

# SWIFT

## CARAVANS

1 9 9 1

### OWNERS HANDBOOK

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## THE CARAVAN TOWING CODE

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

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 2030 kg (4475 lbs), overall width not exceeding 2.3m (7ft 6in approximately) and overall length not exceeding 7m (23ft approximately), excluding the drawbar and coupling.

### CARAVAN TERMS

#### Ex works weight:

The maximum weight 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, variation of  $\pm 5\%$  of the manufacturer's stated ex-works weight can be expected.

#### Actual laden weight:

The total weight of the caravan and its contents when being towed.

### Maximum laden weight:

The maximum weight for which the caravan is designed for normal use when being towed on a road, laden. This should not be exceeded.

### Nose weight:

That part of the weight of the caravan supported by 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. See section on Measurement of Nose Weight.

### TOWING VEHICLE TERMS

#### Kerb weight:

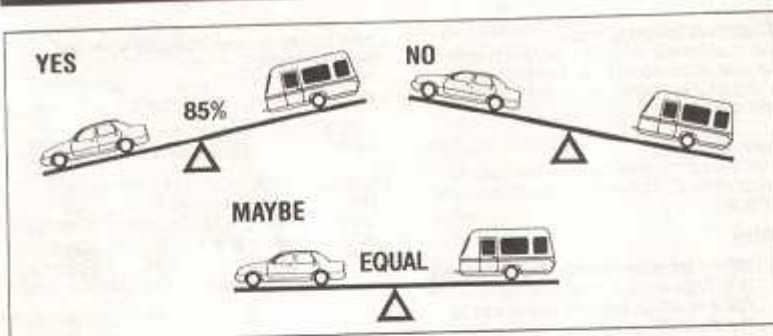
The weight of the towing vehicle as defined by the vehicle manufacturer.

### The Caravan and Towing Vehicle Weight Ratio.

This 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.

**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 increasing when towing. The advice of the vehicle manufacturer should be sought.

### Actual laden weight

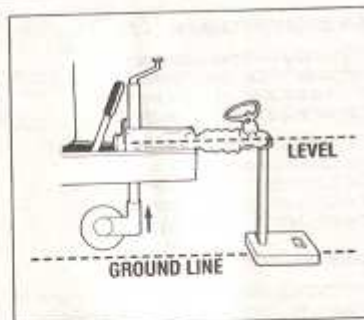
Caravanners can use a public weighbridge to establish the actual laden weight.

**Note:** Weighbridges have varying weight tolerance levels.

### MEASUREMENT OF NOSEWEIGHT

Noseweight may be measured using a proprietary brand of noseweight indicator. Such equipment is obtainable at your Swift Caravan Dealer.

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.

Noseweight can be adjusted simply by distribution of weights in the caravan. (See Loading)



**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. (For detailed information see **Use of Gas**).

**Jack** – A suitable jack is essential (screw, scissor 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 the spirit level.

**Spare wheel** – It is always advisable to carry a spare wheel for 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** – Car manufacturers recommend that their own bracket is fitted at a specialist dealer, to ensure that it is fixed to the correct mounting points. Never use cheap alternatives, obtain one manufactured by a reputable company.

**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 to carry fresh water to the caravan and waste water which needs to be properly disposed of. 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, refrigerator and other electrical appliances. (See **Battery**)

Useful memory aid for other essential items.

## Car

Distilled water  
External mirrors  
Fan belt  
Fire extinguisher  
Jack  
Jump leads  
Petrol can  
Puncture outfit  
Socket set  
Spare bulbs  
Spare keys  
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  
Chemical toilet  
Corner steadies brace  
Coupling lock  
Door mat  
Fire blanket  
Fire extinguisher  
Fresh water container  
Gas cylinder  
Gas regulator  
Jack  
Levelling boards

Mallet  
Numberplate  
Site/caravan mains lead  
Spare bulbs  
Spare 12V fuses  
Spare gas hose  
Spare wheel  
Spirit level  
Toilet fluid  
Waste water container

## 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  
Aluminum foil  
Ashtrays  
Bin liners  
Binoculars  
Bottle opener  
Breadboard  
Breadbin

