer Service
<b>(4) and (7)</b> flashing and acoustic signal 20s	<b>12 V mode:</b> 12V heating element defective	Arrange replacement of 12V heating element, contact Customer Service
<b>(7)</b> flashing and acoustic signal 20s	Temperature sensor without contact or defective	Contact Customer Service
<b>(3) and (7)</b> 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
<b>(3) and (8)</b> flashing brightly	Flame not ignited	Check gas supply (gas bottle, gas valve) Press the <b>(8)</b> button after clearing the fault
<b>(3) and (7)</b> 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	Under voltage 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 <b>Note:</b> No automatic switching is performed during the ignition.

## COOKING EQUIPMENT

### **⚠ WARNING:**

- Appliances and accessible parts become hot during use.
- Avoid touching heating elements.
- Children less than 8 years of age shall be kept away unless continuously supervised.
- This appliance can be used by children aged from 8 years and above, persons with reduced physical, sensory or mental capabilities and/or lack of experience and knowledge only if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliances.
- Cleaning and user maintenance shall not be made by children without supervision.
- Unattended cooking on a hob with fat or oil can be dangerous and may result in fire.
- Never extinguish a fire with water, switch off the appliance and cover flame with lid or fire blanket.
- Danger of Fire: Do not store items on the cooking surface.
- Do not use harsh abrasive cleaners or sharp metal scrapers to clean the oven door glass since they can scratch the surface, which may result in shattering of the glass.
- Never use a steam cleaner to clean appliance.

### **Introduction**

These appliances are designed for cooking foods, any other use is incorrect and dangerous. Failure to install the appliances correctly or improper use, will invalidate any warranty or liability claims.

This appliances must be installed in accordance with the local, national and European regulations in force. Particular attention shall be given to the requirements regarding ventilation. Read the instructions before using the appliances.

Our policy is one of continuous development and improvement. Specifications and illustrations may change subsequent to publication.

### **Provision of ventilation**

The use of a gas cooking appliance results in the production of heat, moisture and products of combustion in the room in which it is installed. Ensure that the kitchen is well ventilated especially when the appliance is in use: keep natural ventilation holes open.

Prolonged intensive use of the appliance may call for additional ventilation, for example opening of a window.

## Thetford hob 900 Series



Read the safety instructions and information on use and maintenance of the hob carefully before continuing. This will enable you to use the hob safely and efficiently. Retain this manual for future reference. For the latest version of the Thetford Manual, please visit [www.thetford-europe.com](http://www.thetford-europe.com).

### Symbols

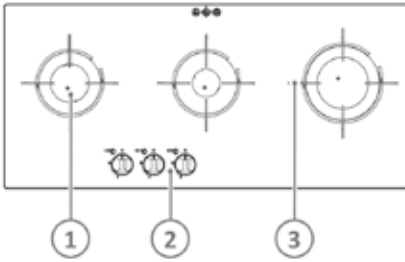
Key symbols:

- ⚠** **WARNING** Risk of injury and/or damage
- ⚠** **CAUTION** Hot surface. Risk of injury and/or damage
- ⚠** **ATTENTION** Important information

### Safety

- ⚠** This appliance may be used by children aged 8 years or older and persons with reduced physical, sensory or mental capabilities and/or lack of experience and knowledge only if they are supervised or have been given instructions on the safe use of this application and understand the potential hazards.
- ⚠** Keep children younger than 8 years away from the appliance, except under constant supervision.
- ⚠** Do not allow children to play with the appliance
- ⚠** Do not allow children to clean or maintain this equipment unattended.
- ⚠** Use only park supplied by the manufacturer.
- ⚠** Do not change or adjust anything on the appliance, unless the change is authorised by the manufacturer or its representative
- ⚠** Use the appliance for cooking only and not for anything else, for example room heating. This can lead to carbon monoxide poisoning and overheating.
- ⚠** The manufacturer cannot be held liable for damage resulting from improper use or incorrect setting of controls.
- ⚠** This appliance is not intended to be operated by means of an external timer or separate remote control system.
- ⚠** The use of the gas cooking appliance results in the production of the heat in which it is installed.
- ⚠** Ensure room has sufficient ventilation when then appliance is in use. During prolonged use, additional ventilation may be needed by opening a window or increasing the extraction force of the hood.
- ⚠** Never extinguish a cooking fire with water. Turn the burner off and cover the flame with the lid of a fire blanket.
- ⚠** The burners and pan supports are hot during and after use. Allow all parts to cool before touching them, as this can cause serious injury.
- ⚠** Unattended cooking on a hob with fat or oil can be dangerous and may result in fire. Do not leave the appliance unattended when in use.
- ⚠** The use of inappropriate hob guards can cause accidents.
- ⚠** Do not store items on the cooking surface of the hob.
- ⚠** Do not use steam cleaners or pressure washers to clean the appliance. See Maintenance and cleaning for instructions.
- ⚠** Do not allow oil or fat to build up on the appliance. Clean the appliance after each use.

## THETFORD 900 SERIES HOB



1. Gas burners
2. Pan supports
3. Control panel

### Before Use

Before using the appliance:

- Ensure that all the packaging materials have been removed.
- Clean the appliance with warm water and household detergent and dry carefully with a soft cloth.
- Ensure that the gas supply is connected and turned on.
- Ensure that the appliance is connected to the 12V DC battery for the spark ignition.
- Ensure that the pan supports are positioned properly.
- Ignite the gas burner and let them burn to expel odours and vapours first

**⚠ ATTENTION:** Only use LPG (Liquified Petroleum Gas). The appliance operates on propane or butane. Propane is preferred over butane, because butane provides poor performance at an ambient temperature below 10°C and cannot be used at an ambient temperature below 5°C

### Use of the burners



For the exact location of the control knobs, see main components.

Turning on:

- Push and turn the control knob.
- Turn the control knob anti-clockwise to the full rate position
  - For automatic ignition models: The automatic ignition sparks and lights.
  - For non-ignition models: Hold a lit match or gas match to the burners.
- Keep the control knob pressed for about 10-15 seconds and then release it.
- Adjust the height of the flame.

If the burner accidentally extinguishes turn the control knob to the 0 position and wait at least 1 minute before re-igniting the burner.

If the burner has not lit within 15 seconds turn control knob back to the 0 position and release it. Wait at least 1 minute and repeat the steps above to turn on the appliance.

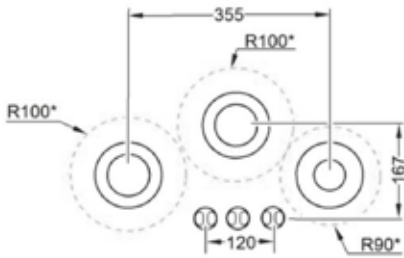
### Turning Off

- Turn the control knob clockwise to the 0 position to turn off the burner.

Always make sure the control knob is in the 0 position when you have finished using the gas burner.

### Safe cooking

- Do not allow cooking vessels to overlap the edges of the appliance- use the correct sizes of pans and position them centrally over the burners.



Lay-out based on Topline 167

Burner set-up: 1x1, 0kW: 2x1,5kW

- Ensure that there is at least a 10mm gap between the pans and the edges of the hob.
- Turn the pans so that the handles do not overhang the front of the appliance.
- Ensure that the flame of the gas burner heats the bottom of the pan, not the edges.
- Do not leave the appliance unattended when not in use.
- Do not use the appliance while the vehicle is moving.
- Turn the control knob back to the 0 position after cooking.
- Keep the appliance clean and prevent accumulation of grease and food scraps.

## Maintenance and cleaning

Thetford recommends an annual inspection service by an approved service centre. Between annual servicing, clean the appliance regularly after use. Before any cleaning work is started, the appliance should be have been left to cool and be disconnected from the gas and electrical supplies.

- Always remove any spills or contamination immediately after use with soap and hot water. Towel dry the surface with a soft cloth.
- Use a non-abrasive multi-purpose cream cleaner and a nylon scourer pad to clean more stubborn dirt or grease.
- For routine cleaning of the glass surface, use a cleaning cream and clean cloth or paper towel. After cleaning, wipe dry with a dry

paper towel.

**⚠ WARNING:** Do not use abrasive cleaners, metal scouring pads or hard brushes. They could damage the appliance.

**⚠ WARNING:** If you clean the burner rings, ensure that the holes are not clogged.

**Note:** The control knobs can be removed for cleaning. The knobs are easy to replace.

## Gas leaks

As soon as you smell gas:

- Ensure that all burners are turned off.
- Extinguish all naked lights and do not smoke.
- Shut off the gas supply at the gas bottle immediately.
- Do not use electrical switches.
- Open all doors and windows.

**⚠ WARNING:** LPG is heavier than air. Escaping gas accumulates at lower levels. By following the strong, unpleasant smell of gas, you can determine where the leak is located. To investigate where it is exactly, use a special leak detection spray. Never use an open flame to find the leak!

# THETFORD 900 SERIES HOB

## Trouble shooting

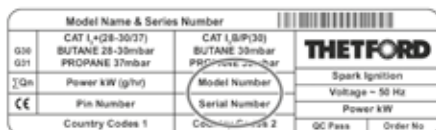
Problem	Problem cause	Solution
Burners do not burn or burn unevenly	Gas bottle is empty Gas tap is closed Burner caps are not correctly positioned Burners are wet or clogged	Fill bottle Open tap Allow caps to cool, then reposition them Dry or clean burners
Automatic ignition does not spark	12V DC battery is discharged Connections are loose Ignition points is wet or dirty	Charge battery Secure connections Dry or clean ignition point
Control knobs do not function	Knobs are mounted incorrectly	Install knobs correctly

If you cannot solve a problem, contact the authorised local Services Centre or Thetford Customer Service in your country.

## Servicing

All servicing must be carried out by an approved competent person. Before any service work is started, the appliance should have been left to cool and be disconnected from both gas and electrical supplies. After each service the appliance must be checked for gas soundness and electrical safety.







For service, please contact your authorised local Service Centre giving details of the model and serial number on the data badge plus date of purchase.















## Putting in storage

- Close the gas valve at the gas bottle.
- Disconnect the battery.
- Ensure that the control knobs are in the 0 position.
- Wipe the appliance clean and dry.


## Technical Specifications

	SHB969 series			SHB922 series		
	Gas input		Injector	Gas input		Injector
						
	kW	g/hr	mm	kW	g/hr	mm
Gas burners	1 x 2.5 2 x 1.5	1 x 179 2 x 107	0.77 0.61	2 x 1.5	2 x 107	0.61
Total	5.5	393		3.0	214	

	SHB931 series			SHB923 series		
	Gas input		Injector	Gas input		Injector
						
	kW	g/hr	mm	kW	g/hr	mm
Gas burners	1 x 2.5 1 x 1.5 1 x 1.0	1 x 179 1 x 107 1 x 77	0.77 0.61 0.52	2 x 1.5	2 x 107	0.61
Total	5.0	363		3.0	214	

	SHB910 series - option 1			SHB910 series - option 2		
	Gas input		Injector	Gas input		Injector
						
	kW	g/hr	mm	kW	g/hr	mm
Gas burners	1.5	107	0.61	2.5	179	0.77
Total	1.5	107		2.5	179	

This application is suitable for use with LPG (liquefied Petroleum Gas) and should not be used with any other gas.

 **WARNING:** This application must be earthed

## Disposal

Your product has been designed and manufactured with high quality materials and components, which can be recycled and reused. When your product has reached the end of life, dispose of the product according to the local rules. Do not dispose of the product with the normal household waste. The correct disposal of your old product will help prevent potential negative consequences to the environment and human health.

## THETFORD 900 SERIES HOB

## Questions

If you have questions about your product, parts, accessories or authorised services:

- Visit [www.thetford-europe.com](http://www.thetford-europe.com)
- If you cannot solve a problem, contact the authorised local Service Centre or Thetford Customer Service in your country.

## Warranty

Thetford BV offers the end users of its products a three-year-warranty. In case of malfunction within the warranty period, Thetford will replace or repair the product. In this situation, the costs of replacement, labour costs for the replacement of defective components and/or the costs of the parts themselves will be paid for by Thetford.

Purchased space parts carry a one-year-warranty. Any fitting and/or labour costs are not covered by warranty.

1. To submit a claim under this warranty, the user must take the product to an authorised Thetford Service Partner. The claim will be assessed there.
2. Components replaced during repair under warranty become the property of Thetford.
3. This warranty does not prejudice current consumer protection laws.
4. This warranty is not valid in the case of products that are used for commercial purposes.
5. Warranty claims falling into one of the following categories will not 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
  - Modifications have been made to the product
  - The product has been repaired but not by an authorised Thetford Service Partner
  - The serial number or product code has been tampered with or removed
  - The product has been damaged by misuse



## Thetford MK3 Mini Grill (when fitted)

### ⚠ WARNING:

- 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.

### Using the Grill

1. Ensure gas cylinder/supply is connected and turned on.
2. Open door, push in the control knob and turn anti clockwise to the large flame symbol (🔥) – see Grill Control position below
3. Continue depressing the knob whilst holding a lighted match to the burner. For models fitted with spark ignition the procedure is similar except that burner is ignited by depressing the ignition button located on the fascia.
4. After the burner is lit continue depressing the knob for approximately 10 - 15 seconds before releasing the knob.
5. If burner has not lit within 15 seconds, release knob and wait at least 1 minute before repeating operations (2) to (4).
6. To turn off, rotate the control knob until the line on the knob is aligned with dot on the control panel.
7. Always make sure the control knob is in the off position when you have finished grilling.

### Note:

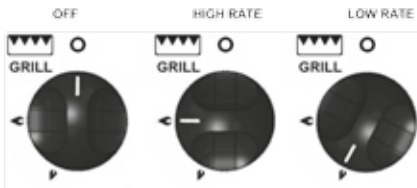
- The grill pan supplied is multi functional, for use in grill or oven.
- The handle design allows removal or insertion whilst the pan is in use.
- Always remove the handle when the pan is in use.
- The grill MUST only be used with the door open.
- The heat deflector below the fascia should be pulled out prior to lighting the grill. Never adjust the heat deflector position without using hand protection – ie oven gloves.

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, open any windows and turn on mechanical ventilators to help remove the smoke.

Although the grill heats up quickly, it is recommended that a few minutes preheat be allowed.

It is normal for the flames on this burner to develop yellow tips as it heats up.

Depending on the food to be cooked the correct grilling height can be achieved by inverting the pan trivet into either the high or low position.

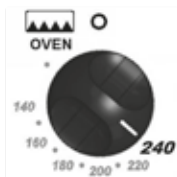


Grill Control Panel

## THETFORD MK3 OVEN

**Thetford MK3 Oven (When fitted)**

1. Ensure gas cylinder/supply is connected and turned on.
2. Open door, push in the control knob & turn to full rate (Gas Mark 9, 240°C) see Fig 4
3. Continue depressing the knob whilst holding a lighted match or taper to the burner.  
For models fitted with spark ignition the procedure is similar except that burner is ignited by depressing the ignition button located on the fascia.
4. After the burner is lit continue depressing the knob for approximately 10 - 15 seconds.
5. Release the knob and turn to required heat setting.
6. If the burner has not lit within 15 seconds, release knob and wait at least 1 minute before repeating operations (2) to (5).
7. Place the oven shelf in the required position and close the door.
8. Although the oven heats up quickly a 10 minute preheat is recommended. The oven should reach full temperature in about 15-20mins.
9. To turn off, rotate the control knob until the line on the knob is aligned with dot on the control panel.
10. Always make sure the control knob is in the off position when you have finished.

**Oven Control Panel**

The oven shelf has been designed to allow good circulation at the rear of the oven. A raised bar at the rear of the shelf prevents 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. Installation of a shelf is the reverse of this procedure.

**Note:** Before using your oven for the first time we recommend the following procedure:-

Clean all surfaces with hot soapy water. Light the oven and set control knob to Gas Mark 5 (200°C). Heat the oven for about 30 minutes to eliminate any residual factory lubricants that might impart unpleasant smells to cooked food.

A non-toxic smoke may occur during this procedure, open any windows and turn on mechanical ventilators to help remove the smoke.

**⚠ WARNING:**




- Ignition must be carried out with the door open.
- 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.
- Always ensure food is properly cooked prior to serving.

**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 cooking chart. 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, allow adequate spacing to ensure free circulation of heat. When roasting with aluminium foil ensure the foil does not impair circulation of heat or block any oven flue outlet.

Oven Temperature Zones					
Gas Mark					Dish
¼ - ½	90°C	110°C	130°C	Very Cool	Meringues
1	110°C	130°C	150°C	Cool	Stewed fruit
2	120°C	140°C	160°C	Cool	Rich fruit cake, rice pudding
3	130°C	150°C	170°C	Warm	Baked custard, shortbread fingers
4	140°C	160°C	185°C	Moderate	Victoria sponge
5	155°C	180°C	200°C	Fairly Hot	Whisked sponges, ginger nuts
6	170°C	190°C	215°C	Hot	Short crust pastry
7	185°C	210°C	230°C	Hot	Bread, scones, flaky pastry
8	200°C	220°C	245°C	Very Hot	Puff pastry
9	215°C	240°C	260°C	Very Hot	Quick browning

**⚠ WARNING:**

- When cooking, young children should be kept away.
- 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.
- Always ensure food is properly cooked prior to serving.

**Do's and Don'ts**

**DO** Read the user instructions carefully before first use of appliance.

**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 oven.

**DO** Check that controls are in the off position when finished.

**DO NOT** Allow children near the cooker when in use. Turn pan handles away from the front so that they cannot be caught accidentally.

