Swift Caravans 2004

Owner's Handbook

SWIFT

INTRODUCTION

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.

HAPPY CARAVANNING!

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THE TOWING CODE

The Towing Code

THE 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 of 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

Mass in Running Order:
The mass of the caravan as stated by the caravan manufacturer, as new with standard fixtures and fittings.

Note: Because of differences in the weight of materials supplied for the construction of caravans, a tolerance of +2% of the weight has been allowed in the Mass in Running Order weight.

Maximum User Payload:
The maximum allowable weight to be put into the caravan whilst it is being towed. This is made up of 3 sections:

Personal effects, optional equipment and essential habitation equipment.

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

Essential Habitation Equipment:
Those items and fluids required for safe and proper functioning of the equipment for habitation as defined by manufacturer of the caravan.

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

Optional Equipment:
Items made available by the manufacturer over and above the standard specification of the caravan.

Maximum Technically Permissible Laden Mass:
The maximum weight for which the caravan is designed for normal use when being towed on a road, laden. This mass takes into account specific operating conditions including factors such as the strength of materials, loading capacity of tyres etc.

WARNING: Under no circumstances should the maximum technically permissible laden mass of this caravan be exceeded.

Nose weight:
That part of the static mass of the caravan supported by the towing device on the rear of the towing vehicle.

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 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 the permitted nose weight. Additional payload must be placed behind the axle to compensate for this.

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).

Power to weight ratio:
No hard and fast rules can be stated but, here is a general guide.

(a) Conventional petrol engines with a capacity up to approximately 1500 cc should be adequate for towing a caravan weighing around 85% of the kerb weight of the towing vehicle.

(b) Above 1500 cc such engines should manage a caravan weighing up to 100% of the kerb weight of the towing vehicle and still give adequate performance.

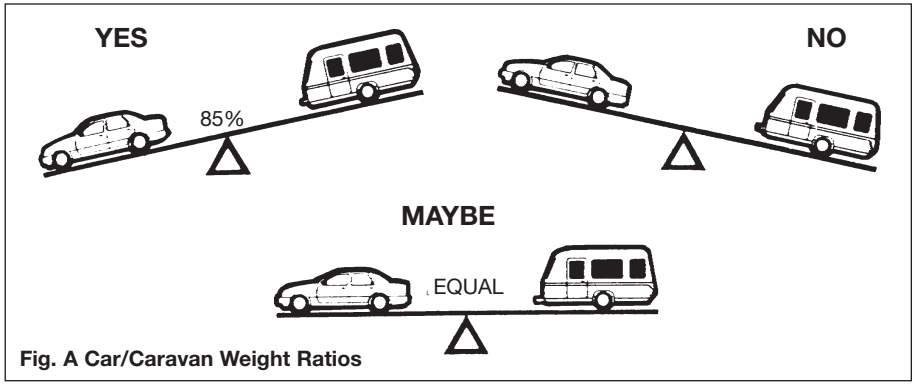


Fig. A Car/Caravan Weight Ratios

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

Vehicles with automatic transmission may need an oil cooler fitting or the SAE rating of the gearbox oil increasing when towing. The advice of the vehicle manufacturer should be sought.

Mass in Running Order:
Caravanners can use a public weighbridge to establish the mass in running order.

Note: Weighbridges 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.

Train Weight (Combination Weight):
The maximum combined weight of the towing vehicle and trailer combination as specified by the towing vehicle manufacturer.

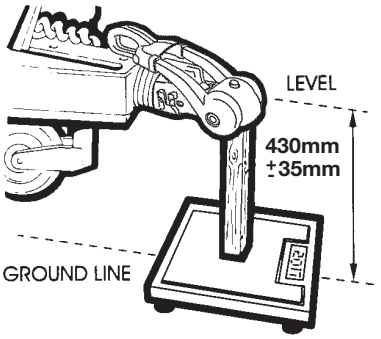


Fig. A Measuring Noseweight

MEASUREMENT OF NOSEWEIGHT

Noseweight may be measured using a propriety brand of noseweight indicator.

Such equipment is obtainable at your Caravan Dealer.

Note: These indicators have a varying tolerance level.

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)

Noseweight 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.

TYPE OF DRIVING LICENCE HELD

In order to be able to tow a caravan a driver must hold a Category B licence. Those car drivers who passed their tests prior to 1 January 1997 would have automatically obtained Category B+E. However, anyone who passed their test after 1 january 1997 will need to take a further test in order to obtain a Category B+E if they wish to tow a car and caravan combination whose train weight exceeds 3,500kg, or up to 4,250 if the caravan is less than 750kg or if the caravan's Maximum Technically Permissible Laden Mass exceeds the unladen weight of the car.

Note: The unladen weight of a car is normally less than the kerbside weight.

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. Two bottles are required for a constant supply. An initial deposit is payable on each cylinder. We recommend the use of 6kg Propane or 7kg Butane 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.

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. One end fits to the car's towing bracket and the other end to the caravan. (See **Stability**)

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**).

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 (S registered plate) will require a type approved towbar and towball (to 94/20/EC). 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, folding cans and wheeled containers.

12N & 12S Sockets - Two sockets designated 12N and 12S are fitted to your car to accept corresponding plugs from the caravan. These are necessary to energise the road lights and caravan auxiliary circuits respectively.

12 Volt Battery - A deep cycling, heavy duty 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 and having a maximum height of 190mm and width of 175mm.

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.

Note: Fitting additional equipment will reduce the caravan allowable payload.

The Towing Code

Useful memory aid for other items.

Car
- Distilled water
- External mirrors
- Fan belt
- Fire extinguisher
- Jack
- Jump leads
- Petrol can
- Socket set
- Spare bulbs
- Spare keys
- Spare wheel
- Tool kit
- Towball cover
- Tow rope
- Tyre pressure gauge
- Warning triangle
- Tyre Pump

Caravan
- Awning pegs and poles
- Awning ground sheet
- Battery 12 volt charger
- Bucket
- Corner steady brace
- Corner steady pads
- Coupling lock
- Door mat
- Fire blanket
- Fire extinguisher
- Fresh water container
- Gas cylinder
- Gas regulator
- Jack
- Levelling boards
- Mallet
- Site/caravan mains lead
- Spare bulbs (Mandatory in E.C.)
- Spare 12v fuses
- Spare 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
- Bin liners
- Binoculars
- Bottle opener
- Breadboard
- Breadbin
- Brush and dustpan
- Butter dish
- Camera and films
- Carving knife
- Cassette recorder
- Chairs
- Clock
- Clothes brush
- Clothes line
- Coat hangers
- Coffee percolator
- Coolbox
- Colander
- Crockery
- Cruet
- Corkscrew
- Cutlery
- Dish cloth and brush
- Dusters and polish
- Disposable cloths
- Egg cups
- Electrical extension lead
- Floor cloth
- Fly spray
- Food
- Food mixer
- Frying pan
- Glasses
- Grill pan
- Jugs
- Kettle
- Kitchen roll
- Kitchen tools
- Litter bin
- Matches
- Measuring jug
- Milk jug
- Mixing bowl
- Needles and thread
- Oven gloves
- Pegs
- Piezo Gas lighter
- Potato peeler
- Pressure cooker
- Radio
- Rubbish bin
- Salad shaker
- 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
- Bail Bonds (some Euro countries)
- 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

PRE-LOAD CHECKLIST
Caution: 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.
- all bunks are secure.
- all rooflights are closed and secured.
- main table is stored in its transit position.
- fridge is on 12v operation and door lock is set.
- all windows are fully closed and latched. Never tow with windows on night setting. Leave all curtains and blinds open to aid rear visibility.
- gas cylinders are correctly positioned, secured and turned off.
- battery is secure and mains connecting cable is disconnected and stowed.
- 12v distribution panel selector switch is set to centre position.

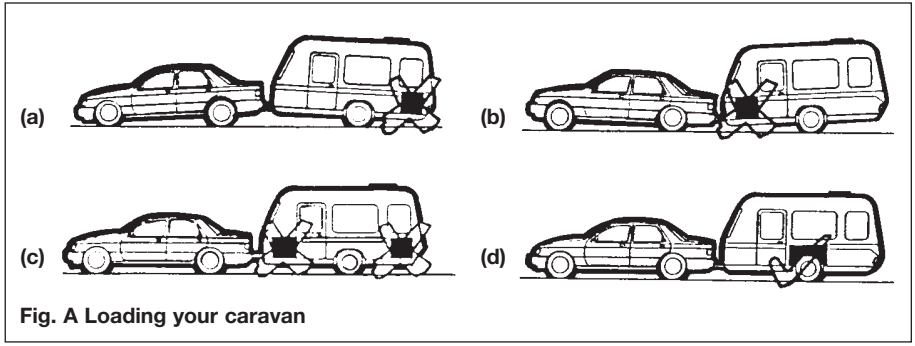


Fig. A Loading your caravan

WARNING: Turn off gas appliances except those heating appliances designed to function while the vehicle is in motion.

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

LOADING AND DISTRIBUTION OF WEIGHT IN THE CARAVAN
Do not exceed recommended maximum loading for your caravan.

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 noseweight at the towing coupling.

   Check noseweight.

Note: Do not overload car boot.

Note: Please take care to ensure that you have allowed for the masses of all items you intend to carry in the caravan.

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

The Towing Code

Sensible Loading:
How to apportion it

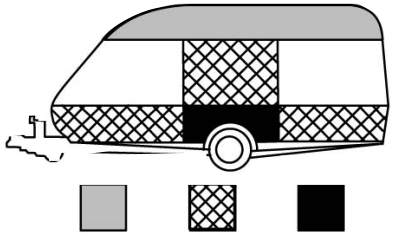


Fig. A

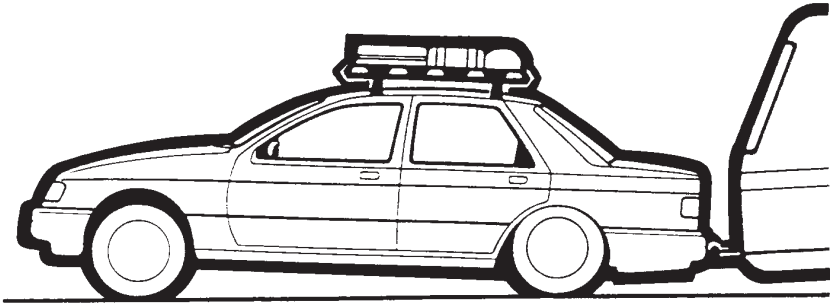


Fig. B Illustration of excessive deflection of vehicle's rear suspension

Towing vehicle's rear suspension
It is important that the towing vehicle's rear suspension is not deflected excessively by the noseweight 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 noseweight will have on the towing vehicle's rear suspension.

After trying out the caravan it may be found that 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.
- Maximum Vertical Load on the car towball as specified by towing vehicle manufacturer.

STABILITY
All our models are fitted with an Al-Ko stabiliser and are of a well balanced design and should be exceptionally good towers. The most 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 noseweight.

(d) Nose of caravan is towing too high.

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

Towball
The Al-Ko stabiliser fitted 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 and marked with the approval number EC94/20. Failure to provide enough clearance around the towball may invalidate your stabiliser warranty.

Stabiliser Friction Pads
The Al-Ko 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 farmer's 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:
i) Unsuitable or unbalanced outfit.

ii) Incorrect loading or weight distribution.

iii) Excessive speed especially downhill.

iv) Side winds.

v) Overtaking.

vi) Being overtaken by a large fast moving vehicle.

vii) Erratic driving.

viii) Insufficient tyre pressures.

ix) Mixing radial and cross ply tyres.

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.

OTHER IMPORTANT TOWING CONSIDERATIONS THAT COULD AFFECT STABILITY

Types of tyres fitted
The tyres fitted by the manufacturer are suitable for towing at sustained speeds of up to 81 mph (130 kph).

Radial and cross ply tyres should never be mixed. It is dangerous and can cause snaking.

Periodically tyres should be rotated to equalise wear in the same manner as car tyres.

Do not mix four ply/six ply/eight ply tyres on the same axle.

Tyre tread
The law requires that tyres and pressures must be suitable for the use to which they are being put. The minimum tread depth of

both car and caravan tyres must be 1.6mm throughout a continuous band comprising the central three quarters of the breadth of tread and around the entire circumference of the tyre.

Tyre pressures
Towing vehicle's tyres must be at the pressures recommended for towing or heavy loading as stated in handbook not on tyre wall. Towing stability may otherwise be affected. The pressures can be found in the towing vehicle handbook. The caravan tyre pressures should be as recommended in the specification details in your handbook.

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 nuts should be tightened to a torque of 88Nm (65lb/ft) on steel wheels or 115Nm (85lb/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.

Wheel Rims
The steel wheel rims are the 5J size incorporating a double safety hump rim which conforms to European standards of safety. The alternative to steel wheel rims are alloy wheel rims.

If you are in any doubt, have your wheels checked by a competent tyre supplier.

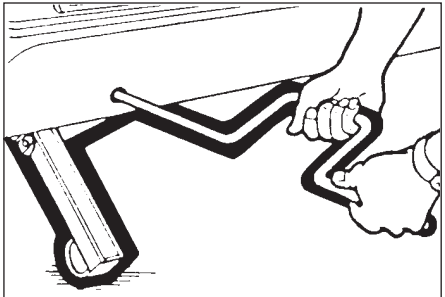


Fig. A Winding Corner Steady

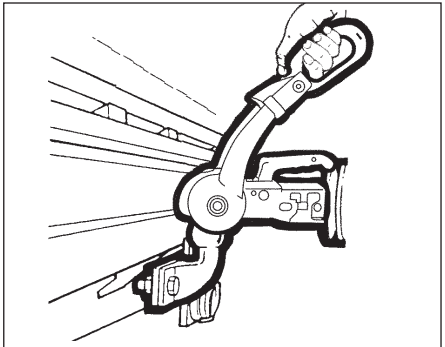


Fig. B Safety Catch and Handle

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.)

PRE-TOW CHECKLIST AND HITCH-UP
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. A).

Pick up any levelling pads or levelling boards.

Check rooflights/vents are securely closed.

Switch off gas supply and change over to electricity if required.

Lock the caravan exterior door.

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 cup is high enough to slide over the towball.

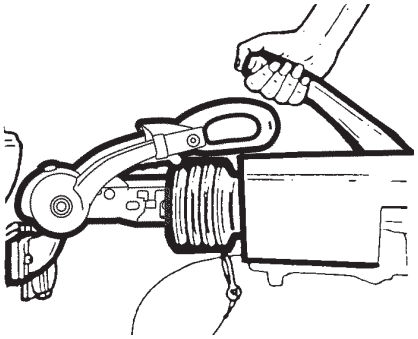


Fig. A Handbrake

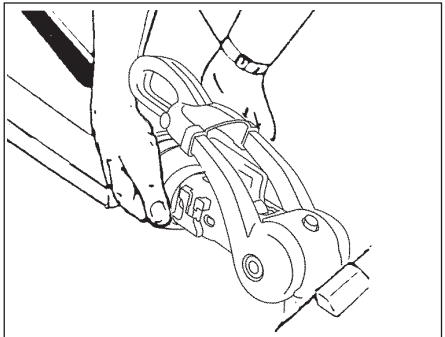


Fig. B Checking Secure Attachment

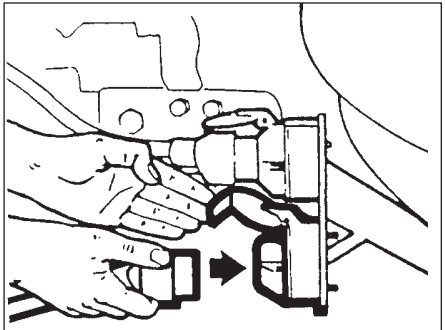


Fig. C Connections - 7 pin Plug

Release caravan handbrake.

Position cup over the ungreased towball, release and lift forward the large red stabiliser handle (Fig. B, Page 10), lift forward the exposed smaller black handle (Fig. B, Page 10), until it clicks up. 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. D)

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

Adjust jockey wheel to lower cup on to the ball. A click indicates it is fully engaged. Ensure black handle has returned to its free position.

Secure caravan handbrake. (Fig. A)

Connect breakaway cable as described on page 13.

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

Note: Ensure jockey wheel locates in recess provided.

Take hold of the caravan under the rubber gaiter behind the coupling and lift to

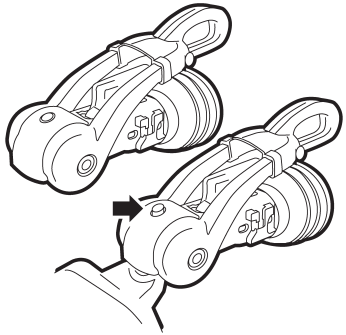


Fig. D Hitch Head Visual Indicator

ascertain whether the caravan is properly attached. (Figs. B & D.)

The Towing Code

Lock hitch if possible (see Safety and Security, page 22).

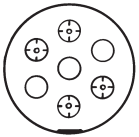
Connect 7 pin plugs to car sockets ensuring there is enough loose cable for cornering. (Fig. C) ensuring they wont drag on the ground.

Check all car and caravan roadlights are working. Check round the caravan for anything left behind.

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

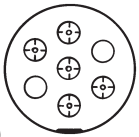
12N AND 12S VIEWED FROM REAR OF PLUG

TUBES ○
PINS ⊕
PINS ●
STRIPS))



12N (BLACK)

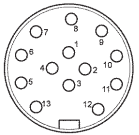
TERMINAL	COLOUR	12N PLUG
1	YELLOW	L/H INDICATOR
2	BLUE	REAR FOG LAMP
3	WHITE	COMMON RETURN (1-7)
4	GREEN	R/H INDICATOR
5	BROWN	R/H SIDE TAIL & No PLATE LIGHT
6	RED	STOP LAMP
7	BLACK	L/H SIDE TAIL & No PLATE LIGHT



12S (GREY)

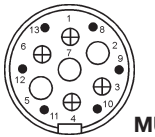
TERMINAL	COLOUR	12S PLUG
1	YELLOW	REVERSING LIGHT
2	BLUE	NO ALLOCATION
3	WHITE	NEGATIVE PIN 4
4	GREEN	CONTINUOUS POWER SUPPLY
5	BROWN	NO ALLOCATION
6	RED	FRIDGE
7	BLACK	RETURN FOR FRIDGE

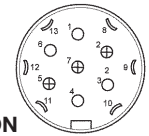
VOLTA/JEAGER & MULTICON FEDER 13 PIN PLUGS (viewed from rear)



VOLTA/JEAGER

PIN NO	COLOUR	DESCRIPTION
1	YELLOW	LEFT FLASHER
2	BLUE	FOG HAZARD LIGHT
3	WHITE	EARTH FOR 1-8
4	GREEN	RIGHT FLASHER
5	BROWN	RIGHT TAIL LIGHT
6	RED	STOP LIGHTS
7	BLACK	LEFT TAIL LIGHT
8	ORANGE	REVERSE LIGHTS
9	BROWN/BLUE	CAR +
10	BROWN/RED	FRIDGE
11	WHITE/BLACK	EARTH FOR 10
12		NOT YET ALLOCATED
13	WHITE/GREEN	EARTH FOR 9





WEST MULTICON FEDER 13K

PIN NO	COLOUR	DESCRIPTION
1	YELLOW	LEFT FLASHER
2	BLUE	FOG HAZARD LIGHT
3	WHITE	EARTH FOR 1-8
4	GREEN	RIGHT FLASHER
5	BROWN	RIGHT TAIL LIGHT
6	RED	STOP LIGHTS
7	BLACK	LEFT TAIL LIGHT
8	ORANGE	REVERSE LIGHTS
9	BROWN/BLUE	CAR +
10	BROWN/RED	FRIDGE
11	WHITE/BLACK	EARTH FOR 10
12		NOT YET ALLOCATED
13	WHITE/GREEN	EARTH FOR 9

ROAD LIGHTING
For your information the wiring diagram of the 12N and 12S connectors is shown opposite. These should be checked regularly and if in any doubt a qualified electrician consulted.

Some European cars may be equipped with Volta, Jeager, West or multi-con sockets, an adaptor or replacement sockets may be required. If so consult your dealer or qualified electrician.

The wiring allocations were changed in 1998 and it is important that you check the car to caravan connections are compatible prior to coupling up to the car.

WARNING: Always disconnect the electrical connector between the towing vehicle and the caravan before connecting a low voltage supply to the caravan (mains) and before charging the battery (EN 1648-1).

- 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 obscured by the addition of any options or accessories to your caravan.

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.

Identification
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 use.**

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.

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:

- Pass the cable through the attachment point and clip it back on itself (figure 1).
- Do not clip directly onto the designated point (figure 2) since the clip is not designed for use in this way.

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.
- Detachable towball: You must seek guidance on procedure from the towing vehicle towbar manufacturer or supplier.

The Towing Code

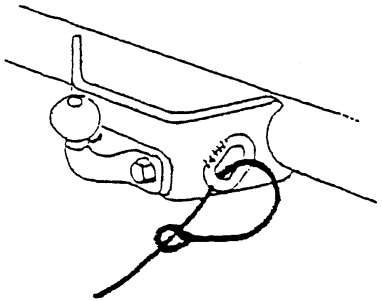


Fig. 1

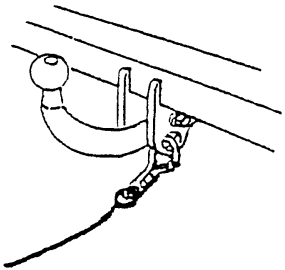


Fig. 2

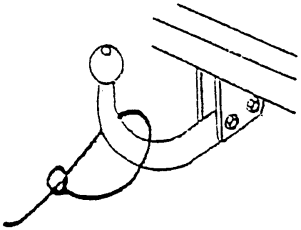


Fig. 3A

When the breakaway cable is attached, check to ensure:

a) that the cable cannot snag in use on the caravan coupling head, jockey wheel, stabiliser or accessory e.g. bumper shield, cycle carrier etc.

b) that there is sufficient slack in the cable to allow the towing vehicle and caravan to articulate fully without the cable ever becoming taut and applying the brakes.

c) that it is not slack and can drag on the ground. If left loose, the cable may scrape along the ground and be weakened so that it subsequently fails to do its job. The cable may also be caught on an obstacle when in motion thus engaging the caravan brakes prematurely.

Having followed this advice, should you feel that a satisfactory coupling arrangement cannot be achieved, consult your Swift Group dealer or towbar supplier.

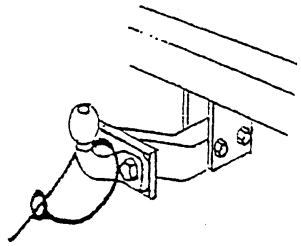


Fig. 3B

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.

Caution: Any rear view mirror must not project more than 200 mm outside:

a) the width of the caravan when being towed.
b) 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 (Regulation 33 of the Road Vehicles [Construction and 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.

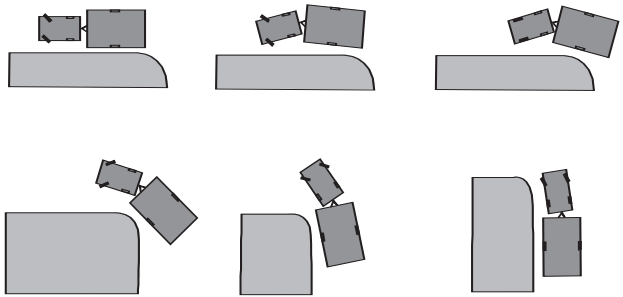


Fig. A Reversing

REVERSING

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

SPEED LIMITS

Normal road towing: 50mph

Motorways (including dual carriageways): 60mph

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 get 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.

IMPORTANT POINTS ESPECIALLY FOR MOTORWAY DRIVING

1. Caravans may not be towed in the outside lane of a three or four lane motorway. (Reg. 12(2) of the Motorway Traffic [England and Wales] Regulations 1982).
2. Reduce Speed:
   i) In high or cross winds.
   ii) Downhill.
   iii) 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.

CHANGING A WHEEL

1. Leave caravan hitched to towing vehicle and ensure handbrake is applied.
2. Lower corner steadies (as safety measure) on the side that the wheel is being changed to stabilise the caravan.
3. Use wheel brace to slacken off wheel nuts on the wheel to be changed.
4. Position jack under the axle at the appropriate jacking point (see fig. B)
5. Jack up the caravan until the wheel for removal is just off the ground.
6. Remove the wheel nuts, wheel trims and remove the wheel.

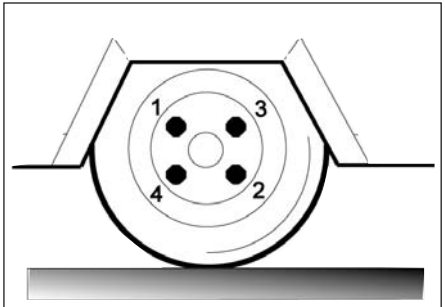


Fig. A Wheel Nut Tightening

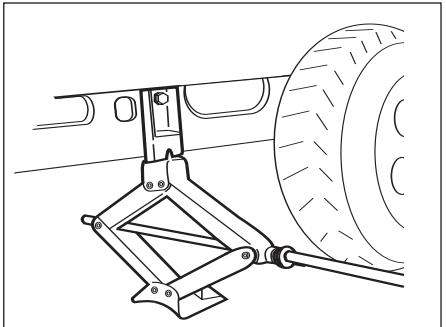


Fig. B Scissor Jack

7. Fit spare wheel and reverse the above procedure.

   Ensure clean, dry mating surfaces and clean, dry bolt/nut sealing areas.
8. Tighten all four/five nuts, according to Fig. A, to 88Nm (65lb/ft) for steel wheels or 115Nm (85lb/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

IMPORTANT
When a wheel has been removed and replaced the torque of the wheel nuts should be re-checked after approximately 15 miles of running. (See 8 above).

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 as an alternative 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, it is recommended that the side mounted Al-Ko Jacking System should be used.

STOPPING ON A HILL

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

(i) Carry a good sized wedge shaped piece of wood with a rope or light chain attached.

(ii) Attach the other end of the rope to the nearside rear grab handle.

(iii) Place the wood behind the nearside caravan wheel.

(iv) Carefully reverse the car slightly back down the hill, the caravan will stop against the wedge and turn.

(v) 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.

ARRIVAL ON SITE

Note: Check and observe site regulations.

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.

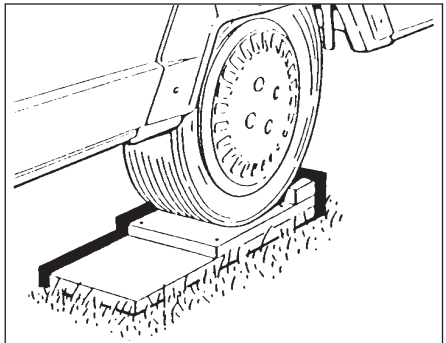


Fig. C levelling Board

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.

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.

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
Apply the caravan handbrake.

Lower the jockey wheel to the ground.

Disconnect the breakaway cable and road lighting plugs.

Release the stabiliser by lifting the red handle. Then lift the exposed black handle forward until it clicks up, at the same time winding down the jockey wheel, to lift the caravan clear of the towing vehicle.

When this operation is complete, replace towball cover and secure the 12N+12S cables in their storage cups.

Park your vehicle alongside the caravan on the offside.

SAFETY AND SECURITY

FIRE

Important: Your attention is drawn to the notice affixed inside the caravan 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.

DICON 300AP SMOKE ALARM

This smoke alarm is approved for use in caravans and mobile homes. (Fig. A)

The National Caravan Council requires that all new or used caravans sold by its members be fitted with a smoke alarm featuring an alarm silence facility.

FEATURES

- Battery operated. No need for mains power wiring.
- Operating Light (LED)

  Flashes approximately every 45 seconds confirming unit is powered.

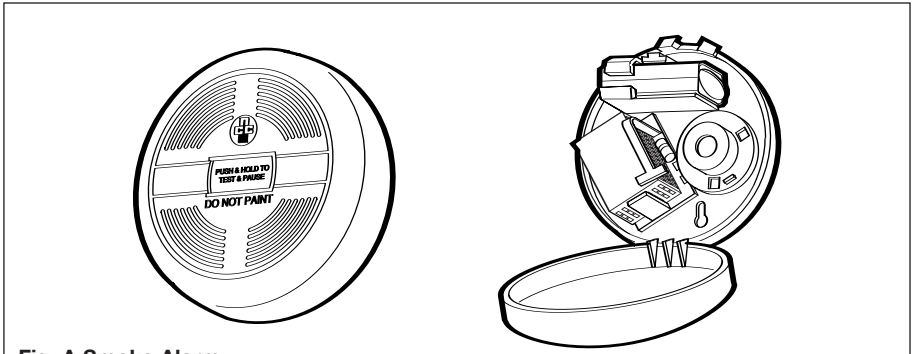


Fig. A Smoke Alarm

- Low Battery Warning
  Unit “beeps” approximately every 45 seconds for up to 30 days when the battery needs replacing.
- Sensitivity Test Button
  Test sensitivity, circuitry, battery and horn.
- Loud 85 Decibel Piezo Electric Alarm
  Automatically resets when hazardous condition has passed.
- Precise Sensitivity
- High Quality Solid State Components

CONNECTING THE BATTERY

Your alarm requires one 9 volt battery to power the smoke detector portion of the unit. Under normal use the battery powering the smoke detector should last approximately one year.

WARNING: Ensure that batteries are correctly installed. Positive terminal to positive contact (marked +), negative terminal to negative contact. Reversing a battery in its compartment will immediately drain the battery and could damage the smoke alarm.

HOW TO TEST

Press test button until alarm sounds, then release. Repeat test weekly.

Note: Always test smoke alarm operation after vehicle has been in storage, before each trip and at least once per week during use.

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.

FALSE ALARMS

Abnormal air conditions may cause the highly sensitive smoke alarm to give a "false" alarm. DO NOT DISCONNECT THE BATTERIES. If no fire is apparent, ventilate the caravan and/or blow fresh air into the unit until the alarm stops. Once cleared the smoke alarm will automatically reset.

MAINTENANCE

Dust can lead to excess sensitivity therefore it is recommended that the unit be vacuumed every 6 months to help keep the unit working efficiently.

Open cover and gently vacuum interior of detector trying to keep the nozzle from touching the unit.

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 1kg (2lb) minimum capacity 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 ISO 7165, of at least 1kg capacity, by the main exterior door and a fire blanket next to the cooker. Familiarise yourself with the instructions on your fire extinguisher and the local fire precaution arrangements.

ESCAPE PATHS

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

CHILDREN

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

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. Some models with sliding doors have two vents located underneath the sliding doors.

Under no circumstances must these vents be blocked or obstructed.

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

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

As the ventilation levels are calculated to suit each 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 to your car exhaust will reduce the possibility of fumes entering your caravan through the ventilation points.

Note: Never allow modification of electrical or LPG systems and appliances except by qualified persons at an authorised Swift Group dealership.

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.

Chassis number
Record your caravan chassis number which can be found on the **front offside section of the drawbar (Fig. A) or any of the eye level windows.**

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.


Fig. A Chassis Number

A hitch lock cover prevents towing of the caravan.

A wheel lock prevents towing of the caravan and removal of the wheel.

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.

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 by using a special decoder. Your local police can obtain the use of a decoder by contacting C.R.I.S. on telephone no: 01722 411430

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.

SERVICES

Services

Connection of services is dealt with under the separate headings.

In all cases users should become familiar with the equipment manufacturers' instructions.

Advice and leaflets, if not supplied with the caravan, can be obtained from the suppliers of the equipment.

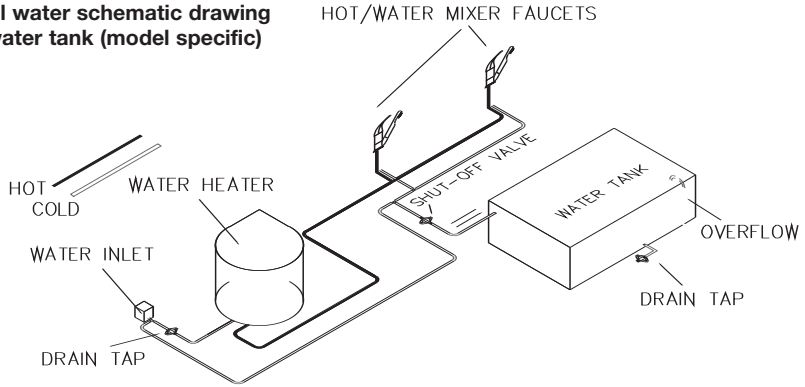
Before making connections of any description to the caravan or its equipment, ensure that ALL equipment is turned off.

WATER

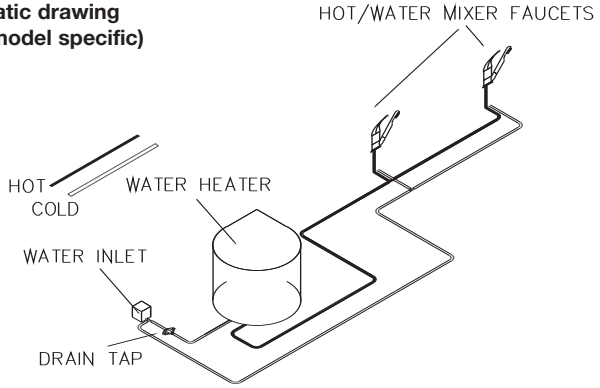
The caravan can use three separate systems for its water supply.

1. External water carrier.
2. Inboard water tank (for winter use essential).
3. Watermaster Aqua Source (mains water) or Truma Water Line.