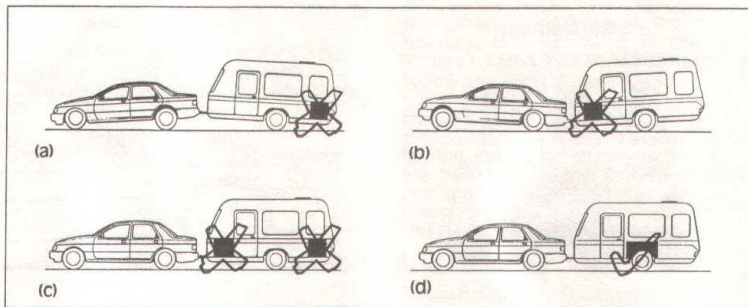
Brush and dustpan  
Butter dish  
Camera and films  
Carving knife  
Cassette recorder  
Chairs  
Clock  
Clothes brush  
Clothes line  
Coat hangers  
Coffee percolator  
Coolbox  
Colander  
Cruet  
Corkscrew  
Cutlery  
Dish cloth and brush  
Dusters and polish  
Disposable cloths  
Egg cups  
Electrical 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  
Pepper pot  
Piezo Gas lighter  
Potato peeler  
Pressure cooker  
Radio  
Rubbish bin  
Salad shaker  
Salt pot  
Saucepans  
Scissors  
Sieve  
Sugar bowl  
Shopping bags  
Sleeping bags  
Tea pot  
Tea strainer  
Tea towels  
Table cloths  
Table mats  
Television  
Tin opener  
Tissues  
Toilet paper  
Torch  
Towels  
Toys & Games  
Vacuum cleaner  
Washing up bowl

## Documents

Bank and credit cards  
Cheque book  
Driving licence  
Maps and guides  
Money  
MOT Certificate





## 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

- nightsetting. Leave all curtains and blinds open to aid rear visibility.
- gas cylinders are correctly positioned, secured and turned off.
  - battery is secure and connecting cable is disconnected and stowed.

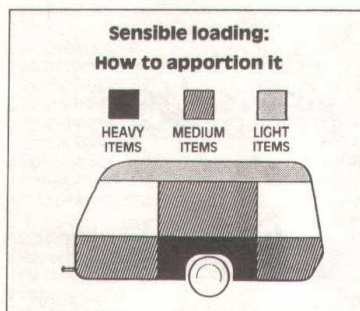
- instability due to the 'pendulum effect' (c).
4. Load remainder to give a suitable noseweight at the towing coupling. Check noseweight.

**Note: Do not load car boot heavily.**

## 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 in front of the axle(s).
2. Load evenly right to left.
3. Do not load items at the extreme front or rear since this can lead to



## 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.

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 twin axle caravan consult the towing bracket manufacturer.

## STABILITY

All models manufactured by Swift 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.

## Towing Aids

If fixing a towing aid to the aluminium chassis you should always ensure that:

- (a) the nuts and bolts are either cadmium coated or stainless steel and
- (b) there is a rubber washer between the two different metals.

Failure to do so will result in the metals interacting.

Never drill the coupling head to aid the fitting of a stabilizer.

It is recommended that stabilizers are fitted by your dealer since the drilling of drawbars requires certain precautions to be taken.



## Suitable towing vehicles

The caravan is manufactured for towing behind normal road cars and is not suitable for towing behind commercial vehicles other than passenger car derivatives. If in doubt please consult Swift Caravans.

## 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 or even completely cured by various proprietary devices, such as a Scott stabiliser, about which your dealer will advise you.

## 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 Swift Caravans 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.

### Tyre Tread

This caravan is subject to the same criteria applied to car tyres, namely; the minimum tread should be 1 mm around the total circumference and across the entire width of the tyre.

### Tyre pressures

It may be necessary to use the tyre valve extension supplied.

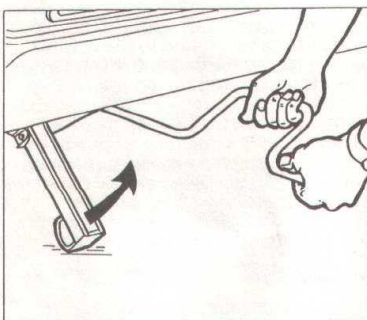
Caravan and towing vehicles tyres must be at the pressures recommended for towing or heavy loading. Towing stability

may otherwise be affected. The pressures can be found in the towing vehicle handbook and under the caravan specification in this handbook.

Note: Although the caravan may be fitted with the same type of tyre as the towing vehicle, the pressures specified are different. Wall charts show values for cars and therefore not applicable. Pressures displayed on tyre walls, apply ONLY in North America and Canada.

## Wheels

Caravan wheel nuts should be tightened to a torque of 9kg/m (65lb/ft) and should be checked with the use of a torque wrench regularly. (See section on Maintenance - ALKO Running Gear). Only use a spare wheel and tyre recommended by Swift Caravans.



## PRE-TOW CHECKLIST AND HITCH-UP

Check Gas Locker, Battery Locker (if fitted) and Cassette Toilet (if fitted) door/s are secure.