**DO NOT** Allow fats or oils to build up in the oven trays or base.

**DO NOT** Use abrasive cleaners or powders that will scratch the surfaces of the appliance.

**DO NOT** Under any circumstances use the appliance as a space heater.

**DO NOT** Put heavy objects onto open grill or oven doors.

## THETFORD C402 TOILET

### Thetford C402 Toilet instructions for use

These operating instructions cover Thetford cassette toilet models C-402C and C-402X. 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 on the fold-out at the back of these operating instructions.

The actions to be taken, referred to by numbers, are illustrated on the fold-out at the front of these operating instructions.

### Parts and Functions

- A. Handle: opens and shuts the valve blade.
- B. Flush knob: when this is 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 knob 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 funnel: 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 without splashing.
- N. Upper handle.
- O. Automatic pressure release vent: ventilates the waste tank when this is 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.

### 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 caravan or camper bathroom. The Cassette toilet is manufactured from high quality synthetic material. This makes it a durable, user & 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 caravan or camper.

The Thetford Cassette toilet is the solution to the sanitary problem in your caravan or camper!

### PREPARING FOR USE

1. Open the access door on the outside of your caravan or camper.
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 water fill funnel outwards, remove the cap and place the extension on the water fill 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.

## THETFORD C402 TOILET

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 waste 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:** 150 ml of water will remain in the water fill funnel when the water tank is empty.

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.

**Note:** Never use force if you cannot get the tank back into place easily. This may cause serious damage.

11. Make sure that the waste tank is secured with the safety catch. Shut the access door and lock it.
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 use, open the valve blade (if still closed) by turning the handle anti-clockwise. Flush the toilet by pressing the flush knob for several seconds.

**TIP!** The flush of your toilet will be more effective if you pulsate the flush by pressing the flush button several times in a row. Close the valve blade after use.

**Note:** Do not leave water in the bowl if the 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 your caravan or motor home.

Please avoid to travel with a waste-holding tank that is more than 3/4 full. This may cause leakage through the venting system.

## THETFORD C402 TOILET

**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 2 litres, which is about 3 uses. It is advisable to empty the waste tank earlier.

**Note:** Do not allow the waste tank to become too full.

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 will getting lost during 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.
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 filling 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 to use 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 tube is placed back into the clamp first and then pushed back into the upper plug.

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.
21. Open the access door on the outside of your caravan or camper and turn the water filling funnel outwards. Remove the cap and empty the water filling funnel by turning it a quarter turn anti clockwise.
22. Remove the waste tank and empty this at an authorised 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 Bathroom Cleaner & Thetford Toilet Bowl 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 Toilet Bowl Cleaner into the toilet bowl and use Thetford Bathroom Cleaner for the outside of the toilet. Read the product instructions before use.
- Flush the toilet bowl with water and wipe down the rest of the toilet with a damp cloth.
- Clean seat and cover. The seat and cover can easily be removed: Lift the seat and cover assembly and pull the round pins (inside the assembly) outwards from the pin holes. After cleaning, replace the seat and cover 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 tank

Next to using Thetford's Cassette Tank Cleaner, the powerful cleaning agent for the periodical cleaning of the waste-holding tank of your toilet, we suggest the following:

- 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 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 the float a half turn and remove it from below. Remove the rubber seal that is under the float. Rinse the float and rubber seal under a tap. Replace the rubber seal and the float for the automatic pressure release vent in the same way. The rubber seals in the toilet (the valve blade seal, the mechanism seal, 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.

N.B. The valve blade seal is a 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 your 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 C402 TOILET

## THETFORD WARRANTY

Thetford B.V. offers the end users of its products a three-year guarantee. 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 not 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.

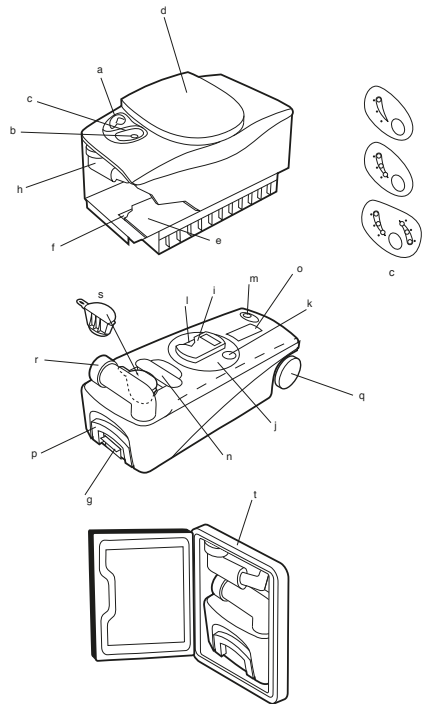
## CUSTOMER SERVICE

Please visit our web site if you require further information or have questions about your toilet, [www.thetford-europe.com](http://www.thetford-europe.com). The information available includes frequently asked questions, problems and solutions, 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).

## LIABILITY

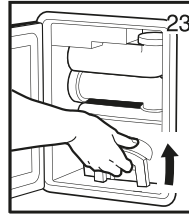
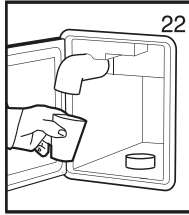
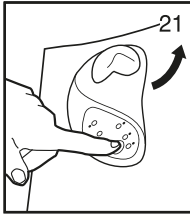
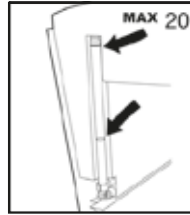
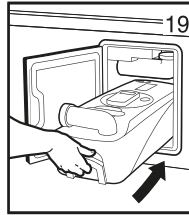
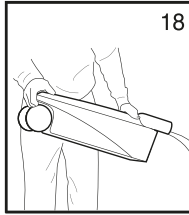
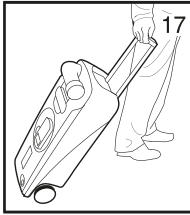
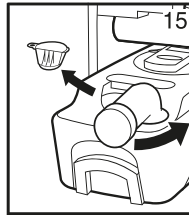
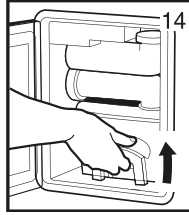
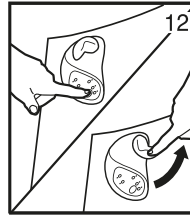
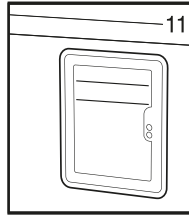
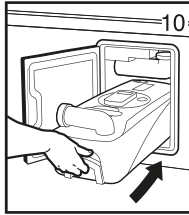
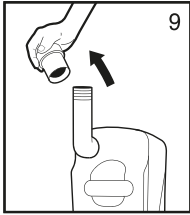
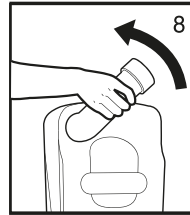
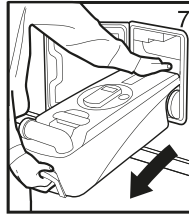
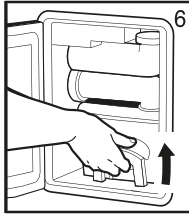
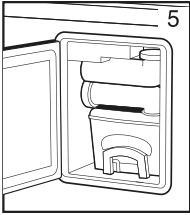
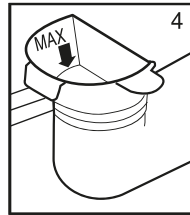
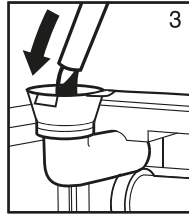
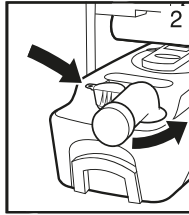
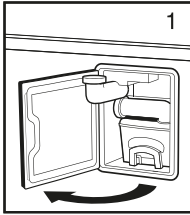
Thetford is not liable for loss and/or damage caused directly or indirectly by use of the toilet.

## C402





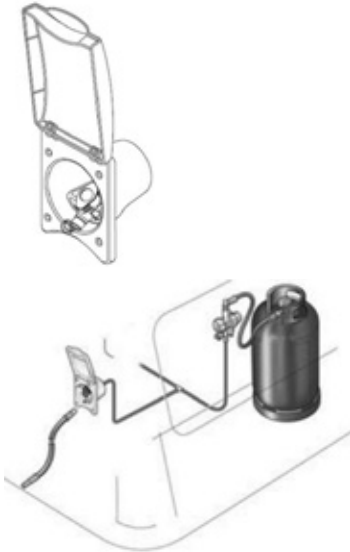
# THETFORD C402 TOILET



## BARBEQUE POINT

### Caravans with external barbeque point (when fitted)

Models equipped with an external barbeque point can be used to power any gas appliance suitable for the gas used in the caravan, 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 caravan 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 has been 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 seal.

**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 (where fitted)

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.



### Shakespeare TV Omni-directional Antenna (where fitted)

The circular, roof mounted Shakespeare antenna is designed for analogue and digital TV reception. All of the connections are pre-made to the antenna, up to the TV sockets mounted on the furniture within your caravan.

The aerial is omni-directional so no external adjustment is required – the aerial connection box, however, does feature a gain control. Rotate the control clockwise to increase gain, and anti-clockwise to reduce gain, to optimise reception.

BEDDING / DOOR

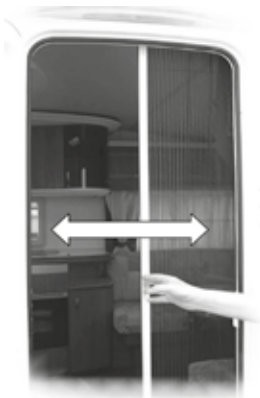
**Bedding**

**⚠ WARNING:** Use the 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 in use by children especially under 6 years of age, these bunks are not suitable for use by infants without supervision.

**Doorscreen (when fitted)**

The door flyscreen is tracked top and bottom and operation must be by the centre of the handle to aid a smooth operation.



**⚠ WARNING:** When opening or releasing the doorscreen, care must be taken to avoid trapping fingers.

**Exterior Door Key**

**⚠ WARNING:** Care should be taken not to leave the exterior door key in the door when unlocking the door. The key may result in damage in the vehicle side if the door is released with the key still in the lock.

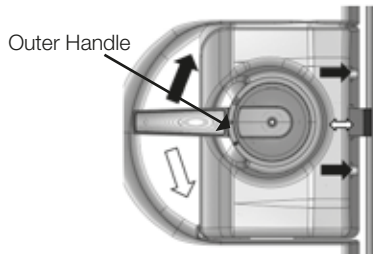
**⚠ WARNING:** The door retainer is designed to hold the door in normal conditions. In gusty or windy conditions we recommend the door is closed to prevent it releasing and slamming shut.

The door flynet operates independently of the door by sliding across the door threshold.

**Exterior door**

**Operation:**

The door is locked from the inside by rotating the outer handle vertically. This also operates the deadlock facility.



## Windows

To open all window types push the central button with your thumbs and turn the internal handles through 90 degrees and push open the window.

### **On models fitted with ratchet stays:**

the window locks in the open position to pre-set positions located within the stay.

To operate, push open the window until you hear an audible click and then slowly release the pane and the window will be locked in the first open position. Push open again to find the next locking position. To close, fully open the window which will disengage the locks and allow the window to close slowly and lock off the handles by turning back through 90 degrees.

## 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!

## 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 towing.

Roof lights provide varying levels of fixed ventilation.

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.

## ROOFLIGHT

**MPK Rooflight (when fitted)**

**⚠ WARNING:**  
Never stand on the dome of the rooflight!

**Instruction for use**

The rooflight can be opened fully, or in four different directions, so that the dome can be angled against driving weather conditions. The handle profiles of both roller blinds (flynet and roller blind) click into space at the edge of the frame and can be opened by pulling the handle (arrow on the handle profile).

With both handle profiles clipped together they can be moved to any position. To separate, fully open the flynet and squeeze together the catches on the central lock and allow flynet to recoil.

**Free-air-flow**

**⚠ WARNING:** When closed there is a free airflow throughout the rooflight, which must be kept free at all times.

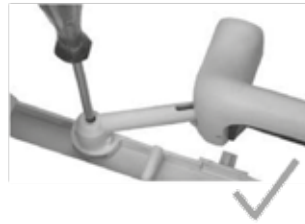
**Before driving**

**IMPORTANT:** All rooflights must be locked down before travelling and both roller blinds locked in the fully open position against the frame.

**Care instructions:**

The rooflight should only be washed by hand, using a sponge with plenty of clean water to avoid scratching. Caustic detergents and solvents may attack the plastic and make it brittle or disintegrate.

For easier cleaning of the dome it can be removed from the frame by releasing the four screws holding the handle arms. Do this from the inside of the van.



Lift the dome clear of the roof and rotate so that it can be lowered into the van across the diagonal of the aperture.

Make sure that only the original screws are used when replacing the dome and that they enter the thread in the plastic correctly. Do not over-tighten.

Never remove the screws holding the dome and the handles together. These are secured by a torque screwdriver and should only be handled by an approved dealer.

## Table storage

To avoid damage care must be taken when removing tables from their stored position.

Tables stored in the table storage compartment must be securely clipped into place whilst in transit.

**⚠ WARNING:** When erecting the free standing table, be careful to avoid trapping fingers.

## Shower use

- Care should be taken as water may become hot temporarily when switched on until it mixes and regulates.
- Small children should be supervised at all times when using the shower.
- We recommend unfastening the shower head before travelling and storing safely to prevent it becoming detached whilst towing.

## Awning

A Vango Air Awning has been specifically designed to fit the rear of your caravan. This option is available through the dealer network and should you wish to purchase then please contact your supplying dealer.



## Assembly

Before pitching your awning study the photograph on the awning bag, this illustrates what the awning should look like when assembled. Check that all the components are correct and undamaged. Review the assembly instructions and familiarise yourself with the procedures before pitching your awning for the first time.

## Care points

Whilst all the seams on your awning are taped to prevent these seams leaking, due to the way the awning is affixed to the caravan in some circumstances you may experience some ingress of water in these attachment areas. Awnings should be taken down in strong winds to protect body panels from cosmetic damage.

## Fire precautions

Keep any naked flames away from the awning fabric. Awnings should be kept ventilated when discharging products of combustion exhaust in to them. Do not place hot appliances near the walls, roof or curtains. Always observe the safety instructions for these appliances. Never allow children to play near hot appliances. Keep passage ways clear. Make sure you know the fire precaution arrangements on the site. Make sure ventilation openings are open all the time to avoid suffocation.

## Ventilation

All awnings are prone to condensation when air on the inside is warmer than outside. Increase ventilation by leaving doors open when possible and opening vents.

## Cleaning and drying

Whenever possible pack the awning when it is dry. If wet, dry thoroughly at first opportunity if the awning is to be stored. Storing the awning when wet will cause mould to grow, which will degrade the fabric.

## Warranty

The awning is supplied with a standard 2 year warranty which can be extended by a further year if the awning is then registered with Vango.

## Contact numbers

Vango can be contacted by Telephone on 0844 770 7058 or alternatively by logging on to the Vango web site at [vango.co.uk](http://vango.co.uk)

## Colour reference

If you require touch-up paint or a respray of your caravan, the correct colour code for all white components is Fiat White 249.

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.

## TV Brackets (when fitted)

In some models a bulkhead mounted bracket is supplied to mount a TV on. Whilst the bracket has a secure travel lock, it is good practise to un-clip the TV from the bracket and store securely for travelling.

## Bonded Roof

The roof of your caravan is made from a bonded construction. Care should be taken when cleaning the roof not to walk directly on the roof. If access to the roof is required the weight of a person should be spread across a larger area using a spreader board and extreme care should be taken when working at heights.

## Step on hitch cover

Where a step on hitch cover is fitted, customers are reminded only to stand on the designated areas, identified with black anti-slip matting. Stepping elsewhere on the hitch cover may result in damage to the hitch cover.

Models without a step on hitch cover are not suitable for standing on and failure to follow these simple instructions may result in premature failure or cracking which will not be covered by any guarantees (including extended warranties).

## Caravan motor movers

The design and fitment of a caravan motor mover shall be in accordance with the NCC Code of Practice 305 and you should ensure you receive a signed installation certificate of compliance from the installer.

**Failure to do so may invalidate  
your warranty**



Fenix® work surfaces .....	158
Vehicle modification and non-standard parts .....	160
Caravan movers .....	160
Caravan exterior .....	160
Condensation .....	161
Caravan interior .....	162
Winterisation/storage .....	164
AL-KO chassis .....	167
AL-KO ATC control system.....	169
Axle types .....	173
Stabilisers and coupling devices .....	177
Overrun device .....	187
Chassis trouble shooting .....	190
Chassis accessories .....	192
Basecamp technical specification .....	193
Bulb replacement chart .....	194
Bulb replacement instructions .....	195
Basecamp wiring diagrams.....	196

# FENIX WORK SURFACES

## FENIX Work surfaces

### Ordinary maintenance

FENIX NTM surface should be cleaned regularly but does not require any special maintenance, just a damp cloth with warm water or mild detergents. Almost all normal household cleaning products or disinfectants are perfectly well tolerated. It is suggested to use a melamine foam sponge - also known as magic sponge - for the normal cleaning and maintenance of the surface.

### Extraordinary maintenance

In case of dirt which cannot be cleaned with normal household detergents, due to the irregular topography and closed surface of FENIX NTM, the use of non-aggressive aromatic solvents (acetone) is suggested. In case of micro scratches, please refer to the specific surface thermal healing instructions.

### Recommendations for cleaning the surface of FENIX NTM

The table below shows the cleaning products and methods best suited to different types of dirt.