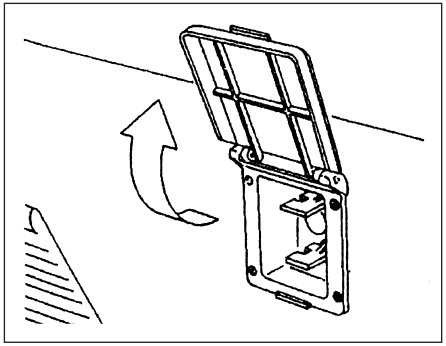
Typical water schematic drawing with water tank (model specific)



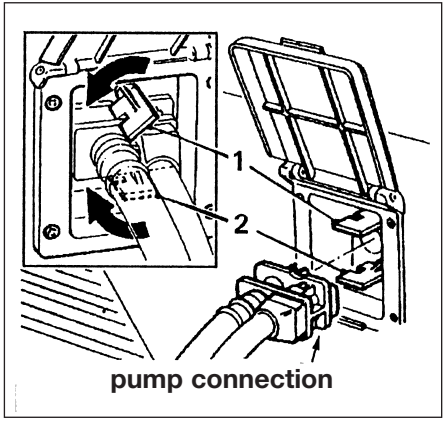
Typical water schematic drawing without water tank (model specific)



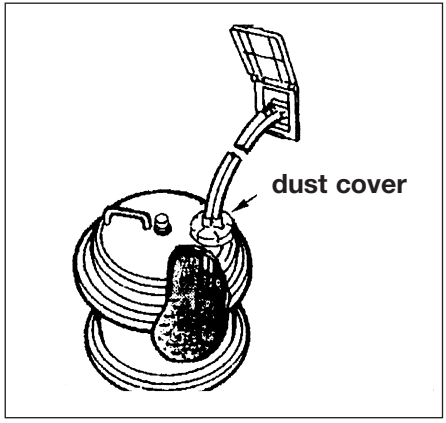
TRUMA COMPACT CRYSTAL 2



Raise the lid, clean both the water socket and the plug of the pump assembly.



Plug the pump connector into the socket. Turn the top security clip anti-clockwise and the bottom security clip clockwise to lock the plug into place.



Place the pump into the water container, ensuring that it is fully submerged before operating the system. A dust cover is available to stop contaminates falling into the water container.

To remove the pump assembly from the Crystal Compact Housing, release the security clips and pull the hose adaptor by using the finger grips provided.

Do not remove by pulling the hose or electric cable.

When using the Winter Kit the blanking plug provided will be fitted to the housing not being used.

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

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 water. Then switch on again.

STERILISING

1. When cleaning the water system at the start or the end of the season it is advisable to use a sterilising fluid e.g. Chempo SDP or similar.
2. Flush the system thoroughly to remove the effective fluid traces.
3. After sterilising the system at the start of the season it is recommended that a new filter cartridge (if fitted) should be fitted. (Not standard).

SHURFLO WATER PUMP (MODEL SPECIFIC)

Fresh water is supplied to the caravan on some models by a Shurflo pump. This pump is a completely sealed unit designed for intermittent use and is self priming.

INBOARD WATER TANKS AND ON-LINE WATER SYSTEMS

To fill the inboard tank from an external container follow these simple instructions:

1. Insert Truma Thames or Maxi submersible pump into external water container.
2. Lift flap and plug pump connector into Truma socket on side of caravan.
3. Ensure the inline stem shut off valve is in the open position. This is located next to the tank or T-connector feeding the tank. Ensure that where Ultrastore water heater is fitted the dump valve adjacent to this is closed. Ensure that the tank drain valve (in front of the tank when the bed front flap is lowered) is in the closed position.
4. Select external pump on the control panel above the door, and switch the pump on via the switch adjacent to the mains fusebox. The inboard tank will now fill from the external tank.
5. When water starts to flow from the overflow on the underside of the caravan, or when the external container is empty, immediately remove the pump connector from the socket in the side of the caravan. Switch off the pump at the control panel or with the switch adjacent to the mains fusebox.
6. Turning a cold tap on with the internal pump now selected at the control panel will relieve pressure in the tank.

TRUMA WATERLINE

WARNING: It is not recommended to tow with water in the onboard or underslung water tank as this could affect stability.

WARNING: Do not under any circumstances connect your caravan to the mains water supply without the pressure reducer fitted. Damage will occur to the caravan's water system.

1. Fig. A: Connect the fitted Crystal 2 plug (1) into the water inlet socket.
2. Fig. B: Uncoil the hose and screw cap adaptor (4) to the drinking water stand pipe. Plug in the hose adaptor (5).
3. Turn on the mains water supply and check for leaks.
4. Open one of the taps and purge any air that may be trapped in the water system.
5. To remove, make sure that the mains water supply has been turned off, then squeeze in the two side clips and pull free the plug.

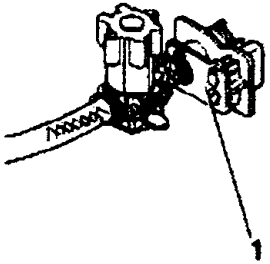


Fig. A

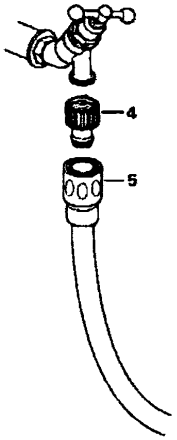


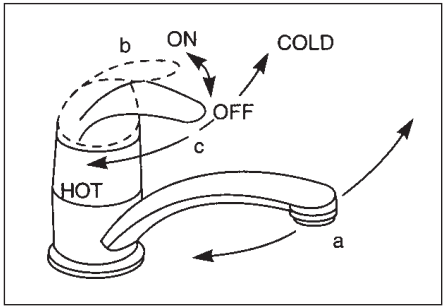
Fig. B

MICROSWITCH TAPS

The micro switch taps are used when the water supply is not pressurised.

When the tap is turned on the micro switch (which is fitted inside the tap) activates the pump to supply water.

Operation
Swivel the tap spout (a) to the desired position over the sink, lift the control lever (b) to activate the pump and allow water to flow simultaneously. To adjust the temperature swivel the lever (c) to the left or right as shown opposite.

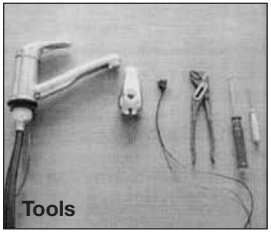


Note: Before commencing microswitch replacement ensure instructions are read through thoroughly. The entire process can be completed without the need to remove the tap from the worktop.

Before you Start
1. Ensure pump is isolated.
2. Position lever in central, i.e. mixer, off location.

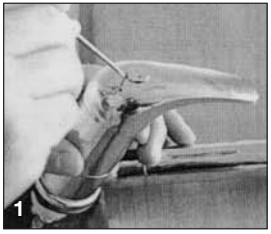
COMET ROMA SINGLE LEVER MIXER TAP

Required tools
- Pipe wrench
- Cross-point screw-driver
- Flat-bladed screw driver inside the handle.


Tools

Step 1
- Remove the marker cap

Step 2
- Remove the screw from the control knob
- Pull the microswitch out of the control knob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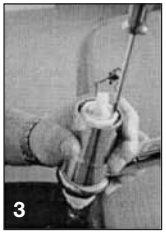
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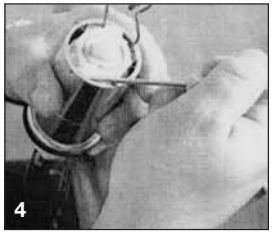

4

Step 3
- Remove the dome
- Remove the small screw between cartridge and closure

Step 4
- Remove the snap ring (small plastic piece)

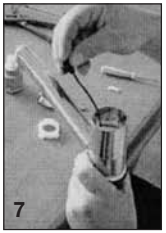
Step 5
- Remove the snap ring with the Pipe wrench (Turn left or right)

Step 6
- Pull the cartridge out of the housing
- Remove the old microswitch


5


6

Step 7



- Put in the cable from the new microswitch.

  You need 50 mm cable length over the top of the housing.

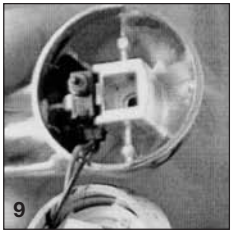
Step 8

- Insert the cartridge.

Step 9

- Refit the component parts in reverse sequence.

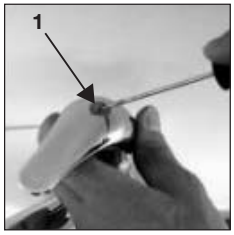
  Steps 5 to 1



REICH KAMA SINGLE LEVER MIXER TAP

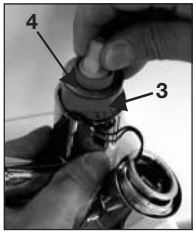
Exchange of the ceramic cartridge/ micro switch

1. Detach cover (1) carefully. If the cover is damaged use spare part no.: 240-059512 (red cover) and 240-059513 (blue cover).

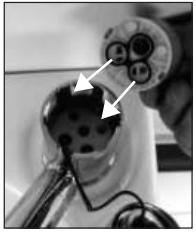


2. Loosen screw inside the handle.
3. Detach the handle (2).
4. Turn out the rosette.
5. Turn out the brass nut with spanner.
6. Pull out the ceramic cartridge (3).

7. If the cartridge is defect:
   - Remove the brass ring (4) from the top of the cartridge
   - Install a new ceramic cartridge, part no.: 240-0528M
   - Make sure that the cartridge is in the right position.



8. If the microswitch is defect:
   - Pull the wire out of the mixer
   - Install a new microswitch, part no.: 240-06220M.



9. Install ceramic cartridge, brass ring, brass nut, rosette and handle in the opposite way.

Maintenance

To prevent your single mixer tap KAMA from being impacted by frost, always drain the tap in the middle position of the handle.

The middle position of the handle is marked by an arrow!

GUIDANCE ON CLEANING PORTABLE WATER TANKS AND THE WATER SYSTEM IN TOURING AND MOTOR CARAVANS

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

Separate Water Containers

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

For Systems:

1. Drain down the system (open all taps to allow air in, enabling the system to drain quickly). (See Maintenance Systems).
2. Remove any water filters fitted, and replace with a short length of hose or empty filter cartridge (this will ensure the filter is not affected by the disinfectant/ sterilant solution).
3. Fill the 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.

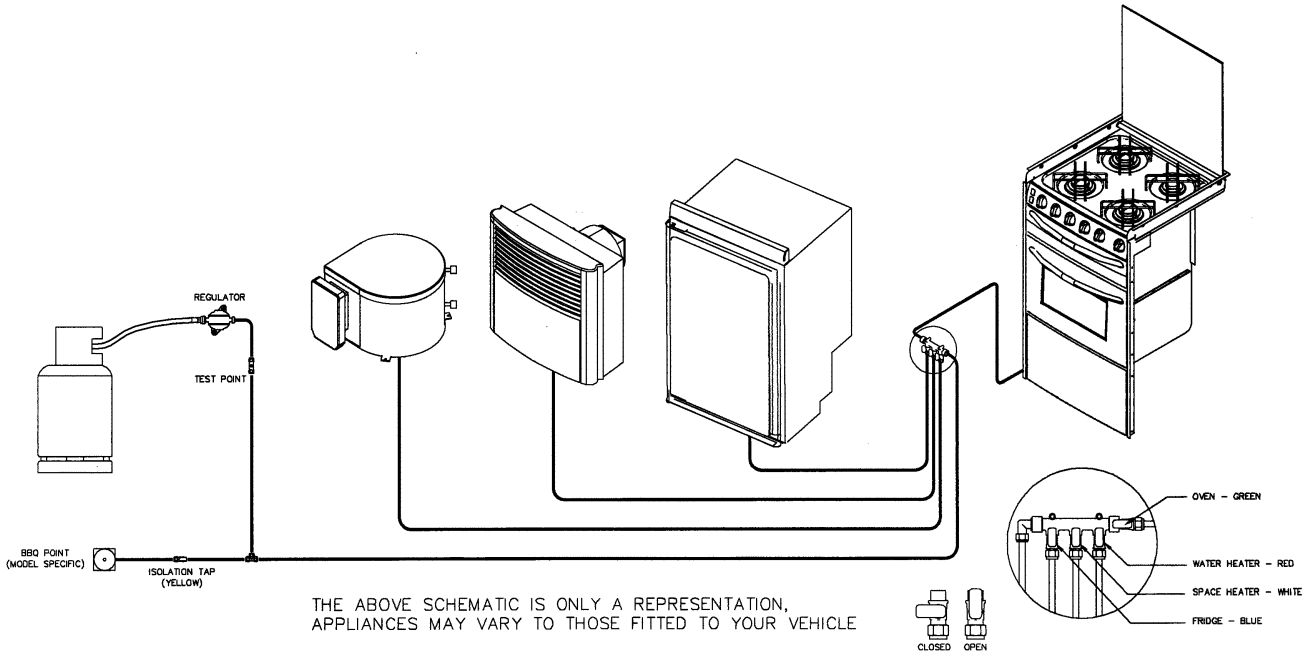
Suitable sterilising chemicals are available from your caravan dealer, accessory shop, chemist or home-brew shops. It is not, however, recommended to use bleach or sodium metabisulphite.

This guidance has been prepared with the kind co-operation and assistance of The Environmental Health Department of The Borough Council of King's Lynn and West Norfolk.

WARRANTY

Products are guaranteed from the date of purchase against defects in materials and workmanship. If the unit proves faulty, return it to your supplier with proof of purchase and purchase date. Please note that frost damage is not a valid warranty claim.

The manufacturer retains the right to repair or replace the unit. The manufacturer cannot be held responsible for claims arising from incorrect installation, unauthorised modification or misuse of the product. The above does not affect your statutory rights.



Typical gas schematic drawing

GAS

GENERAL INFORMATION

Gas Bottles
Bottled Liquified 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

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

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

Note: Regulator valves should always be in the ‘OFF’ position when towing.

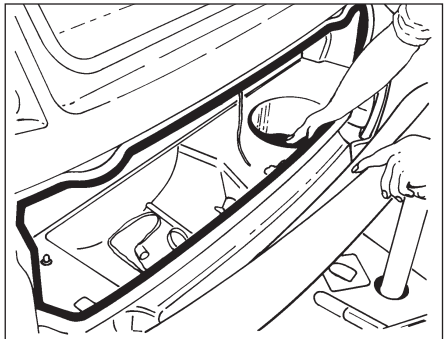


Fig. A Gas Bottle Compartment

Gas Hoses
Two new hoses, or pigtails as they are being called, are available - one for Propane and one for Butane with adaptors for Butane 'clip-on' and Camping Gaz cylinders. It is important to check you have the correct hose and adaptor to suit your gas bottles. Push on hoses are no longer permitted under the new regulations, the new hose have threaded connections and must be securley attached to the regulator and to the gas bottle.

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

Fig. B
Gas Regulator

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

TYPES OF GAS

Butane
Butane is supplied in the U.K. in green, blue or aluminium bottles.

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

A 7kg bottle is recommended for butane gas use.

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

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

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

Scandinavian countries use the same connector.

Germany and Austria supply propane with a male connection.

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

A 6kg bottle is recommended for propane gas use.

GAS SAFETY ADVICE

WARNING: If you smell gas or suspect a leak 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

a) Never look for a leak with a match. Always use a soap solution or its equivalent when testing connections. Do not operate any electrical apparatus whatsoever, especially light switches. If the leak is not obvious, the caravan should be evacuated and qualified personnel consulted.

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

c) Check the flexible hose frequently.

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

e) Keep bottle gas containers outside (and protected against frost). If they must be kept inside make sure they are well away from heat.

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

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

WARNING: Do not use independent portable gas appliances inside the vehicle.

Always read individual appliance instructions

VENTILATION
All ventilation complies with BSEN 721 and vents should not be obstructed in any manner as this could lead to insufficient fresh air. In this case the confined atmosphere becomes depleted of oxygen which leads to the formation of the highly

poisonous gas 'carbon monoxide'. Carbon Monoxide is odourless, colourless and tasteless and will rapidly cause unconsciousness and death with little or no warning prior to collapse. THERE IS NO DANGER WHEN ADEQUATE VENTILATION IS PROVIDED.

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

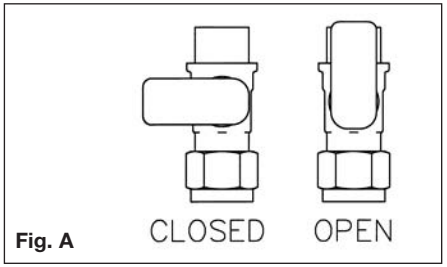


Fig. A

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

Gas bottles must be fully located, seated at the base of the bottles and restrained by the strap provided in the dedicated compartment position.

Straps are positioned to suit 6kg and 7 kg bottles.

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

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

RED	-	Water Heater
WHITE	-	Space Heater
BLUE	-	Fridge
GREEN	-	Oven
YELLOW	-	Barbecue (if fitted)

Note: the external barbecue point is fed from the main feed through an isolation tap. See schematic layout for details.

THERMAL INSULATION HEATING
Your caravan has been designed to achieve a thermal insulation and heating level for specific climatic conditions when 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 20k 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 35k between inside and outside temperatures when the outside temperature is -15°C.

ELECTRICITY

As with electricity in the home, care must be exercised when handling mains electricity.

Your attention is drawn to the following notice as laid down by the Institute of Electrical Engineers.

INSTRUCTIONS FOR ELECTRICITY SUPPLY

On arrival at caravan site

1. Before connecting the caravan installation to the mains supply, check that
   (a) both 12N & 12S plugs and hitch have been disconnected from the towing vehicle,
   (b) the mains supply is suitable for your installation and appliances, i.e. whether it is a.c. or d.c. and whether it is at the correct voltage and frequency,
   (c) your installation will be properly earthed. Never accept a supply from a socket outlet or plug having only two pins, or from a lighting outlet, and
   (d) any residual current device (earth leakage circuit breaker) in the mains supply to the caravan has been tested within the last month.

In case of doubt, consult the site owner or his agent.

2. **MAKE SURE THAT THE SWITCH AT THE SITE SUPPLY POINT IS OFF.**
3. Lift the cover of the electricity inlet provided on the caravan, and insert the connector of the supply flexible cable.
4. Remove any cover from the socket outlet provided at the site supply point, and connect the plug at the other end of the supply flexible cable to this. Switch on the main switch at the site supply point.

Note: Use mains cable fully uncoiled and protect from traffic.

IT IS IMPORTANT THAT THE MAIN SWITCH AT THE SITE SUPPLY POINT SHOULD BE SWITCHED OFF, THE SUPPLY FLEXIBLE CABLE DISCONNECTED, AND ANY COVER REPLACED ON THE SOCKET OUTLET AT THE SITE SUPPLY POINT BEFORE DISCONNECTING THE FLEXIBLE CABLE FROM THE CARAVAN. IT IS DANGEROUS TO LEAVE THE SUPPLY SOCKET OR SUPPLY FLEXIBLE CABLE LIVE.

Because touring caravans are generally left unused for long periods in the open, it is strongly advised that the mains installation is inspected periodically to ensure that it is safe to use. The IEE Wiring Regulations recommend that mains installations in touring caravans are re-inspected every 3 years by a qualified person (see list) who should sign and issue a periodic inspection report. (The manufacturer recommends annual inspections).

Suitably qualified persons acceptable to the NCC to sign and issue inspection and completion certificates are:

- an approved contractor of the National Inspection Council for Electrical Installation Contracting* or
- a member of the Electrical Contractors' Association
- a member of the Electrical Contractors' Association of Scotland
- a qualified person acting on behalf of the above (in which event it should be stated for whom he is acting).

**The names and addresses of Approved Contractors in any locality (there are over 10,500 in the UK) can be obtained from Electricity Shops, or direct from:*

NICEIC, Vintage House,
37 Albert Embankment, London SE1 7UJ

Telephone: 0171 582 7746

The names and addresses of members of the Electrical Contractors' Associations can be obtained direct from:

ECA, Esca House,
Palace Court, London W2 4HY

Telephone: 0171 229 1266

ECA of Scotland, 23 Heriot Row
Edinburgh EH3 6EW

Telephone: 0131 225 7221

WARNING: CURRENT CONSUMPTION IN THE CARAVAN MUST NOT EXCEED 16 AMPS OR THE PITCH PERMITTED MAXIMUM IF THIS IS LESS THAN 16 AMPS.

IT IS DANGEROUS TO ATTEMPT MODIFICATIONS AND ADDITIONS YOURSELF. LAMPHOLDER—PLUGS (BAYONET-CAP ADAPTORS) SHOULD NOT IN ANY CIRCUMSTANCES BE USED.

OVERSEAS CONNECTION

Note: Connection to a mains voltage supply OVERSEAS requires particular attention.

Care must be taken when connecting supplies abroad since the supplies can be of REVERSE POLARITY.

The significance of REVERSE POLARITY is that when equipment is switched off it may not be electrically isolated.

The only certain way of making equipment safe is to unplug it.

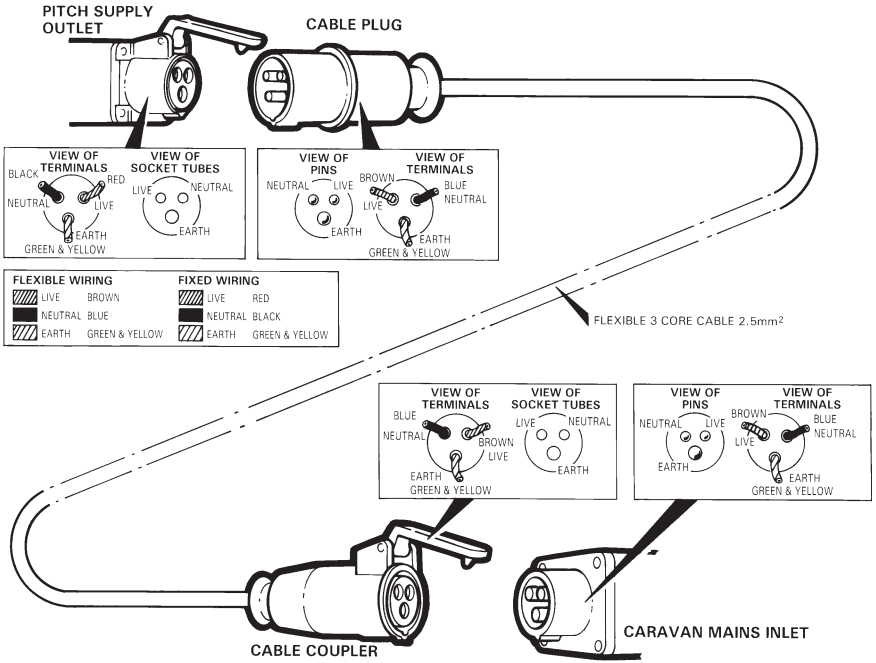
It is useful to have a means of checking polarity of the mains supply, especially when touring overseas. There are available several proprietary makes of equipment for testing polarity.

If it can be achieved, it is preferable to connect live to live, and neutral to neutral to maintain full electrical protection.

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

WARNING: Always check the 230V supply rating on site before switching on two loads as this may cause an overload and a circuit breaker to trip.

WIRING OF CONNECTING CABLE AND CARAVAN MAINS INLET

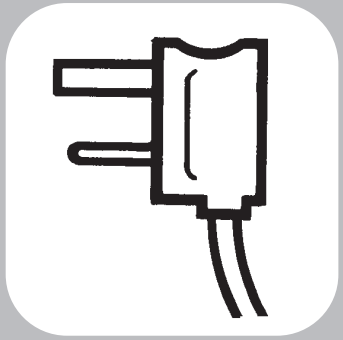


WARNING: IT IS ESSENTIAL THAT CONNECTIONS ARE MADE EXACTLY AS SHOWN. IF TERMINAL MARKINGS ARE NOT IN ACCORDANCE WITH THE DIAGRAM THEY MUST BE IGNORED. IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN.
THE LEGAL LENGTH OF THE MAINS INLET CABLE IS 25 ± 2 METRES. WHEN IN USE IT MUST BE FULLY UNCOILED AND PROTECTED FROM TRAFFIC.

TYPICAL APPLIANCE CONSUMPTION FIGURES

Appliance/ Item	230 Volt		12 Volt		LP Gas
	Watts	Amperes	Watts	Amperes	grams/hour
Refrigerator	115 W	0.5 amp	Only when towing		12 g/h
Ultraheat Space Heater	500 W	2.2 amp	12 W	1.0 amp	30 to 280 g/h
	1000 W	4.5 amp	12 W		
	2000 W	8.5 amp	12 W		
Ultrastore Water heater	850 W	3.7 amp	Not applicable		120 g/h
Cooker Hotplate 1	Not applicable		Not applicable		161 g/h
Hotplate 2	Not applicable		Not applicable		110 g/h
Hotplate 3	Not applicable		Not applicable		73 g/h
Hotplate 4	800 W	3.5 amp	Not applicable		Not applicable
Grill	Not applicable		Not applicable		117 g/h
Oven	Not applicable		Not applicable		125 g/h
Battery Charger	192 W	0.8 amp	Not applicable		Not applicable
Lighting 230V (based on 2x 40 W bulbs)	80 W	0.3 amp	Not applicable		Not applicable
Lighting 12V (based on 10 W bulb)	Not applicable		10 W	0.8 amp	Not applicable
Submersible water pump	Not applicable		28 W	2.3 amp	Not applicable
Radio/ CD player	Not applicable		12 W	1.0 amp	Not applicable
Omnivent position 1	Not applicable		15 W	1.2 amp	Not applicable
position 2	Not applicable		30 W	2.5 amp	Not applicable
position 3	Not applicable		50 W	4.0 amp	Not applicable
Air Conditioning unit	715 W	3.1 amp	Not applicable		Not applicable
Microwave (factory fit)	1200 W	5.3 amp	Not applicable		Not applicable

Note: These are approximate figures for guidance only.



ELECTRICAL EQUIPMENT

AC50 Control Panel

AC75 Control Panel

AC50 AND AC75 CONTROL PANEL OPERATION

Symbol	Function	Description
	12v Power On / OFF	This switch turns on (or off) the 12-volt power to all circuits. Note: as this switch works in conjunction with a relay (that uses around 40mA to operate), it should only be used for relatively short periods of time while using the caravan (i.e. when going out for the day). For long-term isolation of the12 volt power, please place the Car / Van selector switch on the ESM2004 power supply unit in the centre (Off) position (i.e. during storage).
	Entry light	This switch operates the internal entry light (usually the first light within the caravan).
	Internal Pump	This switch turns on power to the internal water pump ready for use. It can be used to turn off the pump over night to avoid any noise from the pump. Note: A green indicator lamp will illuminate within the bottom left corner of the battery gauge when the pump motor is running.
	External Pump	In caravans with an additional (external) pump, this switch will be a two-way switch with a centre off position. This allows the selection of either the internal pump (switch up) or external pump (switch down). Note: A green indicator lamp will illuminate within the bottom left corner of the battery gauge when the pump motor is running.
	Battery Level test	This switch is used to display the battery voltage level. Press and hold the switch to display the battery level on the gauge. The green region indicates a battery with a good charge, the yellow region indicates a battery with an adequate charge, and the red region indicates a battery that requires charging.

Symbol	Function	Description
	Water Level test	This switch is used to display the fresh water level within the onboard water tank. Press and hold the switch to display the water level on the gauge. The gauge indicates the water level on an 'Empty - 1/4 - 1/2 - 3/4 - Full' scale, with empty being on the left.
	When using the optional remote control unit, please ensure the control panel 'Power' and 'Entry light' switches are in the off position for correct operation of the remote control (as the remote control operates in parallel with the control panel switches). The remote control button [I] controls the Entry Light and button [II] controls the 12v Power. If you do not wish to use the remote control, or the remote battery is flat / remote has been lost, you can of course return to manual operation by using the switches on the control panel. The UH**** number on the back of the remote control is the remote code number. Please keep a record of this number in case you need to order a replacement or additional remote control.	

ESM 2 ELECTRICAL SUPPLY MODULE

The ESM 2 Electrical Supply Module from Plug-In-Systems Ltd is a 230V mains and 12V DC power supply unit, providing all the necessary features for supply of electric in your caravan. The unit provides the following important features.

Connections
Plug & socket input/outputs

Mains 230V AC
Mains module with
Earth leakage protection (RCD)
Overcurrent protection (MCBs)

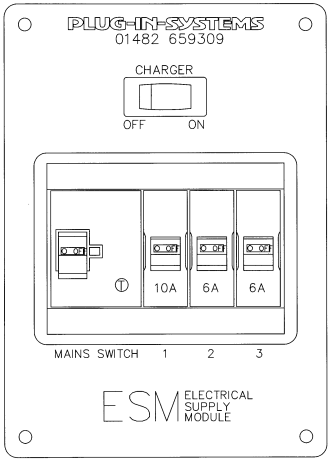
12V DC
Fully automatic transformer/charger with
Overcurrent protection
Short circuit protection
Charger on/off switch

UNIT DESCRIPTION

Mains Module
The ESM 2 is designed to operate on a mains supply of 185-265 volts ac (making it ideal for use with low continental voltages). The 40 amp RCD (Residual Current Device) gives protection against earth faults and also acts as the main switch.

The mains module also has three MCBs (Miniature Circuit Breakers) which are basically resettable mains fuses, to protect against overcurrent. Allocation of the MCBs is as follows:

MBC1- Sockets/Space Heater (if fitted)
MCB2- Space Heater/Lights (if fitted)
MCB3- Fridge/Charger



ESM2

TRANSFORMER/CHARGER
The ESM 2 employs a fully automatic mains to 12 volt dc transformer and battery charger, able to operate with a wide range of input voltages and provide a stable output voltage even under load.

The unit can provide up to 12 amps maximum, after which it will begin to shut down to protect itself.

To use the charger simply place the rocker switch to the ON position, at which point it should illuminate and charging will commence.

ROADS LIGHTS FUSES
The fuses are located on the front bulkhead of the right hand front locker.

Fuse Ratings

1	LH ROAD	5A
2	RH ROAD	5A
3	LH INDICATOR	7.5A
4	RH INDICATOR	7.5A
5	FOG	7.5A
6	STOP	7.5A

ECM ELECTRICAL CONTROL MODULE

PUMP SWITCH & INDICATOR
Included on this panel is a pump isolation switch and pump running indicator. The pump isolation switch is used to isolate power to the water pump in the event of a pump fault or merely as a safeguard against unwanted pump operation. The red pump running indicator will light up as a warning when the water pump has been activated.

AUX SWITCH
This switch may be used to power any auxiliary dc circuits the user may wish to have added to the system.

Battery Condition Meter
This meter indicates the power remaining in your caravan battery.

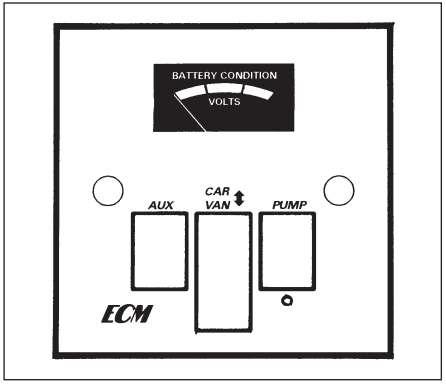
Readings should be taken as follows:

Green region - Fully charged
(no charge necessary

Yellow region - Adequate charge
(re-charge if desired)

Red region - Low charge
(turn on charger switch
to re-charge)

A car/caravan changeover switch is provided in this module and should be used in the following way:



Caravan position
When in this position dc power is available from the caravan battery to power all 12 volt electric circuits.If the charger is switched ON the caravan battery will be charged up via the charger/transformer unit.

Central position
When in this position with the charger switch ON, power is provided to all 12 volt circuits via the charger/transformer only.
With the charger OFF all dc circuits are isolated.

Note: The switch should be placed in this position when the van is being towed.

Car position
Note: First of all the towing vehicle should be electrically connected to the caravan via the 12S socket.

The switch can be placed in this position should the caravan battery become discharged and no mains power is available.

ELECTRICAL SUPPLY MODULE ESM2000

The ESM2000 Electrical Supply Module is a 230 volt ac and 12 volt dc power control unit. It provides all the necessary features for control of the electrics in a caravan. The unit provides the following features:

Mains 230V ac - MAINS MODULE
with EARTH LEAKAGE PROTECTION
OVERCURRENT PROTECTION (RCD)
REVERSE POLARITY INDICATION

12 volt dc - FULLY AUTOMATIC TRANSFORMER/CHARGER
with OVERCURRENT PROTECTION
SHORT CIRCUIT PROTECTION

SWITCH & FUSE MODULE
with BATTERY CHANGEOVER SWITCH
CHARGER ON/OFF SWITCH
8 FUSED DC OUTPUT CIRCUITS

UNIT DESCRIPTION

Mains Module
The ESM2000 is designed to operate on a mains supply of 207 - 253 volts ac (making it ideal for use with low continental voltages). The 40 amp RCD (Residual Current Device) gives protection against earth faults and also acts as the main switch. The mains module also has three MCB's (Miniature Circuit Breakers) which are basically resettable mains fuses, to protect against overcurrent. Allocation of the MCB's is as follows:-

For Abbey, Sterling and Swift models
MCB1 - SOCKETS/BLOWN-AIR HEATING (if fitted)
MCB2 - WATER HEATER/LIGHTS (if fitted)
MCB3 - FRIDGE/CHARGER

For Bessacarr models
MCB1 - HEATING SYSTEM
MCB2 - SOCKETS
MCB3 - LIGHTS/FRIDGE/CHARGER

Using a generator
When using a generator in conjunction with the ESM2000 the following must be observed, failure to do so may result in damage to the unit:

i) Always start the generator with the mains isolator in the caravan turned off.

ii) Allow the generator to warm up for a few minutes before energising power in the caravan, as the output voltage can be higher when cold.

iii) Check the generator output voltage regularly to ensure it is within the specification of the ESM2000 system (i.e. 230 volts +/- 10%)

Transformer/Charger

The ESM2000 employs a fully automatic mains to 12 volt dc transformer and battery charger, able to operate with a wide range of input voltages and provide a stable output voltage even under load. The unit can provide upto 12 amps maximum, after which it will begin to shut down to protect itself.