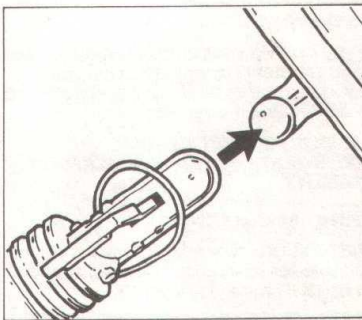
Check wheelnuts, tyre pressures and tyre conditions.

Fully raise all four corner steadies.

Pick up any levelling pads or levelling boards.

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.

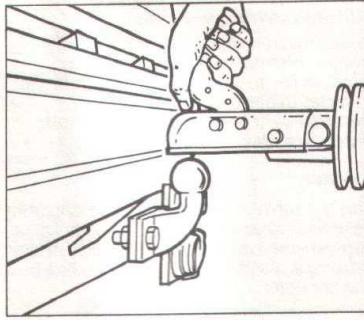


When reversing aim the towball of the car directly at the caravan drawbar. Remove towball cover and keep in car.

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

Release caravan handbrake.

Position cup over greased towball and release safety catch.

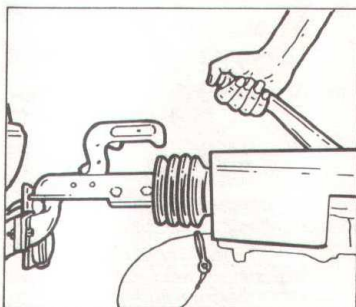


Adjust jockey wheel to lower cup onto the ball. A click indicates it is fully engaged. Ensure locking button has returned to its free position.



## Preparing for the Road

9



Secure caravan handbrake.

Connect breakaway cable (emergency braking device, see inset) to suitable anchorage point on towbar. DO NOT attach to towball.

Turn jockey wheel winding handle whole way and release clamp to raise jockey wheel.

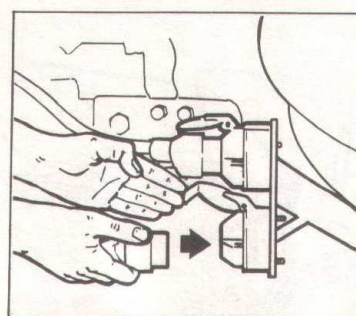
Raise jockey wheel to its highest travel position and tighten clamp again.

N.B. Ensure jockey wheel locates in recess provided.



Take hold of the caravan under the rubber gaiter behind the coupling and lift to ascertain whether the caravan is properly attached.

Lock hitch if possible (see **Safety and Security** page no. 13.).



Connect 7 pin plugs to car sockets ensuring there is enough loose cable for cornering.

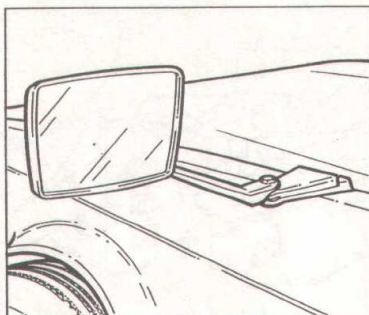
Check all car and caravan roadlights are working.

Check round the caravan for anything left behind.

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

10

## Towing & Driving Hints



### 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.

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

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

**Note:** Any rear view mirror fitted shall be 'e' marked and cover the field of view as stipulated by type approved requirements (Regulation 33 of the Road

12N and 12S viewed from rear of plug

○ TUBES

⊕ PINS

12N (BLACK)



TERMINAL	COLOUR	12N PLUG
1	YELLOW	L/H INDICATOR
2	BLUE	REAR FOG LAMP
3	WHITE	COMMON RETURN (EARTH)
4	GREEN	R/H INDICATOR
5	BROWN	R/H SIDE TAIL
6	RED	STOP LAMP
7	BLACK	L/H SIDE TAIL

12S (GREY)



TERMINAL	COLOUR	12S PLUG
1	YELLOW	REVERSING LIGHT
2	BLUE	BATTERY CHARGING
3	WHITE	COMMON RETURN (EARTH)
4	GREEN	INTERIOR LIGHTS
5	BROWN	SENSING DEVICE
6	RED	FRIDGE
7	BLACK	SPARE

Vehicles [Construction and Use] Regulation 1986).

### Brakes/breakaway cable.

For caravans exceeding a maximum weight of 1500kg the braking device must be such that the caravan stops automatically if the coupling breaks. (Regulation 15 of The Road Vehicles [Construction and Use] Regulations 1986).

