THE VOLKSWAGEN VISION

Welcome to your Richard Holdsworth VOLKSWAGEN VISION motor caravan which we hope will give you great enjoyment for many years to come. The following notes are to help you become familiar with the use of the excellent motor caravan conversion; they should be read in conjunction with the Volkswagen Instruction Manual provided by the vehicle manufacturers, which provides information on the vehicle itself.

Naturally, you will want both your vehicle and your motor caravan conversion to give the very best service, and we would underline the need to read these instructions with care, and to implement their recommendations wherever necessary. The same applies to the instructions provided by the manufacturers of standard and optional items such as the cooker, refrigerator and caravan heater.

Failure to do so in the case of gas appliances can - for example - result in the occupants being put at some risk, while failure to follow recommendations on other items can result in their premature failure for which the manufacturer may not wish to be held responsible.

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WARNING - before every journey the driver must carry out a number of checks for the safety of the vehicle and its occupants. These include those contained in the Owner's Manual produced by the vehicle manufacturer; AND the driver must check the conversion including:

Turn off regulator on gas cylinder and check that cylinder(s) are stored securely. NEVER operate any gas appliance including refrigerator on gas -when in motion or in a petrol station/when filling with petrol.

Remove all but the lightest items from cupboards above waist level.

Stow securely all heavier items within other cupboards and MAKE SURE they will not become loose while the vehicle is in motion.

Stow toilet and other pieces of equipment securely.

Stow table, table leg and other motor caravan fittings securely.

Close all cupboard doors, lower furniture unit lids and locate all sliding seats (if fitted).

Carry only lighter items in roof rack and make sure any such items are secure.

Apply rear seat restraints as these can lead to a more comfortable journey and help reduce the risk of injury in the event of a slow speed collision.

IN NO CIRCUMSTANCES SHOULD VEHICLE OCCUPANTS MOVE AROUND THE VEHICLE WHILE IT IS IN MOTION.

THE DRIVING COMPARTMENT

We design our driver and passenger seats for comfort and versatility. They have to fulfil the dual roles of comfortable driving seats and, of course, comfortable beds at night time. To achieve this there are a number of adjustments with which you must be conversant to obtain the best results.

First, the seats have infinite adjustment of the back-rest by means of the knurled knobs at the base of each seat. Furthermore, each seat is provided with a pneumatic cushion within the base of the rubber bellows to suit the curvature of the individuals back. To inflate, first screw up the small control valve and pump up the bellows to the required amount when driving. To deflate, when a flat bed is required, unscrew the air control valve.

Both the cab driving and passenger seats can be moved forwards and backwards by means of TWO sets of seat slides. The first moves the seats forwards as in a normal car, while the second gives enough additional forward movement for the back rest to be reclined fully to make a bed. Both levers can be found beneath the front edges of each seat.

The front, near-side (passenger) seat can be rotated through 360* degrees. This can best be done by sitting on the driver's seat or by standing outside the vehicle with the passenger door open. First push the safety belt stem down out of the way. Open the passenger door to allow the seat to swing. Find the locking lever which is at the rear of the seat. Lift the lever and rotate the seat to the required position. The locking lever operates when the seat is in the full front position or in the full rearward position, (after rotating through 180 degrees). When the seat has been put at the desired position, adjust the seat fore and aft and back-rest position as necessary.

WARNING: Do not drive or use your motor caravan without first reading and implementing the instructions at **the beginning** of this **manual. The instructions** are for **the SAFETY of YOU, YOUR PASSENGERS AND OTHER ROAD USERS!**

SEATING/DINING/ SLEEPING arrangements

FOR TRAVELLING: The rear seats in your Vision motor caravan will form comfortable face-forwards seats simply by raising the flap(s) on top of the bed-box and resting it against the furniture units behind each unit. Both the back-rest cushion and the base cushion have 'pockets' which enable them to be slotted over their respective seat wooden flaps and held in place for travelling. Note the fact that the base cushion pocket slides over the seat flap from the rear towards the front.

Both back-rest cushions used when dinettes are formed are stored for travelling between the off-side seat and the side of the van.

SLEEPING: To make up the single bed, remove the cushions from the faceforward seat. Open out the door-type flap from the base of the seat and lock into position using the brass barrel bolt. Then, the wooden back-rest folds down with the second hinged part opening out to form the base of the bed. Slide the cab seat along its double runners as far as it will. travel. Recline the cab seat back-rest fully. The base cushion is then placed, with the rolled edge against the furniture unit and the back-rest hinged in-fill cushion is then placed along the side of the vehicle to add width to the bed. Gently push the cab seat back to ensure that the cushions fit snugly and do not move when sleeping.

DINING. This is formed as for the single bed but the cab seat is not reclined and the double back-rest cushion is placed along the vehicle on top of the hinged in-fill cushion and is secured into place by means of the poppers.

The table must be stored in its special position when the vehicle is on the move - remove it from this position and take out the table leg and insert it in the table leg recess in the floor.