Switch & Fuse Module

Car/Van Selector Switch

The car/caravan changeover switch provided in this module should be used in the following way:

Caravan position -
When in this position dc power is available from the caravan battery to power all 12 volt electric circuits.

If the charger is switched on, the caravan battery will be charged via the charger/transformer unit.

Central position -
When in this position with the charger switch on, power is provided to all 12 volt circuits via the charger/transformer only.

With the charger off all dc circuits are isolated.

Note: The switch should be placed in this position when the van is being towed.

Car position -
The switch can be placed in this position should the caravan battery become discharged and no mains power is available.

Note: First of all the towing vehicle should be electrically connected to the caravan via the 12S socket.

Charger switch
When the caravan battery requires charging, press this switch to the on position (it should then illuminate). Also ensure the Selector Switch is in the van position.

DC Fuses
Eight fuses are provided in this module to protect all dc circuits, the fuse allocation is shown below. Fuses must be replaced only with the specified values.

Distribution Panels
Fuse 1 - Front roof lighting
Fuse 2 - Rear roof lighting
Fuse 3 - Blown-Air Heating
Fuse 4 - Radio
Fuse 5 - 12v sockets/Hitchlight/TV amp
Fuse 6 - Fan circuits
Fuse 7 - Water pumps/Water sensor/ Thetford toilet
Fuse 8 - Ignitions

For KT9/2000 BT, GP Distribution Panels
Fuse 1 - Front roof lighting
Fuse 2 - Rear roof lighting
Fuse 3 - Heating System
Fuse 4 - Radio
Fuse 5 - 12v sockets/Hitchlight/TV amp
Fuse 6 - Fan circuits
Fuse 7 - Water system/Thetford toilet
Fuse 8 - Ignitions

Note: For models fitted with central heating, there is an additional 10 amp fuse located behind the ESM 2000 distribution panel.

BATTERY

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

A deep cycling heavy duty 12v battery should be purchased to provide power for lights and other electrical appliances. A proprietary brand leisure battery with an 85amp capacity is recommended.

Note: 85amp batteries and above should be checked dimensionally before purchasing, to ensure fitment within the battery compartment, as brands vary in size.

It should be remembered that batteries suitable for the electrical demands of a 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 leisure type battery, maintained in good condition is used. The battery should be kept topped up at all times.

The battery should be positioned in its compartment, which is vented to the outside, and be properly secured before travelling

WARNING: Do not block battery box vents.

WARNING: 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.

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 strip connector. It is recommended that the fuse rating fitted in this location does not exceed 20 amps.

WARNING: **Switch off all appliances and lamps before disconnecting the battery.**

Smoking is prohibited around the battery compartment.

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

i) Do not leave all 12v lights powered at the same time as this will drain your leisure battery more rapidly.

ii) If all 12v lights must be powered together, ensure the battery is 'in-circuit' i.e. selector switch in the 'van' position and that the battery charger is turned on.

iii) For optimum performance use the transformer/charger unit with a leisure battery attached.

SUPPORT SERVICE

PLUG-IN SYSTEMS LIMITED PROVIDE AN ON-CALL SERVICE FOR WARRANTY OR NON-WARRANTY REPAIRS.

IF YOU WISH TO TAKE ADVANTAGE OF THIS SERVICE FOR PLUG-IN-SYSTEMS ONLY

Telephone (01482) 652523 and ask for PRODUCT SUPPORT SERVICE.

HABITATION RELAY

To conform with European Safety Standards (EMC) all caravans have been equipped with a habitation relay.

This relay is actuated when the 12N/12S plugs are connected to the car’s sockets and the car ignition is turned on.

The relay automatically isolates all 12V equipment within the caravan, excluding the fridge’s 12V power supply, from the car.

GENERATOR GUIDELINES

- Lack of regular servicing can be the cause of most generator problems, gensets under 2kW are mainly dependent on engine speed for output frequency and voltage, poor or no servicing may cause the engine speed governor to run the genset engine too fast. Therefore frequency and output voltage can rise above the specification of the machine data plate i.e. 230V at 50Hz, this may

cause damage to electrical/electronic equipment (such as battery chargers).

- A generator should always be run for a few minutes prior to connection with the caravan or motorhome electrics, to allow it to warm up and the output to settle to a steady level.
- The AC output of generators is often derived from an AC alternator, rectified to DC then inverted back to AC. In essence this means the output sinewave may not be very smooth and may not run sophisticated electronics efficiently. Some of the new wave of gensets are more sophisticated in their production of a sinewave output and are more suited to run electronic equipment.
- If in doubt consult your genset dealer or manufacturer for advice.

SAS 200 MOBILE ALARM SYSTEM

Using the latest microprocessor technology the SAS200 provides all year round protection for your caravan.

Please read all sections of these user instructions before attempting to operate the SAS200.

If you are unsure of any of the point, please contact your local dealer or the manufacturer direct (see point 5)

1. Operation

1.1 Arm/Disarm

The SAS200 Alarm System is armed and disarmed by pressing the button on the key fob remote controller.

The alarm has four modes of operation:

a) Disarmed

b) Fully armed with internal movement sensor and tilt sensor active

c) Partially set with only the tilt sensor active

d) Partially set with only the movement sensor active.

The alarm indicates arm/disarm status by beeping. One beep = armed, two beeps in quick succession = disarmed.

To part set the alarm (modes c or d) hold down the arm button until the desired mode has been selected:

Hold down and release after 2 long beeps, mode (c) selected.

Hold down and release after 3 long beeps, mode (d) selected.

Note: if the arm button is continually held down the system will disarm and then repeat the above sequence.

1.2 PIR Movement Sensor

The SAS200 Alarm System comes complete with a 120° x 360° Passive Infra Red movement sensor that detects body movement within the vehicle.

If you are leaving pets within the vehicle the system should be armed in mode (c) to prevent nuisance triggering.

1.3 Tilt Sensor

The SAS200 Alarm System has an inbuilt tilt sensor that detects tilting of the vehicle during the hitching process. If the tilt sensor is not set correctly, the alarm will not arm and will indicate a fault by beeping 4 times in rapid succession.

During normal (on the flat) operation there is no need to alter the tilt sensor.

If the vehicle is parked on a steep slope it may be necessary to adjust the tilt sensor. With the alarm disarmed, while viewing the movement sensor lens, move the tilt adjustment lever forward until the green light illuminates. Note the position of the lever.

Now move the lever backwards and again note the position of the lever when the green light illuminates.

Set the lever mid way between the two positions.

Remember to return the lever to the centre (locked) position when returning to 'on the flat' use.

1.4 Alarm Siren

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 then rearm.

The alarm siren can be turned off at any point by pressing the key fob button. If the movement sensor caused the alarm trigger, the alarm will give a standard 'two beeps in quick succession' disarm indication. If the tilt sensor caused the alarm trigger, the alarm will give 'two beeps in quick succession' followed by a further 'two beeps in quick succession'.

1.5 Sleep mode

The SAS200 Alarm System incorporates a sleep mode that extends battery life over a long period of time.

If a charged leisure battery is fitted and is supplying 12 volts to the alarm system the alarm will operate in standard 'quick response' mode.

If the alarm is operating from the internal alarm battery only, the alarm will operate in 'slow response' battery saving sleep mode. In this mode you will need to press and hold the arm/disarm button for up to 3 seconds to arm or disarm the alarm.

2. Key Fobs

The SAS200 Alarm System comes complete with 2 key fob remote controllers. If an additional controller is required these can be ordered from your supplier.

2.1 Key Fob Battery Replacement

1. Remove the key fob from your key ring.
2. Prise the casing apart near the key ring fixing slot.
3. While holding the base part of the casing, prise out the old Lithium battery and replace with a new CR2032 battery. Ensure the [+] terminal is located towards the outer case.
4. Relocate the two casing halfs and snap together.
5. Refit the key fob onto your key ring.
6. Remember to dispose of old batteries in accordance with local regulations.

3. Battery

The SAS200 Alarm System incorporates a 3.3Ah sealed lead acid battery that is charged from the vehicles 12v supply. This battery has been selected to run the alarm without any external supply voltage for up to 9 months depending on ambient temperature/initial charge.

The battery is fully charged when the alarm system is despatched, but may need further charging if the vehicle is stood for a number of months without a 12v supply to the alarm.

To charge the alarm battery either fit a fully charged leisure battery to the vehicle or connect the vehicle to the mains supply and switch on the 12v charger/power supply.

The internal battery should be replaced approximately every 3 years to ensure correct operation. Replacement batteries can be ordered from your supplier. Always dispose of old batteries in accordance with local regulations.

4. Specification

4.1 Control Box

Supply voltage:	10.5 to 15v DC
Supply current:	250mA max
Operating temperature:	-5 to +30°C
Battery capacity:	3.3Ah at 12v

Operating time (armed) with no supply:	9 months at 20°C
Siren output:	110 dB +/- 10%

4.2 Movement Sensor

Range:	120° x 360° x 8M
Current consumption:	<1mA typical

4.3 Key Fob

Range:	>10M typical
Battery:	CR2032 Lithium Cell
Typical battery life:	1 year

5. Spare Parts/Service

For spare parts, local supplier contact details or other service information please contact:

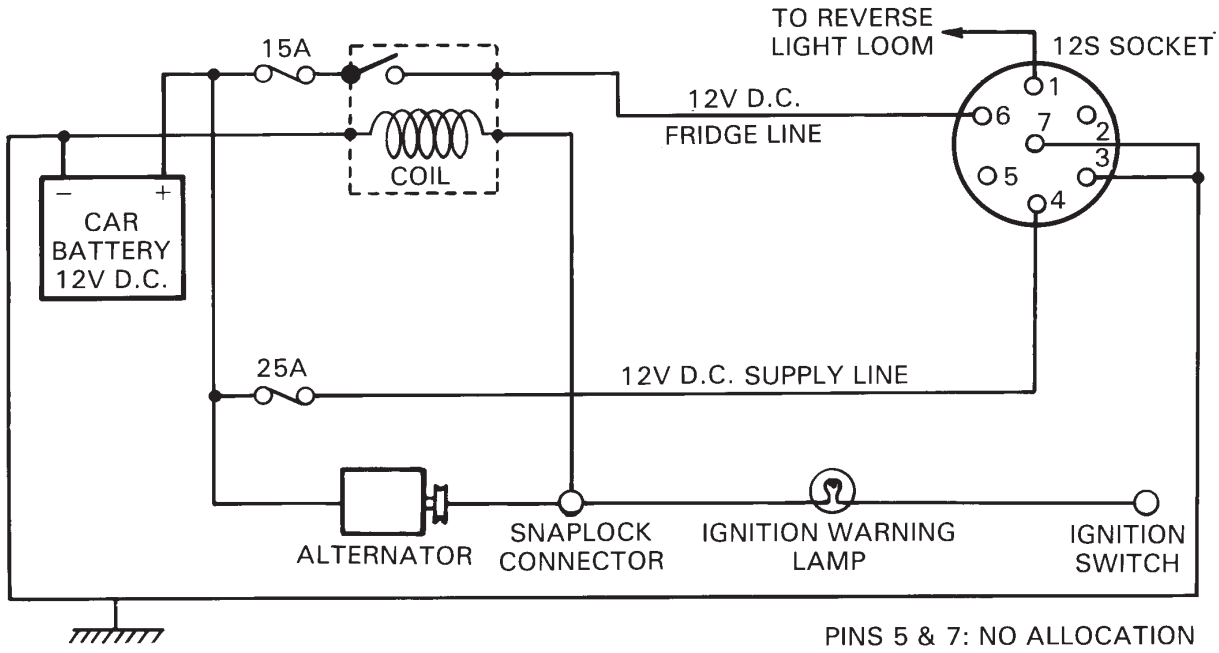
Sargent Electrical Services Ltd. service desk on 01482 678981 during normal office hours.

12 VOLT ELECTRICAL SUPPLY

If your car is fitted with the appropriate relay, please note the following points:

1. The caravan battery will be charged by the car charging system independently of the distribution panel.
2. If the caravan battery level is “low”, power for the caravan 12 volt system can be obtained from the car battery, by connecting the 12S (grey) plug to the car, and setting the distribution panel selector switch to “car”. This will draw power from the car battery and care should be taken not to reduce the level of the car battery so low that the car engine cannot be started. (The battery level indicator in the caravan distribution panel will show the condition of the car battery in these circumstances).
3. When the car and caravan are connected through the 12N and 12S plugs and the car engine is running, 12 volt power will be supplied to the refrigerator, provided the refrigerator selector switch is set to the 12v position, regardless of the position of the distribution panel selector switch.
4. If an extension lead from the 12S socket on a towing vehicle to the 7-core connecting cable is used while a caravan is parked on a caravan pitch, its length should be kept to a minimum and not exceed 5 metres. The minimum cross sectional area of the supply and return leads in the extension cable should be 2.5mm^2.

WIRING OF 12S SOCKET TO TOWING VEHICLE



Note:
If using a combination relay, ensure the supply fuse is the correct amperage. A lower rating will 'blow' causing the fridge, if switched on, to be connected directly to the caravan battery. While towing, the caravan battery will be discharged instead of being charged.

FITTED EQUIPMENT

Fitted Equipment

The instructions covering fitted equipment to your caravan were correct at the time of going to print. Owners handbooks are updated annually and we take great care to try and ensure their accuracy. However, the Swift Group Limited cannot accept responsibility for any changes that may be made in specification or operating instructions to the equipment described in this section after the time of going to press.

Every care is taken to ensure that the information provided in this handbook is correct and easy to understand.

Separate manufacturers' leaflets on many of the components are also included in the Owner's Pack provided with this caravan and we recommend that you compare the instructions in the handbook with the component manufacturers literature, to ensure the information provided is as accurate as possible.

If you are in any doubt as to how to operate the equipment in your caravan, please contact the component manufacturer's service department on the telephone number shown on their component leaflet. If you remain in any doubt, please contact the Swift Group Supercare customer care service department on 01482 875740.

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

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

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

THE TRUMA ULTRASTORE WATER HEATER

OPERATING INSTRUCTIONS

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

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

Filling the Truma Ultrastore with water

e = Lever position "Closed"

f = Lever position "Drain"

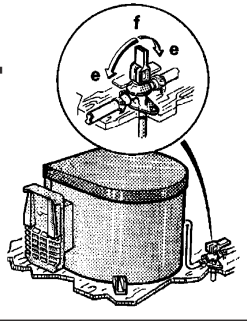


Fig. 1

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

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

Note: If just the cold water system is being used, without water heater, the heater tank is also filled up with water. In order to avoid damage through frost, the water contents must be drained by actuating the safety/drain valve, also when the heater has not been used. As an alternative, two shut-off valves, resistant to hot water, can be fitted in front of the cold and hot water connection.

Draining the water heater

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

Gas operating instructions

Attention: Never operate the water heater without water in it!

If the wall cowl is positioned close to an opening window (or hatch) - in particular directly under it - it must remain closed when the water heater is in use (see warning plate).

1. Remove cowl cover.

a = Rotary switch "On" "Gas operation"

b = Rotary switch "Off'"

c = Rotary knob for temperature selection (illuminated by green lamp "Operation")

d = Red indicator lamp "Failure"

2. Open gas cylinder and open quick-acting valve in the gas supply line.
3. Select required water temperature at rotary knob (c) infinitely variable from approx. 30° to 70°c.
4. Switch on water heater at the rotary switch (a) on the control panel, green indicator lamp "Operation" lights up.
5. If there is air in the gas supply line, it may take up to a minute before the gas is available for combustion. If the appliance switches to "Failure" during this period, switch off the appliance - wait 5 minutes - and switch on again!

Switching off (gas operation)

Switch off the water heater at the rotary switch (b).

Drain the water heater if there is a risk of frost!

If the water heater is not to be used for a longer period, mount cowl cover (non-observance of this point can lead to the function of the appliance being impaired through water, dirt or insects), close quick-acting valve in the gas supply line and close the gas cylinder.

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

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

Red indicator lamp "Failure"

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

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

In event of faults, always contact the Truma Service on Tel: 01283 511092.

Electrical Operating Instructions

Switch the switch on the control panel to "On". This indicates the electrical water-heating element is operative.

When using the vehicle switches refer to operating instructions of the vehicle manufacturer or see switch labels.

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

Note: The water tank in the Truma-Ultrastore is made of high quality food-proof stainless steel VA.

Use wine vinegar for de-scaling the water supply. Allow the product to react and then thoroughly flush out the appliance with plenty of fresh water. To sterilise the water we recommend "Certisil- Argento". Other products, particularly those containing chlorine are unsuitable.

In order to avoid the proliferation of micro-organisms, heat the Ultrastore to 70° at regular intervals.

Do not use the water as drinking water!

Important Operating Notes

1. If the cowl is positioned close to an opening hatch (window), keep this closed during operation. See warning plate. Always mount the cowl cover if the heater is not being used. Non-observation of this point can lead to the function of the appliance being impaired through water, dirt or insects.
2. The guarantee will be invalidated if this point is not observed. Always remove the cowl cover prior to operating the water heater!
3. If there is a defect in the electronics, return the control Printed Circuit Board well padded. If you fail to pack it correctly the guarantee will be invalidated. Only use original Truma Ultrastore control P.C.B's as spare parts.
4. If just the cold water system is being used, without water heating, the header tank becomes more vulnerable to frost damage. Accordingly the contents should be drained by operating the safety/drain valve. This also applies when the motorhome is in storage.

General Safety Notes

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

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

1. Repair jobs are only to be carried out by an expert.
2. The following would invalidate the guarantee:
   a. Any alteration to the appliance (including cowl)
   b. The use of non-Truma spare parts/accessories
   c. Non observance of the operating instructions.
3. The operating pressure for the gas supply is 30mbar (or 28mbar butane/37mbar propane) and must correspond to the operating pressure of the appliance (see name plate).
4. Do not operate the water heater when refuelling the vehicle and when in the garage.
5. During the initial operation of a brand new appliance (or after it has not been used for some time), a certain amount of fumes, and a slight smell, may be noticed for a short time. Remedial action is to immediately run the heater at maximum output and to ensure adequate room ventilation.
6. If the burner makes an unusual noise or if the flame lifts off, it is likely that the regulator is faulty and it is essential to have it checked.

Technical Data

Water contents:	10 litres
Water pressure:	up to max. 2.8 bar
Type of gas:	Liquid Gas (propane or butane)
Operating Pressure:	30mbar (or 28mbar butane, 37mbar propane)
Rated thermal output:	1500W
Gas consumption:	120g/h
Heating time to approx. 70°C:	
Gas operation:	approx. 35 mins
Electrical operation:	approx. 70 mins
Gas and electrical operation:	approx. 20 mins
Power consumption 12V	
Ignition:	0.17A
Heating Up:	0.08A
Standby:	0.04A
Power consumption 230V	
Heating Up:	(3.7A) 850W
Weight (empty):	6.7Kg

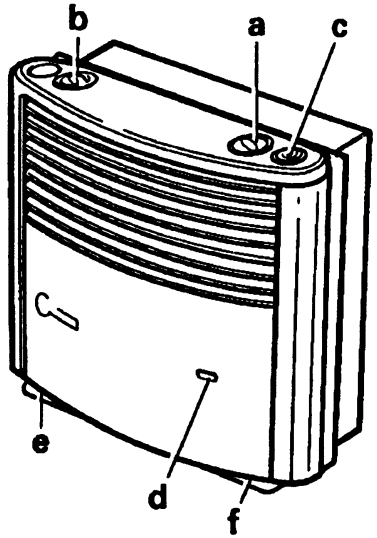
THE TRUMA S 3002 P & S 3002 AUTO SPACE HEATER

INSTRUCTIONS FOR HEATERS FITTED WITH AUTOMATIC IGNITOR OR PIEZO IGNITOR

Switching On

1. Open the valve on the gas cylinder. Open quick-acting valve in gas supply line.
2. Turn control knob to thermostat setting 1-10 and press it down as far as the stop. At the same time keep operating the piezo ignitor rapidly until the flame ignites.
3. Keep the control knob depressed for a further 10 seconds to allow the safety pilot to operate.
4. (Piezo only) Watch through the flame window for another 10 seconds to make sure that the flame does not go out through air in the supply pipe (caused by the valve being closed or changing the cylinder).

Attention: Always wait at least 2 minutes before attempting to re-ignite, otherwise there is a risk of blowbacks (misfiring). This also applies if a working heater goes out has to be re-lit.



a = Control knob
b = Integrated control panel for Trumavent fan TEB
c = Piezo ignitor or automatic ignitor
d = Flame observation window
e = Name plate (remove casing)
f = Thermostat probe

In the case of left-handed installation, the parts are arranged on the other side.

Automatic Ignitor

Prior to first ignition, make sure that the batteries have been inserted; observe correct fit battery cassette (see changing batteries, page 57).

Thermostat

Set the required room temperature at the control knob (numbers 1-10). For an average room temperature of approx. 22°C we recommend setting:

3-5 Without the Trumavent Fan (switched on)

4-8 With the Trumavent Fan

Switching Off

Set control knob to "0". If turning off for a long period of time, close the quick-acting valve in the gas supply line. Close valve of gas cylinder.

Important Operating Notes

1. If the gas supply line is filled with air, it may take up to a minute before the gas becomes available for combustion. During this time depress the control knob and continuously operate the piezo ignitor until the flame ignites.
2. You will have to find out the exact thermostat setting yourself, depending on how much heat you need.
3. Repairs are only to be carried out by a competent service engineer.

Attention: A new O-ring must always be installed after dismantling the exhaust duct.

4. Any alteration to the appliance (including exhaust duct and cowl) or the use of spare parts and accessories, which are important to the function of the heater and which are not original Truma parts, as well as the non-observance of the installation and operating instructions, will lead to the cancelling of the guarantee and exclusion of liability claim.
5. During the initial operation of a brand new appliance, a certain amount of fumes and a slight smell may be noticed for a short while. Remedial action is to immediately run the heater at maximum output and to ensure adequate room ventilation.
6. In winter, before switching on the heater, remove all snow from the cowl.
7. Inspect the exhaust duct and all connections at regular intervals and always whenever there is a blowback (misfire). It is essential that the exhaust duct is installed so that it slopes upwards over its whole length and is securely fixed with several clamps. Never place any object on the exhaust duct, since this could result in damage. The exhaust duct connection to both the heater and the cowl must be firm and well sealed.

Do not operate heaters with incorrectly fitted or damaged exhaust ducts.

8. Never allow the warm air outlet on the heater to be obstructed in any way. For instance never hang washing on or in front of the heater to dry. Misusing your heater in this way could cause serious damage from overheating. Do not place flammable objects near the heater. Please follow these guidelines in the interest of your own safety.
9. If the burner makes an unusual noise or if the flame lifts off while burning, it is likely that the regulator is faulty and it is essential to have it checked.
10. Cleaning (with switched off appliance): It is recommended that at least once a year, before the heating season starts, you remove any dust that has collected on the heat exchanger base plate.

Technical Data:

Type of gas:	Liquid gas (propane/butane)
Operating pressure:	30mbar (28mbar butane, 37mbar propane)
Rated thermal output:	3400W
Gas consumption:	30-280 g/h
Product Indent.	No: CE-0085AP0325

Automatic Ignitor

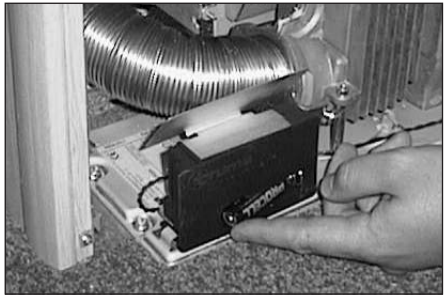
Power consumption:	50 MA (ignition) 0.01 MA (monitoring)
Operating voltage:	3V

CHANGING OF BATTERIES

Changing the Batteries on the Automatic Ignitor

Only change the batteries with the heater switched off.

Always insert new batteries at the beginning of the heating season.



Remove front of heater retaining screw, located through centre of black grill. Unclip front of heater, slide up battery cover to reveal battery. Change the batteries. Observe plus/minus.

Only use temperature resistant (+70°C), leak-proof Mignon round cells (LR 6, AA, AM 3, Art. no. 30010-23600). Other batteries could lead to malfunctions!

TRUMA ULTRAHEAT ADDITIONAL ELECTRIC HEATING FOR TRUMATIC S 3002 (P), S 5002 AND S 55 T HEATERS

Function description

Truma-Ultraheat is an additional 230V electric heater for the LPG heater models Trumatic S 3002/S 5002.

Heater operation is basically possible with gas only, electricity only or simultaneously with electricity and gas.

When using simultaneously the electrical unit will switch itself off before overheating occurs as a result of the stronger gas burner.

When using electrical only we recommend to set the fan control on position 3 (manual or auto), remembering to set the output level to 2000W (ensure that the fuse protection for the power supply of the camp site is sufficient).

If more than 2kw are required (heating up/cold temperatures) you must refer back using gas operations as the 230V electrical operation is a secondary heater only.

Fitted Equipment

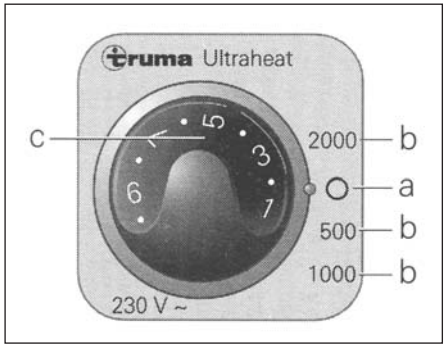
The electric heater can also be operated without the Trumavent fans.

WARNING: Due to the design, the heater front case will become hot during operation. The operator is obliged to ensure that due care is taken to protect third parties (small children in particular).

OPERATING INSTRUCTIONS

Before operating the heater for the first time it is essential to observe the operating instructions, enclosed with the heater.

Control panel with thermostat



a = Rotary switch "Off"

b = Rotary switch "On"
power settings:
500 - 1000 - 2000 W

c = Rotary control knob for room temperature (illuminated by green indicator lamp "operation")

Switching On

Attention: Before switching on, ensure that the fuse protection for the power supply of the campsite is sufficient for the selected power setting (b) (see Technical Data).

Important: The electric feed line for the caravan must be fully unwound from the cable drum.

1. To switch on, turn the rotary switch to the desired output level (b).
2. Set rotary control knob (c) to the desired room temperature.

The thermostat setting on the operating element (1-9) must be determined individually depending on the heating requirement and the type of vehicle. For an average room temperature of about 23°C, we recommend a thermostat setting of about 6 -8.

The electric heater can also be operated without the Trumavent fans.

If the heater is operated simultaneously with electricity and gas, the electrical unit will switch itself off before overheating occurs as a result of the stronger gas burner.

Switching off

Switch the heating system off at the rotary switch (a).

IMPORTANT OPERATING NOTES

1. Repairs may only be carried out by an expert.
2. The heater's hot air outlet should under no circumstances be blocked. Never hang clothes or similar in front of or on top of the heater to dry. This could cause serious damage to the heater as a result of overheating. Do not place inflammable materials near the heater! Please observe these instructions for your own safety.
3. The performance of the room thermostat will be affected if temporarily covered or obstructed
4. When operating a brand-new heater for the first time (or after it has been idle for a lengthy period) you may temporarily notice a slight smoke and smell. We advise running the heater at full power and thoroughly ventilating the room.
5. Any modifications to the appliance or the use of spare parts and accessories important for operation which are not original Truma parts, of non-observance

of the instructions for installation and use will result in the guarantee becoming invalid and no liability will be assumed.

Furthermore the approval for operating the appliance will become invalid and in some countries also the approval for operating the vehicle.

TECHNICAL DATA

Power supply: 230 V ~, 50 Hz

Power consumption at power setting:
500 W: 2.2 A
1000 W: 4.5 A
2000 W: 8.5 A

Weight: approx 2kg

BUTTERFLY OUTLETS

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

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

Butterfly Outlet

Blown air

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

One outlet on each leg of the air ducting layout must be kept open at all times.

Switching off

Push slide switch (a) to the "OFF" position.

IMPORTANT OPERATING NOTES

1. **Repairs may only be carried out by an expert.**
2. Under no circumstances should the hot air outlet be blocked. Never hang clothes or similar in front of or on top of the heater to dry. This could cause serious damage to the heater as a result of overheating. Do not place inflammable materials near the heater! Please observe these instructions for your own safety.
3. When operating a brand new heater for the first time (or after it has been idle for a lengthy period) you may temporarily notice a slight smoke and smell. We advise running the heater at full power and thoroughly ventilating the room
4. Any modifications to the appliance or the use of spare parts and accessories important for the operation, which are not original Truma parts, or non-observance of the instructions for installation and use will result in the guarantee becoming invalid and no liability will be assumed. Furthermore, the approval for operating the appliance will become invalid and in some countries also the approval for operating the vehicle.

TECHNICAL DATA

Power supply: 230 V ~, 50 Hz

Power consumption at power setting:
500 W: 2,2 A 1000W: 4,5 A 2000 W: 8,5 A

Weight: approx. 2 kg

ALDE HEATING SYSTEM

Please read these instructions carefully before using the boiler.

These instructions are approved for Alde Compact 3000 92X, 93X and 94X boilers fitted in caravans, motor caravans and buildings in accordance with CE no. 048 AP-0013.

A professional may only carry out installation and repairs. National regulations must be adhered to.

BOILER DESIGN

The boiler consists of three eccentrically fitted cylinders (heat exchanger, water jacket for the heating system and, outermost, water jacket for hot water). The two outer pipes, as well as their ends and connections, are made

from stainless steel, while the heat exchanger is made from aluminium.

The heat exchanger is divided into two semi-circles. The burner is located in the upper half, the combustion chamber, and the combustion gases are expelled through the lower half. The burner unit is fitted on the end of the heat exchanger. It consists of a combustion fan, burner, solenoid valve and intake/exhaust connections. One or two heating cartridges are fitted to the water jacket of the heating system. Output is 2 or 3 kW, depending on model.

DESCRIPTION OF FUNCTIONS

Using LPG

When the sliding switch on the control panel is set to LPG, the combustion fan starts. The fan creates pressure against the pressure gauge. When the fan pressure is sufficiently high, the pressure gauge signals the electronics box that the boiler can be lit. The electronics box sends ignition sparks to the spark plug at the same time as it sends electricity to the solenoid valves, which open to allow gas in. The burner ignites, and a sensor transmits a signal back to the electronics box that the boiler is lit and ignition spark stops. The burner keeps burning until the boiler thermostat or the room thermostat reaches the set temperature reading. Should the boiler go out for any reason, the sensor is activated and the electronics box ensures that a new attempt is made to start the boiler (in about 10 seconds).

Using the heating cartridge

When the heating cartridge sliding switch is set to any of the output settings on the control panel, the 12-volt relays on the circuit board trip, allowing the 230-volt supply to reach the cartridge. The heating cartridge is controlled in the same way as the gas boiler.

IMPORTANT INFORMATION

- The LPG boiler and heating cartridge may be operated in parallel.
- The heating system may be heated up without the warm water heater being filled with fresh water.
- Always drain the warm water heater of fresh water if there is a risk of frost.
- The LPG boiler must not be operated when filling the vehicle with fuel, in a garage or elsewhere.
- The boiler must not be started if there is no glycol in the system.

Note: If heating is to be operational whilst unattended, ensure mains hook up is connected. System can cause battery to run flat, if battery is the sole power source.

THE CONTROL PANEL

The boiler is controlled using sliding switches on the control panel. The desired temperature in the vehicle is set and regulated via the thermostat on the control panel.

Control panel functions:

A. Heating cartridge switched off.

B. Heating cartridge switched on at 1050 W.

C. Heating cartridge switched on at 2100 W.

D. Heating cartridge switched on at 3150W (if the boiler is fitted with this output setting).

E. LPG boiler switched off.

F. LPG boiler switched on.

G. LED indicates that the LPG boiler is in blocking mode (the burner has not ignited, or has gone out for some reason).

H. Warm water setting. The circulation pump switched off. The heating cartridge/LPG boiler is operated by the boiler's built-in thermostat. Used when only hot water is wanted.

I. Normal setting. The circulation pump is switched on and is controlled by the thermostat on the control panel. The operation of the heating cartridge/LPG boiler is controlled by the boiler's built-in thermostat. Used when both heating and warm water is wanted.

J. Permanent setting. The circulation pump is switched on and runs constantly. The thermostat on the control panel controls the operation of the heating cartridge/LPG boiler. This setting is used in particular circumstances, mostly during the winter. Provides an even flow of heat, but also reduces the hot water capacity.

K. Knob for setting the desired room temperature.

L. Index marking for a room temperature of approx. 22°C.

THE WARM WATER HEATER

ABOUT LPG

The properties of LPG

LPG is a petroleum product, formally known as 'liquid petroleum gas'. It is mainly made up of propane and butane gas. The advantage of propane is that it remains gaseous at temperatures as low as -40∞, while butane loses effectiveness at +10∞C. For this reason, propane is used in colder countries. The cylinders contain LPG both in liquid and gaseous form. Then the cylinders are filled, the pressure turns the gas into liquid. When the cylinder valve is opened, the LPG becomes a gas again. The risk involved in using LPG is that any leaking gas may ignite and explode. Since LPG is heavier than air, any leaking gas will collect at the lowest point.

LPG contains no toxic substances but breathing in concentrated gas may have a certain anaesthetising effect, and can also result in shortness of breath and symptoms of suffocation. These symptoms quickly disappear if the sufferer breathes in ordinary air or oxygen. Naturally, it is inadvisable to inhale either LPG or exhaust fumes. To make it easier to detect gas leaks, a substance with a distinctly rank smell has been added.