**A Breakaway Cable** is required for caravans weighing below 1500 kg if no automatic stopping device is fitted. Always ensure the breakaway cable is secured to the towing vehicle.

### Passengers

Passengers are forbidden to ride in a caravan with the exception of authorized test personnel.

### Road lighting

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



## SPEED LIMITS

**Normal road towing: 50mph**

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

## PULLING OFF

Let the clutch in smoothly.

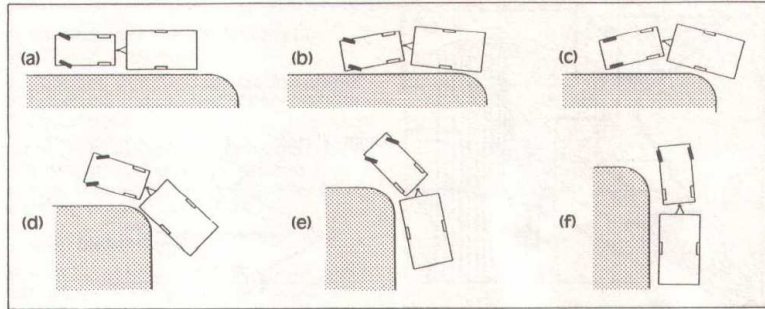
Allow more engine speed to produce the power to move the additional weight of the caravan.

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

Change gears smoothly.

Try not to jerk the clutch.

**Reversing** Proficiency at reversing can only be achieved with practice and should be first attempted in a large open area.



## 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 vehicle 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.

## IMPORTANT POINTS ESPECIALLY FOR MOTORWAY DRIVING

- 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).
- Reduce Speed:
  - In high or cross winds.
  - Downhill.
  - In poor visibility
- 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.

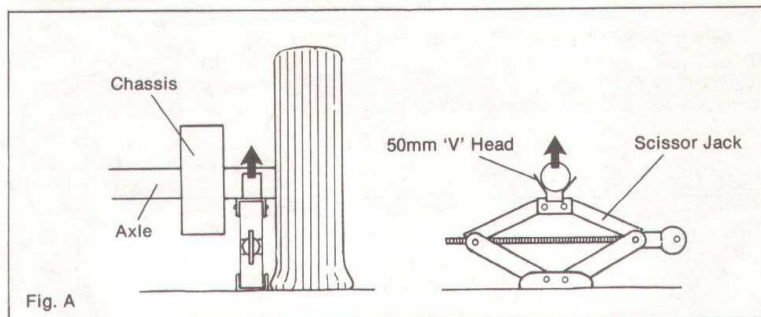


Fig. A

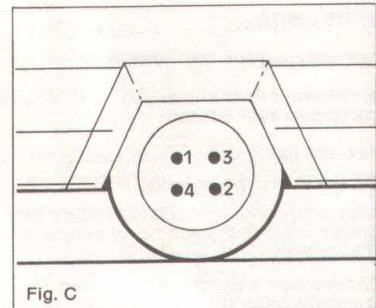


Fig. C

## CHANGING A WHEEL

- Unhitch caravan and ensure handbrake is applied.
- Lower corner steadies as safety measure to stabilise the caravan.
- Remove the hub cap.
- Use wheel brace to slacken off wheel nuts on the wheel to be changed.
- Position scissor jack under the axle at the appropriate jacking point (see fig. A)
- Jack up the caravan until the wheel for removal is just off the ground.
- Remove the wheel nuts and remove the wheel.
- Fit spare wheel and reverse the above procedure.
- Tighten all four nuts equally according to fig. C

## IMPORTANT

When a wheel has been removed and replaced the torque of the wheel nuts should be checked after approximately 15 miles of running.

## JACKING POINTS

It is imperative that the jack is located in the correct position i.e. on the axle tube between the chassis and the wheel.

## STOPPING ON A HILL

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

- Carry a good sized wedged shaped piece of wood with a rope or light chain attached.
- Place the wood behind the nearside caravan wheel.
- Carefully reverse the car slightly back down the hill, the caravan will stop against the wedge and turn.
- 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.



**IMPORTANT:** Your attention is drawn to the notice affixed in the caravan advising on fire prevention, ventilation and what to do in case of fire.

## 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.

## Fire Extinguishers

It is recommended that a 1kg (2lb) minimum capacity **dry powder** fire extinguisher be carried inside your caravan at all times.

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

## IN CASE OF FIRE

1. Get everyone out of the caravan as quickly as possible using whichever exit is quickest including windows. Do not stop to collect any personal items
2. Raise the alarm – Call the fire brigade (in the U.K. dial 999).
3. Turn off gas container valve if safe to do so.