Type of dirt	Recommended cleaning products and method
Syrup, fruit juice, jam, spirits, milk, tea, coffee, wine, soap and ink	Water with a sponge
Animal and vegetable fats, sauces, dry blood, dry wine and spirits, eggs	Cold water with soap or household detergent with a sponge
Smoke, gelatine, vegetable and vinyl based glues, organic waste, gum arabic	Hot water with soap or household detergent with a sponge
Hair spray, vegetable oil, biro and felt tip, pens, wax foundations and greasy make-up, residual solvent marks	MEK, alcohol, acetone with a cotton cloth
Nail polish, spray lacquer, linseed oil	Acetone with a cotton cloth
Synthetic oil paints	Trilene nitre based solvent with a cotton cloth
Neoprene glues	Trichloroethane with a cotton cloth
Traces of silicone	Wooden or plastic scraper, taking care not to scratch the surface
Lime deposits	Detergents containing low percentages of citric or acetic acid (10% max.)

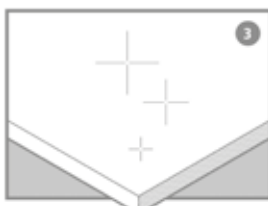
**General precautions**

For best results in cleaning FENIX NTM, it is important to remember certain precautions:

- although very durable, the surface of FENIX NTM must still never be treated with products containing abrasive substances, abrasive sponges or unsuitable products, such as sandpaper or steel wool;
- products with a high acid or very alkaline content should be avoided because they can stain the surface;
- when using solvents, the cloth used must be perfectly clean so as not to leave marks on the FENIX NTM surface. Any streaks can still be removed by rinsing with hot water and drying;
- avoid furniture polishes and wax based cleaners in general, because they tend to form a sticky layer on the dense FENIX NTM surface, to which the dirt adheres.

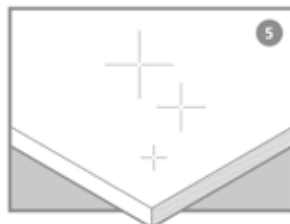
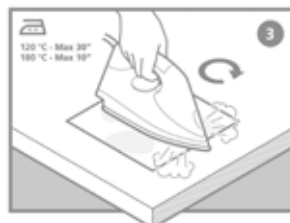
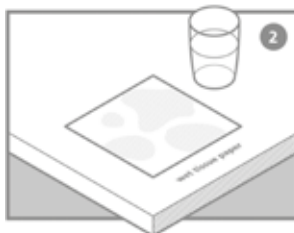
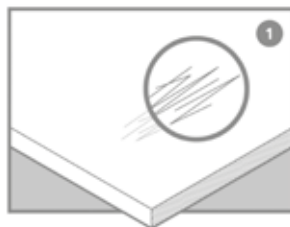
**Maintenance Instructions**

**Melamine foam Sponge**



**Maintenance Instructions**

**Iron**



## MODIFICATIONS

**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 3/6/10 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, Bottle box hinges, 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 (3/6/10) years please check with your Swift Group dealer.

**REPLACEMENT PARTS:** The Swift Group recommend that only OEM approved replacement parts are used.

**Caravan movers**

If thinking of installing a caravan mover as an after fit it is advisable to consult your dealer, as this may not be possible with shock absorbers (if fitted).

**Caravan exterior****Plastic Panels (GRP)**

These are used for front and rear panels, side walls and roof.

**Cleaning**

1. Wash the caravan 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 panels.

Care should be taken as the silicon in some polishes can attack the rubber used on the exterior for seals and gaskets.

**⚠ WARNING:** Do not wash your caravan with a high pressure washer as these can permanently damage the seals of your caravan.

**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.

**Acrylic (Plastic) Window Condensation**

Unlike domestic double glazed windows, your caravan windows 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 cleaning your vehicle with warm soapy water and 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 loses 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 caravan, 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. cupboards, 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 caravan 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 than a lot of heat for a short time.

## EXTERIOR AND INTERIOR MAINTENANCE

- d. After showering, keep the bathroom window or skylights open, and shut the bathroom door long enough to dry off the room.
- 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.

### **Corrosion**

Your caravan has been designed and built using the corrosion resistant materials (e.g. aluminium panels, stainless steel fixings, hot dip galvanised chassis and powder coated extrusions), which if looked after will extend the life and aesthetics of the product in normal service. In certain conditions, for example, if sited for extended periods in close proximity to sea and sand spray, you may experience premature ageing and/or corrosion of the vehicle than under normal conditions.

To help prevent this, we advise regular cleaning and application of a good quality external car polish. For extended periods

(where the vehicle is not in use), we recommend the use of well fitted breathable vehicle cover as protection from harsh coastal elements.

### **Caravan 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.

#### **Soft Furnishings**

Should be vacuumed occasionally to remove grit and sand and help to keep its smart appearance and ensure long life. 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.

## Swift Shield Fabric (optional)

The Swift Shield fabric fitted to some Swift Group products is a luxury stain resistant durable fabric using Aquaclean® technology. This is a revolutionary fabric treatment that allows you to clean stains using water only. This provides you with simple fabric maintenance in the minimum amount of time.

### Cleaning Instructions

Aquaclean® helps to remove the majority of household stains (wine, ink, sauce, fat, mud, chocolate, cream, etc.) in three simple steps:



1. Remove any excess residue on the upholstery



2. Apply water over the stain, either directly or using a damp cloth. Wait a few seconds.



3. Press down over the stain with a damp cloth and rub gently over the fabric in circular movements. If the stain does not come off completely, repeat the process as required.

For further details and stain cleaning demo videos visit the Cleaning Gallery on the Aquaclean® web site: [http://www.aquaclean.com/ES\\_en/home](http://www.aquaclean.com/ES_en/home).

Aquaclean fabrics cannot accept any responsibility for misuse of the fabric by allowing bleach or dissolvent substances coming into contact with it.

### Work Surfaces

You should not stand very hot items on any of the work surfaces, especially models with polycarbonate moulded sinks and drainers.

### 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 70°C (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 caravan dealer shops.

### Shower Bi-fold Door (When fitted)

The door panels should be cleaned with warm soapy water and a non-abrasive cloth/sponge.

Never use an abrasive or aggressive cleaning agent as these may harm the product and cause premature failure.

Vuplex®, a proprietary plastic cleaner, can also be used. This can be obtained from outlets such as Amazon, ebay etc.

## WINTERISATION

**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.

**Cutting Board**

You should not stand hot items on to the removable plastic cutting board. To wash use only warm soapy water, do not use chemicals and bleach.

**Winterisation**

The Swift Group recommends the following winterisation points for customers:

**Servicing**

Arrange (in advance) the yearly service and habitation check, if the caravan's next service is due while the vehicle is stored.

**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'.
- 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:

- Connect caravan to mains hook up with charger on for at least 24 hours prior to placing caravan in storage.
- Ensure the isolation button on PSU is in the 'OFF' position.
- Ensure leisure battery is connected and 20A local fuse(s) is in place, if an alarm or tracker device is fitted.
- The alarm will eventually drain the leisure battery - we recommend regular (monthly) inspection / re-charging of leisure battery via appropriate means. A solar panel can be used to provide an alternative power source and extend the time between leisure battery requiring a re-charge.
- Remove the leisure battery and store in a dry place, if an alarm or tracker device is not fitted.



- 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.

### 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 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 caravan is going to be left connected to 230v supply while not in use, ensure the microwave is unplugged.
- Drain the toilet reservoir.
- Empty the toilet cassette.
- Drain the toilet reservoir.
- Empty the toilet cassette - The Thetford Cassette porta potti is easily winterised for storage.

Empty the fresh water tank using the drain tube / fresh water tank level indicator (level indicator on electronic models only).

Pull the lever indicator / drain tube down from top plug position and outward through door opening to drain water from the tank.

Empty the water fill funnel by pulling the bottle away from tank.

Remove the small water cap on the filler bottom, allowing water to drain from the

water funnel. (Not C-200 toilet).

Do not tighten caps, this helps in keeping unit dry. The pour out spout and vent plug can be removed. Seals should be greased if necessary with acid-free Vaseline.

### 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. 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
- 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.
- Remove road wheels, using the correct jacking points and suitable axle stands, or if being left on road wheels rotate wheels (every two weeks) and ensure the correct tyre pressures are maintained.
- 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 and if fitted prevent the operation of a roof mounted solar panel (model specific)

### 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 caravan by opening doors or windows periodically.

## WINTERISATION

- 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.

**Water system**

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.

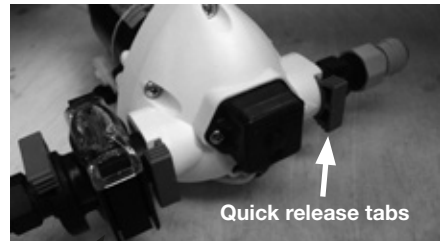
Follow the basic steps outlined below to remove water from the system (current caravans):

- Disconnect any external water source, external submersible hose or pump.
- Locate the 'Yellow' drain valve, which is floor mounted and will be next to the water heater. Move the lever on this valve to the vertical.
- Open one of the taps (the kitchen tap is the most convenient) to the middle (hot and cold mix) position.
- Turn on the pump using the button on the control panel, and leave the pump running until water no longer flows from the tap.
- Open the vanity tap and shower tap mixer, again to the centre hot and cold position and leave them open whilst the caravan is out of use.
- Also remove the shower head, and leave the head in an upright position.
- If present connect the external shower handset and fully open to drain, disconnect and store.

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.

The pump should be disconnected on the output side of the pump, and run for a short while to expel any water contained within the pump body and filter. This is also a good time to disassemble and clean (if necessary) the filter fitted on the input side of the pump.

The easiest method of disconnecting the pump is to remove the quick-release tabs from the Posi-flo type pump (details of releasing push fit plumbing connections can be found in this handbook).



**Water filter**

## Galvanised Parts

### Wet storage stain (white rust)

Hot dip galvanising has been used for many years throughout the automotive industry and is widely regarded as one of the best forms of corrosion protection.

When the steel is withdrawn from the galvanising bath it has a clean, bright surface. Over a period of time this changes to a dull grey colour as the surface zinc reacts with oxygen, water and carbon dioxide in the atmosphere to form a tough, stable, protective layer.

During this time, if galvanised items are stored in damp or wet conditions, where there is little or no air movement then the zinc will continue to react with the moisture that is present. In so doing the zinc will produce excessive amounts of zinc hydroxide. This is seen as a bulky white deposit on the surface of the galvanising and is often referred to as wet storage stain (white rust).

You can help to prevent wet storage stain (white rust) occurring. You can do this by washing the chassis with clean water. You must then allow an adequate flow of dry air to ensure that they dry off completely.

The caravan should not be parked on long grass where the air flow around the chassis is hindered and the dampness retained. It is most likely that the chassis will rapidly show signs of wet storage stain under these conditions.

It is also very important to do this during the winter months to ensure all salt deposits from road spray are completely rinsed off.

## AL-KO chassis

Manufactured from high quality steel, the chassis has extra deep sections to provide strength at points of maximum stress. Large elongated holes are punched in the longitudinal chassis members, to reduce weight to a minimum. Each hole incorporates a return flange to maintain the required strength and provide rigidity in the extra deep sections.

The chassis frame is of a bolted construction which allows replacement of individual parts should the need arise.

The chassis is Hot Dipped Galvanised. This is regarded as one of the best forms of corrosion protection. It does however require minimal maintenance in certain circumstances and should, if properly maintained, last the lifetime of the vehicle.

When new, the chassis is of a bright and shiny appearance. As the galvanising cures during the initial 2/3 month period, this will gradually change to a medium/dark grey colour. This grey finish is the ideal, giving the correct protective coating. During this curing period the surface should be protected to avoid possible wet storage stain, in the form of a soft, light coloured, porous, oxidation layer. If the chassis members are in contact with any salt deposits from roads this should immediately be washed off with a high pressure washer. Salt attracts moisture allowing the surfaces to remain wet, this prevents curing and also allows formation of wet storage stain.

It is recommended that the chassis/ components are washed off, using a pressure washer on an annual basis (especially after winter usage), to avoid undesirable build up of salt and dirt deposits.

The galvanised chassis should not be painted or subjected to any other protective treatment.

Should the galvanising become superficially damaged exposing the steel core, this should be cleaned and treated with a Cold Galvanising Spray obtainable from vehicle accessory outlets.

AL-KO ATC CONTROL SYSTEM  
WHERE FITTED

Display Colour	ATC Condition	Diagnosis	What to do	Outcome	Status
Green	ATC Active	Everything OK			
Green Flashing	ATC Active	Self test incomplete	Drive forward to detect movement to complete self test and recheck LED.	Green (Constant)	Ready for journey
Red	ATC Inactive	Possible to continue journey	Remove 13 Pin plug and wait 5 seconds. Reconnect plug.	Green Red	Ready for journey  ATC Error log file memory exceeded. Caravan can be towed, but ATC will not apply caravan brakes in the event of instability. See below *
Red flashing	ATC has detected a fault.	Do not continue a fault with ATC connected	Remove 13 Pin plug and wait 5 seconds. Reconnect the plug	Green Red (flashing)	Ready for journey  ATC faulty, and cannot be driven. Remove push-rod as shown on page 169. Consult AL-KO, see back page for details.
LED not working	ATC has no power	Check push rod position as shown on page 5 of the ALKO ATC manual before continuing journey.	Remove 13 Pin plug and wait 5 seconds. Reconnect the plug. Check for constant live - refer to system requirements.	Green LED not working	Ready for journey  If power OK, check push rod position: Red line visible - do not drive vehicle. Red line not visible - possible to continue journey but consult AL-KO see back page for details.

Damage to chassis members through impact etc, MUST NOT be straightened or welded. Damaged chassis members MUST be replaced.

### **Drilling or Welding of Parts or Accessories**

The chassis is designed and built to precise tolerances and must not be drilled or welded (except in accordance with certain AL-KO Accessory Operating Instructions). Failure to comply will invalidate all warranties.

### **AL-KO ATC trailer control system (where fitted)**

AL-KO ATC is an electronic, emergency Control system for caravans and trailers. It automatically recognises critical swinging motions and applies the caravan brakes accordingly to regain control of the caravan and car.

#### **General notices**

Read and act in accordance with the following operating instructions before attempting to use AL-KO ATC. AL-KO ATC is a safety related product and, therefore, should only be fitted by an authorised AL-KO trained technician with experience of working with electrical installations. Any evidence of removal or disassembly, other than by trained technicians, will immediately invalidate the product warranty.

#### **Safety Information**

AL-KO ATC is a passive safety product that activates the braking system on the caravan in unsafe driving conditions. The driver has a responsibility under law to ensure that the elements of towing safety are met, including driving within the legal speed limit, consideration of road, weather and other traffic conditions, correct loading and coupling of the caravan.

AL-KO ATC is designed to fit only on AL-KO Chassis and is not suitable for non AL-KO Chassis. AL-KO ATC only functions on caravans with a rigid towbar. The electrical connection between the towing vehicle and caravan must be in good working order.

ATC draws power from the towing vehicle towbar and requires connection to either: Twin \* ATC stores operating errors in a log file which over time will become full and will result in the solid red light appearing. This needs to be erased and can be done easily by connecting the caravan to a 12 volt supply for a period of 12 hours. The power required to carry out this function is minimal. Most occurrences of these errors are due to power supply problems to ATC which could be due to low voltage, or an intermittent power supply from the towbar.

#### **Maintenance and Warranty**

ATC is maintenance free and requires no servicing. In case of any damage to ATC, please contact AL-KO. ATC is a sealed unit and any evidence of removal of ATC or the component parts including outer casing and fixings will immediately invalidate any product warranty.

If ATC is fitted as standard by the vehicle manufacturer then ATC is covered for the same duration of the vehicle warranty or whichever is longer.

If ATC is subject to a call out under warranty and found to comply with the relevant specification or standard, then the cost of any testing or call out charges will be borne by the customer. We reserve the right to request credit card details to cover payment in advance.

#### **Removal of a push rod**



Using a 17mm spanner, slacken locking nut on push rod away from Bowden cable abutment as directed above.

AL-KO ATC CONTROL SYSTEM

The diagram consists of three circular icons arranged horizontally, separated by plus signs. The first icon contains the text 'ATC', the second 'AKS', and the third 'Responsible Driving'. Below each icon is a descriptive paragraph.

**ATC**

As an emergency system, AL-KO ATC automatically safeguards against a number of critical driving conditions. When used in conjunction with AL-KO AKS, there is no safer package for towing a caravan.

**AKS**

The AL-KO AKS Stabiliser device permanently suppresses small swinging and pitching movements in the trailer and increases the critical driving speed by approx 20%.

**Responsible Driving**

A safe driving style and correct loading combine with AL-KO technology to ensure optimum safety and unparalleled towing stability.



Unscrew push rod from brake rod and slide it from the guide tube. Remove the locking nut from push rod using two 17mm spanners.



Re-apply the removed locking nut onto brake rod thread to secure ball nut as shown above. ATC is now deactivated.

**The AL-KO formula optimum safety**

The AL-KO formula for optimum safety is a combination of industry leading technology that ensures the safest possible driving conditions for caravan owners. The formula provides total confidence and control when towing a caravan.

### 7-Pin Connection

ATC can be connected via the auxiliary 12S (white/grey) plug and requires power on Pins 4 (permanent supply) and 3 (earth). Please ensure that your vehicle towbar is correctly connected to ensure correct ATC operation. This can be checked with the use of a multimeter. Important - A 20 amp fuse is required for the constant 12V supply to Pin 4 on the 12S socket. If only a single fuse is fitted to supply both Pins 4 and Pin 6, the power supply capability of the installation must be checked and a minimum fuse rating of 25 Amps must be used.

### 13 Pin Connection

ATC can be connected via the 13-Pin plug and requires power on Pins 9 (permanent supply) and 13 (earth). Please ensure that your vehicle towbar is correctly connected to ensure correct ATC operation. This can be checked with the use of a multimeter.