Combustion

Complete combustion of LPG only generates carbon dioxide (CO2) and water vapour, just like the air we exhale. A good supply of air is essential to ensure complete combustion. The centre of the flame should be blue/green. LPG is extremely environmentally compatible and does not generate any soot during complete combustion.

It can be stored in cylinders for an unlimited time period, without any deterioration of quality.

Pressure

The LPG burner usually works at a lower pressure than that in the cylinder. The most common pressure is a low pressure (0-50 mbar), which is created by allowing the gas to pass through a reduction valve. There is also intermediate pressure (50 mbar-2.0 bar) and, finally, high pressure (over 2.0 bar), which is unreduced pressure mainly used in camping equipment. Low pressure and intermediate pressure are always reduced pressure.

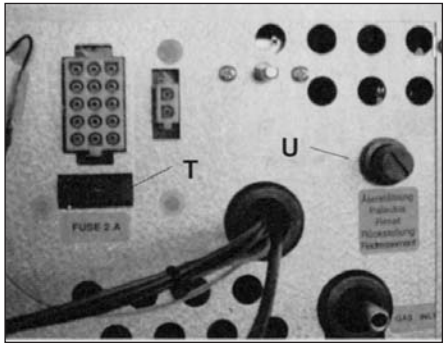
FAULT FINDING

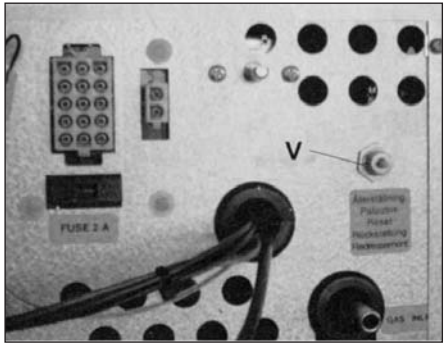
The boiler does not start

1. No LPG?
2. Is the main tap fully open?
3. If the boiler has not been operated for some time, or if the gas cylinder has been changed, it may take longer than normal to light the boiler.
4. Check that the boiler is connected to the electricity supply (> 11 V).
5. Check that the fuse (T) for the boiler is intact.
6. Check whether the overheating protection has been tripped by unscrewing the black plastic cap (U) and pressing the reset button (V).

   NB! If the overheating protection has been tripped it cannot be reset until the boiler has cooled down by 10-20°C. Before restarting the boiler, check that it has been properly bled.
7. Check whether the red LED on the control panel has gone out. If not, switch off the boiler. Wait 30 seconds and then try restarting it.
8. Check that the boiler's electrical connections are properly attached.

9. If none of these help, please contact a service company.





The heating cartridge is not working

1. Check that there is an electricity supply (230 V~) to the heating cartridge.
2. Check that the relays fitted to the boiler come on (a slight click can be heard from the relays when the heating cartridge is switched on at the control panel).
3. Check whether the overheating protection has been tripped by unscrewing the black plastic cap (U) and pressing the reset button (V).
4. If none of these work, please contact a service company.

GUARANTEE

Alde's guarantee is valid for one year from the date of delivery and only covers materials or manufacturing faults, provided that the directions for installation and use have been followed. The guarantee does not cover frost damage.

NB! Only Alde original parts should be used as replacement parts.

The boiler is fitted with a built-in warm water heater with a volume of approx. 8.5 litres fresh water. The warm water heater can produce around 12 litres of 40°C water per half-hour (at a cold water temperature of 10°C). If the heating cartridge is used instead of gas for heating the boiler, the capacity is slightly reduced.

Always rinse out the heater before it is used, particularly if it has not been in operation for some time.

NB! The hot water is not intended for drinking or cooking. When the heater is in continuous use, it should be emptied approx. once a month, to ensure that a new air cushion is formed in the heater. The air cushion is essential for absorbing pressure surges in the heater.

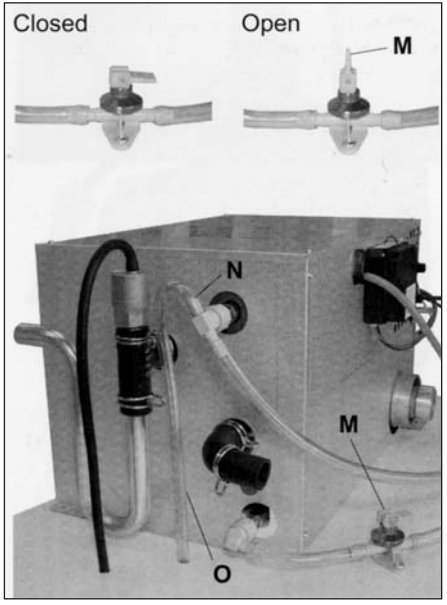
For emptying specially adapted boilers, as well as any other freshwater systems in the vehicle, please refer to the manufacturer's instructions.

NB! The warm water heater should always be drained of fresh water when there is a risk of frost and when the caravan is not in use. The guarantee does not cover frost damage.

Draining the heater using the combined safety/drain valve:

1. Switch off the freshwater pump.
2. Open all water taps.
3. Then open the safety/drain valve by raising the yellow lever (M) to a vertical position.
4. The heater will now drain directly below the vehicle through the safety/drain valve hose. Check that all the water is emptied out (about 7-10 litres). Leave the valve in the open position until the next time the heater is used.

NB! Check that the automatic check valve (N) is open and is allowing air to enter the heater when it is being drained, and that the hose (O) is not blocked.



THE HEATING CARTRIDGE

All compact boilers are fitted with one or two 230 V heating cartridges with a maximum output of either 2100 or 3150 W. Select the heating cartridge output by sliding the switch on the control panel to the desired output position. Always check that the input fuse of the vehicle has the correct amperage in relation to the selected output.

1050 W requires a 6-amp fuse.

2100 W requires a 10-amp fuse.

3150 W requires a 16-amp fuse.

THE CIRCULATION PUMP

A 12 V circulation pump is fitted in the expansion tank. It circulates the heated glycol fluid in the heating system. Use the sliding switch on the control panel to start the circulation pump. The room thermostat on the control panel controls the circulation pump, i.e. switches it on or off according to the amount of heat required. The circulation pump may also be operated continuously. (See the control panel section.

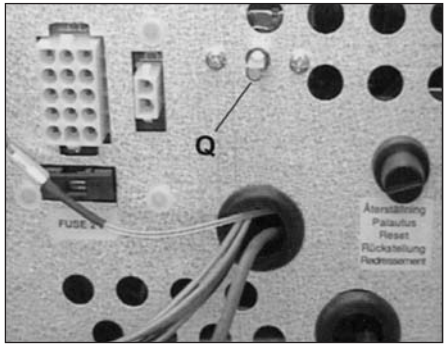
Please note that continuous operation of the 12 V circulation pump considerably reduces the service life of the motor.

SYSTEM TEMPERATURE

The boiler is set to a system temperature of 80°C, i.e. the temperature of the glycol fluid as it circulates in the heating system. The system temperature may be reduced when required, i.e. if the warm water becomes too hot.

Lowering the system temperature

Turn the spindle (Q) anti-clockwise. A quarter turn represents a temperature reduction of 10°C. To increase the system temperature, turn the axle clockwise until it reaches its maximum position and cannot be turned any further. The system temperature is then reset to 80°C.



AIR CIRCULATION

In order to achieve the best possible result from the principle of waterborne heat, it is important to allow air to circulate freely under bunks, and behind backrests and wall-mounted cabinets. If the vehicle has a fitted carpet, ensure that the carpet does not obstruct the air supply to the radiators. It is just as important that cushions or blankets do no interrupt the flow of air behind backrests and wall cabinets.

MAINTAINING THE HEATING SYSTEM

Winter camping

While camping during the winter, ensure that the flue is kept clear of snow and ice since the inlet air to the LPG boiler enters through the flue. Do not start the LPG boiler until the flue is completely free of snow. A flue extension (part no. 300 320) for fitting on the roof is recommended for winter camping.

The LPG system

A professional, who will ensure that there are no leaks from connections or hoses, should check the LPG system regularly. LPG hoses should be changed every second year, since their propensity to dry out and crack will eventually result in leaks.

To increase safety, we recommend fitting an Alde leak gauge, type 4071, as close as possible to the pressure reduction valve.

The heating system

Regularly check the heating system's fluid level in the expansion tank. The level should be about 1cm above the minimum indicator in a cold tank.

The heating system should be filled with a mixture of water and glycol. For preference, use high quality ready-mixed glycol (with inhibitor) intended for use in aluminium heating systems. If using concentrated glycol, the mixture should consist of 60% water and 40% glycol. If the heating system will be exposed to temperatures below -25°C, the glycol content must be increased, but not to more than 50%.

Any vessels used for the liquid must be spotlessly clean, and the pipes in the heating system must be free of contamination. This will prevent the growth of bacterial in the system.

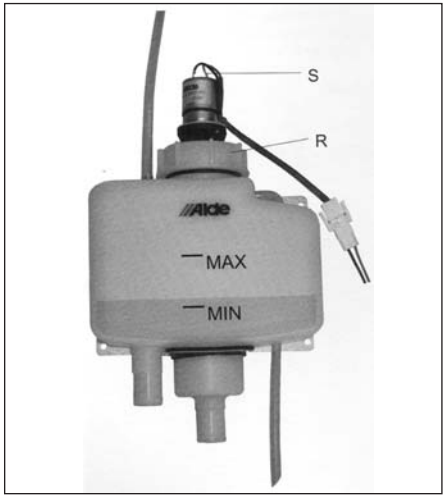
The glycol mixture should be checked before topping up with new liquid. This will ensure that the concentration of glycol in the mixture is not too high.

If the fluid level in the expansion tank falls for reasons other than evaporation, please check all joints, drain cocks and bleeder screws to ensure that they are not leaking. If the glycol-water mixture leaks out, rinse with water and wipe up. New allow the heating system to stand empty of glycol.

FILLING THE SYSTEM WITH GLYCOL FLUID

NB! Any vessels used for the liquid must be spotlessly clean, and the pipes in the heating system must be free of contamination. This will prevent the growth of bacterial in the system.

The system is filled through the expansion tank, either manually or using the Alde filling pump which both tops up and bleeds the system. For manual filling, unfasten the circulation pump nut (R) and life the pump (S) out of the tank. Slowly pour the glycol mixture into the tank. Bleed the system. Top up with more liquid if the level has fallen after bleeding. Bleed a newly filled system regularly during the first days the heating system is in operation.



BLEEDING THE SYSTEM

Depending on how the pipes have been fitted, air pockets may form when the system is filled with glycol fluid. A sign that there is air trapped in the system is that the heat released into the pipes only extends a metre or so from the boiler even though the

circulation pump is operating. In newly filled systems, small air bubbles can form in the expansion tank, creating a murmuring sound. If the circulation pump is stopped for a few seconds, the bubbles will disappear.

Bleeding

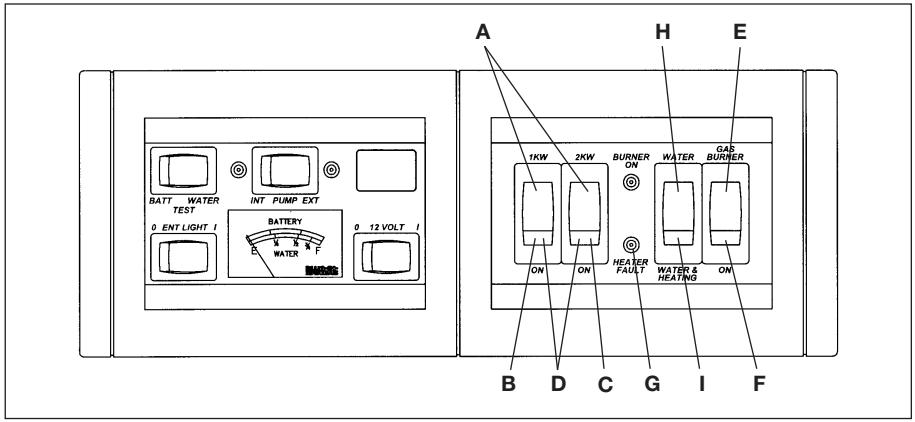
If a bleeder screw is fitted to the outgoing pipe on the rear of the boiler, open this bleeder screw and leave it open until it starts to discharge water. If the boiler is fitted with an automatic bleeder, there is no need to bleed it manually.

Start the LPG boiler. The circulation pump should be switched off. Open the remaining bleeder screws in the system (please refer to the instruction manual of the vehicle for their locations). Leave the bleeder screws open until they start discharging fluid. Start the circulation pump and let it run for a while. Check that the pipes and radiators around the vehicle are heating up. If they still fail to heat up, try the following:

Single-axle caravans: Stop the circulation pump. Using the jockey wheel, lower the front of the caravan as far as possible so that the rear is tilted upwards. Leave it in this position for a few minutes to allow the air to travel upwards in the system. Open the bleeder screw at the highest point. Leave it open until it discharges glycol fluid.

Using the jockey wheel, raise the front of the caravan as far as possible and repeat the procedure in this position. Then position the caravan horizontally and start the circulation pump. Check that the pipes and radiators around the vehicle are heating up.

Motor caravan or twin-axle caravan: The easiest way to bleed the heating system is to place the vehicle on a sloping surface or to raise one end of the vehicle using a jack. Bleed the system as described above.



SETTINGS FOR OPERATION OF THE HEATING SYSTEM AND WARM WATER HEATER

For more information on the settings on the panel, please refer to the 'Control Panel' section.

WARM WATER ONLY WITH 230 V HEATING CARTRIDGE

1. Switch the circulation pump switch to position (H).
2. Switch the LPG switch to position (E).
3. Switch the electric cartridge switch to position (B).

(When the system is being used for warm water only, the electronics limit output to 1kW, irrespective of the output actually selected).

WARM WATER ONLY WITH LPG BOILER

1. Open the LPG shut-off valve.
2. Switch the circulation pump switch to position (H).

3. Switch the LPG switch to position (F).
4. Switch the heating cartridge switch to position (A).

HEATING AND WARM WATER WITH 230 V HEATING CARTRIDGE

1. Switch the circulation pump switch to position (I).
2. Switch the LPG switch to position (E).
3. Switch the heating cartridge switch to the desired output position (B, C or D).

   In the illustration, an output of 2100 W has been selected.
4. Adjust the temperature to the desired level (5-30°C) using the TPS control thermostat (K).

HEATING AND WARM WATER WITH LPG BOILER

1. Open the LPG shut-off valve.
2. Switch the circulation pump switch to position (I).
3. Switch the LPG switch to position (F).
4. Switch the heating cartridge switch to position (A).
5. Adjust the temperature to the desired level (5-30°C) using the TPS control thermostat (K).

HEATING AND WARM WATER WITH BOTH 230 V HEATING CARTRIDGE AND LPG BOILER

(Use only when electricity or gas alone is not sufficient)

1. Open the LPG shut-off valve.
2. Switch the circulation pump switch to position (I).
3. Switch the LPG switch to position (F).
4. Switch the heating cartridge switch to the desired output position (B, C or D).

   In the illustration, an output of 2100 W has been selected.
5. Adjust the temperature to the desired level (5-30°C) using the TPS control thermostat (K).

SETTINGS FOR OPERATION OF THE HEATING SYSTEM AND WARM WATER HEATER

For more information on the settings on the panel, please refer to the 'Control Panel' section.

SWITCHING OFF THE LPG BOILER, HEATING CARTRIDGE AND CIRCULATION PUMP

1. Switch all three switches on the control panel to the O-position (H, E, A).
2. Close the main switch to the heating system if the vehicle will not be used.

   If the main switch is not closed, the boiler will remain in the stand-by position and use a small amount of electricity.
3. Close the LPG shut-off valve.

IF THE RED LED-LIGHT COMES ON

The boiler is fitted with an ionised flame sensor. This means that if the flame goes out for some reason, the electronics will attempt to re-light it. If the flame is not re-lit within ten seconds, the solenoid valve switches off the gas supply, the electronics are blocked and the red LED (G) on the control panel is switched on. The electronics must be reset before the boiler can be started.

Resetting from the blocked position:

1. Switch the LPG switch to position (E). The LED (G) will go out.
2. Wait approx. 30 seconds while the electronics reset the block.
3. Switch the LPG switch to position (F). The electronics will once again attempt to start the boiler.

TP5 ELECTRONIC PROGRAMMABLE ROOM THERMOSTAT

FEATURES

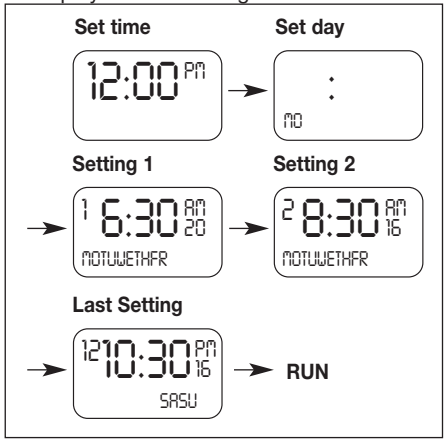
- Controls central heating systems to provide different room temperatures up to 6 times a day
- The TP5 has one programme for Monday to Friday, with a different programme for Saturday and Sunday.
- Setting the TP5 to the lowest temperature will effectively switch off the heating, whilst providing frost protection for the controlled area*

RESET

The unit may be reset to 12:00PM (MO) and the factory set programme by pressing and holding down the four buttons, temperature ▲ and ▼ , time + and - , until the display goes blank.

SETTING THE CLOCK

Press the PROGRAMME button once; the colon is no longer flashing. Use the + and - button to set the time. Hold down a button to change the time quickly; press and release a button to change the time by one minute. When the time and AM or PM are correct, press the PROGRAMME button to start the clock, now only the day and the colon are on display. Use + or - button to select the correct day. Press PROGRAMME to display the first setting.



REVIEWING THE EXISTING SETTINGS AND PROGRAMME YOUR OWN

Now each press of the PROGRAMME button shows, in, turn, the set times, (twelve with the TP5), together with their associated control temperatures. The time and/or temperature of each setting may be altered to your own requirements using the + and - (time) and ▲ and ▼ (temperature) buttons.

LIMITS OF ADJUSTMENT FOR TIME SETTINGS

Time setting 1 can be at any time of the day or night, but would normally be in the morning.

Each of the time settings 2 to 6 can be at any time between the proceeding setting and 1.59am. Time settings 2 to 5 can be set later than the next setting, but doing this changes the next setting as well..... E.g.changing setting 2 in any of the above to 3.00pm would also change setting 3 and 4 to 3.00pm.

This feature prevents times being set out of sequence. If you wish to return to the pre-set programme reset the unit as described above.

EVERYDAY OPERATION

When all twelve time/temperature settings have been checked and/or

altered, ensure the Programmable Room Thermostat is in the RUN mode with the colon blinking before sliding the cover shut.

MANUAL OVERRIDE

If you wish to temporarily change the control temperature from the automatic setting, there is no need to re-programme the thermostats; just press the up or down button until the temperature you

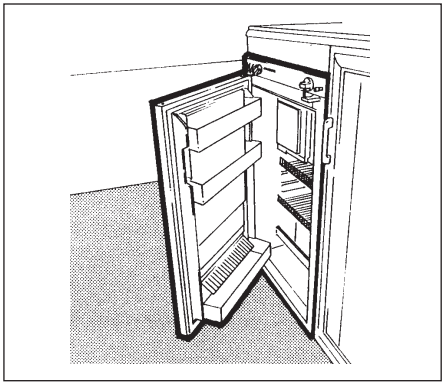
want is displayed. An up or down arrow will appear in the display to remind you that you have over-ridden the programmed temperature. The unit will revert to programmed temperature at the start of the next programmed event.

CONSTANT LOW TEMPERATURE CONTROL

To set the thermostat to control at its low setting (5°C to 16°C depending on model) for 24 hours a day press both t and u buttons at the same time. The display will show the blinking colon, the low setting and the snowflake symbol. To return to the automatic programme press the t and u buttons together again.

BATTERY REPLACEMENT

When the batteries approach the end of their life, a battery symbol blinks in the display. Have the new batteries unwrapped and ready, slide the battery cover fully off to the left, remove the old batteries and insert the new ones WITHIN ONE MINUTE.



REFRIGERATOR

When using your refrigerator for the first time, it is advisable to wash the interior and its accessories.

When the caravan is on tow, the refrigerator should be operated electrically, i.e. from the 12V battery in the towing vehicle, and not by means of bottled gas.

CONTROLS

The refrigerator can be run on either 230V, 12V or LP gas. Changing between these modes of operation is carried out by means of the controls shown on the relevant control panel.

Caution!
Only use one source of energy at a time.

DOMETIC RM7271L, RM7275L, RM7291L, RM7295L, RM7361L, RM7365L, RM7401L AND RM7405L

You have made an excellent choice in selecting the Dometic Absorption Refrigerator. We are sure that you will be fully satisfied with your new appliance in all respects.

The appliance, which works silently, meets high quality standards and guarantees the efficient utilisation of resources and energy throughout its entire life cycle, during manufacture, in use and when being disposed of.

Before you start to use the appliance, please read the installation and operating instructions carefully.

The refrigerator is designed for installation in leisure vehicles such as caravans or motorcaravans. The appliance has been certified for this application in accordance with EU Gas Directive 90/396/EEC.

WARNING AND SAFETY NOTICES

Warning: Never use a naked flame to check the appliance for leaks.

- Protect children!
- When disposing of the refrigerator, remove all refrigerator doors and leave the storage

rack in the refrigerator. This will prevent accidental locking in or suffocation.

- If you smell gas:
  - close the locking tap of the gas supply and the valve on the cylinder.
  - open the windows and leave the room.
  - do not switch on anything electrical.
  - extinguish naked flames.
- Never open the cooling unit; it is under high pressure.
- Work on the gas, flue system and electrical components must only be carried out by qualified service personnel.
- It is imperative that the operating pressure should correspond to the data given on the model plate of the appliance.
- Compare the operating pressure data given on the model plate with the data on the pressure monitor of the liquid gas cylinder.
- Gas operation of the appliance is not permitted while travelling on ferries.
- Covers ensure electrical safety and must only be removed using a tool.
- The appliance must not be exposed to rain.
- The refrigerator is not suitable for the proper storage of medications.

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% of the solvent).

In the event of leakage (easily identifiable from the unpleasant odour):

- switch off the appliance.
- air the room thoroughly.
- inform the authorised Customer Service department.

WARRANTY AND CUSTOMER SERVICE

Warranty arrangements are in accordance with EC Directive 44/1999/CE and the normal conditions applicable for the country concerned. For warranty or other servicing, please contact our Dometic Service department. Any damage due to impro- per 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. Parts can be ordered throughout Europe from our Dometic Service department. Your Service

Centre contact numbers numbers are found in the "European Service Network" booklet

When contacting Dometic Service, please state the model, product number and serial number together with the MLC Code, if applicable. You will find this information on the data plate inside the refrigerator.

DESCRIPTION OF MODEL

Refrigerator Mobile /
Mobile Absorption Refrigerator

"L" with interior light

RM 7401 L

Last digit 1 = manual energy selection
Last digit 5 = automatic and manual energy selection

CLEANING

Before using the refrigerator, it is advisable to clean the appliance both inside and out.

- Use a soft cloth and lukewarm water with a mild detergent.
- Then rinse the appliance with clean water and dry thoroughly.
- Remove dust from the refrigerator unit at yearly intervals using a brush or soft cloth.

Fitted Equipment

Warning: To avoid deterioration of materials:

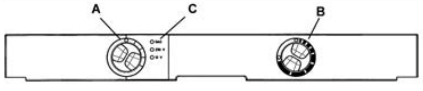
- **Do not use soap or hard, abrasive or soda-based cleaning agents.**
- **Do not allow the door seal to come into contact with oil or grease.**

Using the refrigerator

- The cooling unit is silent in operation.
- When the appliance is first put into operation, there may be a mild odour which will disappear after a few hours.
- Ensure the living area is well ventilated.
- The refrigerator will take several hours to reach its operating temperature in the cooling compartment
- The freezer compartment should be cold about one hour after switching on the refrigerator.

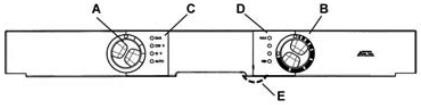
Controls

A. Manual energy selection MES (e.g. RM 7XX1 L)



A = energy selection switch
B = gas/electric thermostat AC/DC
C = operating displays (3 LEDs)

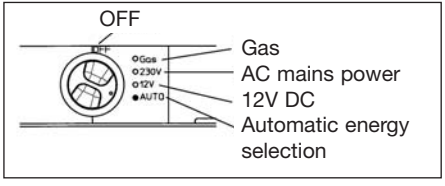
B. Automatic and manual energy selection AES (e.g. RM 7XX5 L)



A = energy selection switch
B = gas/electric thermostat AC/DC
C = operating displays (4 LEDs)
D = temperature setting display
E = dimmer for LED-displays
(only accessible when door opens)

Note: The refrigerator is equipped to operate on mains power, DC or liquid gas (propane/ butane). The desired power option is selected by means of energy selector switch (A). Energy selector switch (A) has four settings: AC mains power, DC (12V), Gas (liquid gas), OFF.

Appliances with automatic energy selection have the additional setting "AUTO" .

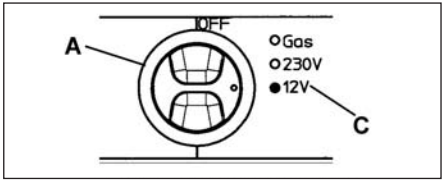


MANUAL ENERGY SELECTION

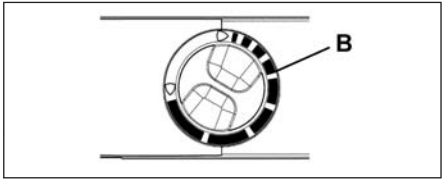
ELECTRICAL OPERATION

12V - operation (DC)

Warning: The refrigerator should only be used while the motor is running, otherwise the on-board-battery would be discharged within a few hours!



1. Set energy selector switch (A) to 12V .
2. Operating display "C", 12V lights "green". Appliance is in function.

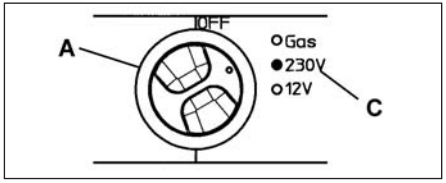


3. Use rotary switch (B) to regulate the temperature in the main refrigerator compartment.

Note: If the operating display fails to light up (it lights up "red" at AES models) the device is not in operation. (For troubleshooting see page 77).

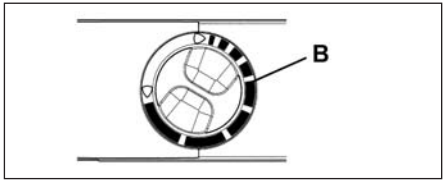
Mains power

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



1. Set energy selector switch (A) to 230V .
2. Operating display "C", 230V lights "green".

   Appliance is in function.



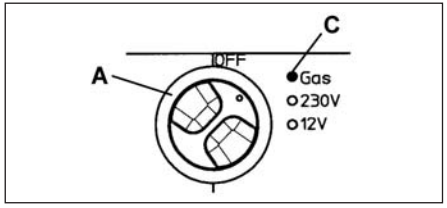
3. Use rotary switch (B) to regulate the temperature in the main refrigerator compartment.

Note: If the operating display fails to light up (it lights up "red" at AES models) the device is not in operation. (For troubleshooting see page 78)

GAS OPERATION

- The refrigerator should only be operated using liquid gas (propane, butane). Do not use town gas or natural gas.
- If the refrigerator is operated during travel using gas, the precautions stipulated by the legislation in the respective country must be taken (in conformity with the European standard EN 732).
- Operating the refrigerator with gas is not permitted during travel in France and Australia.
- As a basic rule, operation using gas is prohibited in petrol stations.

1. Open the valve of the gas cylinder
2. Open the shut-off valve to the gas supply.

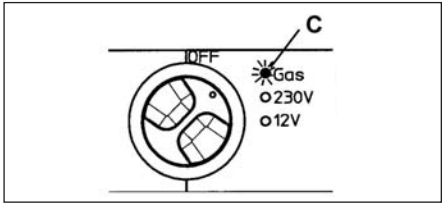


1. Set energy selector switch (A) to gas
2. Set rotary switch (B) to "MAX" position.

The ignition process is activated automatically, accompanied by a ticking sound approx. 30 sec. Upon successful ignition, the display LED (C) "Gas" lights yellow.The refrigerator is in function. Use rotary switch (B) to regulate the temperature in the main refrigerator compartment.

GAS FAULTS

In the event of a gas fault (e.g. gas cylinder empty), the operating display (C) flashes yellow.



Remedies:

Set the energy selector switch (A) to position "OFF".

1. Is there any gas in the gas bottle?
2. Is the gas bottle valve open?
3. Is the on-board shut-off valve open?
4. Set the main switch (A) to "on"

The reignition starts again.

If after about 30 seconds the operating display (C) starts flashing red again, the gas fault has not been cleared (e.g. air in the gas pipe).

5. Briefly switch the refrigerator off and then on again using main switch (A).

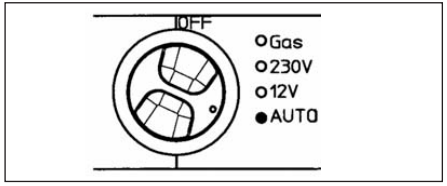
   To remove air from the gas pipes, repeat this procedure 3-4 times.

If these actions do not help, please call an authorised Dometic Service Centre.

AUTOMATIC ENERGY SELECTION (ONLY WITH RM 7XX5 L)

"AUTO"-OPERATION

RM7XX5 L - models are equipped with an "AUTO"-MATIC function.



1. Set energy selection switch (A) to position "AUTO" .

   The LED "AUTO" illuminates.

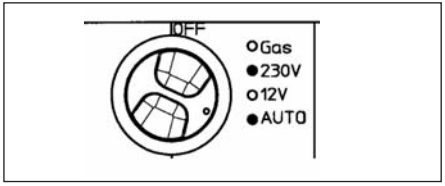
Note: Manual operation is possible at any time.

Explanations

Upon switching on, the electronics automatically select one of the three possible energy types: 230V - 12V - liquid gas. The control electronics

automatically ensure that the refrigerator is supplied with the optimum source of energy in each respective case.

Priority 1.) Solar (12V DC)
2.) 230V AC
3.) 12V DC
4.) Liquid gas



The selected energy is displayed by the corresponding LED (i.e. 230V).

230 V - operation

If sufficient supply voltage is available (more than 200V), this power source is selected as the first option (no solar-system installed).

12 V - operation

12V operation should only be selected while the vehicle motor is running or there is sufficient voltage available from the solar system. This can be detected from the D+ connection of the alternator to the electronics, or from the respective signal on the solar charge regulator.

GAS OPERATION

Gas operation is selected in the following circumstances:

- No supply voltage available.
- The vehicle engine is not running.
- Supply voltage less than 200V

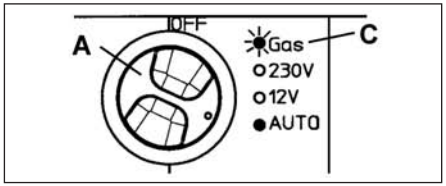
Refuelling Stop

In order to prevent unintended switching to gas operation during refuelling, the electronic system starts gas operation of the refrigerator, after the motor has been turned off for 15 mins. During this time the appliance is in stand-by operation mode and only the "AUTO" LED lights up.

The use of naked flames is prohibited in petrol station environments. If the refuelling stop lasts longer than 15 mins., the refrigerator should be switched off at the main switch (A), or switched over to another energy type.

Gas faults at "AUTO"- mode

If gas faults occur the operating LED "C" flashes yellow.



Remedies:

Set the energy selector switch (A) to position "OFF".

1. Is there any gas in the gas bottle?
2. Is the gas bottle valve open?
3. Is the on-board shut-off valve open?
4. Set the main switch (A) to "on"

   The ignition starts again.

If after about 30 seconds the operating display (C) starts flashing red again, the gas fault has not been cleared (e.g. air in the gas pipe).

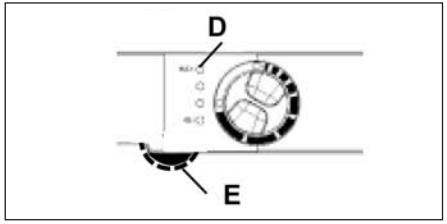
5. Briefly switch the refrigerator off and then on again using main switch (A).

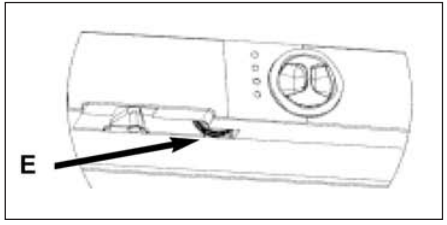
   To remove air from the gas pipes, repeat this procedure 3-4 times.

If these actions do not help, please call an authorised Dometic Service Centre.

Additional functions (RM 7XX5 L - models only)

- Temperature setting display (D) with 4 LED to indicate the selected temperature (MIN - MAX)
- LED - dimmer (E) for adjusting the brightness of the display-LED (only accessible when door opens)

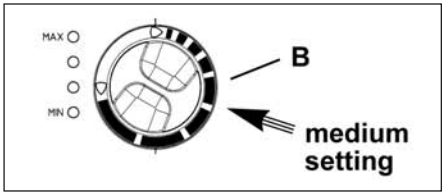




Underneath the fascia is a knurled knob for adjusting the brightness (see item E above)

Temperature setting cooling compartment

As shown, you are able to regulate the temperature of the cooling compartment, if necessary, by turning rotary knob (B) .