## Ventilation

All Swift caravans comply with British Standard 4626. The ventilation points on your caravan are fixed points of ventilation which are stated by the British Standards. 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.

Night time ventilation is operable by releasing the window catches and placing them in the second groove on the frame catch.

## Petrol/Diesel Fumes

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

## SECURITY

### Caravan Theft

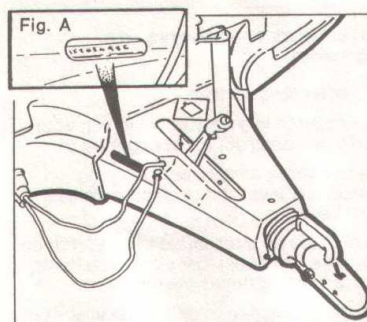
The theft of a caravan can occur in the most unlikely circumstances; from a motorway service area, even from an owner's driveway.

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

### Chassis number

Record your caravan chassis number which can be found on the **front offside section of the drawbar**. (Fig. A)

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



### Additional security

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

A hitch lock cover prevents towing of the caravan.

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

Window etching of the chassis number is a cost effective deterrent

**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.

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

## 1. Selecting a pitch.

Do not pitch in a position in which your outfit will obstruct others coming in.

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

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

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

## 2. Unhitching.

Apply the caravan handbrake

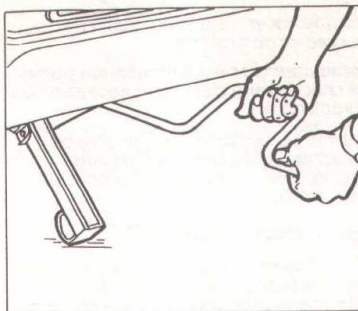
Unclamp and lower the jockey wheel to the ground.

OR Operate the handle and manually lift the coupling head clear of the towing ball.

**NOTE: Serious damage will occur unless the locking button is depressed first and the handle lifted forward before the caravan is lifted manually. This prevents the noseweight being transmitted through the locking button.**

Re-clamp jockey wheel if necessary.

Disconnect the breakaway cable.



Disconnect the two 7 pin plugs and return them to their holders.

Replace towball cover.

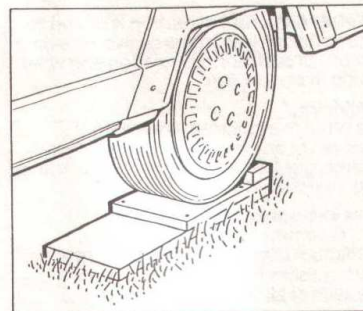
Park your vehicle alongside the caravan on the offside.

## 3. Levelling the caravan

Levelling must be carried out in both directions in order for the refrigerator and other equipment to function correctly.

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. Stepped levelling boards can easily be constructed.

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.



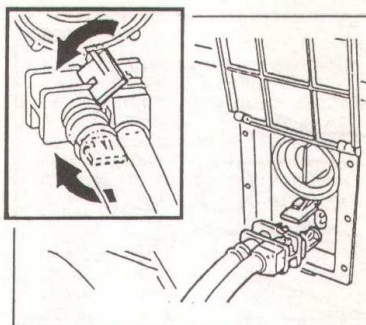
Connection of services are dealt with under separate headings. In all cases become familiar with manufacturers' instructions.

**Before making connections of any description to the caravan ensure ALL equipment is turned off and that where appropriate switches are moved to the on site positions.**

**The Cascade Water Heater**, where fitted must NOT be switched on until water flows from the hot water taps which indicates the water heater is full.

**The Cascade Water Heater** should not be used on BATTERY CHARGER ONLY (i.e. without a 12v battery in circuit) as this may cause the heater to operate incorrectly.

Under no circumstances connect **The Cascade Water Heater** directly to a mains water supply.



## WATER

Fill fresh water container and place in suitable position. Place waste water receptacles in position.

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

To connect the pump simply align the plug with the socket and push into position. This makes both the water and electric connections. Turn the security clip anti-clockwise to lock the connector plug into place. The pump system has been designed so that it cannot be fitted incorrectly.

Place the submersible pump into the water container, ensuring that it is fully submerged before operating the system.

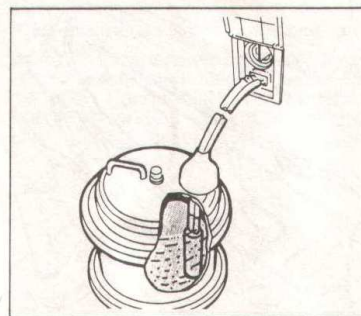


Fig. A Gas Bottle Compartment

## GAS

**Turn on gas at main cylinder.**

### GENERAL INFORMATION

#### Gas Bottles

Bottled L.P. gas is the most convenient portable source of fuel for your caravan.