### Operating instructions

After coupling the caravan correctly to the towing vehicle, connect the 12N & 12S plugs or the 13 Pin plug to the towbar.

Upon connection, ATC will carry out an initial self test and the LED light on the front fairing will light up RED. During the self test, the sound of the push rod moving inside ATC can be heard. When the self test is complete, the LED will turn GREEN or flashing GREEN to signal that ATC is active. If the LED does not change to green, then ATC is not functioning correctly. The table provided on page 168 details what to do in this case. Prior to commencing any journey, ensure that the

caravan lighting is fully operational and check the vehicle is loaded appropriately, the nose weight and tyre pressures are correct, and confirm that the caravan is coupled to the vehicle with the breakaway cable correctly applied. Always re-check the ATC LED is green after any interval during a journey, such as a service station break.



### Troubleshooting

Should you experience a fault with ATC, the LED light on the fairing will change colour. Therefore, refer to the table on page 168 and follow the instructions. If no illumination of the LED is evident, refer to system requirements on page 169 and check towbar wiring for permanent supply.

In the unlikely event that you receive a red flashing LED light and disconnecting and re-connecting the power does not alleviate the problem, check the push rod position as detailed below. Locate ATC on the axle and check the position of the push rod. If no red line is visible, ATC is not active, and can be driven. However, we recommend that you contact AL-KO at the earliest convenience.

If the red line is visible on the push rod, as shown on the left, the caravan should not be moved. The push rod needs to be removed to deactivate ATC. Using two 17mm spanners, the removal process is as shown opposite.

# LOADINGS

## Loadings on Coupling Heads, Overrun Assemblies and Axles

The permitted 'nose' weights of the coupling head/stabiliser, overrun assembly and drawbars, must never exceed the lowest value stamped on the assemblies.



**Fig. 1**

The maximum axle loading is that stamped on the plate (Fig. 1 example axle plate) located in the centre of the axle, facing rearwards.

**Note:** Do not attempt to remove as this will void the plate.

The third line down marked "Capacity" is the maximum permitted axle loading and must not be exceeded.

The caravan manufacturer may have stated a lower maximum loading weight on the plate fitted adjacent to the entrance door, this then becomes the maximum permitted load and must not be exceeded. We recommend you record the Axle details for future reference.

It may be possible if required for the caravans MTPLM to be upgraded.

Your caravan dealer will require the following details from the axle plate.

(Example of information ref Fig 1)

- Order - CHA402248
- Qty - 1 of 2
- Date - 3 May 05
- Type - B850-10
- Capacity - 1000E

Please consult your Swift Group Dealer to confirm if this is possible.

## Loading

Loads to be carried in the caravan should be placed directly over, or as close as possible to the axles, otherwise the handling will be impaired. Maximum gross weight, as advised by the caravan manufacturer, must not be exceeded without approval from AL-KO.

Maximum loading is defined as the difference between ex-works weight and the permitted total weight.

### Load Too Far Forward (Fig 2)

Steering and braking ability reduced. Increased loading on the rear axle and chassis of the tow vehicle.



**Fig. 2**

### Load Too Far Back (Fig. 3)

High skid risk together with poor braking effect.



**Fig. 3**

### Load Over Axle (Fig 4)

Optimum road holding together with maximum braking effect. Exceptionally heavy loads should be placed directly over the axle.

Attention should be paid to the legal regulations regarding the permitted pressure exerted by the towbar on the towed unit.



**Fig. 4**



## Axle types

### Safety Precautions

No welding is permitted on AL-KO Axles

It is important that the wheel and hub / brake drum are compatible. This means that the PCD, wheelbolts and inset must all be compatible with both the hub/brake drum and the wheel rim.

Particular attention must be paid to the recommended torque figures for the wheelbolts (see pg 33).

The axle type details shown on axle type plates must not be obscured or made illegible by application of any additional surface finish.

## Operating Instructions

### Service Brake

When the towing vehicle is braking or travelling down hill, the overrun device shaft is pushed in (dependent on the magnitude of the thrust on the shaft) and presses on the overrun lever. This acts on the bowden cables and expander mechanism, which in turn expands the brake shoes applying the wheel brakes.

### Hand brake

With the gas strut version, pull the handbrake lever until upright. With the spring cylinder version, pull the handbrake lever right up to the last tooth. The caravan is then braked.

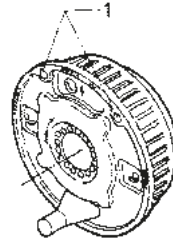
**⚠ WARNING:** Please note that with the handbrake fully applied, the caravan/trailer is able to move backwards by 25 cms until the spring cylinder/gas spring takes effect.

## Maintenance and Cleaning

Maintenance of Euro-Plus/Euro-Compact and Euro-Delta.

The above semi-trailing axles come fitted with maintenance free wheel bearings (greased and sealed for life) and no adjustment is necessary.

**Note:** The hub bearing is not protected against water ingress. Check wheel brake linings for wear every 10,000 kilometers (6200 miles) or every 12 months via the inspection hole



**Fig. 5**

(Fig. 5/Item 1). Adjust if necessary. Where continuous travel in hilly regions or high mileage is experienced, earlier inspection and adjustment may be necessary.

**Note:** The flanged hub-nut, located under the dust cap, used to keep the brake drum in situ, is a ONE-SHOT NUT (ie. must only be used once). If removed it must be replaced with a NEW flanged nut - torqued to  $290 \pm 10 \text{ Nm}$  ( $214 \pm 7.5 \text{ lbs/ft}$ ). A small amount of special mineral grease, available from AL-KO must be applied to stub axle thread prior to fitting the new flanged nut. After fitting excess grease must be removed with white spirit.

The rear hexagon cap head bolt located under the black plastic cap MUST NOT BE DISTURBED under any circumstance. Interference with this nut will result in immediate tyre wear and damage to the braking system and WILL INVALIDATE ALL WARRANTIES. Should the rear nut accidentally be disturbed then the complete axle must be returned to AL-KO for resetting of the toe-in and camber.

AXLE

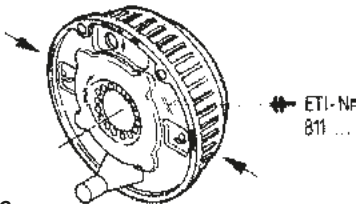
No attempt should be made to remove the bearing. In the event of damage to the bearing or drum, only the drum complete with bearing and circlip will be available as a spare. No grease is used in the hub other than the mineral grease on the stub axle. No grease should be placed in the DUST cap. This is not a grease cap as used in all previous hubs

**Spare parts**

Spare parts are safety critical parts! For this reason when fitting spare parts we recommend the use of original AL-KO parts or those parts that they have explicitly approved. The reliability, safety and suitability of parts designed especially for their products, has been determined using a special test procedure. In spite of constantly monitoring the market they are unable to assess or vouch for other products.

If repair work or servicing is required, AL-KO have a large network of AL-KO service stations throughout Europe.

To establish the correct spare parts required for your axle you should always quote the axle type (axle identification plate Fig. 1, page 172) and Spare Part Identification no. (ETI No.), which will be stamped onto the wheel brake or on the identification plate (Fig. 6). Please establish these numbers before contacting AL-KO or a Service Agent.



**Fig. 6**

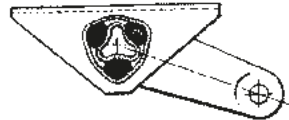
The AL-KO rubber suspension axle has been designed and developed to suit all types of road conditions and is maintenance free.

Three rubber elements are contained within an hexagonal axle tube. These provide suspension and have inherent damping characteristics.

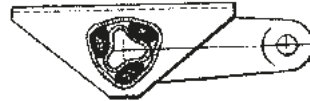
Figs. 7, 8 & 9 show the deformation of the rubber elements at the extremes of suspension movement.

The axle is designed to ride with the suspension drop arm at, or slightly below, the horizontal position.

For Trouble Shooting & Fault Finding please see Table 1 on page 190.



**Fig. 7**



**Fig. 8**



**Fig. 9**

**AL-KO braking system adjustment**

1. Ensure the towing shaft with coupling head is pulled FULLY FORWARD. (Fig. 10).
2. Release the handbrake to the FULLY OFF position. If the handbrake will not go down the whole way because of the fairing or any other obstruction; then the fairing must be cut away and/or the obstruction removed to achieve this desired position. It will not be possible to set up the braking system properly when the handbrake is not in the FULLY OFF position. (Fig. 10).
3. Jack up one side of the caravan, using the AL-KO Side Lift Jack System. (see Jack Operating Instructions).
4. Remove the inner plastic bung from the backplate to expose the "starwheel" adjuster access. (Figs. 10 & 11).

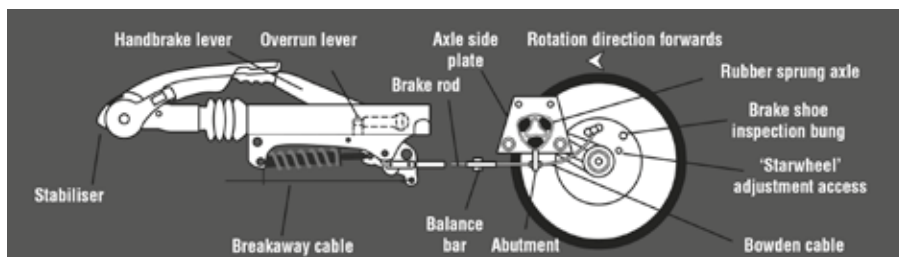
5. ALWAYS rotating the road wheel in the forward direction - NEVER backwards; adjust the starwheel with a suitable screwdriver, in the direction of the arrow embossed on the backplate until there is resistance in the wheel rotation. (Fig. 11).
6. Slacken off the starwheel adjuster until the road wheel turns freely in the FORWARD direction. (Fig. 11).
7. Check the adjustment at the end of the brake cable where it is secured to the abutment (bracket), welded to the centre of the axle.  
When the inner cable is pulled out it should extend between 5 and 8 mm. (Fig.12). (On tandem axles a double abutment (bracket) is fitted to the front axle ONLY).
8. Repeat for other wheel or wheels.
9. On tandem axles the brake cables from the rear axle should pass over this axle and cross over each other, before being connected to the abutment (bracket) on the front axle. Where ATC is fitted to a tandem axle caravan, the brake cables **SHOULD NOT** be crossed over.
10. Ensure the balance bar (compensator) is being pulled evenly (Figs.10 & 12). Excessive movement to this bar (double on tandem axles) would indicate possible incorrect adjustment (if appropriate, repeat step No. 7 - Fig. 12).
11. Check the brake rod support bracket, (fixed to the floor) IS supporting the brake rod evenly. The brake rod MUST ALWAYS run straight, NEVER bent or curved under any fittings. On tandem axles, using the double balance bar, a brake rod support tube ( ALKO Part No. 228827) MUST ALWAYS be fitted on the end of the brake rod, passing through the centre aperture on the abutment.
12. Remove the slack in the brake rod by adjusting the long ball nut, rear of the balance bar, ensuring the overrun lever makes contact with the end of the towing shaft. Note! Over adjustment to the long ball nut (Fig. 12/Item 2) could induce movement of the inner brake cable,

reducing the effective clearance of the brake shoes. If the overrun lever will not make contact, it is possible the two lock nuts, forward of the spring cylinder, are incorrectly adjusted. Loosen the nuts and adjust brake rod as above (Figs. 10 & 12).

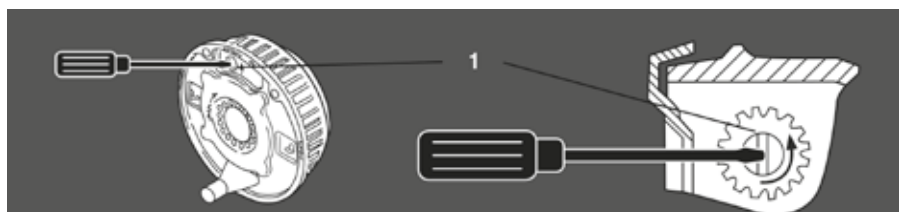
13. OVER ADJUSTMENT of either the wheel brakes or linkages, will result in difficult reversing causing the wheels to “lock-up”.
14. When parking, the handbrake lever MUST ALWAYS be engaged into the fully upright position (90°). If difficulty is experienced in this operation, try easing the caravan backwards with one hand while engaging the handbrake fully with the other. This manoeuvre should not be attempted on a rearwards facing slope. In this case wheel chocks should be used combined with the handbrake. See page 173 for all handbrake operations.
15. Finally, if the road wheels have been removed, re-tighten using a calibrated Torque Wrench (see Changing a wheel). Remember to over-tighten is just as dangerous as to under-tighten, as this can distort the wheel rims. Avoid the use of power wrenches.

**⚠ WARNING:** The torque settings should be rechecked regularly. Wheel bolts should NEVER be lubricated.

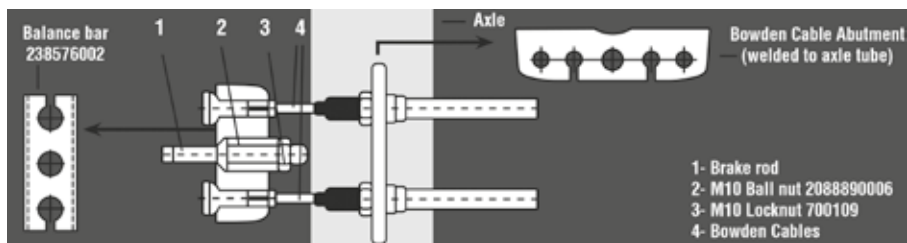
## AL-KO BREAKING SYSTEM ADJUSTMENTS



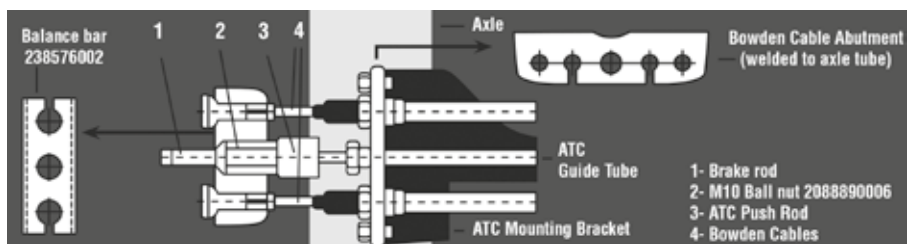
**Figure 10 Brake Linkage**



**Figure 11 Adjusting the Starwheel**



**Figure 12A Standard Brake Linkage**



**Figure 12B Brake Linkage with ATC Fitted**

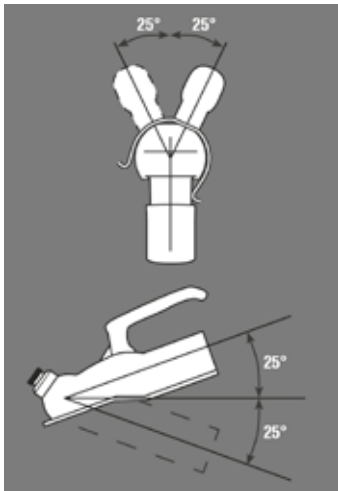
## Stabilisers and coupling devices

Your caravan will be fitted with either an AKS 3004 stabiliser or an AK160/300 coupling head.

### SAFETY PRECAUTIONS

Always ensure that the coupling head is properly connected to the tow vehicle's towball every time you couple up. If this procedure is not carried out correctly, the caravan/ trailer may become detached from the towing vehicle! Maximum possible articulation of the coupling head must not exceed  $\pm 25^\circ$  vertically and  $\pm 20^\circ$  horizontally - see Fig 13.

If exceeded, components will be overloaded and the operation of the assembly adversely affected!



**Figure 13** - Maximum Articulation of Coupling Head

## AK160 Coupling

### Operating Instructions

#### Coupling Up



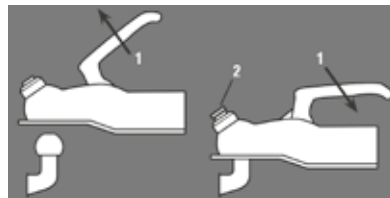
Open coupling handle. To do this pull the coupling handle up (Fig 14) in the direction of the arrow.

The coupling mechanism has a fixed open position, ie. as long as the coupling head is not placed on the ball the coupling will remain open.

Put the open coupling onto the towball. The coupling handle automatically and audibly clicks into position. In the interests of safety, press the handle down by hand (Fig 14).

The coupling head is correctly connected when the green cylinder part of the safety indicator is visible (when viewed from the side - Fig 14/ Item 2).

The coupling mechanism is correctly engaged when the coupling handle can no longer be pressed down any further (by hand).



**Figure 14** - Coupling Up

### Caution

If the coupling head is not correctly hitched onto the towball, then the caravan/trailer can become disconnected from the towing vehicle.

# AKS 3004 STABILISER WHERE FITTED

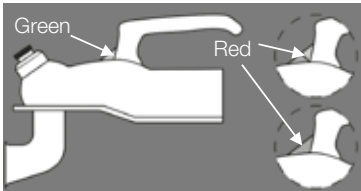
## Uncoupling

Open the coupling handle and lift the coupling head from the towball by using the jockey wheel winding handle.

## Wear indicator

A wear indicator on the coupling head (Fig 15) shows whether the wear limit of the towing vehicle's towball or the trailer coupling has been reached. For this purpose, hitch up the trailer to the towball and drive the unit for approx. 500 m. This will set the coupling head adjustment. Following this, check the wear indicator as follows:

If the green indicator is visible on the coupling (with the coupling engaged Fig 15), the coupling head is in good condition or the wear on the towball is within permissible limits. .