The cooling unit's performance is influenced by ambient temperatures.

Tip: Please select the medium setting for ambient temperatures between +15°C and +25°C. The unit operates within its optimum performance range.

STORING FOOD

- Always store food in sealed containers, aluminium foil or similar.
- Never put hot food into the refrigerator, always let it cool down first.
- Products that could emit volatile, flammable gases must not be stored in the refrigerator.
- Store quickly perishable foods directly next to the cooling fins.

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.

Fitted Equipment

MAKING ICE CUBES

Ice cubes are best frozen overnight. At night, the refrigerator has less work to do and the unit has more reserves.

1. Fill the ice cube tray with drinking water. **Only use drinking water!**
2. Place the ice cube tray in the freezer compartment.

DEFROSTING

As time goes by, frost builds up on the fins.

When the layer of frost is about 3mm thick, the refrigerator should be defrosted.

1. Switch off the refrigerator, as described on page 74 - "Switching off".
2. Remove the ice cube tray and food.
3. Leave the refrigerator door open.
4. After defrosting (freezer compartment and fins free of frost), wipe the cabinet dry with a cloth.
5. Use a cloth to mop up the water from the freezer compartment.
6. Switch the refrigerator back on again.

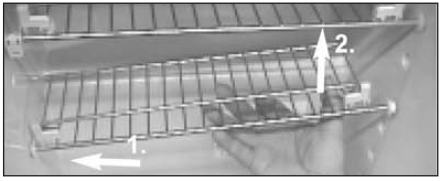
Warning: The layer of ice must never be removed forcibly, nor may defrosting be accelerated using a heat source.

Note: Water thawing in the main compartment of the refrigerator runs into an appropriate container at the back of the refrigerator. From there, the water evaporates.

POSITIONING THE STORAGE RACK

Dismantling:

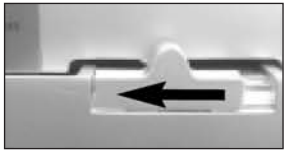
1. Loosen the front and back securing brackets.
2. Move the storage rack to the left and remove it.



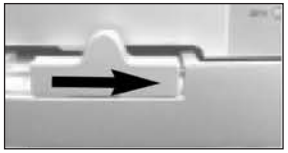
To fit the storage rack, the reverse order applies.

DOOR LOCKING

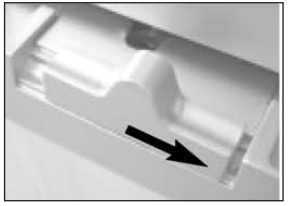
Open



Close

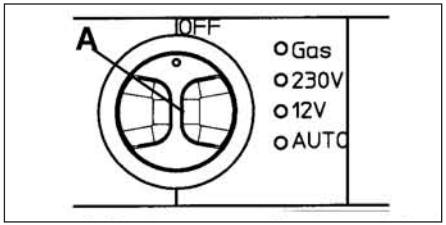


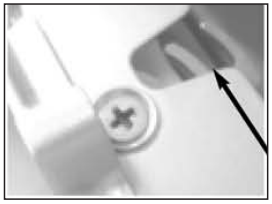
Park-position/ vent-position



SWITCHING OFF

1. Set energy selector switch (A) to position "0" (OFF). The appliance is now fully switched off.
2. Secure the door open by means of the door stop. The door will be slightly ajar. This is to prevent mould from forming inside the appliance.





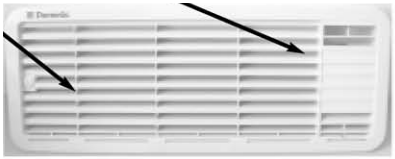
Switching off gas operation

If the refrigerator is to be taken out of service for an extended period of time, the on-board shut-off valve and the cylinder valve must be closed.

WINTER OPERATION

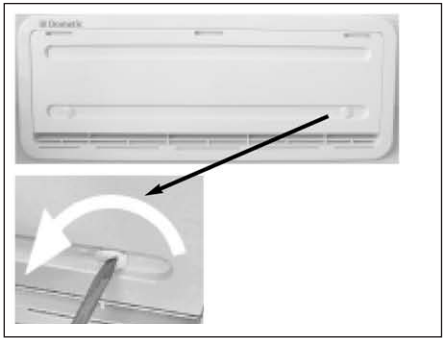
1. Check that the ventilation grills and the extractor have not been blocked by snow, leaves or similar.
2. When the ambient temperature falls below +8°C, the optional winter covers should be fitted. This protects the unit from excessively cold air.

Lower ventilation grille (L200



Upper ventilation grille with flue vent (L100)

3. Affix the cover and fasten it.

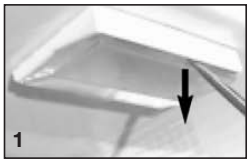


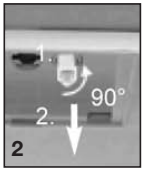
Tip: It is also recommended that the winter covers should be used when the vehicle is taken out of service for an extended period of time.

INTERIOR LIGHT

Changing the light bulbs

1. Remove cover.
2. Detach defective light bulb.
3. Fit new light bulb

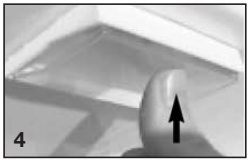




Fitted Equipment

4. Clip the cover back in place.

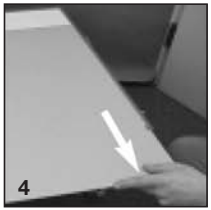
Note: For 12V DC : 1 light bulb 12V, 2W



Please contact Dometic Service Centres for replacement light bulbs.

CHANGING THE DECOR PANEL

1. Open the door and loosen the hinge screw.
2. Take off the door by moving it upwards.
3. Unscrew the door strip (3 screws).
4. Remove the decor plate and insert a new decor plate.
5. Screw the door strip back in position.
6. Put the door back on.
7. Tighten the hinge screw.



Dimensions of the panels in mm:

Model	Height	Width	Thickness
RM 7271 /..75	713+/-1	453.5+/-1	3.2
RM 7361 /..65	713+/-1	453.5+/-1	3.2
RM 7291 /..95	718+/-1	491.5+/-1	3.2
RM 7401 /..05	718+/-1	491.5+/-1	3.2

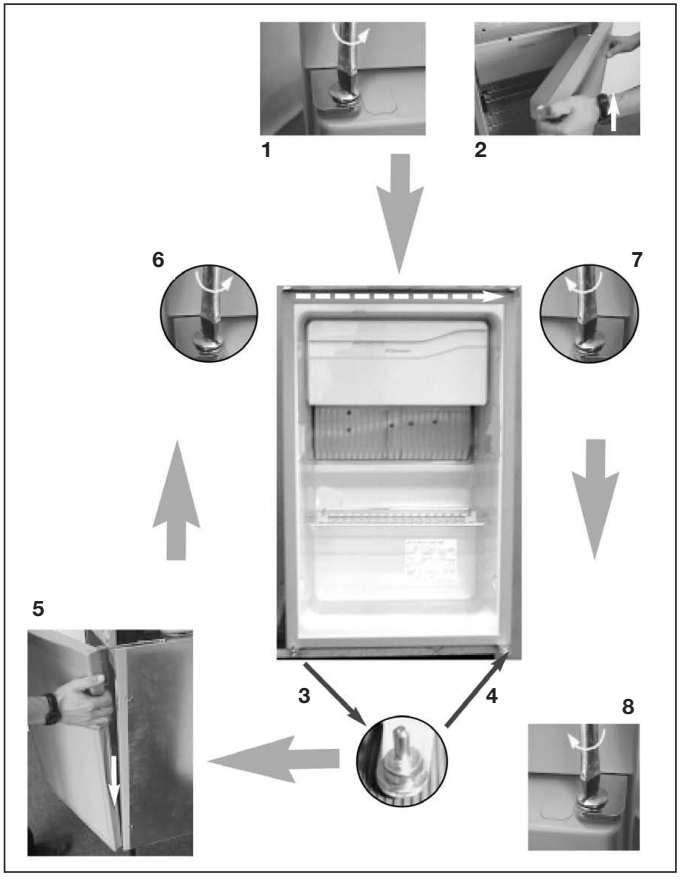
Changing the doorhang

It is not always possible to change the door when the refrigerator is installed.

1. Open the door, unscrew the hinge screw and keep it to hand.
2. Take off the door by moving it upwards.

5. Attach the door.

8. Screw the hinge screw back in



TROUBLESHOOTING

Before calling the authorised Service Department, please check whether:

1. The instructions in the section "Using the refrigerator" have been followed.
2. The refrigerator is not tilted excessively.
3. It is possible to operate the refrigerator with an available power source

Failure : The refrigerator does not work in gas operation mode	
Possible cause	Action you can take
Gas bottle empty	Change gas bottle
Is the supply cut-out device open?	Open the cut-out device
Air in the gas pipe?	Switch device off and on again 3-4 times to remove air from the gas pipe

Note: The Seven Series refrigerator requires a constant 12 volt supply for the fridge to operate on gas. Disconnecting the leisure battery will switch off the gas operation of the fridge.

Failure : The refrigerator does not work on 12V	
Possible cause	Action you can take
On-board fuse defective	Fit new fuse
On-board battery discharged	Check battery, charge it
Engine not running	Start engine

Failure : The refrigerator does not work on 230V	
Possible cause	Action you can take
On-board fuse defective.	Fit new fuse.
No connection to supply voltage.	Establish power connection.
AES: gas operation despite connection to the supply voltage?	Appliance switches to gas operation due to insufficient supply voltage (automatically switches back to 230 V operation)

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.
The thermostat setting is too low.	Turn the thermostat to a higher setting.
There is too much ice on the condenser.	Check that the refrigerator door seals when shut.
Too much warm food put inside.	Let food cool down first.
Appliance running for a short time.	Wait several hours, check again.

MAINTENANCE

- Works on gas components and electrical installation may only be carried out by authorised personnel. We recommend to contact your Dometic Service Centre.
- EN 1949 stipulates that the appliance´s gas equipment and it's associated fume system must be inspected after installation and a certificate issued.

  Afterwards a qualified technician must inspect according to EN 1949 every two years and a certificate issued.

  It is the user's responsibly to arrange for inspections after purchase.
- It is recommended that the gas burner be inspected and cleaned as necessary at least once a year.
- We recommend maintenance following an extended shutdown of the vehicle.

PRODUCT LIABILITY

Product liability of Dometic GmbH does not include damages which may arise from faulty operation, improper alterations or intervention in the equipment, adverse effects from the environment such as changes in temperature and air humidity, which may impact the equipment itself or the direct vicinity of the equipment or persons in the area.

ENVIRONMENTAL HINTS

Refrigerators manufactured by Dometic GmbH are CFC-free.

Ammonia (a natural compound of hydrogen and nitrogen) is used in the cooling unit as a coolant. The non-ozone-hazardous cyclopentan is used as a propellant in the manufacture of the PU foam insulation.

DISPOSAL

In order to ensure that the recyclable packaging materials are re-used, these should be sent to the usual 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 approx. 25°C, it is sufficient to operate the refrigerator at the middle thermostat setting (for both gas and mains voltage).
- Where possible, always store goods that have previously been cooled.
- Do not position the refrigerator in direct sunlight.
- Constant circulation of air must be supplied to the refrigerator unit.
- Defrost regularly.
- Open the door only for a short time when removing goods from the refrigerator.
- Run the refrigerator for about 12 hours before filling it.

TECHNICAL DATA

Model	Dimensions H x W x D (mm) depth incl. door	Gross capacity incl. freezer compartment	Usable capacity of freezer compartment	Connection Mains / Battery	*Consumption electricity / gas in 24 hrs	Netweight	Ignition Burn Control Device / Ignition unit	Stepped cabinet
RM7271L	821x586cx541	77 litre	9.5 litre	125 W / 120 W	ca.2.5 KWh / 260g	26kg	✓	✓
RM7275L	821x586cx541	77 litre	9.5 litre	125 W / 120 W	ca.2.5 KWh / 260g	26kg	✓	✓
RM7291L	821x525cx541	86 litre	10.5 litre	125 W / 120 W	ca.2.6 KWh / 260g	26kg	✓	✓
RM7295L	821x525cx541	86 litre	10.5 litre	125 W / 120 W	ca.2.6 KWh / 260g	26kg	✓	✓
RM7361L	821x586cx541	88 litre	9.5 litre	135 W / 130 W	ca.2.6 KWh / 260g	26kg	✓	
RM7365L	821x586cx541	88 litre	9.5 litre	135 W / 130 W	ca.2.6 KWh / 260g	26kg	✓	
RM7401L	821x525cx541	97 litre	10.5 litre	135 W / 130 W	ca.2.6 KWh / 260g	26kg	✓	
RM7405L	821x525cx541	97 litre	10.5 litre	135 W / 130 W	ca.2.6 KWh / 260g	26kg	✓	

We reserve the right to make technical changes.
*Average consumption measured at an average ambient temperature of 25°C in pursuance of ISO Standard.

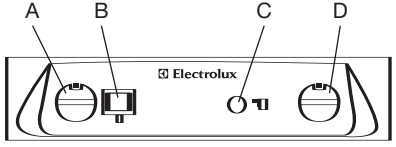


Fig. C Control Panel - RM4501 Manual Ignition

MODEL RM4501

The refrigerator can be run on 230V, 12 V or LP gas. Changing between these modes of operation is carried out by means of the control buttons positioned as shown in fig. C.

The energy selection (A) can be set at either "AC" (230V), "DC" (12 V), "GAS" (LP gas) or "OFF".

An indicator lamp (B) at the control panel flashes when the automatic ignitor attempts to light the burner. Otherwise this lamp is off.

The refrigerator is fitted with a safety device, which automatically shuts off the supply of gas if the flame goes out. The safety device can be opened manually be depressing knob (C).

The refrigerator temperature is controlled by a thermostat (D) when the refrigerator runs on 230V and LP gas. Please note that the thermostat has no "off" position when the refrigerator runs on LP gas.

STARTING THE REFRIGERATOR

LP Gas operation

After initial installation, servicing, or changing gas cylinders etc., the gas pipes may contain some air, which should be allowed to escape by briefly turning on the refrigerator or other appliances. This will ensure that the flame lights immediately.

To start gas operation:

1. Open the shut off valve of the gas bottle (check that there is enough gas). Open any on-board shut-off valve.
2. Set the thermostat knob (D) to the highest setting.
3. Turn the energy selector (A) to position "GAS". A ticking sound will be heard and the lamp (B) will start flashing.
4. Press the button (C). This opens the flame failure device and allows gas to flow to the burner.
5. When the flame lights, the sparking stops automatically and the lamp stops flashing.
6. Keep the knob (C) depressed for another 10-15 seconds to activate the flame failure device, then release it.

If the lamp starts flashing again, repeat steps 4-6.

To terminate gas operation, turn the knob (A) to "OFF" position.

230V operation

Before taking the refrigerator into operation, check that the voltage stated on the data plate is the same as the main voltage in use.

- Turn the thermostat knob (D) to its highest (coldest) position.
- Set the energy selector (A) to position "AC"

12 V operation

Only operate your refrigerator on 12 V when the engine of the vehicle is running - otherwise your battery will soon be discharged.

- Set the energy selector (A) to position "DC"

REGULATING THE TEMPERATURE

It will take a few hours for the refrigerator to reach normal operating temperature. We therefore suggest you start it well in advance of a trip and if possible store it with pre-cooled foodstuffs.

On 230V operation and LP gas operation the refrigerator is controlled by a thermostat and the thermostat knob (D) should be set at 3-5. If a lower (colder) temperature is desired, set the thermostat to a higher figure.

On 12 V operation the refrigerator works continuously.

THETFORD ABSORBER REFRIGERATORS

This user's information is for all N80 models of Thetford absorber refrigerators. It explains how to use your refrigerator correctly and safely. Read the manual carefully before using the refrigerator for the first time to obtain a quick overview of how to operate and use the refrigerator.

Thetford absorber refrigerators are specially designed to store fresh and frozen food and make ice cubes in caravans and campers. The control panel allows you to select the preferred energy source. Different energy sources allow you to use your refrigerator under different conditions.

Thetford absorber refrigerators belong to category C11: gas appliances that must be installed so that they are isolated from the living space.

To find out more about how your absorber refrigerator works, visit our website at www.thetford-europe.com .

PRECAUTIONS AND SAFETY INSTRUCTIONS

Alerts

The following alerts are used in this user's manual:

Warning! "Warning" alerts the user to the danger of damage to the product or to the user if the user fails to carry out the described procedures carefully. Non-observance of the procedures may result in serious injury to the user or damage to the product.

Caution! "Caution" alerts the user to the possibility of damage to the product if the user fails to carry out the described procedures carefully.

Important! "Important" denotes supplementary information for the user and alerts the user to potential problems.

Tip! "Tip" provides the user with suggestions and advice for carrying out certain actions more easily or handily.

Warnings

- This refrigerator must be installed according to the manufacturer's instructions and in compliance with local and national regulations.
- Read this manual carefully before you start to use your refrigerator.
- Always consult the warnings before you perform any maintenance or gas checks.

Repairs/maintenance

- Never open or damage the cooling system. The cooling system is pressurised and contains substances harmful to health.
- Never attempt to repair gas, extractor or electrical parts yourself. They must be repaired by a qualified service engineer. Contact the Customer Service department of Thetford for a list of qualified parties.
- Always switch off the refrigerator before you perform any kind of maintenance or cleaning.

Use

- Never cover the ventilation gratings in the walls of a caravan. Good ventilation is essential for the correct working of the absorber system.
- Never expose the refrigerator to rain.
- Never operate the refrigerator by gas while driving. If a road accident results in fire, there is a risk of explosion.

What to do if...

- You smell gas:
  - close the valve of the gas bottle;
  - extinguish any naked flames;
  - do not switch on any electrical devices or lighting;

- open the windows and leave the room;
  - contact the Customer Service department of Thetford.
- You suspect a leak in the cooling system:
  - switch off the refrigerator;
  - extinguish any naked flames;
  - provide sufficient ventilation;
  - contact the Customer Service department of Thetford.

ABOUT YOUR REFRIGERATOR

Your refrigerator has a cold space and a freezer compartment. After starting up the refrigerator, allow it to cool for at least eight hours before placing any food in it.

Cold space

The condenser is located on the inside of your refrigerator. The absorber system uses the condenser to draw off heat from the refrigerator. Therefore, never place plastic or paper over the condenser. Air must be able to circulate freely through the refrigerator so that heat can be extracted.

Important! Do not cover the condenser at the back of the refrigerator with plastic or paper. The refrigerator cools optimally when air is allowed to move freely through the refrigerator.

- To limit frosting on the condenser:
  - always cover liquid foods before placing them in the refrigerator;
  - always let hot food cool before placing it in the refrigerator;
  - never keep the refrigerator open longer than necessary.

Fitting racks

Inside your refrigerator there are two or three storage racks. You can adjust the racks to a convenient height by means of a simple click system:

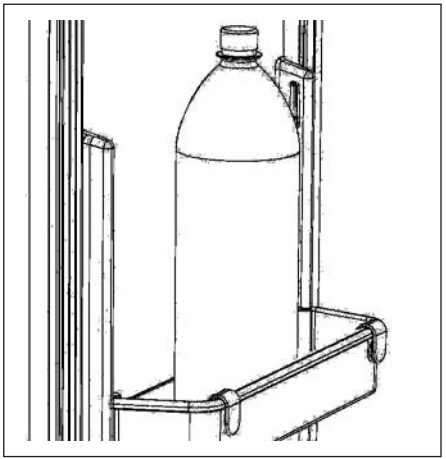
- click the plastic bracket to the right short side of the rack;
- turn the bracket into the horizontal position and insert the rack tipped in a sloping position into the refrigerator;
- place the short side without bracket into one of the grooves on the left wall of the refrigerator;
- place the short side with bracket in the corresponding groove on the right wall of the refrigerator;
- turn the bracket downwards to fix it into the groove.

To move a rack, turn the bracket upwards and remove the rack. Place the rack at the required height in the way described above.

Securing products for driving

One of the racks in your refrigerator has a system for securing products for driving. The system consists of a simple click-and-slide plastic strip. To secure products on the rack while driving, push the plastic strip as tightly as you can against the products on the rack.

In the storage space on the inside of the refrigerator door, there is the unique Thetford flexible bottle slide. The slide prevents bottles from sliding around during driving. Push the slide against the products in the door or place the products between the bottle slide.



Freezer compartment

The two-star freezer compartment (N80) is suitable for making ice cubes and for storing frozen foods for a short time.

Important!

- The freezer compartment is unsuitable as a means of freezing food.
- Use only drinking water to make ice cubes.
- Do not place any other products in the freezer compartment when you are making ice cubes.
- Water freezes fastest with the thermostat at the highest setting.

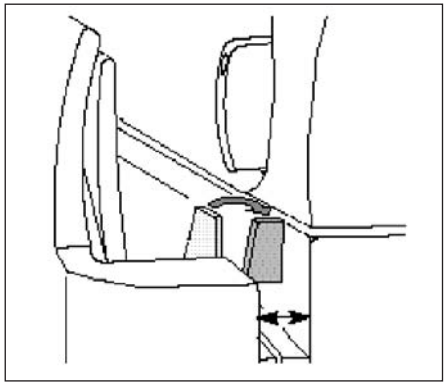
Tip!

- Make ice cubes at night when your refrigerator has more spare capacity.

Door locking mechanism

The refrigerator door has an automatic locking mechanism. The door locks automatically when you press it shut firmly. The lock releases unnoticed when you open the refrigerator with your hand. This automatic locking mechanism also keeps the refrigerator door shut during driving. For some models an additional security device is fitted below the refrigerator. By pushing the locking bar over the closed refrigerator door you can make doubly sure that the door does not come open during your journey.

If you are not going to use the refrigerator for a prolonged period of time, you can use the special hook of the door locking mechanism to prevent odours. Turn the hook a quarter of one rotation to position it at right-angles to the refrigerator. In this position, the hook prevents the door from closing.



Technical data

Category:	C11
AC:	230V (50/60 Hz)
DC:	12V
Gas types:	I3+ (28-30/G3: 37 mbar) (Countries: BE, FR, IE, LU, PT, GB, GR, IT)
	I3B/P (G30/G31: 28-30 mbar) (Countries: DK, DE, IS, NL, SE, FI, NO)
	(G30 = butane, G31 = propane)
Model:	N80 x Exxx
Dimensions H x W x D (mm) Depth incl. door:	821 x 525 x 543
Gross volume incl. Freezer (L):	80
Net volume incl. Freezer (L):	75
Volume freezer (L):	9.5
Input * (kWh/24h):	2.5
Input * (gr./24h):	238
Net weight (kg):	23
Ignition:	Electrical

**average energy consumption at ambient temperature of 25°*

SWITCHING ON THE REFRIGERATOR (N80)

- It is recommendable to clean the inside of the refrigerator before you switch it on.
- Let the refrigerator cool for at least eight hours before you place food in it for the first time.
- The freezer compartment should be cold one hour after switching on the refrigerator.

Igniting and starting your refrigerator

Automatic ignition (N80E)

A = Energy source selector switch
B = Electric thermostat
C = Gas control button
D = Flame meter

A. The refrigerator can be powered by the mains (230V), direct current (12V) or liquid gas. Select the energy source that you want by means of the energy source selector switch (A). The switch has four settings:

- direct current (DC)
- mains supply
- gas
- switched off

B. The thermostat controls the refrigerator temperature when the refrigerator is powered from the mains (230V). Position 5 is the coldest temperature setting.

C. The gas control button controls the refrigerator temperature when the refrigerator is powered by gas. Position 5 is the coldest temperature setting.

D. The flame meter shows whether the flame is burning. The flame is burning when the meter comes into the green area.

Electrical operation

The refrigerator can be powered by electricity in two ways:

- 12 V DC: Set the energy source selector switch (A) to
- the refrigerator will now be powered by the battery of your car or camper.

Important!

- Always use the gas connection or mains voltage to start up the refrigerator for the first time and to cool it. Powering from the battery of your vehicle is suitable only for maintaining the temperature of the refrigerator and its contents once it has been refrigerated.
- When powered by a vehicle battery the refrigerator works without temperature control (i.e. constant operation).

- Mains voltage (230 V): set the power selector switch (A) to
- Set the temperature by means of the thermostat, rotary switch (B). Position 5 is the coldest temperature setting.

Powering with gas

Warning!

- Flammable material must be kept away from the refrigerator.
- For selection of gas type, see the information plate inside your refrigerator.
- For the pressure regulator model, see the information plate inside your refrigerator.
- The type of gas container and its location must be in compliance with the most recent regulations. Ensure that the unit is installed in a location with good ventilation and make sure that the ventilation openings in the gas container storage location remain open.
- The changing of the gas container must be done outside in the open air and out of reach of any possible sources of ignition.

- It is prohibited to use gas to power the refrigerator while you are driving. If a road accident results in fire, there is a danger of explosion.
- It is prohibited to use gas to power the refrigerator in the vicinity of petrol stations.

1. Open the valve of the gas bottle and the gas taps.
2. Set the gas control button to the 5th position.
3. Set the energy source selector switch (A) to
4. Ignite the gas flame:

Automatic ignition (N80E)

- Press the gas control button, rotary switch (C), and keep it depressed.
- Ignition takes place automatically. You will hear a ticking noise. If ignition was successful, the noise will stop and the flame meter will turn green. Release the gas control button.
- If the flame goes out, ignition will be repeated automatically.
- Set the desired refrigeration level by means of the gas control button, rotary switch (C). Position 5 is the coldest setting.

Switching off the refrigerator

1. Set the energy source selector switch (A) to ;
2. Turn the gas control button, rotary switch (C) to 0 (Off);
3. The refrigerator is now completely switched off.

Note!

- The refrigerator is only fully switched off when both the energy source selector switch and the gas control button are at zero. In the case of a refrigerator with electrical ignition, when the gas control button is not set to 0, the ignition mechanism will keep sparking. This can cause a flat battery.

4. Use the door locking mechanism to lock the open door. This prevents unpleasant odours and mould in the refrigerator.

Important!

- If you are not going to use the refrigerator for a prolonged period, close the valve of the gas bottle and the gas taps.

MAINTENANCE

Regular maintenance is necessary to ensure the correct functioning of your refrigerator.

Cleaning

Tip!

- A good time to clean your refrigerator is straight after you have defrosted it.
- Clean the refrigerator with a soft cloth and mild detergent.
- Dust the refrigerator with a soft, moistened cloth.
- Use a brush or soft cloth to remove once a year any dust from the condenser at the inside of the refrigerator.

Important!

- Do not use soap or aggressive detergents that are abrasive or soda-based.
- Make sure that the door closing mechanism does not come into contact with oil or grease.

Defrosting

Frost will gradually build up on the condenser of the refrigerator. You should defrost the refrigerator as soon as the frost layer is about 3 mm thick. Frost reduces the refrigerating capacity and life of your refrigerator.

- Remove the ice cube tray and all food.
- Switch off the refrigerator in the way described previously.

- Leave the refrigerator door open.
- Place dry towels in the refrigerator to absorb the water.
- Place trays containing hot water in the freezer compartment.
- After defrosting (when the freezer compartment and condenser are frost-free), remove the towels and the water trays and use a cloth to dry off the refrigerator.
- Switch the refrigerator on again in the way described previously.

Important!

- Do not use force or sharp objects to remove frost.
- Do not try to accelerate defrosting by using a heat source, such as a hairdryer.

Door locking mechanism

Frost will form in the refrigerator if the door is not closed properly. To determine whether the door closes properly, close the door with a piece of paper between the door and the refrigerator. Pull at the piece of paper. If you feel resistance, the refrigerator door closes properly. If you feel no resistance, the door does not close properly. Perform this test regularly on all four sides of the refrigerator door.

Take the following action if you find that the door does not close properly:

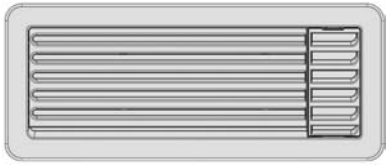
- check whether the screws of the hinges of the refrigerator door are securely in place;
- check whether the door locking mechanism keeps the door properly shut.

Winter operation

If you use the refrigerator when the outdoor temperature is below 0°C, install the Thetford winter cover on the ventilation gratings. The cover protects your refrigerator from excessively cold air. The winter cover is a refrigerator accessory obtainable from your caravan dealer.

Tip!

- It is advisable to use the winter cover if you are not going to use the vehicle for a long period of time.



Ventilation grating with winter cover

Maintenance of gas equipment

A qualified service engineer must maintain and inspect gas and electrical equipment. It is advisable to have this maintenance work performed by a customer service centre. Contact the Customer Service department of Thetford for a list of qualified parties.

Important!

European laws covering gas appliances and extractors prescribe observance of the following rules (which are the user's responsibility):

- gas appliances and extractors must be inspected prior to first usage and thereafter every two years;
- appliances that run on liquid gas must be inspected each year. After each inspection a certificate will be issued;
- the gas burner must be cleaned at least once a year or more frequently if necessary.
- If a gas hose is used, it must be checked annually. This hose has a limited life and, thus, must be regularly replaced. Check the hose regularly for cracks, splits and ageing. If in doubt, replace the hose. Pay attention to the maximum life of the hose and replace it in time, as advised by the manufacturer or in conformance with local regulations.

- For replacement, a gas hose approved in accordance with the local regulations must be used . Position the hose so that it can rotate, is not kinked, and will allow no bends to occur.
- Due to the limited life of the gas hose, it must be installed so that replacement is possible.

Replacing bulbs

If a bulb in your refrigerator is defective, you can replace it by clicking in a new one:

- remove the cover by pressing both sides;
- remove the defective bulb;
- fit the new bulb;
- click back the cover.

For details regarding spare bulbs please contact the Customer Service department of Thetford.

Maintenance checklist

This refrigerator will give you many years of trouble-free use if you simply run through the following checklist regularly:

- keep the refrigerator clean (see section “Cleaning”);
- defrost the refrigerator as often as is necessary (see section “Defrosting”);
- check the door closing mechanism regularly (see section “Door locking mechanism”);
- make sure that the ventilation gratings are not blocked.

STORAGE

If you do not expect to use your refrigerator for a lengthy period, carry out the following actions:

- Remove all food
- Switch off the refrigerator
- Clean the refrigerator as described in Section ‘Cleaning’
- Shut off the gas tap to the refrigerator
- Leave the door of the refrigerator ajar using the special door closure hook (storage position)
- Place the winter protection on the ventilation grating.

TROUBLESHOOTING

If your refrigerator does not refrigerate properly or will not start, run through the following checklist. If this fails to solve the problem, contact our Customer Service staff who will be pleased to help you.

Thetford B.V.
Customer Service
(+31 (0)76-5042312
info@thetford.nl

- Check whether you have followed the instructions in “Switching on the refrigerator”.
- Check whether the refrigerator is on a level surface.
- Check whether the refrigerator can be used with an available energy source.

Problem: refrigerator will not work on gas	
Possible cause	**Action you can take**
a) Gas bottle is empty.	a) Replace the gas bottle.
b) Valve of the gas bottle or one of the shut-off valves is closed.	b) Open the valve of the gas bottle or shut-off valve(s).
Problem: refrigerator will not work on 12V DC	
Possible cause	**Action you can take**
a) 12V fuse is defective.	a) Fit a new fuse (Camper —> fuse box of camper. Car —> fuse box of car)
b) Battery is empty.	b) Test the battery and charge it.
Problem: refrigerator will not refrigerate sufficiently	
Possible cause	**Action you can take**
a) Insufficient ventilation for the refrigerator.	a) Check whether the ventilation gratings are covered.
b) Thermostat/gas control button set too low.	b) Increase the setting of the thermostat/gas control button.
c) Too much ice on the condenser.	c) Check whether the refrigerator door shuts properly and defrost the refrigerator.
d) Too much hot food stored simultaneously.	d) Let the food cool off first.
e) Gas burner is dirty.	e) Have the gas burner cleaned.
f) Door does not shut properly.	f) Check the door closing mechanism.

GUARANTEE, CUSTOMER SERVICE AND LIABILITY

Guarantee

Thetford B.V offers the end users of Thetford refrigerators a three-year guarantee, instead of the normal guarantee of two years. This extra year guarantee applies only if it can be demonstrated that the refrigerator has been properly maintained (as described in this manual) and serviced by a qualified party during the second year following purchase. 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 make a claim under this guarantee, the user must take the product to a Service Centre recognised by Thetford. The claim will be assessed here.
2. If components are replaced during repair under guarantee, these become the property of Thetford.
3. This guarantee does not prejudice current consumer protection law.
4. This guarantee is only applicable if the product is supplied within the European Community.
5. This guarantee is not valid in the case of products that are for, or are used for, commercial purposes.
6. No claim under the guarantee will be accepted in the following circumstances:
   - 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

Liability

Thetford is not liable for loss and/or damage caused directly or indirectly by use of the refrigerator.

ENVIRONMENT

Refrigerators manufactured by Thetford B.V. are PCB-free. Most of the refrigerator is recyclable.

If the refrigerator has reached the end of its service life, contact your local waste processing company to dispose of the refrigerator in an environment-friendly way.

Energy-saving tips

- Install the refrigerator and switch it on about 12 hours before you put anything in it.
- Do not expose the refrigerator to direct sunlight.
- At an ambient temperature of approximately 25°C you can let the refrigerator operate at the middle position of the thermostat (both with gas operation and mains voltage).
- Store foods that have been pre-cooled.
- Open the door only briefly when you take things out of the refrigerator.
- Defrost the refrigerator regularly.

Fitted Equipment

PLEASE READ THE MANUFACTURERS INSTRUCTIONS BEFORE OPERATING THE APPLIANCE

WARNING: When you are cooking it is essential to provide additional ventilation such as opening windows near the grill, cooker and oven.