Make sure that heating, cooking appliances and 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.

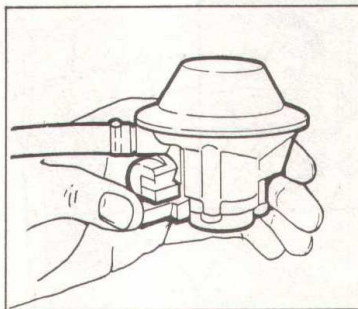


Fig. B

### The regulator

The regulator (Fig. B) is a governing device which adapts the bottle pressure to one that suits the equipment in the caravan.

**Note: Regulator valves should always be in the 'OFF' position when towing.**

### WARNING

Some industrial LPG appliances operate at high pressure and require a 'high pressure' regulator. This often has an adjusting handle on it. NEVER use such a regulator on a caravan.

Propane and Butane gas regulators are not interchangeable.

## Hoses

Hoses should be made from Neoprene, which is black and should conform to BS 3212. Rubber hosing should never be used. It is good practice to replace hoses annually, and a jubilee clip is a worthwhile addition to prevent accidental removal of the hose.

## 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 and Calor, aluminium and 32lb bottles which have a special clip-on connection.

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 or Austria supply propane with a male connection.



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

## GAS SAFETY ADVICE

### 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 from the LPG exhaust from a refrigerator venting into it.

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.

## Ventilation

All ventilation complies with BS 4626 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.

## 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) 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, and
  - (b) 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.
  - (c) 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. Remove any cover from the electricity inlet provided on the caravan, and insert the connector of the supply flexible cable obtained from the site owner.
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.

**IN CASE OF DIFFICULTY CONSULT AN APPROVED ELECTRICAL INSTALLATION CONTRACTOR (WHO MAY BE THE LOCAL ELECTRICITY BOARD). IT IS DANGEROUS TO ATTEMPT MODIFICATIONS AND ADDITIONS YOURSELF. LAMPHOLDER-PLUGS (BAYONET-CAP ADAPTORS) SHOULD NOT IN ANY CIRCUMSTANCES BE USED.**

#### On leaving caravan site

5. Reverse the procedure described in Paragraph 3 and 4 above.

**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. IT IS DANGEROUS TO LEAVE THE SUPPLY SOCKET OR SUPPLY FLEXIBLE CABLE LIVE.**

## Periodically

6. Preferably not less than once a year, the caravan electrical installation should be inspected and tested and a report on its condition obtained as prescribed in the Regulations for Electrical Installations, published by the Institute of Electrical Engineers.

## 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.

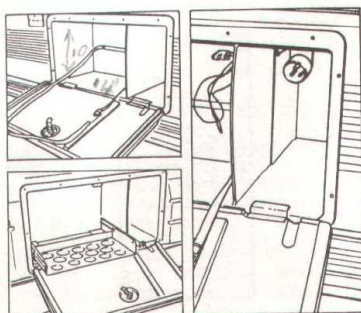
A means of checking the polarity of the mains supply when overseas is useful.

There are available several proprietary makes of equipment for the purpose.

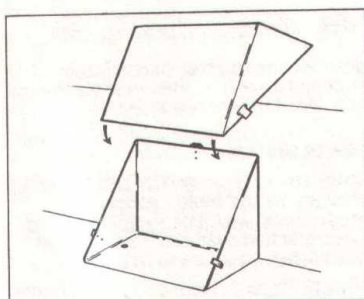
If it can be achieved, it is preferable to connect live to live, and neutral to neutral to maintain full electrical protection.

CHECK all caravan equipment is set-up to accept the site supply before actually switching on.





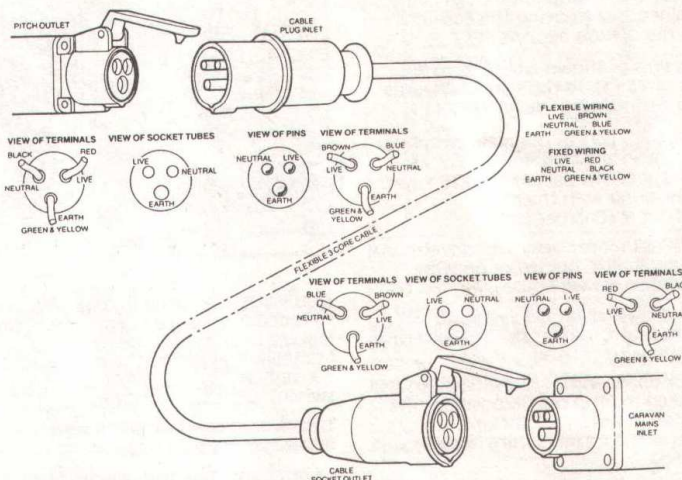
Battery Box (External)



Battery Box (Internal)

Where internal battery box is fitted, ensure vent pipe is inserted through grommet provided.