**Figure 15 -** Wear Indicator

When the green indicator on the coupling handle is completely covered over and only the red portion is visible (Fig 15), this could be caused by the following:

- Towball has reached the lowest wear limit of 49.61mm dia.
- Both coupling head and towball are showing signs of wear.
- Towball is in good condition with 50mm dia, but the coupling head is showing an excessive level of wear.

## Caution

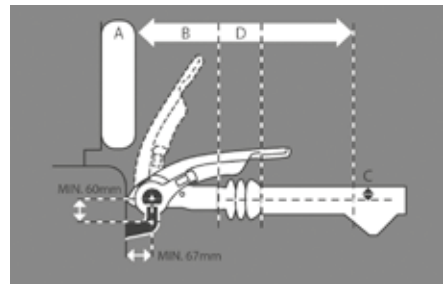
Under these circumstances, the coupling head can become detached from the towball and the caravan/trailer can break away from the tow vehicle. The coupling head and towball must therefore be checked IMMEDIATELY before future use. Any faulty parts must be changed IMMEDIATELY.

All maintenance work should be carried out by AL-KO Approved Workshops.

## AKS 3004 Stabiliser (where fitted)

### Regulations

1. The AKS 3004 stabiliser must be used in conjunction with 50mm dia. Towballs which conform to EC Directive 94/20 (DIN 74058 or local equivalent).
2. Suitable for attachment to drawbars or approved overrun braking equipment for single (and tandem axle) caravan/trailers, with a minimum weight of 200kg and a maximum permissible weight of 3000kg.
3. EC design approval has been given to the AL-KO AKS 3004 coupling under permit No. e1\*94/20\*0930\*00.



**Figure 1 -** Necessary clearances

## Restrictions of use

1. The trailer coupling may only be connected to towing vehicles where the clearances for the stabiliser can be observed, in accordance with EC Directive 94/20 or UNECE R55 (DIN74058). If these clearances are infringed by special attachments, then the use must be checked separately.

The area above the towball of the vehicle must be free from vehicle components or attachments (A) (e.g. spare wheels, platforms etc.)

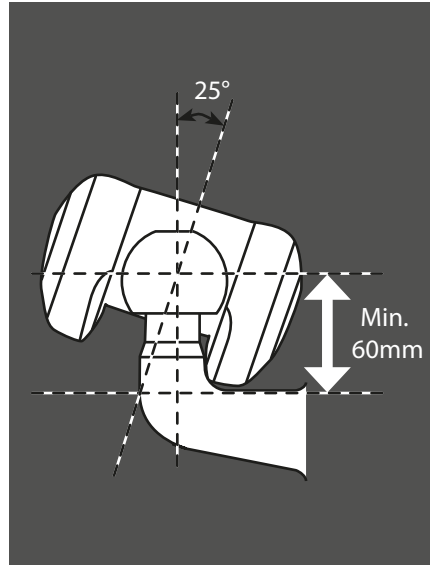
The clearance for the stabiliser lever must be at least 330mm (B) + the stroke movement (D) (85mm-100mm), which equates to 440mm when used in conjunction with an AL-KO overrun.

2. Swan Neck towbars (fixed or detachable) are suitable for use with the AKS 3004 providing they comply to EC Directive 94/20 or UNECE R55 and have the required minimum 60mm clearance, measured from the centre of the towball (Fig 2).

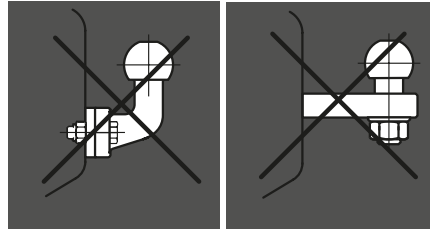
## Safety warnings

1. In accordance with EC Directive 94/20, couplings of type A 50-1 cannot be used (see Fig 3), your warranty will be invalid if this type of towball is used.
2. For UK use, use the extended neck towball (type A50-X).
3. A bolted-in type ball coupling (Fig 4) is only permissible if the thread is locked or welded.
4. The AKS 3004 cannot be used with a laterally attached reversing lever, on the left side, when facing the direction of traffic.
5. The towball must be free from grease, paint and other residue, otherwise the stabilising effect is greatly reduced. Coated towballs must have the coating completely removed (use 100 or 120 grain emery paper). If this is not done increased towball wear will occur and may cause damage, or reduce the efficiency of the stabiliser.
6. If friction pads become contaminated with grease, they should be replaced.

7. The AKS 3004 should only be operated by one person, when opening or closing the handle, to reduce injury risks.



**Figure 2** - Max suitable rotation of overrun device is 25°.



**Figure 3** - A 50-1 coupling

**Figure 4** - Bolted in coupling

# AKS 3004 STABILISER WHERE FITTED

## AKS 3004 operating instructions

### AKS 3004 specifications

Coupling Handle (Fig 7/Item 1)

Stabiliser Lever (Fig 7/Item 2)

### Preparation for coupling/uncoupling

The Stabiliser lever (Fig 7/Item 2) must be in the uppermost position (open).

#### Coupling up

Pull the coupling handle (Fig 8/Item 1) up in the direction of arrow. The coupling mechanism has an open position, as long as the AKS 3004 is not placed on the ball, the handle will remain open. Put the opened coupling onto the clean towball. The handle must now make an audible click and return to the flat position.

**⚠ WARNING:** The coupling is correctly engaged when the green edge of the safety indicator button is visible (Fig 9/Item 2).

#### Secure Jockey Wheel for transit:

After coupling fully retract the jockey wheel inner tube so that it locks against the jockey wheel outer tube.

Slacken the jockey wheel clamp handle and raise the complete assembly to its highest position with the wheel facing backwards within the hitch cover ensuring that it doesn't come into contact with the brake rod assembly. Fully tighten the jockey wheel clamp handle to ensure the jockey wheel is firmly held in position.

#### Stabiliser unit

To operate the stabiliser (once coupled to the towball), simply press the stabiliser lever down as far as it will go (Fig 9/Item 3).

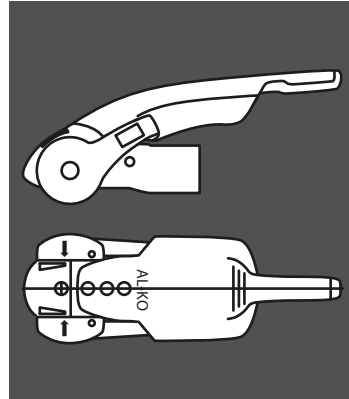
To ensure the stabiliser is correctly coupled, check the arrowhead lines up with the black line marked 2 (Fig 9 /Item 4 and Fig 13/C).

#### Uncoupling

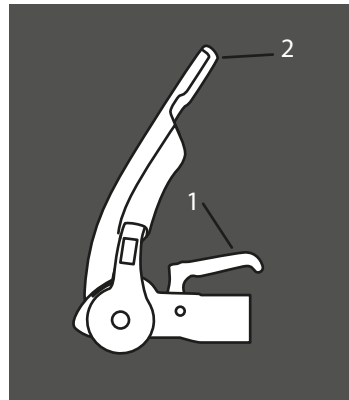
Pull the stabiliser lever up as far as it will go, open the coupling handle and lift the AKS 3004 from the towball by using the jockey wheel winding handle.

**Note:** The friction pads (Fig 10/Items 1, 2 & 3) are pressed against the towball and hence generate a stabilising/damping force. These pads are therefore subject to wear over time, however they will have a long service life (circa.30,000 miles), provided they are well maintained and kept free of grease/dirt.

### Operating instructions



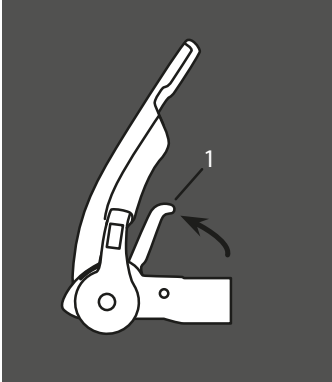
**Figure 6** - AKS 3004 stabiliser



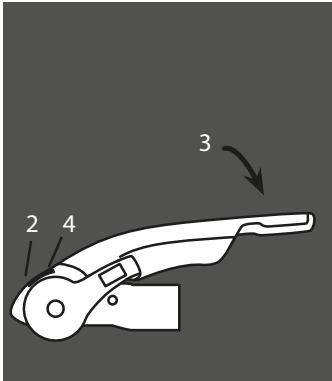
**Figure 7** - Raise stabiliser lever



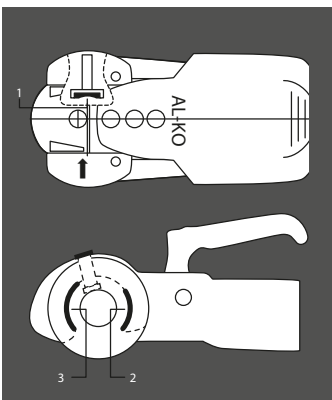
## AKS 3004 STABILISER WHERE FITTED



**Figure 8** - Pull coupling handle up



**Figure 9** - Correct engagement with towball



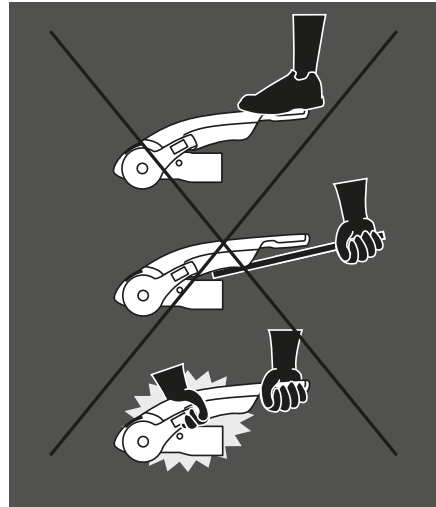
**Figure 10** - AKS 3004 friction pads

### Manoeuvring

For easier manoeuvring (on campsites etc), pull the stabiliser lever to the 'up' position.

Please do not use the stabiliser lever as a manoeuvring handle. Please use the handles on the caravan or fit the AL-KO manoeuvring handle to your jockey wheel (available separately).

1. During opening or closing, the AKS must only be operated by one person.
2. Press stabiliser lever down by hand force only. **DO NOT** use your foot or an extension bar, this will damage the components.
3. When opening or closing the stabiliser lever, please ensure your hand does not touch the coupling handle - you may accidentally trap your fingers.



**Figure 11** - How not to operate the stabiliser handle

# AKS 3004 STABILISER WHERE FITTED

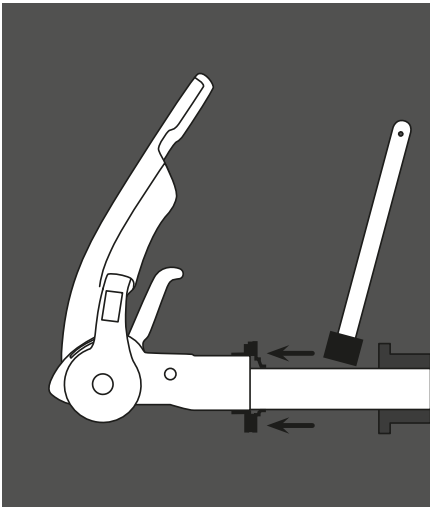
### Noises whilst driving

As a rule, the friction pads of the AKS 3004 do not make a noise during driving. Any clicking, creaking or squeaking noises that do arise may be due to the following:

- a. Foreign bodies, dirt or exhaust particle build up between the friction pad and towball.
- b. Dry operation of the draw shaft inside the overrun device.
- c. A detachable towball which has too much play in the locking mechanism.

### Remedial action

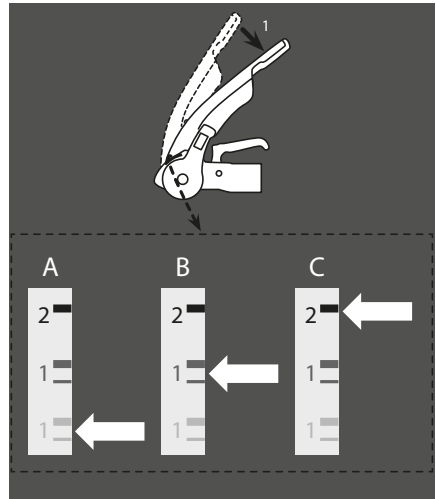
- a. Clean the towball and friction pads before each journey by lightly rubbing the surfaces with a light emery paper (100-120 grit) or use brake cleaning fluid to remove the build up.
- b. Lubricate the draw shaft sleeve via the grease nipples. In addition, push the gaiter forward and grease (DIN 51 825 KTA 3K) the exposed part of the shaft (Fig 12).
- c. Visit a specialist workshop to have the ball holding area checked for damage and the locking mechanism for function. If necessary, change the towball.



**Figure 12** - Remedial action

### Checking the efficiency of the side friction pads

1. Check that the stabiliser is correctly coupled by ensuring the coupling handle is fully down and the red indicator button is in the raised position.
2. Push the stabiliser lever (Fig 13 - Item 1) down until resistance is felt (i.e. The friction pads are in contact with the ball but not yet under pressure).
3. Check the position of the arrowhead on the arm of the stabiliser. If it lines up with the two green lines then the friction pads are still as new (Fig 13 - A).
4. If the arrowhead lines up with the two red lines then the friction pads are worn and should be replaced immediately (Fig 13 - B).



**Figure 13** - Checking left / right friction pads

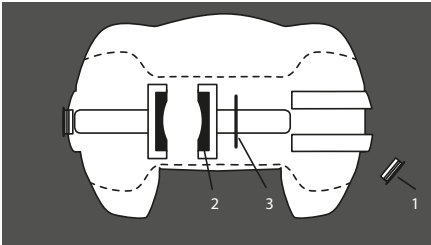
**Note:** When the stabiliser lever is correctly applied, the arrowhead should line up with the black line marked 2 (Fig 13 - C).

**Note:** The friction pads do not require any form of lubrication and should be cleaned with a fine emery paper prior to every journey. It is not necessary to adjust the friction pads.

### Friction pad replacement (side)

(Replace one at a time)

1. Uncouple the AKS 3004 stabiliser.
2. Remove protective caps (see Fig 14- Item 1) with the aid of a small screwdriver.
3. Press worn out pad inwards and remove (use punch and hammer) (see Fig 14- Item 2).
4. Insert new friction pad from below (after first re-inserting shim washers if they were present) and press in as far as it will go (see Fig 14 - Item 3 and Fig 15).



**Figure 14 -** Remove worn pads



**Figure 15 -** Insert new pads

### Checking the efficiency of the front/rear friction pads

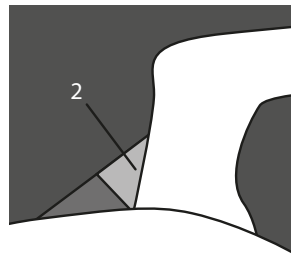
1. Couple the AKS 3004 stabiliser to the towball but do not activate the stabiliser.
2. If a green indicator is visible (on the handle), then the AKS 3004 is in a new condition or the pads and towball are within the permissible limits (Fig 16 - Item 2).
3. If only a red indicator is visible (Fig 17 - Item 3), then this may have the following causes:
  - a. AKS 3004 is okay but the towball has reached the lowest limit of 49.61mm.
  - b. AKS 3004 stabiliser shows signs of wear.

- c. Towball is in a new condition (50mm) but the front/ rear friction pads show a high degree of wear.

Establish the diameter of the towball so that conclusions may be drawn as to the wear of the friction pads (ball diameter must not be less than 49.61mm).

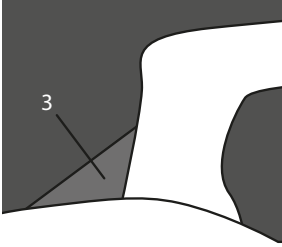
### Friction pad replacement (front/rear)

1. Uncouple the AKS 3004 stabiliser.
2. Remove the soft dock (pull up & off), (Fig 20 - Item 1).
3. Press the safety indicator outwards and secure with SW14 hex. spanner (not included), (Fig 20 - Item 2).
4. Remove cheese-head screw (Fig 20 - Item 3 & Fig 18), using special torx tool.
5. Press friction lining recess (Fig 20 - Item 19) inwards and pull down and out.
6. Open coupling handle (Fig 20 - Item 5).
7. Remove countersunk head cap screw using special torx tool (Fig 20 - Item 6 & Fig 19).
8. Press friction pad inwards with a screwdriver and remove.
9. Fit new friction pads in reverse. Tighten screws to 5Nm (Fig 20 Items 3&6)
10. Replace rubber soft dock, insert top section then bottom.



**Figure 16-** Wear indicator - good condition

AKS 3004 STABILISER  
WHERE FITTED



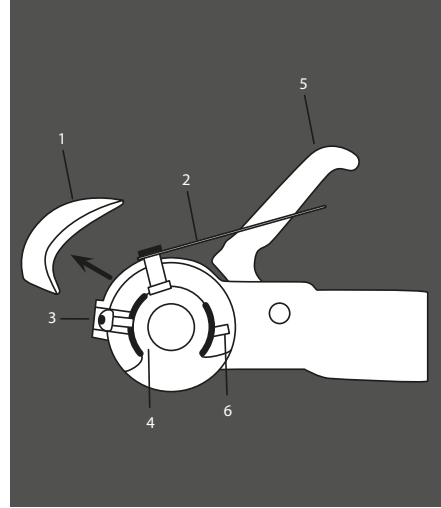
**Figure 17** -Wear indicator - poor condition



**Figure 18** Cheese head screw revealed



**Fig 19** Remove head cap screw



**Figure 20** Friction pad revealed

**Important maintenance & cleaning advice**

1. The towball should be cleaned regularly to remove grease or other residue, to maintain the efficiency of the friction pads. The use of thinners, white spirit or brake cleaner is recommended for cleaning the towball and friction pads.
2. If friction pads are contaminated, they should not be cleaned but replaced.
3. The surface of the towball must be free of grooves, rust or seizing marks.
4. Towballs coated with paint or similar, must have this surface completely removed (use 100 or 120 grain emery paper). If this is not done, increased towball wear will occur and may cause damage to the AKS 3004 stabiliser components.
5. In winter, you should carefully spray only the visual indicator with de-icer.