WARNING: When using cooking or heating appliances, surfaces and handles may become hot. Care should be taken and if necessary hand protection used.

STOVES HOBS, GRILLS AND OVENS

BURNER IGNITION

The hotplate lid must be open for the hotplate, grill or oven burners to ignite.

The ignition should not be operated for more than 15 seconds. If, after 15 seconds the burner has not lit, stop operating the ignition, open the compartment door and wait at least 1 minute before attempting to ignite the burner.

In the event of the burner flames being accidentally extinguished, turn off the burner control and do not attempt to re-light the burner for at least 1 minute.

SPARE PARTS

When ordering spare parts, please give the following information so the appliance can be correctly identified:

1. The name of the appliance from the facia, and its colour.
2. The model number and the serial number of the appliance (from the data badge).

BE SAFE - NOT SORRY

Warning: Good ventilation is essential to the continuing safe operation of all gas appliances. Do not allow any ventilation openings to become accidentally or deliberately blocked.

Keep all flammable materials (such as curtains, furnishings, towels and clothing) away from the appliance.

Parts of the appliance may be hot during or immediately after use. Allow sufficient time for the appliance to cool after switching off.

When opening the appliance door, take care to avoid skin contact with any steam which may escape from the cooking.

Do not use aluminium foil to cover the grill pan, or put items wrapped in foil under the grill as this can create a fire hazard.

Do not use the oven with the door inner glass panel removed (glass oven doors only).

If the cooker has a storage compartment below the oven, this should only be used to store oven furniture. Do not store any flammable materials in this compartment.

When cooking with fat or oil, never leave unattended.

Turn pan handles inwards so they are out of reach of children and cannot be caught accidentally.

Glass lids may shatter when heated, turn off all burners before shutting the lid.

Models without ignition button: For safety reasons, we recommend the use of a hand held spark ignitor or gas lighter to ignite the burner, rather than a match or taper, which could allow burning debris to fall behind the appliance.

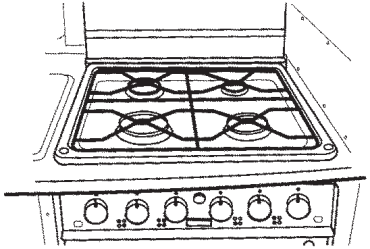
When you have finished cooking, check that all controls are in the off position.

THE HOB

Caution:

- Do not use foil on the hob, as it creates a fire hazard
- Glass lids may shatter when heated, turn off all burners before shutting the lid
- Note: When positioning the pan support, ensure that the fingers are central to the burners (Fig 1).

Always use the most appropriate size of burner for the pan you wish to use. Use pans with a flat base of minimum 100mm/4 ins diameter, and maximum 200mm/8 ins diameter, which are stable in use. Avoid old or misshapen pans as these may cause instability.



Stoves Hob

Important: Any spillage of liquid should be cleaned away immediately to reduce the risk of fluid entering the appliance.

Ignition - Push in the control knob and turn anticlockwise to the large flame symbol. Keep the knob depressed, and press the ignition button (if fitted), or use a hand held spark ignitor or gas lighter. The knob must be held in for 15-20 seconds before releasing.

ELECTRIC HOTPLATES

Before using for the first time, prime the hotplate - switch it on without a pan to harden and burn off the coating. Use a medium-high setting for 3 - 5 minutes. A non-toxic smoke may occur.

To switch on, turn the hotplate control knob to the required setting.

The high speed hotplate ring (if fitted) is identified by its central red spot - this ring has a faster response time.

THE GRILL

- Note: The door must be open when the grill is used.
- Caution: When the grill is being used, accessible parts may be hot; young children should be kept away.
- Never cover the grill pan or grid with cooking foil, or allow fat to build up in the grill pan as this creates a fire hazard.
- Keep all flammable material away from the appliance.

To light the grill
Push in the control knob and turn anticlockwise to the large flame symbol. Keep the knob depressed, and press the ignition button (if fitted), or use a hand held spark ignitor or gas lighter. The knob must be held in for 15-20 seconds before releasing.

Detachable grill handle (if supplied)
Place the handle (shield uppermost) over the edge of the grill pan at the recess and slide along to position centrally between the two locator bumps. To remove the handle, place the grill pan down, and lift the handle slightly as you slide it along the recess.

Using the grill
Push in the grill pan until it locates centrally under the grill burner

There are three different grilling positions as the trivet can be inverted to give a high or low position or it may be removed.

1. The high trivet position is suitable for toasting bread.
2. The low trivet position is suitable for grilling all types of meat.
3. With the trivet removed the food is placed directly on the base of the grill pan, eg; when cooking dishes such as whole fish.

Always preheat the grill for 3 minutes for best results.

When you have finished grilling, check the control knob is in the off position

THE OVEN

Caution: When you are cooking, keep children away from the vicinity of the oven.

- **Important**: A safety device stops the ignition being used when the oven door is closed.
- Do no use foil on the oven shelves as this creates a fire hazard, and can hinder circulation of heat.
- Keep all flammable material away from the appliance.

To light the oven

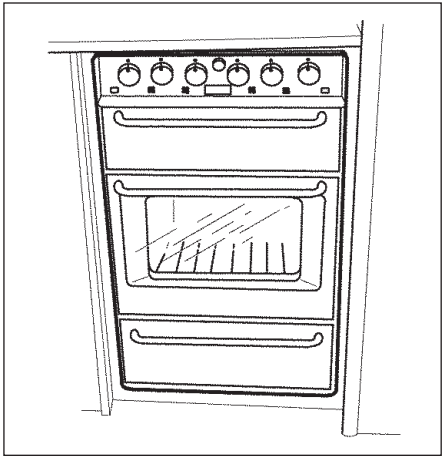
1. Open the oven door and turn the control knob anticlockwise to the required gas mark. Push in and hold in the control knob, and either press the ignition button (if fitted) or use a hand held spark ignitor or gas lighter.
2. Once the burner has lit, close the oven door and hold the knob in for 15-20 seconds.
3. If the flame goes out, the flame sensing device cuts off the gas supply to the burner. To light the oven again, wait for 3 minutes then repeat the above procedure.

To turn off - Push in the control knob and turn clockwise.

Preheating
The oven must be preheated for 10 minutes when reheating frozen or chilled food, and we recommend preheating for all yeast mixtures, batters, soufflés and whisked sponges.

Using the oven
The shelf positions in the oven can be altered. If you prefer darker cooked results, cook on a higher shelf. For paler results use a lower shelf.

The cake tray and roasting tin that are supplied with this appliance are the largest which can be used for good results and even baking. Extra shelves, tins or trays can be ordered from your supplier.



Place food items on the tray and position the tray on the centre of the shelf, leaving one clear shelf position between shelves to allow for circulation of air.

CLEANING

Caution: Any cleaning agent used incorrectly may damage the appliance.

Always let the appliance cool before cleaning.

Some cooking operations generate a considerable amount of grease. This combined with spillage can become a hazard if allowed to accumulate on the appliance through lack of cleaning. In extreme cases this may amount to misuse of the appliance and could invalidate your guarantee.

Do not use caustic pastes, abrasive cleaning powders, coarse wire wool or any hard implements as they will damage the surfaces.

All parts of the appliance can be safely cleaned with a cloth wrung out in hot soapy water.

Burner caps and heads

Important: Allow burners to cool before cleaning.

Caution: Hotplate burners can be damaged by soaking, automatic dishwashers (or dishwater powders/liquids), caustic pastes, hard implements, coarse wire wool and abrasive cleaning pastes.

For the burners to work safely, the slots in the burner head, where the flames burn, need to be kept clear of deposit. Clean with a nylon brush, rinse and dry thoroughly.

Clean with a mild cream cleaner eg; Jif, or use a moist soapy Brillo pad.

Note: Fixed burners (if fitted): Some versions incorporate fixed burners. These burners are secured to the hob with 2 screws. Fixed burners must be cleaned whilst in position. Make sure that the gap between the burner and the hotplate does not become blocked with grease.

Glass parts (if fitted)

DOOR PANELS, FACIA PANEL, HOTPLATE LID

Do not use abrasive cleaners or polishes. Use a mild cream cleaner, eg; Jif. Rinse thoroughly and dry with a soft cloth.

The inner door glass panel can be removed for cleaning; open the door wide, hold the bottom and top edges and slide out. When replacing the glass panel, hold it level and straight with the grooves in the door trims before sliding back in.

Painted, plastic and gold coloured parts

DOOR FRAME & HANDLES, CONTROL KNOBS

Only use a clean cloth wrung out in hot soapy water.

Vitreous enamel parts

GRILL PAN, HEATGUARD, OVEN/GRILL COMPARTMENT(S), HOB SPILLAGE WELL, PAN SUPPORTS

Use a mild cream cleaner. Look for one that has the Vitreous Enamel Council's recommendation seal, eg; Jif.

Chrome plated parts (Fig 1)

GRILL GRID, SHELVES, SHELF RUNNERS

Do no use abrasives or polishes. Use a moist soap pad, eg; Brillo. Shelf runners can be removed for cleaning. Grasp the runners and slide out of the hanging holes as shown in fig 1.

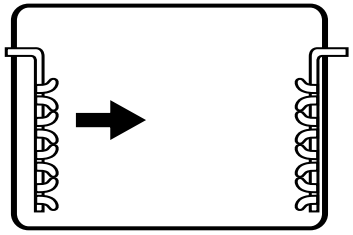


Fig. 1 Chrome Plated Parts

Stainless steel surfaces (stainless steel models only)

Only use a clean cloth wrung out in hop soapy water, and dry with a soft cloth. Do not use undiluted bleach or any products containing chlorides as they can permanently damage the steel.

Some foods are corrosive, eg; vinegar, fruit juices and salt, and they can mark or damage stainless steel if they are left on the surface for any length of time. Wipe any spillage immediately.

Sharp objects can mark the surface of stainless steel but will become less noticeable with time.

Electric hotplates

Important: Ensure that elements are switched off and cool before cleaning

For normal cleaning use a clean damp cloth. For heavy cleaning, use a clean damp cloth or scouring pad with a cream cleaner.

Follow the circular grooved pattern on the hotplate. Rinse off any cleansing agent thoroughly, then switch on to a low-medium setting for few minutes to dry. When cleaning take care to avoid the red dot on the high speed hotplate (if fitted).

THETFORD CASSETTE PORTA POTTI

INTRODUCTION

The Cassette Porta Potti is constructed of high quality plastics for durability and has a high gloss finish that is easy to clean and maintain. The unit consists of two sections, a permanently installed toilet system and a slide out waste holding tank — CASSETTE.

The toilet section includes a seat and cover, flush and valve blade opener knob, toilet tissue compartment and holder, waste level indicator, built-in toilet fluid storage compartment, a drip tray — a drain tube assembly and a fresh water tank.

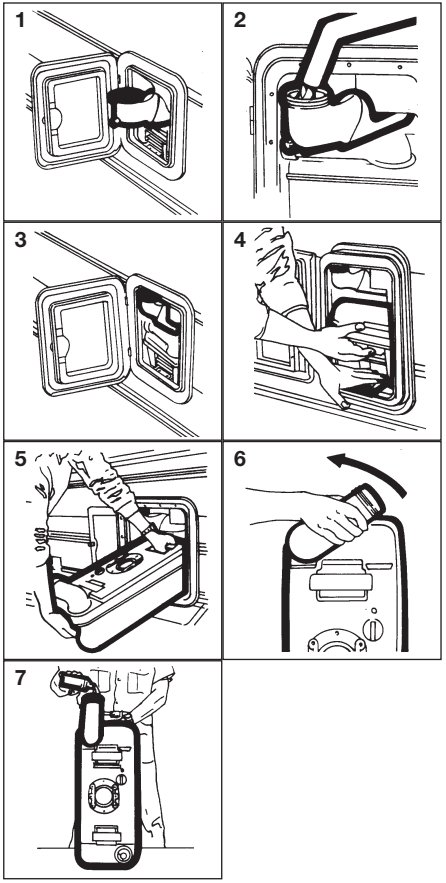
The unique Cassette section is located underneath the toilet and is removed for emptying from outside the caravan through an access door. A rotating pour-out spout, automatic holding tank vent, air release valve, valve blade, carrying handles and hand grips are incorporated into the Cassette.

PREPARING FOR USE

1. Open access door on the side of the caravan and swing out fresh water fill funnel.
2. Fill fresh water tank using a hose or jerrycan until water funnel level reaches neck. Tank capacity is 15 litres. Aqua Rinse may be added to improve cleaning of bowl and flushing of unit.
3. Replace cap. Swing water fill funnel inward until it touches side of water tank. Note: 150ml of water will remain in fill bottle when fresh water tank is empty.
4. Next add Aqua Kem to Cassette for controlling odours. Depress retaining clip.
5. Remove cassette by pulling straight out. When Cassette hits stop, tilt downward slightly and remove (stop for safety when Cassette is full).
6. Position tank vertical and swivel pour out spout upward.
7. Remove cap. Remove deodourant from storage compartment. Add 100ml of Aqua Kem or 120ml of Aqua Kem Bio through pour out spout. Add small amount of water through spout to cover tank bottom. Replace cap and return pour out spout to its original stored position.

Note: As an alternative deodourant can be added to Cassette through the valve blade opening. Hotter weather or longer retention time may require addition of more Aqua Kem.

CAUTION: Do not add Aqua Kem Concentrate or Aqua Kem Bio directly into toilet bowl while Cassette tank valve blade is closed. Pressure due to heat and altitude change can build up in the Cassette tank causing bowl contents to splash upward upon opening the valve blade, if opened too fast. Before each use, open and shut the Cassette valve blade to vent the tank



8. Slide the Cassette, pour out spout facing outside into the caravan through access door. Never force insertion or removal of the Cassette tank, damage to system can occur.
9. Make sure the Cassette is secured by the retaining clip. Close and lock access door.

OPERATION

Flushing (Electric Models)

10. Before using the toilet we advise to add some water to the bowl by pressing down the flush knob. This avoids marking the bowl. Water will stop flowing when knob is released.
11. To flush after use, press the flush knob down while turning in an anti-clockwise direction. The turning motion opens the valve blade, emptying the toilet bowl. This procedure results in the best bowl rinse and most efficient use of water. After flushing, turn the knob in a clockwise direction to close the valve blade. The toilet can also be used with valve blade open, which allows the waste to go directly into the holding tank.

Flushing (Manual Models)

10. Before using the toilet, we advise you to add some water to the bowl by turning the flush knob in clockwise direction. When flush knob is released it will turn automatically back.
11. To flush after use, turn the valve knob in anti-clockwise direction and turn the flush knob. This procedure results in the best bowl rinse and most efficient use of water.

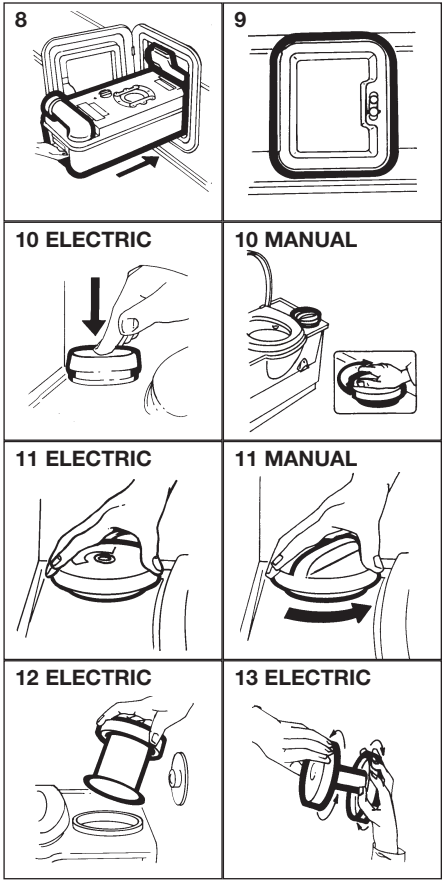
TOILET TISSUE

12. Toilet tissue is stored in the specially designed storage compartment that helps keep tissue clean and dry (electric models only). Tissue can also be suspended on a tissue holder using the special wall mount bracket, if desired.
13. To replace tissue, remove tissue holder from compartment by pulling up on tissue cover. Hold bottom of tissue holder in one hand and cover in the other, and turn in opposite directions until you hear a click. Pull apart. Place tissue on holder, insert prongs of cover into holder. Hold cover and holder and twist in opposite direction until locked. Aqua Soft toilet tissue is recommended for best results.

Emptying the Cassette

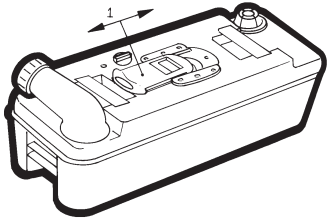
The Cassette capacity is 20 litres and should be emptied when the waste level gauge indicator goes from green to full red.

The gauge does not begin to move from green to red until the tank is over half full.



Caution: Do not allow Cassette to become overfilled, see Trouble Shooting section for emergency emptying procedure.

The holding tank features a unique sliding cover (1) which guarantees optimal hygiene. The sliding cover moves automatically when the holding tank is inserted. When holding tank is removed, the cover automatically assumes its correct position. To clean the holding tank, you may remove the cover manually by sliding it towards the pour-out spout.



To empty Cassette be sure that the valve blade is in the closed position.

14. Open the access door on side of caravan. Depress the retainer clip, pull Cassette until stop, tilt and remove Cassette.
15. Carry the Cassette using the lower carrying handle, pour out spout up, to a normal household type toilet or other authorised disposal point. Set Cassette in vertical position on the ground and rotate pour out spout upward.
16. Remove spout cap. Grasp unit by upper carrying handle nearest to pour out spout. Place other hand on upper rear grip so that the air relief valve button can be depressed with thumb while emptying, to ensure smooth outflow of tank contents. When empty, rinse tank and valve blade with water.

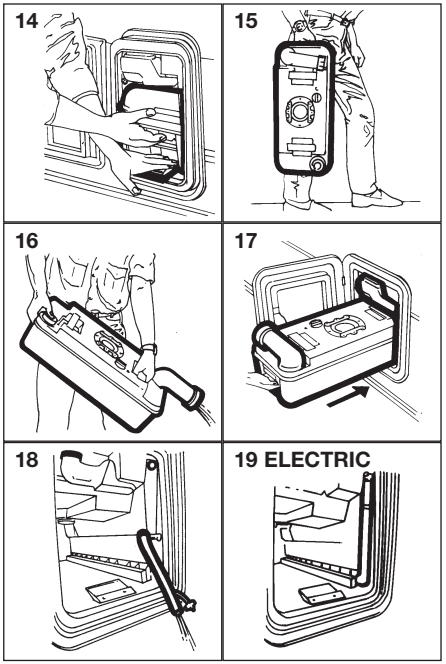
    Note: Depress air release valve button only when pour out spout is pointed downwards.
17. After preparing for use, slide the Cassette into the caravan. Check to make sure that the retaining clip secures the tank in a locked position. The pour out spout end of the tank should be visible through the access door opening. Add water to the fresh water tank as outlined in “Preparing for Use” section. Close and lock access door.

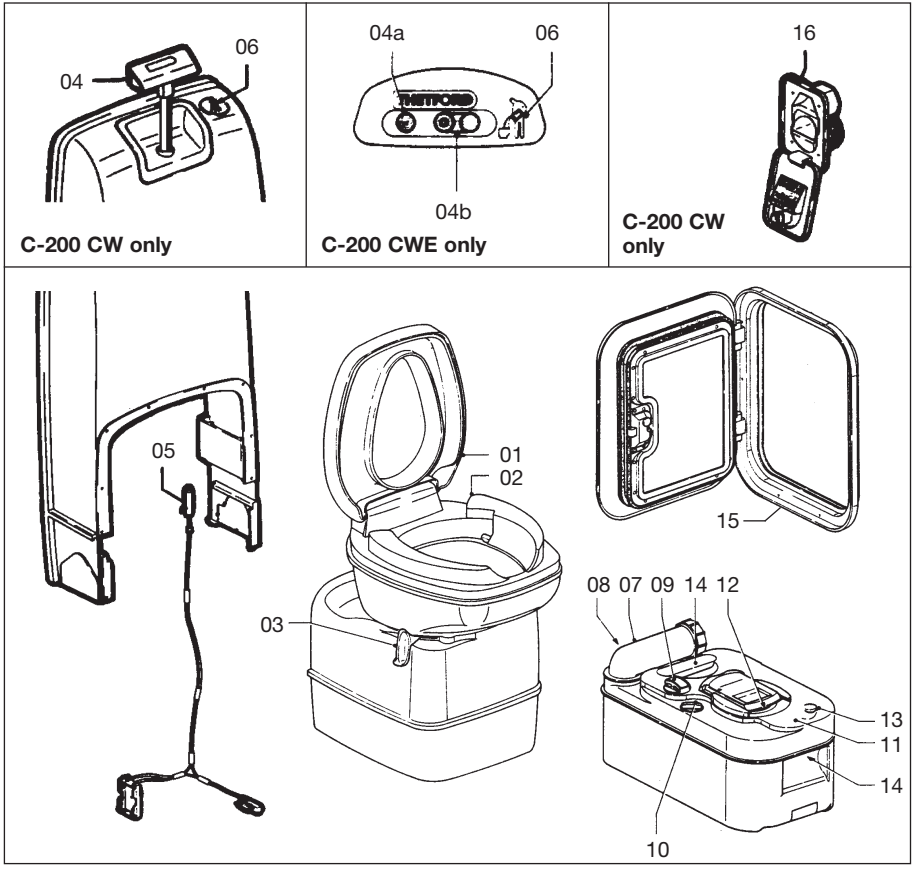
CLEANING AND MAINTENANCE

No routine maintenance is required on the Thetford Cassette Porta Potti. The use of Aqua Rinse helps to clean and protect the toilet bowl, valve blade and seals during flushing. Do not use strong household detergents or cleaners with chlorine, solvents or acid contents, as they will damage valve seals.

Empty Cassette and rinse tank with clear water. Use a mild soap to clean toilet bowl, seat and cover, as well as exterior of toilet unit and Cassette. Replace tank inside caravan.

Note: Pour-out spout and vent plug can be removed. Seals should be greased if necessary with acid-free vaseline.





THETFORD CASSETTE C-200 CW (Manual) and C-200 CWE (Electric)

FEATURES

1. Removable seat and cover.
2. Rotatable bowl.
3. Valve blade handle: opens and closes valve blade.
4. Flush-handle activates the flush by lifting and pushing down the handle.

4a **C-200 CWE.** Flush button: activates flush.

4b **C-200 CWE.** Valve blade buttons: open and close valve blade electronically.

5. Power-supply for the waste-level indicator: two batteries, type: Penlite 1,5V AA alkaline.
6. Waste-level indicator: indicates when holding tank requires emptying.
7. Rotating pour-out spout: makes emptying holding tank easy and convenient.
8. Upper carrying handle
9. Automatic holding tank vent: vents the holding tank when the tank is inserted in the toilet. This prevents under- or overpressure in the holding tank.
10. Valve blade opener.
11. Sliding cover: closes automatically when holding tank is taken out. Guarantees optimal hygiene.
12. Valve-blade
13. Vent button: vents the holding tank to avoid splashing while emptying.
14. Hand grip
15. Access door
16. Waterfill door

Fitted Equipment

CASSETTE C-200 CW AND C-200 CWE
The toilet section of the C-200 includes a rotatable bowl, removable seat and cover, a console with a flush handle/flush buttons, a built in flush-watertank and a waste level warning indicator. Underneath the bowl, the valve blade handle is located.

PREPARING FOR USE

1. Open access door pull retaining clip upwards (fig. 1).
2. Remove holding tank by pulling straight out. When holding tank hits the stop, tilt front end downwards slightly and remove (fig. 2).
3. Position tank vertically and swivel pour-out spout upwards (fig. 3).
4. Remove the cap of the pour-out spout. Add required quantity of toilet fluid through pour-out spout then add approx. 2 litres of water through the spout to cover holding tank bottom. Replace cap and return pour-out spout to its original stored position (fig. 4).

   Note: Warmer weather or longer intervals between emptying the waste tank may require additional toilet fluid. Use only Thetford toilet fluid to achieve the best results.

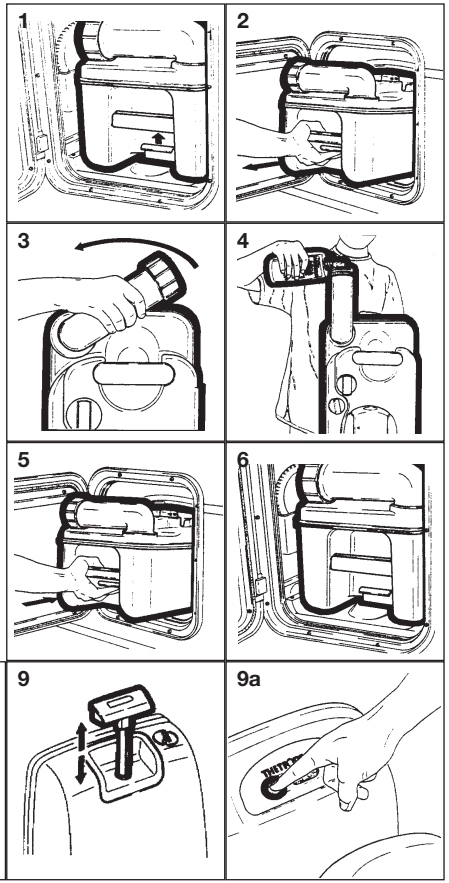
   Caution: Never add toilet fluid directly into toilet bowl.

5. Slide the holding tank into position through access door (fig. 5).
6. Make sure the holding tank is secured by the retaining clip. (fig. 6).
7. Open the waterfill door and add 50 ml of Aqua Rinse. Aqua Rinse results in a better flush and improves the hygiene of the toilet. Then fill the watertank with fresh water using a jerrycan or a hose. Tank capacity is 7 litres (fig. 7).

OPERATION

8. Turn the bowl in the most comfortable position (fig. 8)
9. **C-200 CW only:** Before using the toilet it is recommended to flush some water into the bowl by lifting and pressing down the flush handle (fig. 9).

9a. **C-200 CWE only:** Before using the toilet it is recommended to flush some water into the bowl by pressing and releasing the flush button (fig. 9a).



10. After use open the blade by turning the blade-handle anti-clockwise (fig. 10).

10a. C-200 CWE only: After use open the blade by pressing the 'open' button (fig. 10a).

11. C-200 CW only: To flush, lift the flush handle and press it down (fig. 11). After flushing, close the blade by turning the blade handle clockwise.

11a. C-200 CWE only: To flush press the flush button (fig. 9a). After flushing, close the blade by pressing the close button on panel (fig. 11a).

The toilet may also be used with the valve blade open, which allows the waste to pass directly into the holding tank.

The waste holding tank is located underneath the toilet and is removed for emptying from the outside of the vehicle through an access door. A rotating pour-out spout, automatic holding tank vent, air release valve, valve blade, carrying handles and hand grip are incorporated in the waste holding tank. A sliding cover guarantees you optimal hygiene.

EMPTYING THE HOLDING TANK

The holding tank capacity is approx. 17 litres and the tank should be emptied when the waste-level indicator lights up. The waste-level indicator lights up when the holding tank contains more than 15 litres of waste.

CAUTION: Do not allow the holding tank to become overfilled. See trouble shooting section for emergency emptying procedure.

12. Open access door and remove the holding tank. The holding tank can only be removed when the valve blade is closed (fig. 12).

13. Carry the holding tank to a normal household type toilet or other authorised disposal point. Place the holding tank in vertical position and rotate pour-out spout upwards (fig. 13).

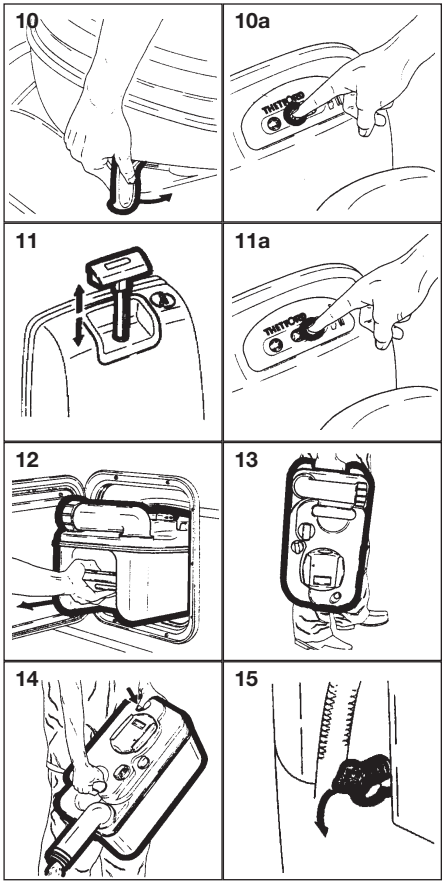
14. Remove the spout cap. Grasp unit by upper carrying handle nearest to pour-out spout. Place other hand on upper rear hand grip so that vent button can be depressed with the thumb while emptying. This ensures a smooth outflow of the tank contents. (fig. 14).

Note: Only depress the vent button when pour-out spout is pointed downwards.

Rinse the holding tank with clean water. For preparing for use again, see steps 1 to 7.

CLEANING AND MAINTENANCE

The lipseal and the seal of the automatic vent are made of rubber and therefore these parts need regular maintenance (depending on frequency of use, once or twice a month).



Lipseal: Remove the sliding cover. Open the valve-blade by turning the blade-opener knob anti-clockwise. Clean the seal with water. Dry the seal and grease with silicone spray/oil or vegetable oil.

Seal of automatic vent: Turn the automatic vent 60° anti clockwise and remove gently. Clean the seal with water. Dry the seal and grease with silicone spray/oil or vegetable oil.

To clean the holding tank, empty the tank, and rinse with clean water. Use a mild soap to clean toilet bowl, seat and cover, as well as exterior of toilet unit and holding tank.

NOTE: Do not use strong household detergents or cleaners that contain chlorine, solvents or acid contents.

WINTERING/STORAGE
The Thetford Cassette C-200 CW/CWE is easily winterised for storage.

Empty remaining fresh water into the bowl by activating the flush handle up and down (C-200 CW) or by pressing the flush button (C-200 CWE).

Once pump has been cleared and water flow has stopped completely, release into waste tank. Remove waste tank and empty contents in normal way.

To evacuate any remaining water from the fresh water tank. place a container underneath the drainplug and remove drainplug.

When procedure has been completed replace drainplug and waste holding tank (fig. 15). Clean the seals and grease them after drying (see cleaning and maintenance).

Leave the blade of the holding tank open. Do not replace cap on the pour out spout, to ventilate the holding tank. (Also grease the seal of the pour out spout cap.)

COLD WEATHER USE
The toilet can be used in cold weather conditions provided that the toilet is in heated surroundings. If this is not the case, you can use a nontoxic antifreeze (propylene glycol) or an antifreeze such as those used in car radiators. Add the antifreeze to the water in the tank. Add the quantity specified in the instructions, paying due regard to the safety instructions.

HIGH ALTITUDE AND WARM WEATHER USE
Pressure may build up in the holding tank if the tank is not inserted while driving at high altitudes or in warm weather conditions. The automatic holding tank vent will vent the tank when there is over- or under-pressure. High temperatures may require additional Thetford toilet fluid.

THETFORD WARRANTY

1. The Thetford Cassette is warranted for one year from the date of purchase, please fill in and return the warranty card.
2. The warranty covers replacement of defective or flawed parts and the inadequate performance of the toilet.
3. In case of a defect apply to an original dealer or Thetford Service Centre with proof of purchase.
4. Defects, which in our judgement occurred from misuse, negligence or accident, are not covered by the warranty. In addition, the warranty does not apply if the product is installed or handled improperly or if other than the prescribed toilet fluids have been used or if the product has been altered in any way or has been repaired by unqualified persons, or if the serial number and/or date has been altered or removed.
5. Should the original buyer wish to return to us parts believed to be defective, the parts should be sent prepaid. If we find the parts defective and covered by warranty, they will be repaired and returned. If warranty does not apply or has expired, a nominal charge will be made. Any transport costs are for the account of the owner.

6. Before returning product or parts they should be properly cleaned, in order to carry out inspection and repair.
7. No other warranty is given and no personal representative is authorised to make any warranty other than that is contained herein.

CARAVANS WITH TV INLET IN BATTERY BOX

Models equipped with TV points in the battery box can be attached to a pitch facility:

1. Connect pitch output to input in battery box being careful not to trap aerial lead in battery box door.
2. At aerial booster position disconnect roof aerial input lead and replace it with the loose end of the cable from the battery box. The internal TV point is now connected to the battery box input.

CARAVANS WITH EXTERNAL BARBEQUE POINT

Models equipped with an external barbeque point can be used to power any gas appliance suitable for the gas used in the 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:

1. Fit male nozzle from despatch kit to your barbeque or appliance ensuring a gas tight joint. The work should be carried out by a competent person; if in any doubt consult your dealer.
2. Open box lid by pulling tab on bottom edge and lifting. Remove red cover cap.
3. Insert male nozzle on appliance into female coupling, push firmly home until click is felt.
4. Open gas locker on caravan, ensure gas bottle tap is open and supply is connected to regulator. Turn isolation tap behind barbeque point to open (so that the tap handle is in line with the flow direction of the gas.
5. Returning to barbeque point, turn red knob until it is inline with the flow direction of the gas.
6. Light and operate appliance to its instructions.
7. When operation of external gas appliance has finished, turn red knob in barbeque box so that it is at right angles to the flow of gas to isolate the appliance.
8. Release the appliance hose and nozzle by pushing back the collar of the coupling.
9. Replace red cover and close lid of barbeque point.

Please note that you cannot open the gas supply until the nozzle has been inserted.