## 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.

## MAINS UNIT (CEC 225)

Access to the Mains Unit and Transformer/Charging Unit can easily be gained by removing the cushions from the offside bedbox.

Grasp slats as shown and raise to an angle of 45°. Push the slats backwards whilst maintaining the angle.

The CEC 225 acts as the main switch for the caravan allowing isolation of all circuits. It forms part of the KT8 Power System along with the KT12 Transformer/Charger Unit.

The Mains Unit replaces the conventional fusebox. Similar, but larger ones are often fitted in new houses.

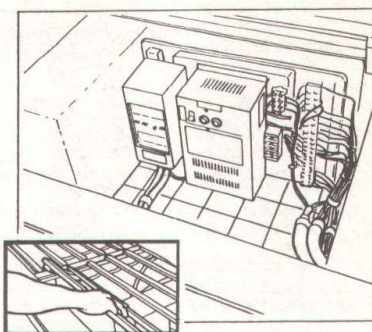
The unit gives overload and earth leakage protection for the 240v electrical supply in your caravan.

For normal operation all switches on the unit need to be in the ON position. The switches on the left of the unit are known as M.C.B.'s (miniature circuit breakers).

These take the place of the conventional fuse but are more convenient.

In the event of a fault the M.C.B. 'trips' i.e. automatically moves to the OFF position.

After elimination of the fault the M.C.B. can be re-set by switching to the ON position. (Against the spring pressure in an upwards direction).



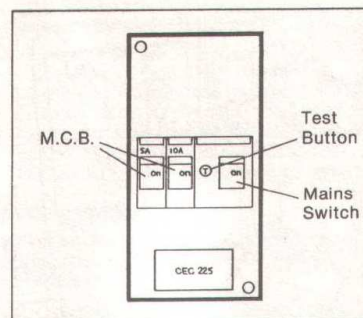
If an earth fault develops or a person was to touch a live piece of equipment the leakage of current to earth should immediately operate the RCD (residual current device) and 'trip' the main switch, to the OFF position.

This switch is only re-settable after elimination of the fault.

To re-set, operate the switch as for M.C.B.'s.

Periodically the RCD should be checked by operating the test button marked 'T'. The unit should immediately switch to the OFF position. If the unit does not switch off then a qualified electrician should be consulted.

If the unit does switch off, the test is complete and the switch can be re-set



restoring the supply back to normal.

Note: Having too many appliances switched on at the same time will trip the RCD. This is a safety measure.

### POWER SYSTEM

**Note: The connection of the battery charger to the mains supply is in accordance with the Regulations for Electrical Installations 15th Edition (IEE Wiring Regulations) 1981.**

The KT8 Power System is supplied, either fitted at the rear of the battery compartment or remotely in a convenient position and comprises:

- Mains Unit (CEC 225)
- Transformer/Charger Unit KT12



- (c) Fuse block  
(d) DC Connector blocks

## Power Enclosure

The enclosure, accessible from the outside locker door has two compartments. One houses the battery (with a pull-out battery tray fitted to some models) and with provision for 'parking' battery terminals when the battery has been removed.

The second compartment contains the inlet mains socket, and gives stowage space for the mains hook-up cable.

## TRANSFORMER / CHARGER UNIT KT12

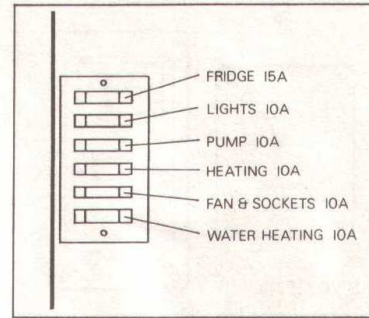
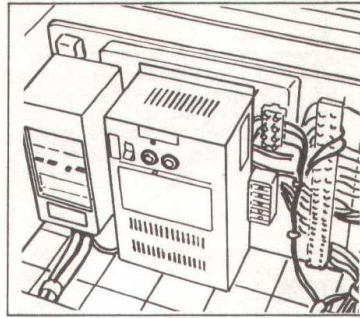
The KT12 transformer/charger unit has important safety features:

- Over-current protection
- Short circuit protection
- Reverse battery polarity protection

The unit has been designed not only to operate as a battery charger, but also for use as a power supply, should a 12V DC battery not be present in circuit. It is however recommended that a good quality **leisure battery** is installed.