## Lubrication

Should lubrication of the stabiliser parts become necessary, then the following must be observed.

- Clean all parts thoroughly.
- Areas may only be covered with a thin film of grease (see Fig 21).
- Use multipurpose grease DIN 51825 KTA 3K.

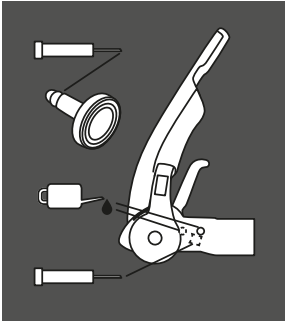


Figure 21

**⚠ WARNING:** When lubricating, ensure none gets into the friction pad or towball holding area.

## FAQS

### Stabiliser

#### Can the red and/or green indicator buttons be replaced if broken/missing?

This is usually caused by catching the button with the hitch lock when fitting the hitch lock. The green section can in some circumstances be replaced. Please contact AL-KO for further advice. The red part cannot be replaced.

#### The stabiliser arms keep lifting up when I travel.

The most likely cause is the handbrake handle catching on the stabiliser lever when braking.

Gently tease the handle away from the contact point - 5mm should be sufficient. Whilst doing this, make sure you support the base of the handbrake with a block of wood to stop it coming off the ratchet plate.

## Friction pads

### When should I change my friction pads?

The friction pad life expectancy is around 30,000 miles and can be prolonged by regular cleaning with fine grade emery paper. Simply remove them according to the instructions (see Servicing and Cleaning) clean them and replace.

However, they will wear out and this can be monitored via wear indicators on your stabiliser. See pages 183/184 for wear indicator information, and instructions on changing them.

**My friction pads look 'glassy' with bits flaking off.** Contamination has built up on the pads. This could be due to grease on the towball, spray from the road, diesel fumes or failure to remove all of the coating on the towball.

You need to remove the friction pads according to the instructions on pages 183/184, and rub them lightly with a fine grade emery paper. AL-KO recommend cleaning the pads in this way after every journey to prevent build up and prolong friction pad life.

**When towing I can hear loud creaking or groaning.** There are two possible causes:

- The incorrect towball could be fitted. Check your towball is compatible with your stabiliser, and if it isn't replace it immediately. Failure to do so could result in your caravan becoming unhitched during towing.

The necessary clearances are outlined on page 178, and AL-KO recommends the AL-KO extended neck towball which complies to all the necessary specifications.

- Contamination may have built up on the friction pads. This could be due to grease on the towball, spray from the road, diesel fumes or failure to remove all of the coating on the towball.

You need to remove the friction pads according to the instructions on page 183/184 and rub them lightly with a fine grade emery paper.

## AKS 3004 STABILISER WHERE FITTED

AL-KO recommend cleaning the pads in this way after every journey to prevent build up and prolong friction pad life.

**The end has snapped off of my friction pad.** This usually happens when the pads have not been fully disengaged before dropping the stabiliser onto the towball. You will need to replace the friction pad with a new one. To avoid this in future always place, rather than drop, the stabiliser onto the towball and ensure the stabiliser lever has been lifted fully.

**Can I tow my caravan without activating the friction pads?** Yes, but AL-KO do not recommend it. It is the hitch handle that attaches the stabiliser to the towball. If you do not activate your friction pads then you will have no damping benefits.

### Towball

**My towball has grease on it. Can I use it with an AKS stabiliser?** Under no circumstances can a greased towball be used with an AKS stabiliser. Ensure you remove all grease before hitching up.

Use a cloth to remove the excess grease, and use brake cleaner to remove any residue. We do not recommend methylated spirit as this can leave a greasy residue.

**I have an AKS 3004 stabiliser. What is the minimum clearance that i need between the towball and towing vehicle?** Minimum clearance is 68mm. This measurement is taken from the centre of the towball to the nearest point of contact with the towing vehicle.

Insufficient clearance will prevent the stabiliser from correct articulation and could damage your car or even cause the stabiliser to become detached from the towball.

**Which towballs are compatible with the AKS 3004 stabiliser?** The necessary clearances are outlined on page 178, and AL-KO recommends the AL-KO extended neck towball which complies to all the necessary specifications.

The AL-KO extended neck towball is available to purchase online at [www.al-ko.co.uk](http://www.al-ko.co.uk).

**I have a new AL-KO towball - do I need to take the paint off?** Yes. It is vital that all paint is removed from the towball before use, as it will contaminate the stabiliser friction pads. To remove the paint, simply rub with emery paper, ideally finishing with a coat of brake cleaner fluid to remove any residue.

## Overrun Device

In the importance of safety, please familiarise yourself with the operation of this overrun device BEFORE using your caravan.

### Safety Precautions

When parking your tow vehicle and caravan on site, you must apply the caravan handbrake. If the unit is parked but disconnected from the tow vehicle, it is strongly recommended that each wheel is chocked using AL-KO or suitable wheel chocks.

**Caution:** Please note when parking the caravan, the wheelbrake auto reverse mechanism will allow the caravan to travel backwards for approximately 25 cm (please allow sufficient clearance when parking).

### Operation

AL-KO overrun devices are a mechanical type, using a hydraulic damper.

### Breakaway Cable

- Attach the caravan to the tow vehicle as described in AK160 coupling and AKS 3004 stabiliser sections
- Thread the breakaway cable through the breakaway cable guide provided (Fig 2) and connect it to attachment point provided on towing bracket (Fig 1). Please refer to 'Braked Trailers Use of Breakaway Cables' for further details.

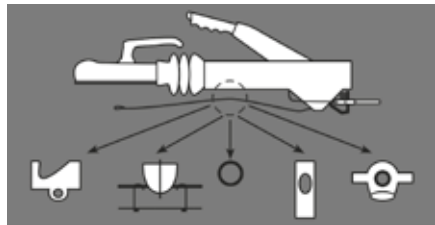


**Figure 1** Breakaway Cables.

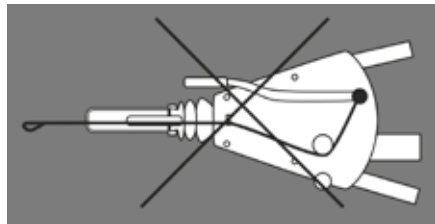
**Caution:** The breakaway cable operates the handbrake (emergency brake), in the event of the caravan becoming detached from the towing vehicle during towing. For this emergency brake to work correctly, it is absolutely essential that the following points are observed:

1. The breakaway cable MUST run through the breakaway cable guide.
2. The breakaway cable MUST NOT be wrapped around the jockey wheel, as this disables the emergency brake (Fig 3).
3. The cable MUST run as straight as possible and not be restricted.
4. Ensure the cable is long enough to allow for cornering and will not become taut or snag during use, as this could result in the handbrake operating whilst towing.

Please refer to 'Braked Trailers Use of Breakaway Cables' information sheet, supplied with your caravan.



**Figure 2** Breakaway Cables Guides.



**Figure 3** DO NOT wrap breakaway cable around jockey wheel.

# OVERRUN DEVICE

## EURO-OVERRUN DEVICES FITTED WITH AKS 3004 STABILISER

Fully retract Jockey Wheel inner tube so that it locks against Jockey Wheel outer tube.

Slacken Jockey Wheel Clamp handle and raise complete assembly through cutout in body to its highest position (ensure it doesn't come into contact with the brake rod assembly), fully tighten Jockey Wheel Clamp handle to ensure the Jockey Wheel is firmly held in position.

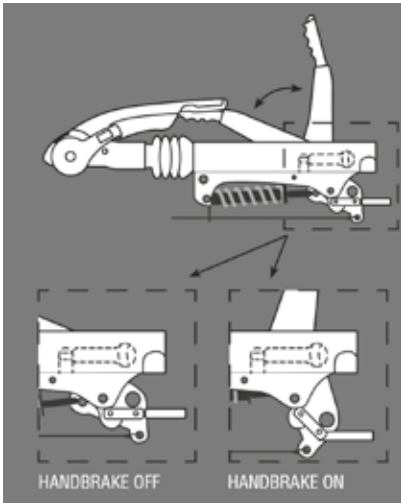
### Euro Handbrake

Ensure the handbrake is fully applied to ensure that the wheel brakes will be automatically re-applied should the vehicle start to roll backwards.

**Caution:** If the handbrake is not fully applied as detailed above, there is a danger that the caravan could roll backwards.

### To release

Press the handbrake down until it is parallel with the fairing cover to ensure that the brake is correctly disengaged.



**Figure 4** Handbrake lever operation

## SERVICING

**Every 10,000 - 15,000 km or every 12 months:** Lubricate/grease all sliding and moving parts of the overrun device as show in Fig 5.

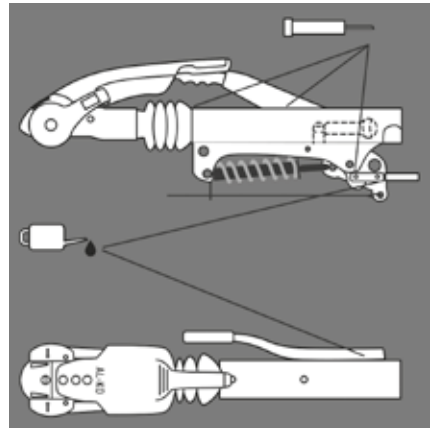
**Recommended lubricant:-** General purpose grease to DIN 51825 KTA 3KA.

## CHASSIS

### Servicing and care of hot dip galvanized parts:-

The formation of white rust is only a surface coating and has no adverse effect on the anti-corrosion properties of galvanising. To minimise the potential for the formation of white rust the following precautions should be taken:

- Ensure there is adequate air circulation when storing hot dip-galvanized parts.
- After winter journeys it is recommended that surfaces are washed with clean water.



**Figure 5** Lubricate/grease the parts indicated.



## SPARE PARTS

Spare parts are safety critical parts! For this reason when fitting spare parts in our products we recommend the use of original AL-KO parts or those parts that we have explicitly approved. The reliability, safety and suitability of parts designed especially for our products, has been determined using a special test procedure. In spite of constantly monitoring the market we are unable to assess or vouch for other products.

If repair work or servicing is required, AL-KO have a large network of AL-KO service stations throughout Europe. To establish the correct spare parts required you should always quote the model and type of overrun device in question along with the ETI No. which is stamped into the overrun device housing. The ETI number for the Euro Overrun can be found on the handbrake lever.

### EURO-OVERRUN DEVICES FITTED WITH AK160 COUPLING HEAD

Connect caravan electric plug controlling lights and indicators etc. into towing vehicle socket. Wind the jockey wheel up fully and clamp securely in position, ensuring that it does not foul the brake rod or breakaway cable. Remove wheel chocks if fitted and stow safely.

**Caution:** Failure to comply with this could result in the brakes overheating.

### Euro Handbrake

Ensure the handbrake is fully applied to ensure that the wheel brakes will be automatically re-applied should the vehicle start to roll backwards.

**Caution:** If the handbrake is not fully applied as detailed above, there is a danger that the caravan could roll backwards.

### To release

Press the handbrake down until it is parallel with the fairing cover to ensure that the brake is correctly disengaged.

## COMPLEMENTARY PRODUCTS

### AL-KO Security Device

AL-KO Security Devices provide a substantial deterrent against the theft of the caravan or trailer. They lock over the coupling handle, preventing unauthorised uncoupling.

Fitting the supplied Safety Ball into the coupling head when the Security Device is applied, prevents the caravan or trailer from being coupled to another vehicle.

The Security Device is manufactured from high density steel and is TUV approved. Visit [www.al-ko.co.uk](http://www.al-ko.co.uk) for more information.

### Friction pads

Made from low-wear material, four specially engineered friction pads surround the towball and continue to ensure optimum friction damping.

### Extended neck towball

Designed especially for use with the AL-KO AKS stabilisers the Extended Neck Towball has an extended machined neck to allow correct stabiliser articulation and clearances.

### Hitch cover

Designed to fit the AKS 3004 Stabilisers, the hitch cover will help protect your stabiliser from the elements.

The water/fade resistant padded foam fabric has a velcro fastening and eyelet for padlock security (padlock not included). Visit [www.al-ko.co.uk](http://www.al-ko.co.uk) for more information.

**Trouble shooting & fault finding****Table 1 Axles**

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Poor Braking	Linings worn or damaged. Brake Linings not bedded in. Brake set up incorrect.	Replace Brake Linings. Will pass after braking a few times. Reset Brakes as page 173-176 & ensure system is lubricated.
Difficulty in Reversing	Braking system set too tightly. Auto-Reverse lever too stiff.	Reset Brakes as page 173-176. Lubricate and free off Reverse Lever.
Brakes Overheating	Incorrect setting. Braking system not fully released. Overrun lever stuck. Damage or Corrosion to braking system	Reset Brakes as page 173-176. Check Handbrake has been released & the system is running freely. Lubricate and free off Reverse Lever. Check system as page 173-176 and repair or renew parts as necessary.
Handbrake Force Low	Incorrect setting of the brakes. Linings not bedded in.	Reset brakes as page 173-176 and lubricate as necessary. Will pass after braking a few times.
Uncomfortable ride or Uneven Braking	Loose braking adjustment. Damper defective. Axle shock absorbers defective.	Reset brakes as page 173-176. Check and replace damper if necessary. Replace shock absorber.

**Table 2 Coupling Heads**

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Coupling does not engage onto ball	Ball diameter too large. Ball could be damaged or deformed. Coupling head dirty or defective.	Change ball to correct size. Fit new ball. Clean & Lubricate coupling and replace if necessary.
Difficulty in Uncoupling	Ball damaged or deformed. Coupling damaged or deformed. Coupling head under pressure from damper.	Fit new ball. Replace if necessary. Pull forward a few inches to relieve pressure
Too much play in the coupling	Coupling damaged or deformed Ball too small	Replace if necessary. Fit new ball.

**Table 3 Overrun Devices**

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Poor Braking	Overrun shaft tight. Overrun shaft corroded. Body housing damaged.	Lubricate overrun shaft and replace any damaged parts.
Brakes Overheating During Towing	Handbrake not fully released. Braking system incorrectly set. Incorrect attachment of breakaway cable.	Release handbrake. Reset brakes as page 173-176. Ensure correct attachment as listed on page 29 or refer to Braked Trailers Use of Breakaway Cables sheet.
Handbrake Force Low	Defective gas strut. Incorrect setting of spring cylinder.	Replace gas strut. Reset spring cylinder as page 173-176.
Brakes Apply During Deceleration or Downhill Travel.	Overrun damper is defective.	Replace the overrun damper.

## ACCESSORIES

### Accessories

#### Corner Steadies

Corner Steadies are as stated, for the purpose of steadying the caravan corners. They are NOT JACKS AND SHOULD NEVER BE USED AS SUCH. The screw and pivot pins should be lubricated periodically to ensure their satisfactory operation. (See also Jack Operation).

#### Shock Absorbers

All AL-KO chassis have pre-punched holes to accommodate Shock Absorbers, in front of the axle. On the Euro-Axle System, axle swing arms have a removable rectangular plastic cap exposing a slot to accommodate retro-fit brackets for the Octagon Shock Absorbers. Delta Axles have Shock Absorbers fitted as standard which MUST NOT BE REMOVED.

#### Road Wheels

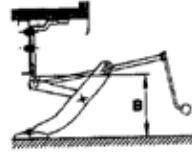
The condition of wheels and tyres should be checked regularly, particularly for distortion of flanges and the wheel dish. Wheels that are damaged or distorted, or have wheel bolt seatings cracked or deformed must not be repaired or used in service - these must be replaced.

**⚠ WARNING:** The torque settings should be re-checked regularly.

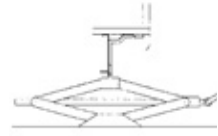
#### Jacks

The Corner Steadies Should never be used to jack up the caravan. When jacking becomes necessary use the AL-KO Side Lift Jack or 2-Tonne Jack system.

**Note:** It is essential that the car and caravan are hitched together before commencing jacking. All AL-KO chassis from 1992 onwards have 2 holes punched in the chassis members, each side (rear of the axle); to accept the brackets for the Jack(s). Corner Steadies may be used for stability ONLY, when the caravan is in the jacked position. The caravan should never be lifted by jacking up under the chassis member.



**Side Lift Jack**



**2 Tonne Jack**

If working under the caravan in an elevated position, axle stands must be used for safety. Wheel chocks for the opposite wheel(s) are also advisable.

#### Jockey Wheel

Lubricate screw thread and wheel spindle periodically.



#### Spare Wheel Carriers

The telescopic frame tubes should be lubricated periodically. Accessories

#### Corner Steadies

Corner Steadies are as stated, for the purpose of steadying the caravan corners. They are NOT JACKS AND SHOULD NEVER BE USED AS SUCH. The screw and pivot pins should be lubricated periodically to ensure their satisfactory operation. (See also Jack Operation).

#### Shock Absorbers

All AL-KO chassis have pre-punched holes to accommodate Shock Absorbers, in front of the axle. On the Euro-Axle System, axle swing arms have a removable rectangular plastic cap exposing a slot to accommodate retro-fit brackets for the Octagon Shock Absorbers. Delta Axles have Shock Absorbers fitted as standard which MUST NOT BE REMOVED.