In the interest of safety all external hose lengths should be kept to a minimum and attachments secured correctly.

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

BEDDING

Sleeping bags and continental quilts can be compressed into small spaces and can be ready to use in minutes.

LOWER SINGLE BEDS ASSEMBLY
(Figs. A & B)

1. Unroll bed slat bundle and place between the recess in both seats.
2. Arrange seat cushions as appropriate.

DOUBLE BED ASSEMBLY
(Fig. C)

1. Grip front of slatted bed and walk backwards until bed is fully extended.
2. Arrange seat cushions as appropriate.

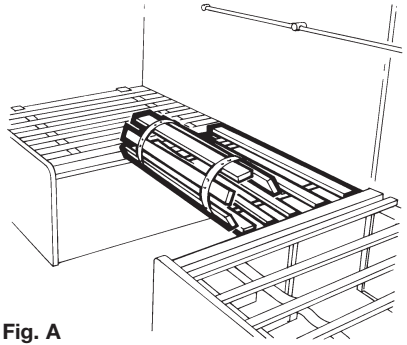


Fig. A

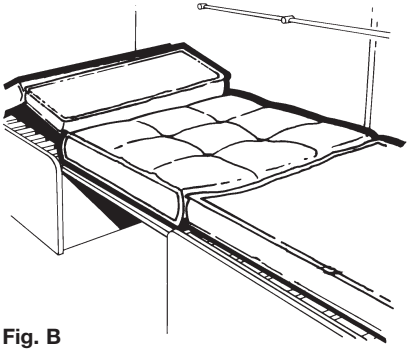


Fig. B

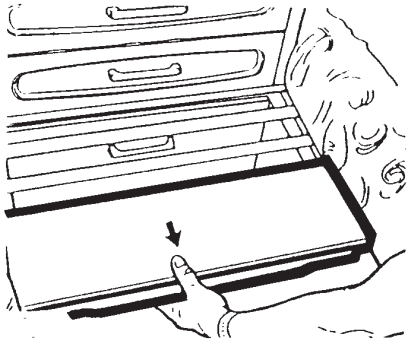
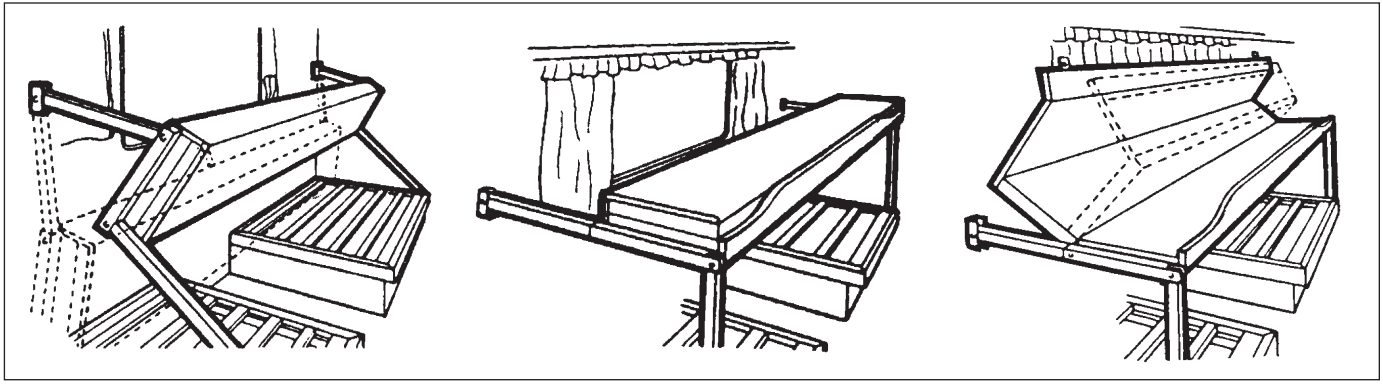


Fig. C



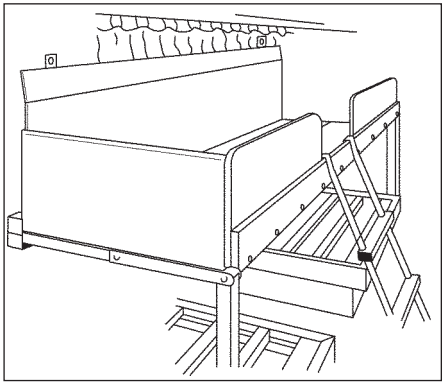
PULLMAN BUNKS

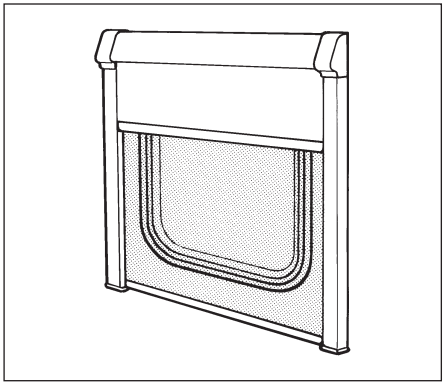
1. Release catches, one at a time.
2. Release press studs on the bed board.
3. Grasp the bunk as shown and pull carefully in direction of arrows.
4. The bunk is designed to automatically move into the correct position.
5. Where a bed board is fitted, unfold and make sure it is secured by press studs when lifted into position. (The bed board is required to protect both the occupant and the window from damage during use of the bunk.)
6. Locate safety boards.
7. Arrange seat cushions as appropriate.

BUNKS ARE DESIGNED TO CARRY A CHILD TO A MAXIMUM OF 70KG (11 STONE)

WARNING: Always ensure safety boards are located before entering the bunk.

WARNING: Care should be taken against the risk of falling out, when upper bunks are used by children, especially under 3 years of age.





KOMFORTROLLO BLINDS (SEITZ)

Blinds and Flyscreens
Flyscreen and blinds operate in the same manner. The flyscreen can only be 'fully up' or 'fully' down, but the blind also has an intermediate position.

To operate, pull down by holding the fingergrip(s), gently ease towards the window to locate the catches. To retract, pull down easing away from the window to release the catches and guide to the required position.

- ONLY OPERATE BY HOLDING THE FINGERGRIP(S) - pulling on one side will cause uneven running and snagging.
- DO NOT ALLOW THE BLIND OR FLYSCREEN TO RE-COIL WITHOUT CONTROL.
- It is not recommended that blinds and/or flyscreens are left in the down position for long periods, or when travelling, as this can result in fatigue of the spring.
- Clean the cassette, side track and fabrics with mild detergent and water.
- Lubrication of mechanism or spring is not required or recommended. However, if components should require cleaning, use only WD40 or similar with fluff-free cloth. Other lubricants may result in damage to fabrics and plastics.

Tension Adjustment
Remove plastic cover (if fitted) to locate tension lugs. The tension lugs have a slot and are located in the cassette on a 'bayonet' principle. Insert screwdriver into slot (ensure a good fit), turn lug clockwise to allow the spring tension to push the lugs just free of the cassette. Keep fingers away from screwdriver tip to avoid accidental injury. Spring can now have more or less tension applied as required.

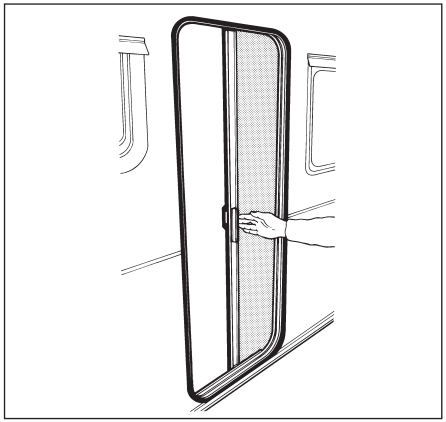
If in doubt of tension to be applied, release all tension and re-start. In which case, with blind fully wound on the roller, apply 12 revolutions of lug (factory setting).

Refitting is a reversal of removal procedure.

For more detailed information, see manufacturer's instructions.

Cassette Blind and Flyscreen
Always hold the end rod in the middle. When closing blinds, slide the end rod of the flyscreen blind on to the end rod of the sun blind and engage. To open the blind push the end rods towards the darkening blind to the edge and disengage the end rods. Now move the end rod of the flyscreen back by hand - do not let it recoil.

DOORSCREEN



When drawing or releasing the doorscreen, care should be taken not to let it spring back freely, this may result in damage to the screen or its fittings.

Always pull the doorscreen close to the centre. It is not advisable to pull close to the top or bottom as this will cause snagging and uneven running.

Caution
When opening or releasing the doorscreen, care must be taken to avoid trapping fingers.

Do not allow the doorscreen to slam open.

SEITZ ENTRANCE DOOR

To open from the outside, pull the opening lever in the door handle.

To open from the inside, pull the opening lever in the recessed handle.

To lock the door from the outside turn the key to the left, to unlock turn the key to the right.

To lock the door from the inside, depress the locking button. To unlock pull the handle.

The window is opened by depressing the button on the catches and turning through 90°, open the pane fully until it locates. To close pull the pane back and close the catches.

The door flynet and blind operate independently by sliding together and engaging.

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 12,500mm^2 of fixed ventilation each.

WINDOWS

To open press the knobs in the middle of the catches and turn through 90°. Swivel the pane open as required.

To close the window, open the window as far as possible and slowly close again, turn the catches through 90° to close.

All opening windows have two catch positions. The first position is for ventilation the second seals the window from ventilation and rain.

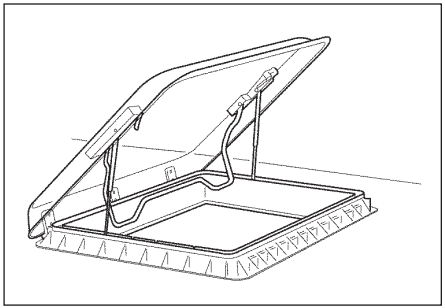
HEKI-2 ROOF LIGHT (SEITZ)

The lift/tilt roof light can be set in 3 positions by means of pneumatic springs.

Position 1 lifts the pane 12mm without allowing rain to enter the caravan.

Position 2 sets the pane to a 150mm opening and locks with a bar.

Position 3 opens the pane through 55°.



A fully adjustable flyscreen and black-out screen are built into the inner frame. The flyscreen can be drawn independently and the black-out screen is variable for partial or full black-out.

Forced ventilation functions via a brush lined duct instead of a ventilated pane.

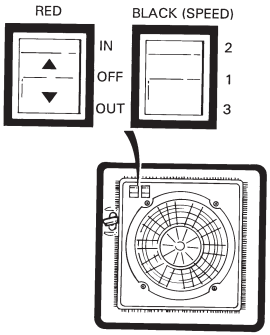
A cover hood can be fitted for winter protection.

Heki-2 roof lights provide 13,200mm^2 of fixed ventilation

MINI HEKI ROOFLIGHT

To open depress button and push bar upwards. The rooflight has two open ventilation positions and a fully open position.

The blind and flynet operate independently of each other and are engaged by connecting to each other and sliding.



THE OMNIVENT (12V) ROOFLIGHT

The Omnivent is a double glazed rooflight constructed from a synthetic ultra-violet screened material. Its side operating mechanism allows a completely free central opening with built-in fixed ventilation when closed.

Red Switch = Mode of Operation

Induction (IN)
Expel (OUT)

Black Switch = Speed Control

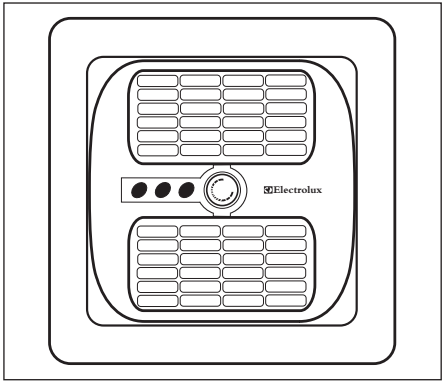
1, 2 and 3

Omnivents give no fixed ventilation when set on induction.

THE BLIZZARD 1500 AIR CONDITIONER

Starting and function selection

Main Switch	ON-OFF	Position ⎍ air conditioner ON Position ⎎ air conditioner OFF
Warm/Cold Dual Switch	Warm-Cold	Position ⎍ fresh air Position ⎎ warm air
Thermostat	Air Temperature (18°C-40°C)	By rotating the knob clockwise, temperature increases (max 40°C) By rotating the knob anti-clockwise, temperature reduces (min 18°C)
Fan Switch	Air Speed	Position ⎍ high speed Position ⎎ low speed



To set the required temperature adjust the RED/BLUE selector control knob against the indicator mark on the outer bezel. Airflow direction can be achieved fore and aft by adjustment of the air outlet louvres.

Attention
Never obstruct the air inlets and outlets

The air conditioning compressor runs during the refrigerating phase, if switched on and off at once it may get damaged. Therefore, it is very important to wait at least 3 minutes before attempting to switch it on again.

WARNING: Never introduce your hands or other object within the air inlet openings.

Maintenance
To ensure trouble free running it is recommended that the unit be cleaned once or twice a year.

Never attempt the following until the power is disconnected and the unit is cool

Remove dust and dirt with a damp cloth (do not use petrol or solvents).

Check that water trap holes are not clogged.

Periodically open cover and clean filters by washing with a mild detergent solution and allow to dry before refitting.

The Blizzard air conditioning unit provides no fixed ventilation.

ASH FRAMED DOORS

In order to provide customers with the latest designs of door furniture it is possible, due to the use of natural wood, that warping may occur. This should not detract from the correct functioning of items fitted in the caravan.

SHOWER

When using the shower, always ensure that the shower curtain is fully drawn thus avoiding water spray on unprotected areas.

TABLES

Slide top of drawers out and fold back to form convenient table. (Fig. A)

The pedestal table can be swung round for easy access to the seating and then re-positioned afterwards. (Fig. B)

Tables stored in the table storage compartment must be securely clipped into place whilst in transit.

CAUTION
When erecting the free standing table, be careful to avoid trapping fingers.

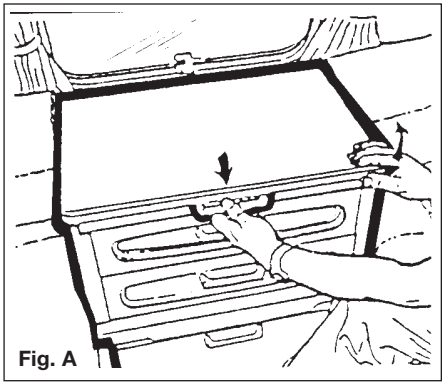


Fig. A

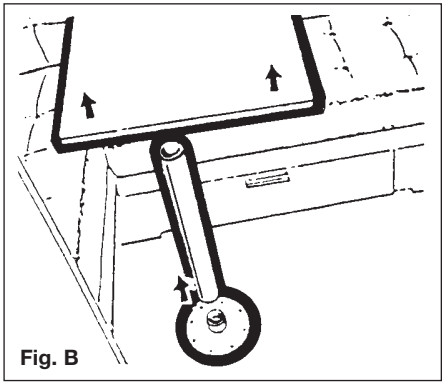
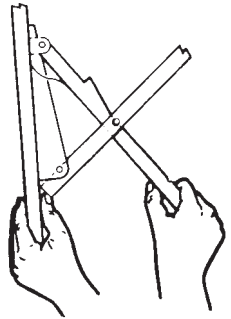
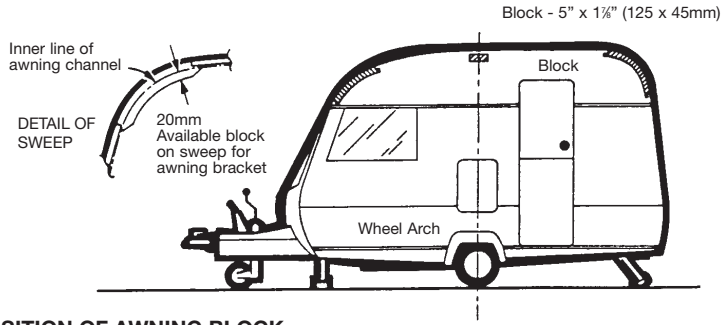


Fig. B



NOT TO SCALE



POSITION OF AWNING BLOCK

FIXING OF AWNINGS

In order to avoid puncturing the outer skin of the caravan wall, it is recommended that awning poles are fixed to your caravan using load spreading eyelet pads or rubber sucker pads.

Attaching awning brackets and associated fixings to your caravan by using mechanical methods which pierce the outer skin of the caravan wall can allow water ingress which will invalidate the product warranty.

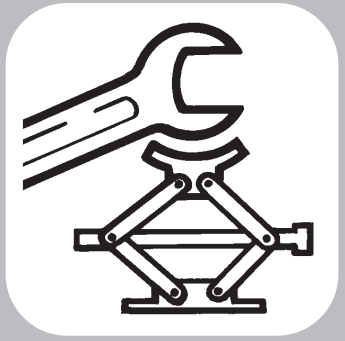
Important:
Care must be taken when using an awning as poles and suckers can cause damage to exterior side panels.

Awnings should be taken down in strong winds to protect the side panels from cosmetic damage and dents from the awning poles.

Note:
Awnings should be kept ventilated when discharging products of combustion exhaust into them.

Awning Sizes
Due to the various awning types and sizes the awning sizes provided in the Service and Warranty Handbook are for guidance only.

Specific awning sizes must be confirmed with the dealer or awning manufacturer prior to purchase.



MAINTENANCE

MODIFICATIONS - DIY WORK

Owners need to be aware that carrying out DIY modifications to your caravan may in certain instances, invalidate the warranty cover and could also affect the safety and structure of the caravan.

Before carrying out any DIY work within the warranty period (3/5) years please check with your nearest Swift Group dealer or contact Supercare customer services on 01482 875740 for advice.

CARAVAN EXTERIOR

Aluminium Panels
The stove enamelled paintwork is very durable and easy to clean owing to the high gloss properties.

Plastic Panels (GRP/ABS)
These are used for front and rear panels and, in some cases, for roof and side panels.

Cleaning
For both aluminium panels and plastic panels.

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.

When cleaning Sikaflex sealed areas, use Domestos/water.

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.

Mouldings
All mouldings are of anodised aluminium and will retain their lustre for a long period if no abrasive materials are used to clean them.

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.

Condensation
As your caravan is double glazed you may occasionally get condensation inside the double glazing. This is particularly so in severe weather change (usually spring and autumn) and is easily cured in dry weather.

i) Remove the plastic plugs from interior top of each window.

ii) Leave unplugged for approximately 1-4 hours until condensation has cleared.

WARNING: Do not wash your caravan with a high pressure washer as these can permanently damage the seals of your caravan.

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.

Work Surfaces
You should not stand very hot items on any of the work surfaces, especially models with polycarbonate moulded sinks and drainers.

Cupboard Catches
It is advisable to lightly oil all cupboard catches, sliding bolts and hinges from time to time.

Bathroom, Shower Room and Kitchen Equipment
All the Thermoplastic parts in these areas have easy clean surfaces. To ensure long life and 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).

Furniture
A simple wipe over with a damp cloth should be all that is required. Polishing with a proprietary brand of wax polish enhances and maintains furniture in showroom condition.

It must be remembered that because the frames of the doors are made of ash, which is a natural product, they can be affected by temperature and humidity and may bow under certain conditions. As conditions change they should revert to their original positions.

Kitchen Drainer and Cutting Board
You should not stand hot items on to the removeable plastic kitchen drainer. To wash use only warm soapy water, do not use chemicals and bleach.

The round wooden kitchen cutting board can be lightly brushed with vegetable oil to enhance it.

WINTERISATION/STORAGE

This is probably an opportune moment to arrange for the caravan to have its annual service at your appointed dealer.

The following applies wherever your caravan is stored particularly during the winter months.

Do not park near trees or larch type fences, due to possible wind damage.

Keep any grass around the floor of the caravan short, to maintain air flow and stop any possible damp getting into the caravan.

It is advised that the caravan is ventilated regularly throughout the winterisation /storage period, opening windows, doors and rooflights when possible.

General
All moving parts should be checked for free operation.

Clean all cooking appliances and refrigerator.

Lubrication should be carried out at the points illustrated in the general notes on chassis maintenance (page 98).

Charge up the on-board battery every 2 months.

Check alarm battery condition every 2 months and charge if necessary.

Leave the refrigerator door open.

Leave furniture doors and lockers open to allow air to circulate fully.

Condensation
Condensation will occur when humidity levels rise. Correct heating and ventilation will help reduce this. When cooking or in wet inclement weather increased ventilation through windows and rooflight will be required.

Soft Furnishings
Clean and dust the upholstery and if possible remove before placing the caravan into winter storage. Alternatively, stand the cushions on their edges to allow circulation of air. This will reduce the possibility of dampness from condensation.

Keep curtains or blinds closed, to minimise fading of furniture.

If the blinds and/or flyscreens remain down for a prolonged period of time, re-tensioning of the springs will be necessary before re-use.

Maintenance

Wheels and Tyres
Do not store in one position with partially deflated tyres. The tyre walls will suffer and do present a real danger of blow outs, especially when travelling at faster speeds than are allowed in the UK.

The wheels should be turned every couple of weeks or even better, the wheels removed and the caravan placed on “winter wheels” or axle stands.

If you are removing the wheels, follow the jacking procedure for changing a wheel.

Check your tyres regularly for signs of age and deterioration, particularly wear, cracking and blistering. If in doubt consult a reputable tyre fitter.

Water System

Ensure water pump is turned off.

Lift kitchen sink unit lid and clip in open position.

All single lever mixer taps, including the shower control, should have the lever moved to the central position and lifted to the open position for hot and cold.

All conventional taps should be opened.

Remove shower head. Let the shower hose drain into the shower tray and then return to holder.

Drain water tanks if fitted:
Internal tanks- open inline valve adjacent to the tank. Valve is open when handle is inline with valve.
External underslung tanks - remove drain pipe from retaining clip and open tap. Allow water to drain. Clip pipe back in position.

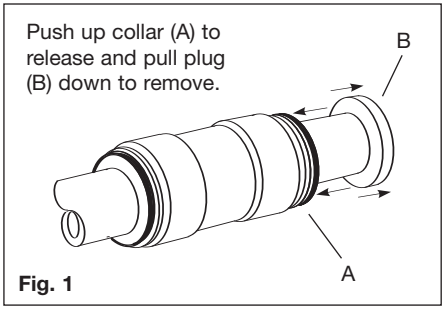


Fig. 1

Open system drains. Remove red drain plug from under the floor of the vehicle (Fig.1) and place in drawer.

Drain water heater. Open yellow handle on inline valve adjacent to heater. Valve is open when handle is vertical.

Before recomissioning the system reverse all above actions. (See Taps in Services section)

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.

Recomissioning the Water System
Fill the fresh water tank on the Thetford Cassette porta potti using a hose or jerrycan until the water in the funnel reaches the neck. Tank capacity is 15 litres. Aqua Rinse may be added to improve cleaning of bowl and flushing of unit.

Replace cap. Swing back the water fill funnel until it touches the water tank.

Add Aqua Kem (100 ml) into the Cassette (or 120 ml if using Aqua Kem Bio) through the pour out spout. Add small amount of water through the pour out spout and replace the cap.

It is advisable after storage to flush the water system initially with a sterilising agent (such as Milton), and then with water repeating until the system is well flushed through.

Connect the pump.

Fill the system with water until water flows

freely from the hot taps. About 2 gallons of water will be required. Close the hot taps.

Appliances
Before starting caravanning after storage check all gas appliances and electrical points.

Note: Preferably not less than once a year, the electrical installation should be inspected and tested by a qualified electrician.

After storage it is advisable to air the caravan and clean throughout, especially cooking appliances and the refrigerator.

Replace the bedding and wheels if they were removed for storage.

Important
Always follow the manufacturers recommended procedures after use of fitted equipment in the caravan and before storing for any length of time.

ALKO RUNNING GEAR

CARE & MAINTENANCE INSTRUCTIONS FOR YOUR AL-KO CHASSIS AND COMPONENTS

General Information
The AL-KO lightweight chassis has been perfected by many years of research and development, supported by an exhaustive test programme.

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.

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.**

Independent Suspension

The AL-KO rubber suspension is designed and developed to suit all types of road conditions and is maintenance free. Three rubber elements are contained within a hexagonal axle tube. These provide suspension and have inherent damping characteristics. (Only the hubs and wheel brakes require attention - see axle section).

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.

The **maximum axle loading** is that stamped on the oval (Fig. 1) plate located in the centre of the axle, facing rearwards. The third line down marked "Capacity" is the **maximum permitted axle loading and must not be exceeded.**

Where the Caravan Manufacturer states a maximum loading weight, then **this is the maximum permitted load.** This figure **must not exceed the maximum axle load.**

Enter your Axle details for future reference:

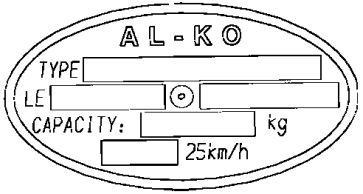


Fig. 1

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.

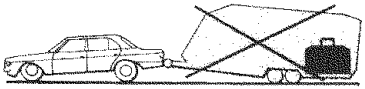


Fig. 3

Load Over Axle (Fig 4)
Optimum road holding together with maximum braking effect. Exceptionally heavy loads should packed directly over the axle.

Attention should be paid to the legal regulations regarding the permitted pressure exerted by the towbar on the towed unit.

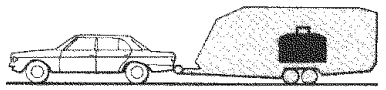


Fig. 4

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 mean 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 16).

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.

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.

The backwards rotation of the brake drum causes the secondary brake shoe to collapse cancelling out the braking effect, allowing the trailer 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.

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.

IMPORTANT NOTE

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 or every 12 months via the inspection hole (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.

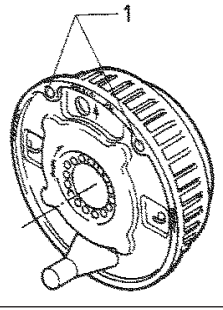


Fig. 5

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 ± 10 Nm (214+/1 7.5 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 sprit.

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.

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

"Standard Axle" Maintenance (taper roller bearings)

After 1500 km or 6 months

Have the axial play of the hub bearing checked and adjusted if necessary.

After 10,000 km or 12 months

Check quantity and quality of grease, renew if necessary.

Check the wear of the wheel brake linings every 10,000 Km or every 12 months through inspection hole (Fig. 5) and adjust if necessary. Where continuous travel in hilly regions or high mileage is experienced, earlier inspection and adjustment may be necessary.

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 for your axle you should always quote the axle type (axle identification plate Fig. 1) 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.

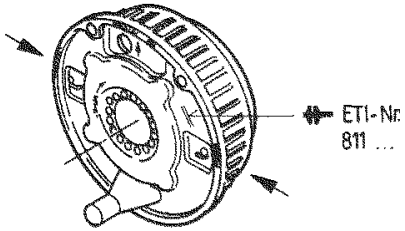


Fig. 6

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 132.

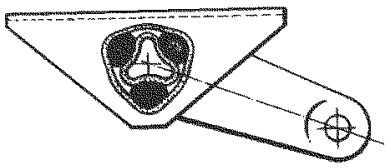


Fig. 7 Rebound or Free Position

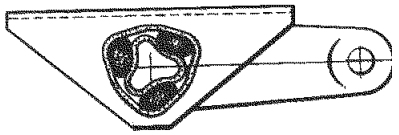


Fig. 8 Normal or Laden Position

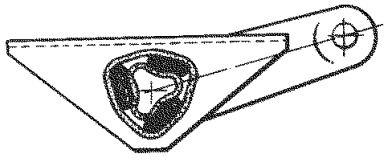


Fig. 9 Maximum Bump

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.
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 (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

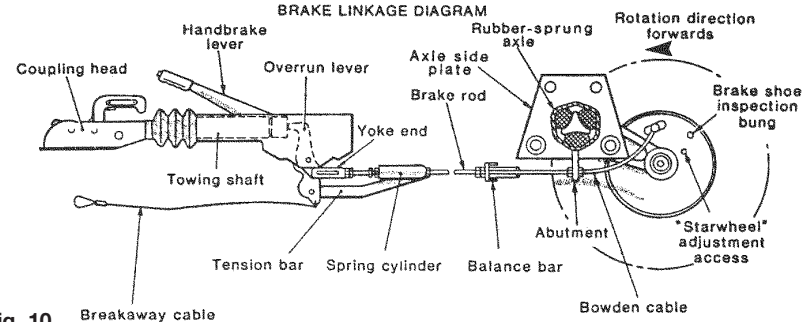


Fig. 10

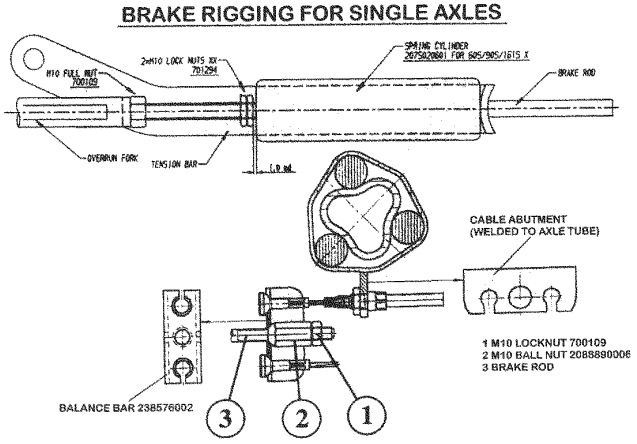


Fig. 12

Brake Linkages

It is recommended that all brake linkage threads are lightly greased for protection.

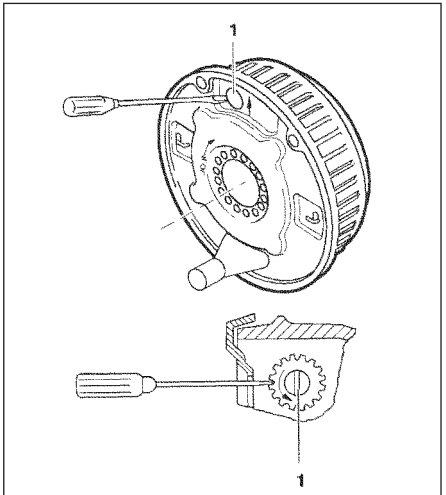


Fig. 11

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. Adjust the two locking nuts, forward of the spring cylinder (Fig. 10), (on some chassis a single Nyloc nut is used) to give 1 mm of clearance on the spring cylinder. This cylinder (the energy store for the handbrake operation) must be able to rotate ONLY, not slide on the brake rod. (Fig. 12). (If the overrun assembly is fitted with a gas strut handbrake then no spring cylinder is fitted - therefore ignore this paragraph).
14. CORRECT ADJUSTMENT of the linkage is checked by operating the handbrake lever so that when the second or third tooth is engaged, a slight braking force is felt on the road wheels.
15. OVER ADJUSTMENT of either the wheel brakes or linkages, will result in difficult reversing causing the wheels to “lock-up”.
16. When parking, the handbrake lever MUST ALWAYS be engaged into the fully upright position (90°). This is to compress the spring within the spring cylinder and thereby create an energy store which will automatically engage the brakes further should the caravan move. 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 117 for all handbrake operations.
17. Finally, if the road wheels have been removed, re-tighten using a calibrated Torque Wrench to 88 Nm (65 lbs/ft) - on all M12 wheel bolts -in sequence, i.e. North, South, East, West **NOT** clock or anti-clockwise (refers to steel rims only). 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.

    IMPORTANT - The torque settings should be rechecked after 50 Km. Wheel bolts should **NEVER** be lubricated.

Coupling Heads/Combined Stabiliser Devices

Your Caravan will be fitted with either a standard coupling head or a combined stabiliser/coupling unit. If your caravan is fitted with an AKS 1300 Stabiliser, please request Part No. 1385106 for full operating instructions. If fitted with AKS 2700, request Part No. 1385107.

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 ±25 o vertically and ±20 o horizontally - see Fig 13.

If exceeded, components will be overloaded and the operation of the assembly adversely affected!

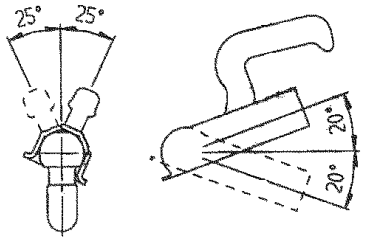


Fig. 13

Operation

For Coupling types AK160, AK300 & AK350.

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).

Caution

If the coupling head is not correctly hitched onto the towball, then the caravan/trailer can become disconnected from the towing vehicle.

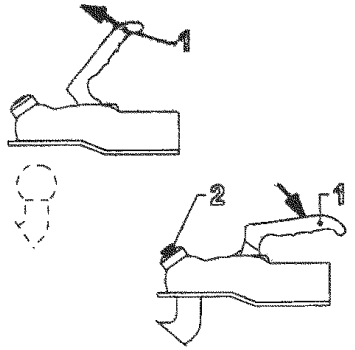


Fig. 14

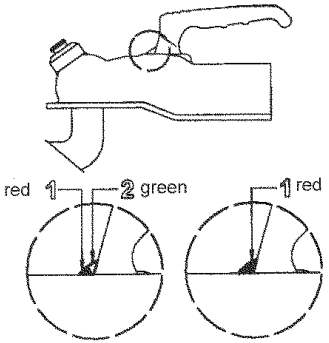


Fig. 15

Uncoupling

Open the coupling handle and lift the coupling head from the towball. When there are higher nose loads, coupling and uncoupling can be made easier by using the jockey wheel.

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 or not.

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.

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:

- The towball has reached the lowest wear limit of 49.61 mm 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 breakaway 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.

Operation

For coupling types AK7, AK 10/2 or AK252. (This type of coupling is normally fitted to trailers or older model caravans).