Once connected to 240v mains supply and switched on, its operation is fully automatic. When used as a battery charger any load placed on the 12V system will be shared by the battery and the unit.

When used as an alternative DC power



supply, with no battery in circuit, the KT12 will supply a suitable output for use with pump, lighting, T.V., radio etc. Should the unit become overloaded the 12A DC fuse will blow. Removal of the overload or fault allows the unit to return to normal operation, after replacing the DC fuse. A 1A anti-surge AC fuse is provided as further protection.

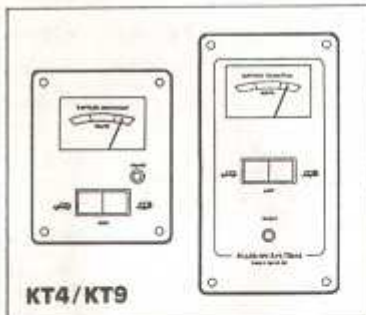
Under normal circumstances the total load required by caravan equipment should not produce an overload situation.

The facility for drawing 12V supply from the car battery is intended for standby situations only, and care should be taken not to run the car battery too low.

Provided the appropriate relay is fitted to your car and the connection is made via the 12S plug and socket; it is possible to charge the caravan battery whilst towing. This is recommended in order to keep the battery in a fully charged condition.

## Fuseblock

1. Each circuit is protected by a standard blade car fuse of appropriate rating.
2. This type of fuse is readily available and if necessary spare fuses can be interchanged, car to caravan provided the current rating is STRICTLY observed.



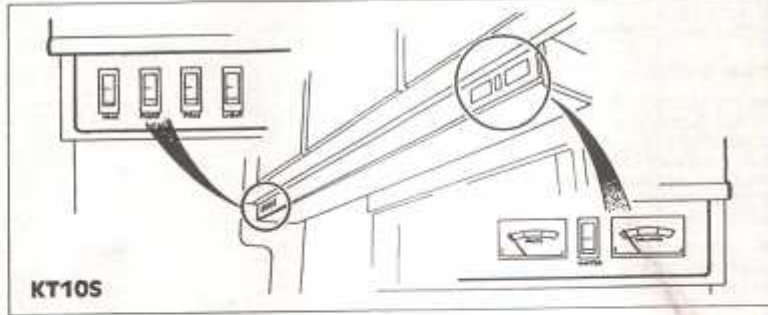
## KT4 & KT9 DISTRIBUTION PANELS

The KT4 and KT9 Distribution panels have the following facilities:-

1. Battery Condition Indicator
2. Battery Selector Switch
3. Pump ON Indicator (optional)

## Operation

1. Select CAR or CARAVAN battery supply source required by the three position switch.
2. Check that the meter needle moves into the yellow or green sectors of the scale, indicating satisfactory battery charge state.
3. 12 volts DC is now distributed to all caravan circuits.
4. The central OFF position on the selector switch ensures that both car



and caravan battery supplies are switched off, if however mains supply is connected via the charger unit, 12 volts supply will be available direct to power the 12 volt equipment in the caravan with the switch in the centre position.

## KT10S KITCHEN CONSOLE

The Kitchen Console has the following facilities:-

## Switches

### BATTERY / WATER

Selection of either Battery Condition Display or Water Level Display.

### LIGHT

Overhead fluorescent DC light.

### FAN

Integral extractor fan.



### CAR/VAN

This switch is used to select the DC supply from either the CAR or CARAVAN battery.

A centre OFF position is provided to isolate DC supply.

When used in conjunction with the KT8 Power System it is possible to charge the caravan battery regardless of the position of this switch. When charging the caravan battery, observe the battery condition meter. If the meter shows a good charged condition (green area), provided there are no DC applications being used, the charger should be switched off.

Remember to switch the charger on when required.

### BATTERY

A deep cycling heavy duty 12v battery should be purchased to provide power for lights, fridge and other electrical appliances. A proprietary brand leisure battery with either a 60 or 90 amp capacity is recommended. The battery must also have a tube venting capability.

### WARNING

Explosive gases may be present at 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 25A.

When fitting the battery, ensure that the correct polarity is observed (where battery connectors are provided, black is negative, red is positive) and that terminals are **securely** fastened.

Ensure the battery is secured with the strap provided.

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of terminals (possibly once a year).