# TECHNICAL SPECIFICATION

Model	Basecamp	Basecamp Plus
<b>Berths</b>	2	2
<b>Number of Axles</b>	1	1
<b>Internal Length (At bed box height)</b>	3.42m / 11'3"	3.42m / 11'3"
<b>Overall width**</b>	2.28m / 7'6"	2.28m / 7'6"
<b>Overall height** (including TV Aerial)</b>	2.58m / 8'5"	2.71m / 8'10"
<b>Maximum Internal Headroom</b>	1.95m / 6'5"	1.95m / 6'5"
<b>Overall Length</b>	5.10m / 16'9"	5.10m / 16'9"
<b>Mass in running Order (includes Tolerance)</b>	879kg / 17.3cwt	904kg / 17.8cwt
<b>MTPLM - (Lower Limit)</b>	990kg / 19.5cwt	1015kg / 20.0cwt
<b>MTPLM - (Higher Limit)</b>	1100kg / 21.7cwt	1100kg / 21.7cwt
<b>Total User Payload</b>	111kg / 2.2cwt	111kg / 2.2cwt
<b>Personal Effects</b>	111kg / 2.2cwt	111kg / 2.2cwt
<b>Options</b>	0.0kg / 0.0cwt	0.0kg / 0.0cwt
<b>Type Size</b>	185 R14C 102 Q	185 R14C 102 Q
<b>Type Pressure at Lower Limit MTPLM</b>	2.6 bar / 38psi	2.7 bar / 39psi
<b>Tyre Pressure at Higher Limit MTPLM</b>	3.0 bar / 44psi	3.0 bar / 44psi
<b>Static Load on Coupling Head</b>	100kg	100kg
<b>Thermal Insulation Grade</b>	THREE	THREE
<b>Bed Sizes</b>		
<b>Front Double</b>	198cm x 183cm - 6'5" x 6'0"	198cm x 183cm - 6'5" x 6'0"
<b>Front Single (Nearside)</b>	183cm x 69cm - 6'0" x 2'3"	183cm x 69cm - 6'0" x 2'3"
<b>Front Single (Off Side)</b>	183cm x 69cm - 6'0" x 2'3"	183cm x 69cm - 6'0" x 2'3"

\* Estimated weight

\*\*The dimensions given are approximate due to slight variations in suspension ride heights, loading conditions and tyre pressures.

Customers should verify the actual dimensions of their touring caravan before committing to anything that could be impacted by these dimensions

The masses are calculated in accordance to EU regulation 1230/2012 and NCC code of practice 304.

The Mass in Running Order (MRO) comprises:

1. The mass of the empty caravan as supplied by Swift including loose items such as the hook-up cable, kit bag, entrance step, manuals etc
2. 10kg allowance for LPG

The MRO is calculated with the fresh water tank, toilet flush tank and water heater empty. If you travel with water in the fresh water tank, toilet flush tank and the water heater the payload will reduce accordingly.

The personal effects is based on the number of berths and the length of the caravan and includes an allowance of 20kg for a leisure battery,

The Maximum Technical Laden Mass (MTPLM) is the maximum mass allowed when the caravan is fully laden.

**WARNING:** Under no circumstances should the MTPLM be exceeded.

Please note: Any dealer fit options will reduce the overall payload available to the user of the caravan.

If you require additional payload it is possible to upgrade the MTPLM to the upper limit. Please contact your Swift caravan dealer for more information.

## BULB REPLACEMENT

**Bulb Replacement**

<b>Road Lights</b>		
<b>Application</b>	<b>Type of Wattage</b>	<b>Bulb Reference or lamp reference</b>
Front marker lamp - Britax	LED	L99.0012V
Rear end outline lamp (Red/White) - Britax	LED	L103.00.L12V
High level stop lamp - Britax	LED	L102.00L12V
Number plate lamp - Britax	LED	L104.00L12V
Rear lamp multi function cluster - Britax	LED	L79.00.12V (LH) & L79.01.12V (RH)

<b>Interior/Other</b>		
<b>Application</b>	<b>Type of Wattage</b>	<b>Bulb Reference or lamp reference</b>
Locker spotlight with dimming control	LED	FEM1561
China locker base lamp, switched, surface mount	LED	FEM1373C
Bathroom light, switched, recessed	LED	FEM1374
High level strip lamps	LED	FEM1214 (Cut to length strip)
Awning lamp	LED	L101-00-L12V

**Note:** Not all lights feature on all models within range

## Road Light Bulb Access

### Rear light clusters (Containing indicator, tail/stop,reverse and fog lamps):

- These multi-function lights are LED and have no user serviceable parts inside.
- Replacement clusters can be fitted in the following way:
- Remove three screws visible around the perimeter of the cluster
- Pull cluster away from rear panel of the tourer, taking care to not put excessive strain on the electrical connections behind the lamp.
- Unplug the electrical connection from the rear of the lamp , by releasing the tab and lifting the connector upwards relative to the cluster
- Plug the connector back into the replacement lamp, position the lamp into the recess and replace the three fixing screw

### Front low level marker/position lamps (Clear lense)

- These lamps are LED and have no user serviceable parts inside.
- Replacements should be undertaken by your dealer, as the lamps are sealed onto the mounting panel.

### High level brake lamp

- This lamp is single piece and has no user serviceable parts inside
- Replacements should be undertaken by your dealer, as the lamps are sealed onto the mounting panel.

### Number plate lamps

- These lamps are single piece and have no user serviceable parts inside
- Replacement should be undertaken by your dealer, as the lamps are sealed onto mounting panel.

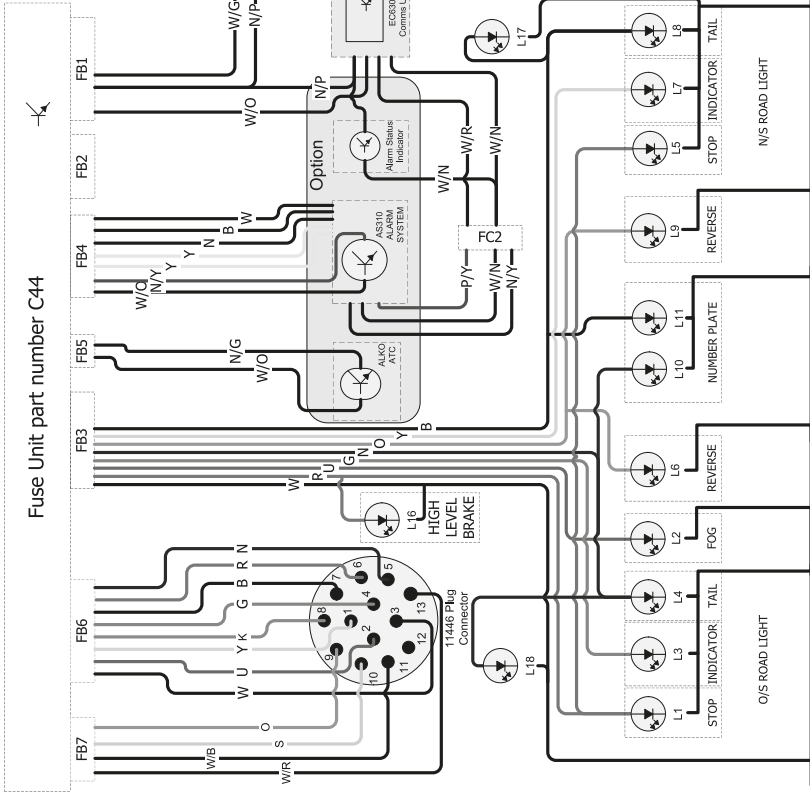
### Upper side/marker/ position lamps (Red and White lense)

- These lamps are LED and have no user serviceable parts inside.
- Replacement should be undertaken by your dealer, as the lamp is sealed onto the mounting panel.

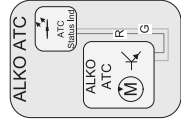
WIRING DIAGRAM - ROAD LIGHTING

**Road Lighting**  
**Swift Caravans 2017 T1A Basecamp**  
 SARGENT ELECTRICAL SERVICES LTD Issue 2, 28/04/16

See separate sheet for cable colour chart  
 Dual coloured cables show in primary colour  
 White cables shown in primary colour  
 FC2 is the alarm connector  
 Some vehicles feature LED light sources  
 Not all lights are fitted some models



L1	Brake lamp	LED
L2	Fog Hazard lamp	LED
L3	O/S Indicator lamp	LED
L4	O/S Tail lamp	LED
L5	Brake lamp	LED
L6	Reverse lamp	LED
L7	N/S Indicator lamp	LED
L8	N/S Tail lamp	LED
L9	Reverse lamp	LED
L10	Number plate lamp	LED
L11	Number plate lamp	LED
L12	O/S rear marker lamp	LED
L13	O/S front marker lamp	LED
L14	N/S rear marker lamp	LED
L15	N/S front marker lamp	LED
L16	High level brake lamp	LED
L17	N/S Side marker lamp	LED
L18	O/S Side marker lamp	LED

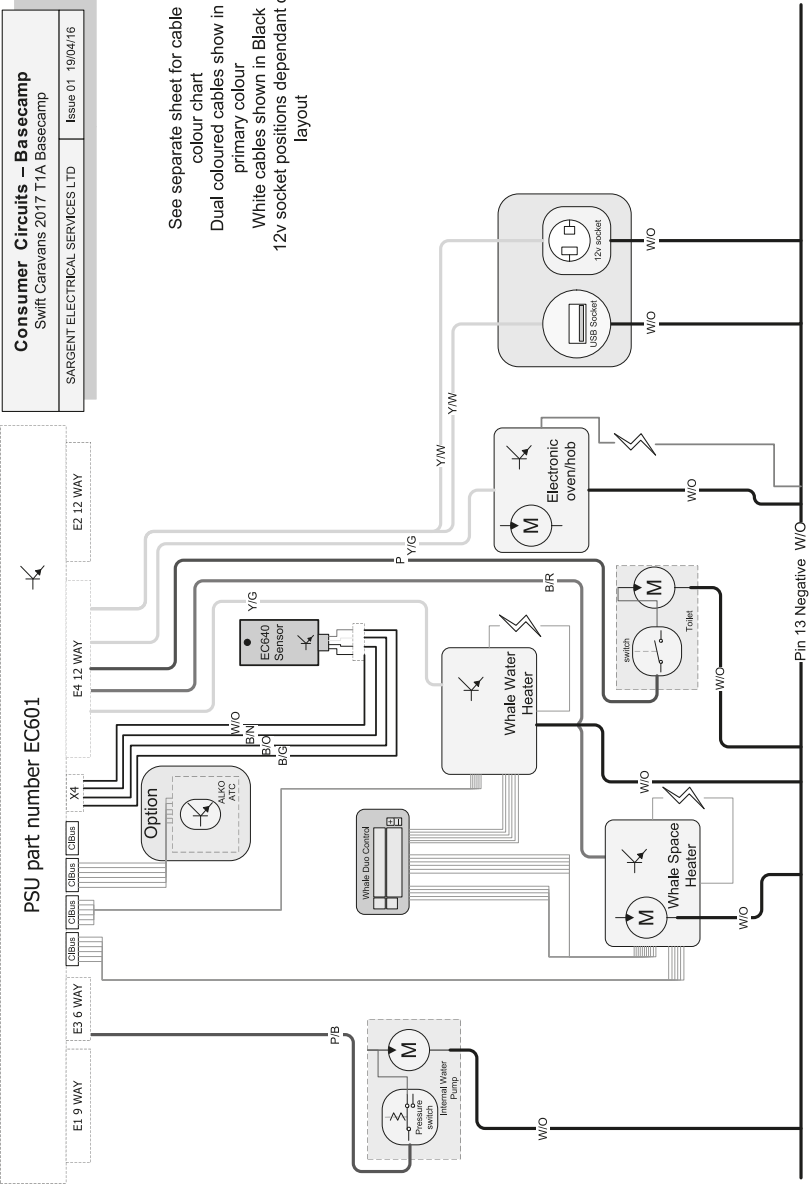


Pin3 Negative W

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# WIRING DIAGRAM - CONSUMER CIRCUITS

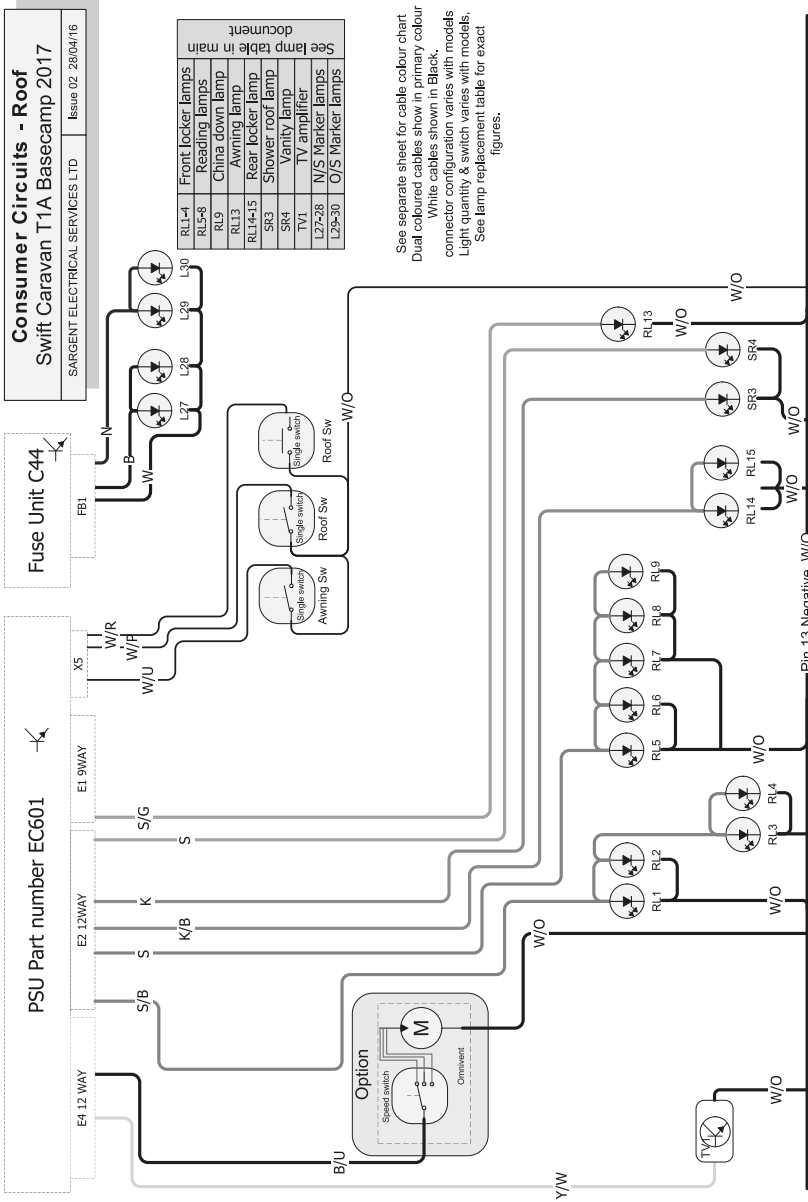


**Consumer Circuits – Basecamp**  
Swift Caravans 2017 T1A Basecamp  
SARGENT ELECTRICAL SERVICES LTD Issue 01 19/04/16

See separate sheet for cable colour chart  
Dual coloured cables show in primary colour  
White cables shown in Black  
12v socket positions dependant on layout

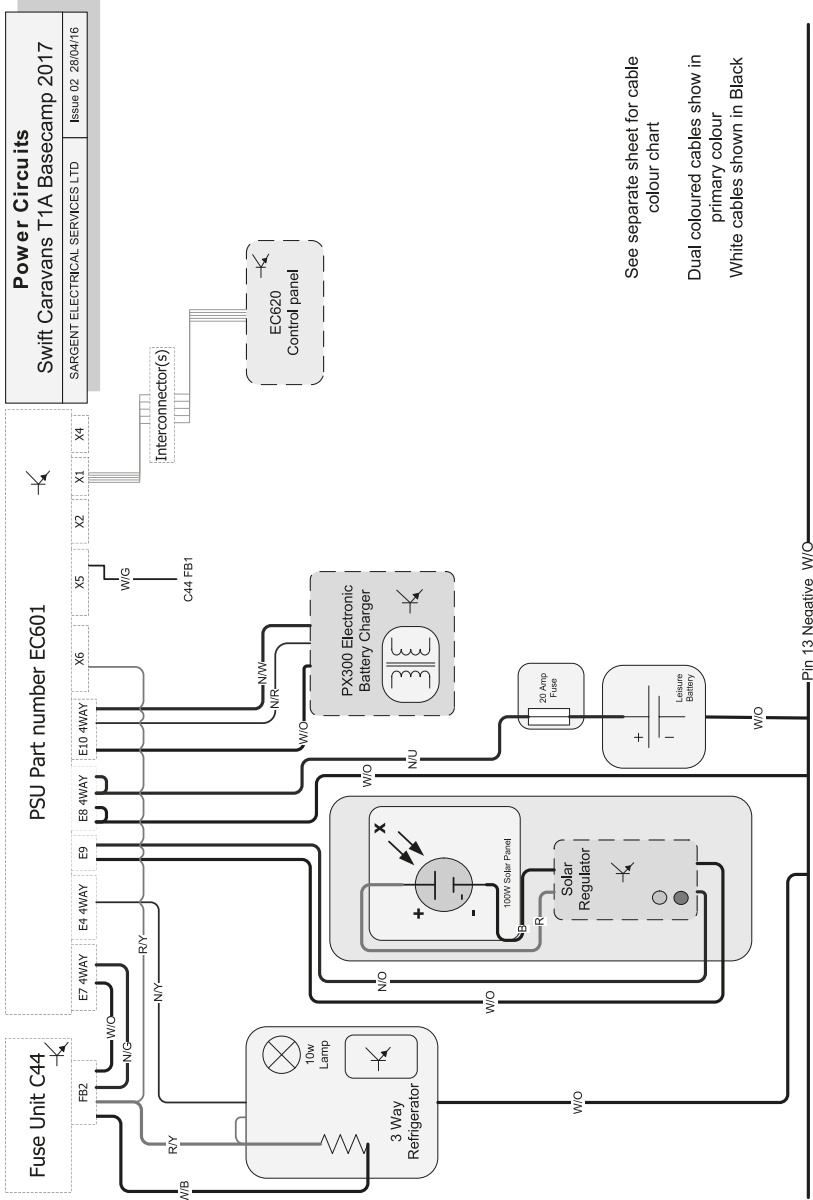
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WIRING DIAGRAM - CONSUMER CIRCUITS ROOF