Coupling Up

Push the safety lever (Fig. 16/Item 1) up with the index finger and lift the handle up and forwards. Put the opened coupling onto the towball with the handle pulled up and in addition press down by hand. The coupling will close by applying a light pressure. Press the handle down by hand until the catch snaps out (Fig. 16).

The coupling head is correctly engaged when the green cylinder part of the safety indicator is visible (Fig. 16/Item 2).

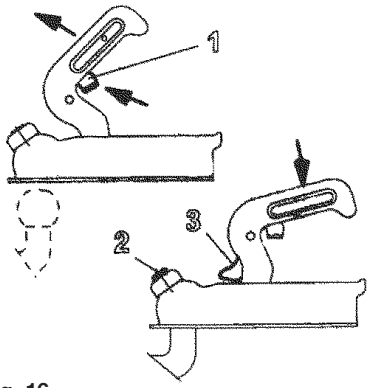


Fig. 16

Caution

It is most important to check that the coupling head is properly engaged on the towball each time.

Uncoupling

Lift coupling handle fully and remove the coupling head from the towball. Where there are higher nose loads, coupling and uncoupling can be made easier by using the jockey wheel.

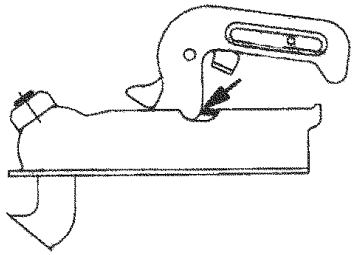


Fig. 17

Wear Indicator:

If the handle reaches the back of the cutaway portion of the housing, when the coupling head is engaged (Fig. 17) there will be play between the towball and coupling head. Automatic re-adjustment is no longer possible and the assembly will need inspecting.

Caution:

Under these circumstances, the coupling head can become detached from the towball and the caravan/ trailer can breakaway 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.

Servicing & Cleaning

Lubrication Points (Fig. 18)

Clean Towball

Lightly grease, or oil ball socket, joints and bearing points as appropriate. General purpose grease to DIN 6=51825 KTA 3K.

For Troubleshooting and Fault Finding please see Table 2 on Page 133.

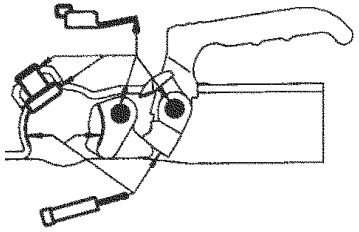


Fig. 18

Operating Instructions for AKS 2004

REGULATIONS

1. The AKS 2004 must be used in conjunction with 50 mm 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 200 Kg and a maximum permissible weight of 2000 Kg.
3. EC design approval has been given to the AL-KO AKS 2004 coupling under permit No. e1*94/20*0930*00.

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 (DIN 74058). If these clearances are infringed by special attachments, then the use must be checked separately.

   Clearances for Stabiliser Handle (Fig. 19)

   The area above the towball of the vehicle must be free from vehicle components or attachments (A) (eg spare wheels, platforms etc.)

   The clearance for the stabiliser handle must be at least 330 mm (B) + the stroke movement (D) (85mm-100mm), which equates to 440 mm when used in conjunction with an AL-KO overrun.

   Max. 50 mm (C) clearance between the centre of the towball and top of the overrun assembly or fairing, to ensure both coupling handle and stabiliser handle do not foul on operation.

   Maintain the same clearances for other manufacturers' overrun assemblies.

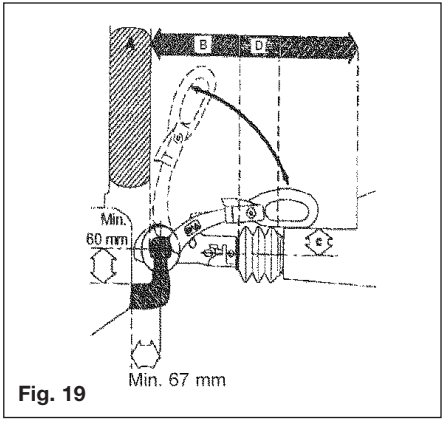


Fig. 19

2. Not suitable for use with overrun devices which can revolve above 25 (Fig. 20).
3. Swan Neck towbars (fixed or detachable) are suitable for use with the AKS 2004 providing they comply to EC Directive 94/20 and have the required minimum 60 mm clearance, measured from the centre of the towball (Fig. 20).

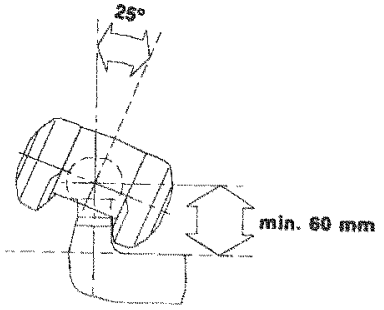


Fig. 20

SAFETY WARNINGS

1. In accordance with EC Directive 94/20, couplings of type A 50-1 cannot be used (see Fig. 21), your warranty will be invalid if this type of towball is used.
2. For UK use, please use the extended neck towball (type A50-X).
3. A bolted-in type ball coupling (Fig. 22) is only permissible if the thread is locked or welded.
4. The AKS 2004 cannot be used with a laterally attached reversing lever, on the left side, when facing direction of traffic.
5. The towball must be free from grease, paint and other residue, otherwise the stabilising effect will be greatly reduced.

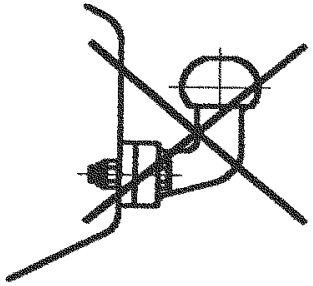


Fig. 21

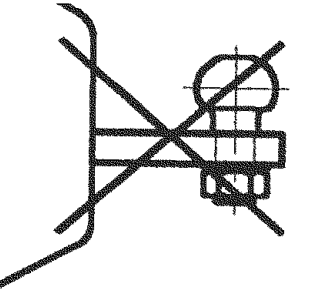


Fig. 22

6. If friction pads become contaminated with grease, they should be replaced.
7. The AKS 2004 should only be operated by one person, when opening or closing the handle, to reduce injury risks.

AKS 2004 Delivery Specifications

Coupling handle (Fig. 23/Item 1),
Stabiliser Lever (Fig. 23/Item 2)

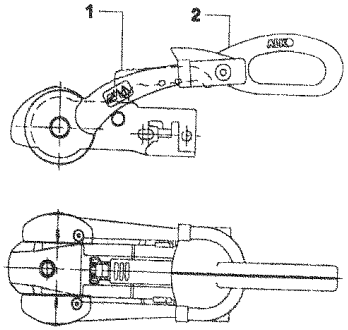


Fig. 23

Preparation for coupling/uncoupling

The Stabiliser lever (Fig. 24/Item 2) must be in the uppermost position (open).

Coupling

Pull the coupling handle (Fig. 25/Item 1) up in the direction of arrow. The coupling mechanism has an open position ie. as long as the AKS2004 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.

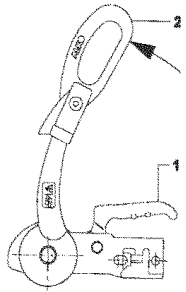


Fig. 24

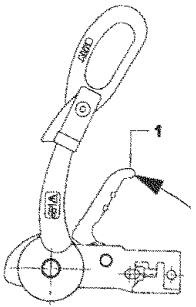


Fig. 25

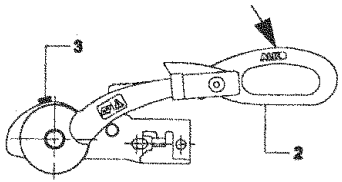


Fig. 26

Warning: The coupling is correctly engaged when the green edge of the safety indicator button is visible (Fig. 26/Item 3).

Stabiliser Unit

To operate the Stabiliser (once coupled to the towball), simply press the stabiliser lever down as far as it will go (Fig. 26/Item 2).

Uncoupling

Pull the stabiliser lever handle up as far as it will go, open the coupling handle and lift the AKS2004 from the towball. With larger nose loads, coupling and uncoupling can be made easier by using the jockey wheel to assist lifting.

Please Note: The friction pads (Fig. 27/1,2,3) 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.

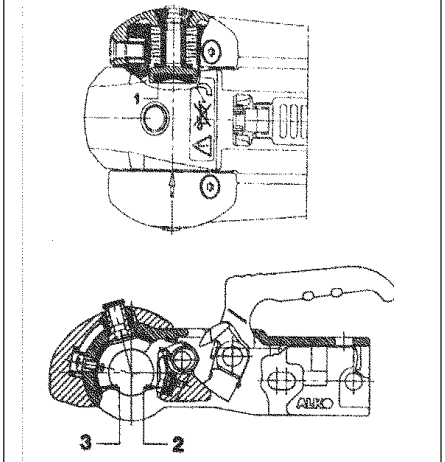


Fig. 27

Checking the efficiency of the left/right friction pads

1. Couple up AKS 2004.
2. Open Stabiliser lever (Fig. 28/Item1).
3. Close Stabiliser lever until resistance is felt (ie friction pads are in contact with the ball but not yet under pressure).
4. If the arrow on the arm (Fig. 28/Item 4) is before or on the marked area (Fig. 28/Item 2) the friction pads are still as new (See A)

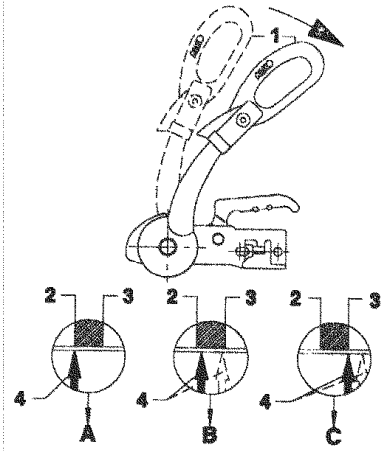


Fig. 28

5. The arrow on the arm should lie between the marked area on the soft dock (See B)
6. If the arrow on the plate reaches or passes the marked area on the soft dock then the friction pads need replacing (See C).

   Please Note: It is not necessary to adjust the 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 an 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 (Fig. 29).
3. When opening or closing the stabiliser lever, please ensure your hand does not touch the coupling handle - you may accidentally trap your fingers! (Fig. 29).

Noises whilst driving

As a rule, the friction pads of the AKS 2004 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 or dirt between the friction pad and tow ball.

b) Dry operation of the drawshaft inside the overrun device.

c) A detachable towball which has too much play in the locking mechanism.

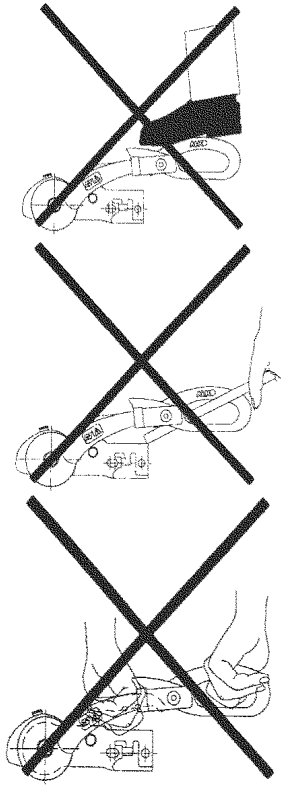


Fig. 29

Maintenance

Remedial Action

a) Clean the tow ball and friction pads by lightly rubbing the surface (100-120 grit emery paper).

b) Lubricate the drawshaft 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. 30).

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.

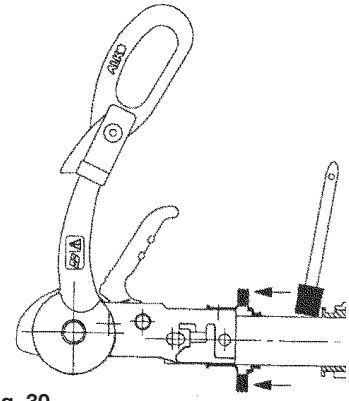


Fig. 30

Servicing and Cleaning

Friction Pad Replacement (please replace one at a time)

1. Uncouple AKS 2004.
2. Remove protective caps (Fig. 31/Item 1) with the aid of a small screwdriver.
3. Press worn out pad inwards and remove (use punch and hammer) (Fig. 31/2)
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 (Fig. 31/Item 4 & Fig. 32).

Checking the efficiency of the front/rear friction pads

1. Couple the AKS 2004 to the towball but do not activate the stabiliser.
2. If a green indicator is visible (on the handle), then the AKS 2004 is in a new condition or the pads and towball are within the permissible limits (Fig. 33/Item 2).
3. If only a red indicator is visible (Fig. 34/Item 3), then this may have the following causes:

   a) AKS 2004 is okay but the towball has reached the lowest limit of 49.61mm

   b) AKS 2004 shows signs of wear

   c) Towball is in a new condition (50mm) but the front/rear friction pads show a high degree of wear.

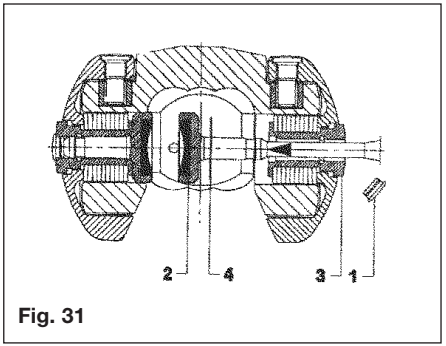


Fig. 31

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)

Fig. 32

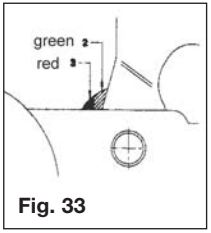


Fig. 33

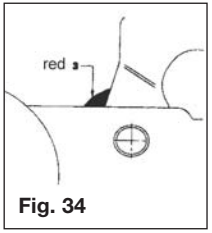


Fig. 34

Friction Pad Replacement (Front/Rear only)

1. Uncouple the AKS 2004
2. Remove the rubber soft dock (pull up and off) Fig. 35/Item 1 & Fig 36.
3. Press the safety indicator outwards and secure with SW14 hex. spanner (not included), (Fig. 35/Item 2).
4. Remove cheese-head screws (Fig. 35/ item 3 & Fig 36), using special torx tool.
5. Press friction lining recess (Fig. 35/Item 4) inwards and pull down and out.
6. Open coupling handle (Fig. 35/Item 8).
7. Remove countersunk head cap screw using special torx tool (Fig. 35/Item 5 & Fig. 37).
8. Press friction pad inwards with a screwdriver and remove from ball cup.
9. Fitment of new linings takes place in reverse. Tighten screws 3 & 5 to 5 Nm.
10) Replace rubber soft dock, insert top section first then bottom.

Important Maintenance and Cleaning Advice:

1. The towball should be cleaned regularly to remove grease or other residue, the use of Thinners, White Spirit or Brake Cleaner is recommended - otherwise the stabilising effect will be severely reduced.

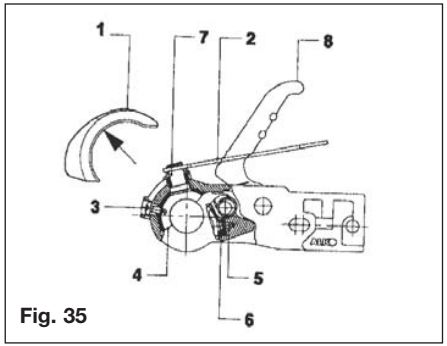


Fig. 35


Fig. 36


Fig. 37

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 2004 components.
5. In Winter, carefully spray only the visual indicator with de-icer.

Lubrication

Should lubrication of the stabiliser parts become necessary, then the following must be observed.

a) Clean all parts thoroughly.

b) Areas may only be covered with a thin film of grease (Fig. 38).

c) Use multipurpose grease DIN 51825 KTA 3K.

Warning: When lubricating, ensure none gets into the friction pad or towball holding area.

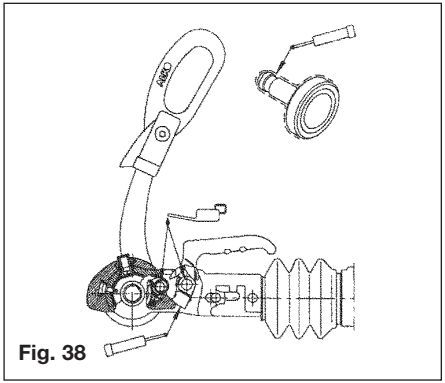


Fig. 38

Overrun Devices

In the importance of Safety, please familiarise yourself with the operation of this overrun device **BEFORE** using your caravan/trailer.

Safety Precautions

When parking your tow vehicle and caravan/trailer 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.

If a 'detachable' type drawbar is fitted (as with catering trailers). the drawbar must not be removed from the trailer with the hand-brake applied.

Caution: Please note when parking the caravan/ trailer, the wheelbrake auto-reverse mechanism will allow the caravan/trailer 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.

Coupling Up

Manoeuvre towing vehicle or trailer to coupling point.

Overrun devices fitted with 50 mm coupling head

Fully open coupling head handle and secure hitch onto the towball. See pages 10 and 123 (coupling up).

Thread the breakaway cable through the breakaway cable guide provided (Fig. 40) and connect it to attachment point provided on towing bracket (Fig. 39). Please refer to 'Braked Trailers Use of Breakaway Cables' for further detail.

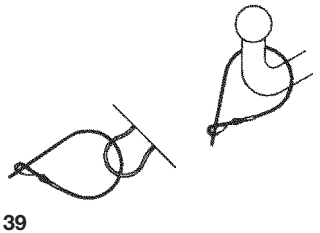


Fig. 39

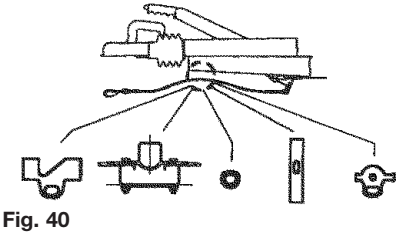


Fig. 40

Caution: The breakaway cable operates the handbrake (emergency brake), in the event of the caravan/trailer 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. 41).
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/trailer.

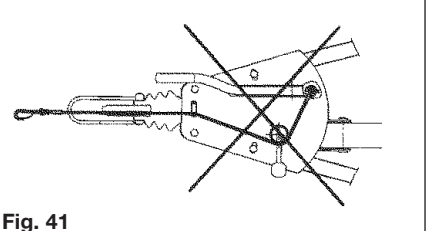


Fig. 41

Overrun device fitted with Eye End

Lock the eye end into the eye end jaw assembly and see operating instructions for vehicles fitted with eye end jaw assembly.

Overrun Device Fitted with 50 mm Coupling Head

Connect trailer 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.

Ensure handbrake is fully off by pushing it fully down (Figs. 42-46).

Remove wheel chocks if fitted and stow safely.

Caution: Failure to comply with this could result in the brakes overheating.

Coupling Up (Euro-Overrun Devices)

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 (Fig. 45).

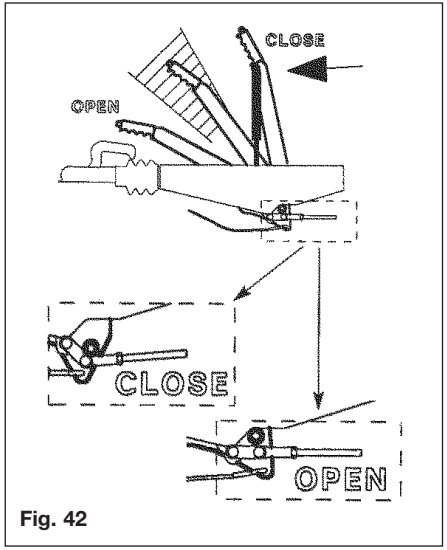


Fig. 42

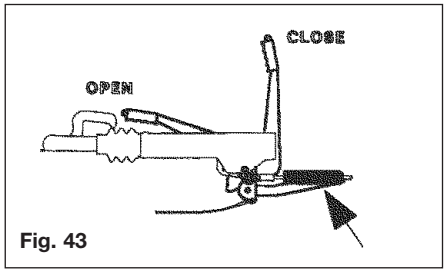


Fig. 43

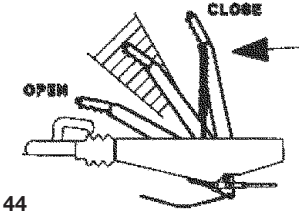


Fig. 44

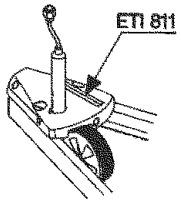


Fig. 45

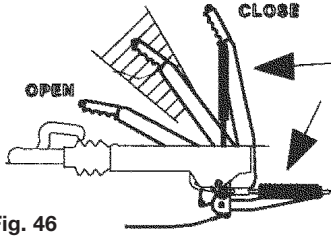


Fig. 46

Uncoupling (All Types)

Secure caravan/trailer by chocking both wheels. Apply handbrake fully. There are 4 different handbrake systems (See Figs 42-46). With all four systems please observe the following:

Handbrake Lever With Gas Strut (Fig. 42)

Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

To Release

Press the handbrake push button fully home and firmly press the handbrake lever back into the off position (handbrake horizontal).

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

Caution: The brake rod must not be under tension/bowed when the handbrake is disengaged, otherwise the breakaway mechanism will not function.

Handbrake Lever With Spring Cylinder (Fig. 43)

Apply handbrake fully ensuring that handbrake is in the vertical position. This will ensure that the spring cylinder energy store is fully loaded and will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

Automatic Handbrake Lever (Fig. 44)

Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut or spring cylinder will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

Caution: If the handbrake is not fully applied as detailed above, there is danger that that the trailer could roll backwards!

To Release

Firmly push the handbrake lever back into the off position (Handbrake horizontal).

Handbrake Lever With Spring Cylinder and Gas Strut (Fig. 46), normally fitted to commercial units:

Ensure handbrake is fully applied (as described). This will ensure that the gas strut or spring cylinder will automatically re-apply the wheel brakes if trailer starts to roll backwards.

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

To Release

Press the handbrake push button fully home and firmly press the handbrake lever back into the off position (handbrake horizontal).

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. 47.

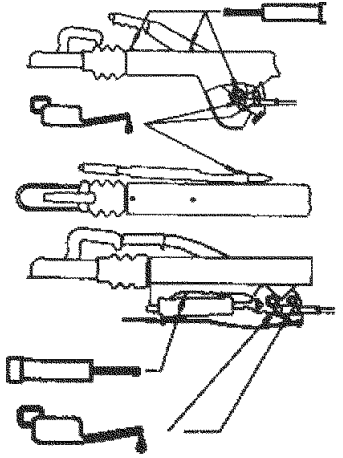


Fig. 47

Recommended lubricant. General purpose grease to DIN 51825 KTA 3KA.

Servicing and care of hot dip galvanised parts

The formation of white rust is only a surface coating and has no adverse effect on the anti-corrosion properties of galvanising. In order 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-galvanised parts.
- After winter journeys it is recommended that surfaces are washed with clean water.

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 (See Fig. 45).

For Troubleshooting and Fault Finding, please see Table 3 on Page 132.

Trouble Shooting & Fault Finding

Table 1 Axles

Fault	Cause	Remedy
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 117 & ensure system is lubricated.
Difficulty in Reversing	Braking system set too tightly. Auto-Reverse lever too stiff.	Reset Brakes as page 117. 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 117. Check Handbrake has been released & the system is running freely. Lubricate and free off Reverse Lever. Check system as page 117 and repair or renew parts as necessary.
Handbrake Force Low	Incorrect setting of the brakes. Linings not bedded in.	Reset brakes as page 117 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 117. Check and replace damper if necessary. Replace shock absorber.

Table 2 Coupling Heads

Fault	Cause	Remedy
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 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

Fault	Cause	Remedy
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 117. Ensure correct attachment as listed on page ? 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 117.
Brakes Apply During Deceleration or Downhill Travel.	Overrun damper is defective.	Replace the overrun damper.

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. (See Accessory Price List). Delta Axles have Shock Absorbers fitted as standard which MUST NOT BE REMOVED.

Stabilisers

AL-KO overruns can be fitted with a range of AL-KO Stabiliser devices (if not already fitted as standard), dependent on the maximum gross weight of the caravan. AL-KO stabilisers operate on a friction type basis, whereby friction pads grip onto a **Dry, Grease Free Towball**. It is important to note that the AKS range of stabilisers are suitable for use with swan neck, fixed or detachable type towbars or the special AL-KO Extended Neck Bolt-On Towball. We do not approve the use of any other bolt-on type towball, other than the AL-KO Towball. Failure to use the correct towball may result in product failure and will invalid your warranty.

The AKS range is available in three different models: The AKS 1300 is suitable for caravans up to a maximum gross weight of 1360 Kg, the AKS 2700 up to 2700 Kg and the new AKS 2004 up to 2000 Kg. Each Stabiliser can also be retro-fitted with an AL-KO Security Device and Safety ball, to ensure maximum theft Deterrent (please see our accessory price list for further details). All 'Red' coloured AL-KO Security Devices have full TUV and Sold Secure Approvals and are available from most good caravan dealers or direct from AL-KO Mail Order on 0800 074 4334.

AKS 1300 & Security Device

AKS 2700 & Security Device

AKS 2004 & Security Device

Road Wheels

In most instances the road wheels and tyres are supplied by the Caravan Manufacturer. 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.**

Important: Standard AL-KO caravan chassis use M12 wheel bolts. These **must always only** be tightened to the correct torque setting of 88 Nm (65 lbs/ft), in sequence, (i.e. North, South, East, West); **NEVER** clock or anti-clockwise. ALWAYS use a **calibrated torque wrench, do not** use a corner steady brace, power or electric wrench. It is as dangerous to overtighten wheel bolts as it is to not tighten them sufficiently.

Important: The torque settings should be re-checked after 50 Km.

If other wheel bolts are used please ensure the torque settings are as follows:

M10 - 49 Nm (36 ft. lb)

M14 - 135 Nm (99.5 ft. lb)

M16 - 210 Nm (155 ft. lb)

Special Note -Aluminium Wheels

The standard M12 x 1.5 60° Conical Wheel bolts are NOT SUITABLE for aluminium wheel rims. Special wheel bolts should be used.

Tyres

The legal requirements for tread depth on motor vehicles, also applies to caravan and trailers.

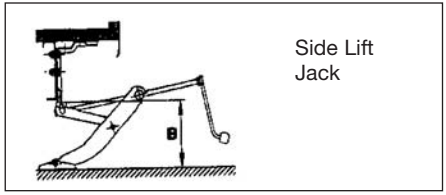
Jacks

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.**

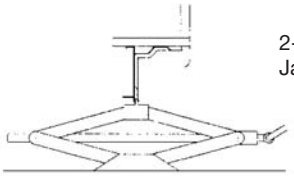
NOTE: It is essential that the car and caravan are hitched together before commencing jacking. All AL-KO chassis from 1992 onwards have 2 holes punched in the chassis members, each side (rear of the axle); to accept the brackets for the Jack(s). (See Accessory Price List).

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.**



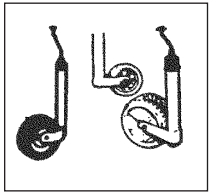
Side Lift Jack



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.

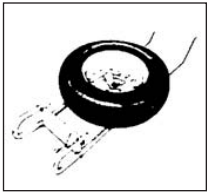
Jockey Wheel



Lubricate screw thread and wheel spindle periodically.

Spare Wheel Carriers

Each caravan has a set of punched holes in the chassis member to facilitate the fitting of a spare wheel carrier. The assembly is of a strong, lightweight construction and zinc plated for all-weather protection.



There are 3 variants to suit most AL-KO chassis (record your tyre size on this booklet for future reference).

The carriers can be fitted for left or right hand operation and are easy to fit.

The telescopic frame tubes should be lubricated periodically.

RECORD YOUR SPARE WHEEL CARRIER INFORMATION HERE:

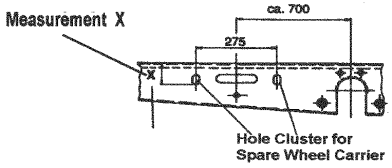
Caravan Make (eg Abbey).....

Caravan Model (eg Spectrum 520).....

Year of Manufacture .....

Tyre Size (eg 195R 13).....

Dimension 'X' in mm .....
(taken from following diagram)



GENERAL DATA

Fault Finding

WATER

Problem	Possible Cause	Remedy
Water not flowing from any tap when operated but pump runs	Freshwater tank empty Pump wired in reverse Pump not primed 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 Refer to pump manufacturers instructions Check connections Check pipes run Check, starting inside freshwater tank Dismantle and clean Check for bubbles & secure with clip
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 On switched tap version, microswitch could 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 Disconnect wires from microswitch and join together. If the pump operates, microswitch should be replaced
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. Ensure that hose is Carver recommended type Refer to installation manual Disconnect and inspect Seek service attention

WATER (continued)

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

GAS

Problem	Possible Cause	Remedy
Hob does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle 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 bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to oven manufacturers instructions
Space heater or central heating	No gas Over gassed Air in pipe	Check level of gas in bottle Check gas bottle 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 central heating boiler manufacturers instructions
Fridge does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to fridge manufacturers instructions
Water heater does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to water heater manufacturers instructions

CASSETTE TOILET

Problem	Remedy
Bowl does not drain when toilet is flushed. Cassette is overfilled	DO NOT REMOVE CASSETTE. While inside the caravan turn flush knob anti-clockwise to open valve blade and leave it in the open position. Open access door on side of caravan. Rotate pour-out spout outward. Place appropriate size container under spout cap. Remove cap carefully. Allow bowl contents to drain into container. This will lower the water level in the bowl. Replace cap and return pour-out spout to stored position. DO NOT REMOVE CASSETTE. Go inside the caravan and turn the flush knob clockwise to close valve blade. Now, the cassette may be removed following the normal removal and emptying procedure.
Odours	Use proper amount of holding tank deodourant specified on bottle.
Toilet tissue does not fit into compartment.	Since some tissues are supplied on larger rolls, it may be necessary to use some tissue before storing into compartment.
Soiled bowl after flushing	Partially fill bowl to cover soiled portion of bowl. Next flush will dissolve waste. **Tip:** Leave valve blade open during use.
No power to add water to toilet bowl	Check cassette safety sensor switch and fuse-holder for proper engagement and operation. **Note:** Cassette has to be removed to reach switch and fuse. Insert cassette and try adding water to toilet bowl. Toilet can be flushed manually. Add water. Add water to bowl from a separate container. Turn flush knob anti-clockwise to open valve blade. Turn clockwise to close valve blade.
Cassette cannot be removed	Check for obstacles under retaining clip. Depress retaining clip several times to check operation. Remove cassette. Flush knob and valve blade in partial open position. Close valve blade by moving knob clockwise. **CAUTION: If valve blade is open during cassette removal, severe damage to system can occur. Never force insertion or removal of the cassette tank.**
Valve blade mechanism sticks or is hard to open	Spray light film of silicone on blade.
Major unit malfunction	Contact your original Caravan Dealer.

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 and every third year there is a 'Works Rally' where owners have the opportunity to visit the factory. 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 Supercare (SML Ltd), Tel: 01482 875740 or from the Swift Group website.

SPARES AND AFTER SALES SUPERCARE

There are numerous items available from your dealer ranging from door catches through to spare wheels and touch-up paints. Please note that all after sales enquiries must be directed through your supplying dealer. The after sales service at the factory is geared to support our dealer network as is the service provided by appliance manufacturers.

In the interest of safety, replacement parts for an appliance shall conform to the appliance manufacturers specifications and should be fitted by them or their authorised agents.

Note: Please remember to quote chassis number when ordering any items from your dealer.

Customer Care
Tel: 01482 875740
Fax: 01482 840082

NOTE:
The times for contacting Customer Care by telephone are:

9am to 4pm Monday to Thursday.
9am to 12.45pm Friday.

Swift Group Website
www.swiftleisure.co.uk

Swift Group E-Mail Enquiry
enquiry@swiftleisure.co.uk

REPAIR FACILITIES

Should you be unfortunate enough to suffer a major accident with your caravan it is comforting to know that we have a completely separate repair shop facility where their fully trained experts will under take all types of major damage repair work.

Repairs of a minor nature should be referred first to your local dealer.

Useful Information

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

The Camping and Caravanning Club,
Greenfields House,
Westwood Way,
Coventry,
West Midlands.
Tel: 01203 694995
www.campingandcaravanningclub.co.uk

MOTORING ASSOCIATIONS

Automobile Association (AA)
Fanum House,
Basingstoke,
Hants. RG1 2EA
Tel: 0990 448866
www.theaa.co.uk
e-mail: customer.services@theaa.com

RAC Motoring Services
RAC House,
M1 Cross,
Brent Terrace,
London, NW2 1BX
Tel: 0990 722722
www.rac.co.uk

Green Flag National Breakdown
PO Box 300,
1, Cote Lane,
Leeds, LS99 2LZ
Tel: 0345 670345

TRADE ASSOCIATION

National Caravan Council
Catherine House,
Victoria Road,
Aldershot,
Hampshire, GU11 1SS
Tel: 01252 318251
www.martex.co.uk/ncc
e-mail: mail@martex.co.uk

CRIS

HPI Equifax
Dolphin House,
New Street,
Salisbury,
Wiltshire SP1 2TB
Tel: 01722 411430/422422

Swift Group Limited
Dunswell Road, Cottingham,
East Yorkshire HU16 4JX
Tel: (01482) 875740
e-mail: enquiry@swiftleisure.co.uk
web site: www.swiftleisure.co.uk

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NCC Approved

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 Swift 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.

Quality with Style

Swift Caravans, Dunswell Road, Cottingham, East Yorkshire HU16 4JX. Tel: 01482 875740 Fax: 01482 840082
e-mail: enquiry@swiftleisure.co.uk website: www.swiftcaravans.co.uk

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