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# WIRING DIAGRAM - POWER CIRCUITS

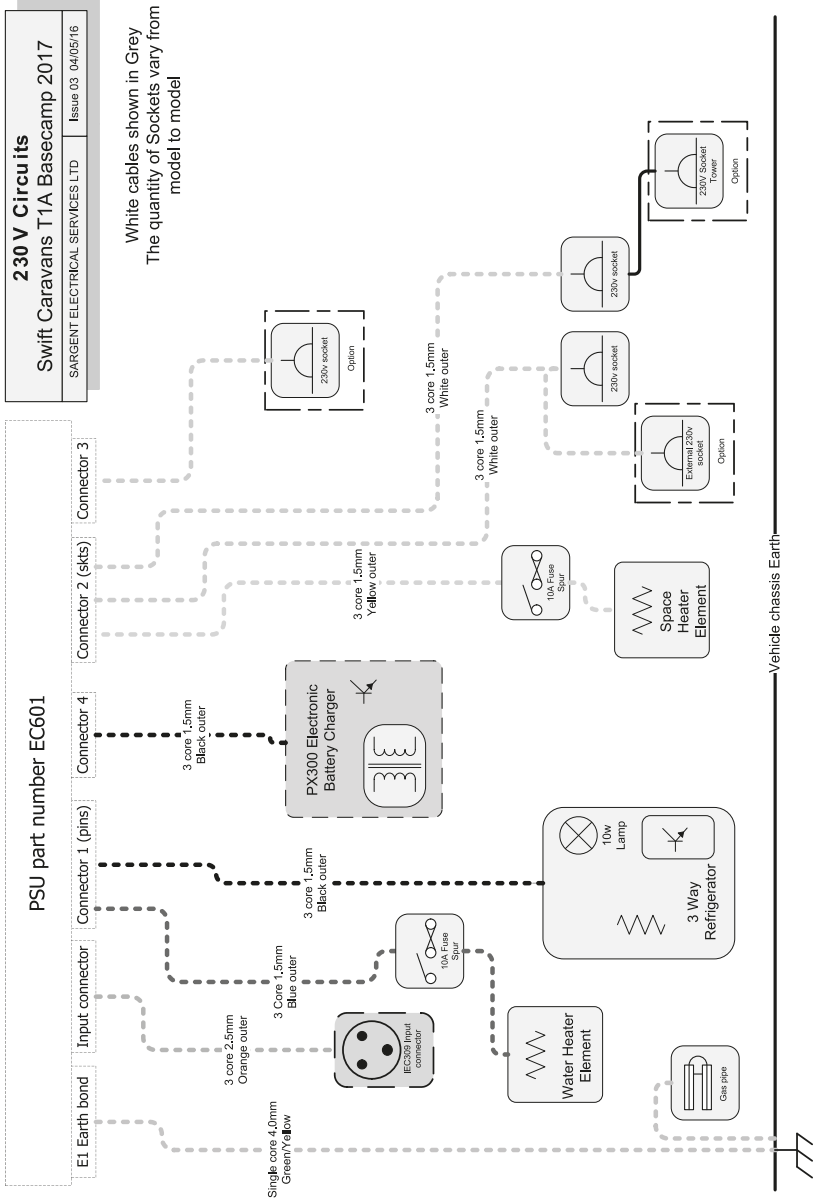


See separate sheet for cable colour chart  
 Dual coloured cables show in primary colour  
 White cables shown in Black

Pin 13 Negative W/O

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WIRING DIAGRAM - 230V CIRCUITS

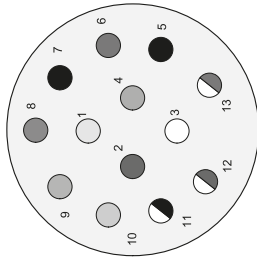


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# WIRING DIAGRAM - 13 PIN SOCKET

## ISO 11 446 Circuits Swift Group Caravans (where applicable)

SARGENT ELECTRICAL SERVICES LTD Issue 01 06/07/10



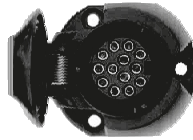
11446 Plug Connector viewed  
from cable entry on plug

It is possible to get adaptors that convert two sockets on the towbar to a single 13 pin ISO socket, and vice versa.

Connection lead from 12N 7 pin socket plus 12S 7 pin socket to 13pin Euro Socket. (Converts a vehicle with two 7 pin sockets to a caravan with a 13 pin plug)

Please be aware that some car and adaptor manufacturers don't provide the fridge power connections

Pin No	Core Colour	Core Size	Function
1	Yellow	1.5	Left Hand Indicator Light
2	Blue	1.5	Rear Fog Warning Light(s)
3	White	2.5	Earth for pins 1 - 8
4	Green	1.5	Right Hand Indicator Light
5	Brown	1.5	Right Hand Tail Light
6	Red	1.5	Brake Lights
7	Black	1.5	Left Hand Tail Light
8	Pink	1.5	Reverse Light(s)
9	Orange	2.5	Car +ve
10	Slate (Grey)	2.5	Fridge +ve
11	White/Black	2.5	Earth for pin 10
12	White/Blue	1.5	Not Yet Allocated
13	White/Red	2.5	Earth for pin 9



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Example

**Y/U**

Yellow cable with Blue stripe

**Cable Colour Chart**

Swift range 2016

SARGENT ELECTRICAL SERVICES LTD Issue 28/04/16

## WIRING DIAGRAM - CABLE COLOUR CHART

## 12v Cable Colours

<b>B</b>	BLACK
<b>N</b>	BROWN
<b>R</b>	RED
<b>O</b>	ORANGE
<b>Y</b>	YELLOW
<b>G</b>	GREEN
<b>U</b>	BLUE
<b>P</b>	PURPLE
<b>S</b>	SLATE GREY
<b>W</b>	WHITE
<b>K</b>	PINK

## 230v Cable Colours

<b>B</b>	BLACK
<b>N</b>	BROWN
<b>W</b>	WHITE
<b>O</b>	ORANGE
<b>Y</b>	YELLOW
<b>G</b>	GREEN
<b>U</b>	BLUE

Owners Club .....	204
Spares and after sales Supercare .....	204
Repair facilities .....	204
Caravan Clubs .....	205
Motoring Associations .....	205
Trade Association .....	205
Change of ownership .....	206
Index .....	210

## USEFUL INFORMATION

### Owners club

The Owners Club is a completely independent organisation run for the benefit of the caravan 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

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 number when ordering any items from your dealer.

### 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](http://www.swiftgroup.co.uk/find-a-dealer)



The enjoyment of caravanning can be greatly enhanced by membership of one or more of the various 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](http://www.caravanclub.co.uk)

### The Camping and Caravanning Club

Greenfields House,  
Westwood Way,  
Coventry,  
West Midlands.

Tel: 024 7647 5448  
[www.campingandcaravanningclub.co.uk](http://www.campingandcaravanningclub.co.uk)

## Motoring Associations

Automobile Association (AA)  
Fanum House,  
Basingstoke,  
Hants. RG1 2EA

Tel: 08705 448866  
[www.theaa.co.uk](http://www.theaa.co.uk)  
e-mail: [customer.services@theaa.com](mailto:customer.services@theaa.com)

### RAC Motoring Services

8 Surrey St.  
Norwich  
Norfolk  
NR1 3NG

Tel: 01922 437 000  
[www.rac.co.uk](http://www.rac.co.uk)

### Green Flag National Breakdown

Tel: 0845 246 1557  
[www.greenflag.com](http://www.greenflag.com)

### RBS Insurance

Churchill Cover  
West Moreland Road  
Bromley, Kent  
BR1 1DP  
0800 051 3030

## Trade Association

### NCC

Catherine House,  
Victoria Road,  
Aldershot,  
Hampshire, GU11 1SS

Tel: 01252 318251  
[www.thencc.org.uk](http://www.thencc.org.uk)  
e-mail: [info@thencc.org.uk](mailto:info@thencc.org.uk)

## Change of ownership

### Notification of change of ownership

As the new second hand owner, please notify the Swift Group of the change of ownership by completing this page, detaching it and sending it to:

Customer Services Department  
Swift Group Limited,  
Dunswell Road,  
Cottingham,  
East Yorkshire,  
HU16 4JX.

**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.

## CHANGE OF OWNERSHIP

<b>Details of caravan:</b>	Model:	
	Chassis No:	
<b>New owner:</b>	Name:	
	Address:	
	Email:	
	Telephone:	
	Mobile:	
	Date of purchase:	
<b>Previous owner:</b>	Name:	
	Address:	
	Email:	
	Telephone:	
	Mobile:	
	Date of purchase:	





**Symbols**

13 pin connection.....	72
13 pin socket.....	27
230V mains electrical equipment .....	73

**A**

Acrylic windows.....	160
AKS 3004.....	35
AKS 3004 operating instructions .....	180
Alarm siren .....	53
Alarm system.....	51
Alarm tilt sensor.....	52
AL-KO ATC trailer control system .....	169
AL-KO braking system adjustment .....	174
AL-KO chassis .....	167
AL-KO operating instructions.....	50
AL-KO Secure immobiliser.....	50
AL-KO side lift jack .....	51
ALKO Spare wheel and carrier tips .....	32
Appliance consumption figures.....	75
Arrival on site.....	34
Assistance.....	8
Awning .....	155
Awning light operation .....	52
Axle types.....	173

**B**

Barbeque point.....	150
Base Camp technical specification .....	193
Bathroom / shower.....	163
Battery charging .....	100
Battery compartment.....	98
Bedding.....	152
Breakaway cables .....	29
Bulb fitting instructions .....	195
Bulb replacement .....	194

**C**

Caravan clubs .....	205
Caravan exterior .....	160
Caravan handling.....	32
Caravan interior .....	162
Caravan motor movers .....	18
Caravan movers .....	160
Caravan terms.....	14
Caravan towing code.....	14
Carbon monoxide.....	41
Change of ownership .....	207
Changing a wheel.....	33
Chassis accessories .....	192
Chassis trouble shooting .....	190
CO alarm.....	41
Colour reference.....	156
Condensation .....	161
Cooking equipment .....	134
Cycle racks.....	156

**D**

Dometic refrigerator.....	109, 113
Doorscreen.....	152
Drop down TV mechanism .....	156

**E**

Electrical overseas connection.....	71
Electrical system.....	71
Escape paths .....	40
Exterior 230v socket.....	101
Exterior door.....	35, 152
Exterior door key .....	152
External shower point .....	151

**F**

FENIX work surfaces .....	158
Fire alarm test.....	39
Fire and fire alarm.....	38

- Fire extinguisher ..... 40
- Front locker and sunroof..... 156
- Furniture ..... 164
- G**
- Galvanised parts..... 167
- Galvanised steel chassis..... 22
- Gas ..... 66
- Gas bottles..... 66
- Gas faults ..... 70
- Gas hoses ..... 66
- Gas regulator..... 66
- Gas safety advice ..... 68
- Gas schematic ..... 65
- Generator ..... 100
- Glossary & checklist ..... 17
- Green Flag National Breakdown ..... 205
- H**
- Habitation relay..... 101
- Hitching-Up ..... 24
- Hitch operating instructions AKS 3004 .. 178
- J**
- Jacking points ..... 33
- L**
- LED road lighting ..... 28
- Levelling the caravan ..... 34
- Loading ..... 172
- M**
- Measurement of nose weight..... 16
- Modifications ..... 160
- Motoring associations..... 205
- Motorway driving ..... 32
- Moving off ..... 31
- N**
- NCC..... 205
- O**
- Overrun Device..... 187
- Owners club ..... 204
- P**
- PIR internal movement sensor ..... 52
- Plumbing connections ..... 58
- Preparing for the road..... 20
- Pre-tow check list..... 25, 26
- R**
- RAC motoring services ..... 205
- RBS Insurance ..... 205
- Repair facilities..... 204
- Reversing ..... 31
- Roller blind advice ..... 153
- Roof ..... 156
- Rooflight..... 154
- Roof lights ..... 153
- S**
- Sanitising water tanks and water system . 61
- Security ..... 48
- Selecting a pitch..... 34
- Service inspection ..... 10
- Shakespeare TV omni-directional antenna ..... 151
- Shower heads ..... 155
- Snaking ..... 22
- Solar energy system ..... 99
- Spares and after sales customer care.... 204
- Speed limits..... 31
- Stabiliser friction pads..... 22
- Stabilisers and coupling devices ..... 177
- Stability..... 22
- Step on hitch cover ..... 156

## INDEX

Stopping on a hill.....	34
Suitable towing vehicles.....	22
Supplier contacts .....	9
Swift Command Power Control System...	78
Swift Shield fabric.....	163
Swift Talk.....	2

**T**

Table storage .....	155
Thetford C260 cassette toilet.....	135
Thetford C402 toilet.....	144
Thetford hob.....	135
Thetford MK3 mini grill.....	141
Thetford MK3 oven.....	142
Towball.....	22
Tow car electrics .....	27, 28
Towing vehicle's rear suspension .....	21
Towing vehicle terms .....	16
Trade association .....	205
TV aerial .....	151
Types of gas.....	68
Types of tyres fitted .....	23
Tyre law.....	24
Tyre maintenance .....	23

**U**

Unhitching.....	35
Useful items.....	18, 19

**V**

Ventilation.....	48
------------------	----

**W**

Water faults .....	63, 64
Water intake housing.....	60
Water pump pressure switch adjustment.	60
Water system .....	56
Whale space heater.....	108
Whale water heater.....	104
Wheel bolt tightening.....	33
Windows .....	153
Winterisation.....	164
Wiring of connecting cable and caravan mains inlet.....	74





## USEFUL INFORMATION



All Swift Group models have been certified by the National Caravan Council 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 caravan carries the "NCC Approved Caravan" badge.

The NCC also conduct unannounced inspections at the Swift factory to ensure continued compliance. NCC Approval gives you peace of mind that your caravan is legal and safe.

All Swift Group touring caravans are European Whole Vehicle Type Approved.

This is your assurance that these caravans meet all European regulations, and have been constructed and conform to approved standards of safety and manufacturing.

#### IMPORTANT CUSTOMER NOTICE

#### TOURING CARAVAN MODEL YEAR

The model year runs from 1st September to 31st August.

For example, the earliest a 2017 model would be registered under the Caravan Registration Identification Scheme (CRiS) is 1st September 2016.



CRiS is the Central Registration & Identification Scheme that issues touring caravan registration documents, equivalent to that of the V5 registration document issues by the DVLA for cars. CRiS was established in 1992 by The National Caravan Council and provides a method of registering the 'keeper' details of every tourer manufactured by NCC member companies to help prevent and detect caravan related crime.

Why register with CRiS?

- Safety • Security • Warranty

Did you know..?

You should not take a tourer abroad without a registration document. If you go abroad your CRiS registration certificate provides the necessary proof, required by the police and other authorities, that you are its registered keeper.

If you need to make a claim on your insurance, CRiS can help speed up claims by providing details of your tourer and its purchase date to relevant parties.

CRiS can help your tourer's manufacturer contact you in the event that there is any kind of product recall or fault that could affect the safety of your caravan.

### CRiS Registration and VIN Chip Caravan Registration

Your caravan has been security marked and recorded under the Caravan Registration and Identification Scheme that is recognised by the Caravan Industry.

Shortly after purchasing this caravan you should receive your Touring Caravan Registration Document. It will be sent by post to you home address.

Your Touring Caravan Registration Document will include a 17 character VIN (Vehicle Identification Number), shown in the top right hand corner. This 17 character will be permanently marked onto the caravan chassis.

To protect yourself and your touring caravan, never leave the Registration Document in the caravan. For security reasons keep it in a safe place.

If you sell the caravan please follow the instructions on the Touring Caravan Registration Document.

If you do not receive a Touring Caravan Registration Document, lose it, or any of the details recorded are incorrect, please contact: CRiS, Avonbridge House, Bath Road, Chippenham, Wiltshire, SN15 2BB or Tel 0203 282 1000.

### **VIN Chip Caravan Identification**

The caravan's unique 17 character VIN will be incorporated into VIN Chip tamper evident labels; the master VIN Chip label is situated on the front near side window to aid police checking, another in the gas locker and a maximum of 10 placed on the inside of the windows (with the exception of opaque windows).

Three electronic RFID chips containing the individual identity of your caravan are concealed within the caravan and can only be read by using a specially programmed RFID scanner.

Your local police can obtain the use of a CRiS VIN Chip scanner by contacting CRiS on Tel 0203 282 1000.

For help, support and advice Contact CRiS:

NCC CRiS Ltd  
PO Box 445  
Aldershot  
GU11 9SF

Tel 0203 282 1000

[www.cris.co.uk](http://www.cris.co.uk)

Opening Hours: Monday - Friday 8am to 8pm  
Saturday 9am to 5pm  
Sunday 10am to 5pm

USEFUL INFORMATION