Please Note: The single table pillar design cannot be as firm or as steady as the conventional four legged table, but maximum steadiness can be achieved each time the table is erected by pressing down firmly on the table so that the leg is pressed hard into the floor and table cone.

DOUBLE BED KIT: As an alternative to the single beds provided in your Vision as part of the standard equipment, a double bed kit is available as an optional extra. This consists of a solid part with two fold-down legs for the cab and a series of slats - like a rope ladder - plus two extra cushions. Fold out the legs and locate the front part in the cab with the rear corners supported on the fronts of each face-forwards seat. Fold out the slatted part and rest on each side seat - locate in position with the press studs - both front and rear. Drop in place the two long back-rest cushions on the slatted section and the two double-bed cushions at the front to make a double bed some six feet long by the width of the van.

NIGHT-TIME PRIVACY AND SECURITY: The vehicle is fully curtained. The rear door, side sliding door and two cab doors can be locked from inside the van by pressing down the relevant knob to the 'locked' position.

For night-time privacy, full curtaining is provided in your Vision. In particular, you will note that the curtains overlap at the centre and there are velcro tabs, or poppers on most curtains to hold them in place. In addition, the cab curtains are provided with small elasticated loops which can be hooked over the window winder handle to keep these curtains firmly against the side of the van.

There are ample lights provided when darkness falls. There are also 8 watt fluorescent lights on either side of the van and also a small courtesy filament light immediately to the rear of the vehicle sliding door which operates when the sliding door is opened and a similar light in the vehicle cab which operates from the cab doors. These two lights are installed by the vehicle manufacturer and your local VW dealer will be able to provide replacement bulbs while replacement fluorescent tubes can be obtained at most good motor caravan or caravan accessory shops.

Ventilation can be obtained by removing the flyscreen and opening the roof ventilator - remembering to replace the flyscreen afterwards. Increased ventilation - yet with security - can be obtained by winding the cab windows down no more than 2 inches and sliding the caravan windows and locking them in place in the first 'notch'.

STORAGE: There is ample storage space in your Volkswagen Vision motor caravan both within the vehicle and in the roof rack.

Inside the vehicle you will find space for storage beneath the two faceforwards seats.

WARNING: Heavy items - such as tins of food etc. - must NOT be carried in cupboards or shelves above waist level as such items may become dislodged it the vehicle has to be braked heavily - or the driver has to swerve suddenly to avoid another road user and these objects can cause injury to the motor caravan occupants.

KITCHEN UNIT - WATER SUPPLY

The fresh water tank is located under the vehicle and holds approximately 59 litres. Some water remains in the tank below the level of the pump draw off. The tank is filled by means of the external fresh water filler cap in the centre of the offside of the vehicle.

The exterior filler Is provided with a locking cap which is filled by means of turning the cap in an anti-clockwise direction, and using either a water container and funnel or direct from a tap with the aid of a pipe, (many experienced motor caravanners carry with them a short length of piping specifically for this task).

The water tank is fitted with breather holes which may allow water to leak onto the ground, this is especially so when the tank is filled to the brim or if the vehicle is parked on an angle. It does NOT necessarily mean that the tank is leaking!

The locking cap is provided with two numbered keys. We would suggest you keep one in a safe place while the other is kept for regular use.

NOTE: Always retain a reference of your key number so that replacements can be provided if they both become lost.

WARNING: Neither ourselves as manufacturers nor your dealers retain the key numbers, and we are unable to provide replacement keys without the appropriate number.

The water tank can be drained by means of a plastic tap situated at the bottom, nearside of the tank. The tap turns through 180°. A small white plastic filter unit is fitted in the pipe from the water tank and can be removed from underneath the vehicle by unscrewing the jubilee clips joining it to the water pipe.

The water tank itself should be drained periodically and flushed through. Before winter, it is essential to drain the tank and - in fact - the whole water system to prevent it from freezing up. Failure to do so can result in damage to the tank, pipes and water pump for which the manufacturer will not wish to be held responsible.

Water left in the fresh water tank for extended periods may also become unsuitable for drinking or for washing up purposes, and for this reason also the tank must be drained and flushed through if the motor caravan is not to be used for even short periods.

Sometimes, water from plastic tanks can taste a little strange - particularly early on in the life of the motor caravan. Should the water become tainted, the water tank and water system can be treated with a proprietary product called Milton (available from chemists). Puritaps (also available from chemists) will make water safe but many motor caravanners these days prefer to fit inline filters. There are several good filters on the market, one of the most popular being the Safari available from good motor caravan accessory shops or direct from Associated Chemists Ltd, 61 Wicker, Sheffield, S3 8HT

PLEASE NOTE: When draining down the water system, it is wise to remove the water tank filler cap to prevent the possibility of air locks in the system. If you are laying the vehicle up before winter (or frosty weather) make sure the water pump as well as the water tank is free of water.

INSIDE THE VEHICLE: The fresh water tank is fitted with a water level gauge, the dial and controls of which are situated on the control panel fitted beside the wardrobe. To set the dial,

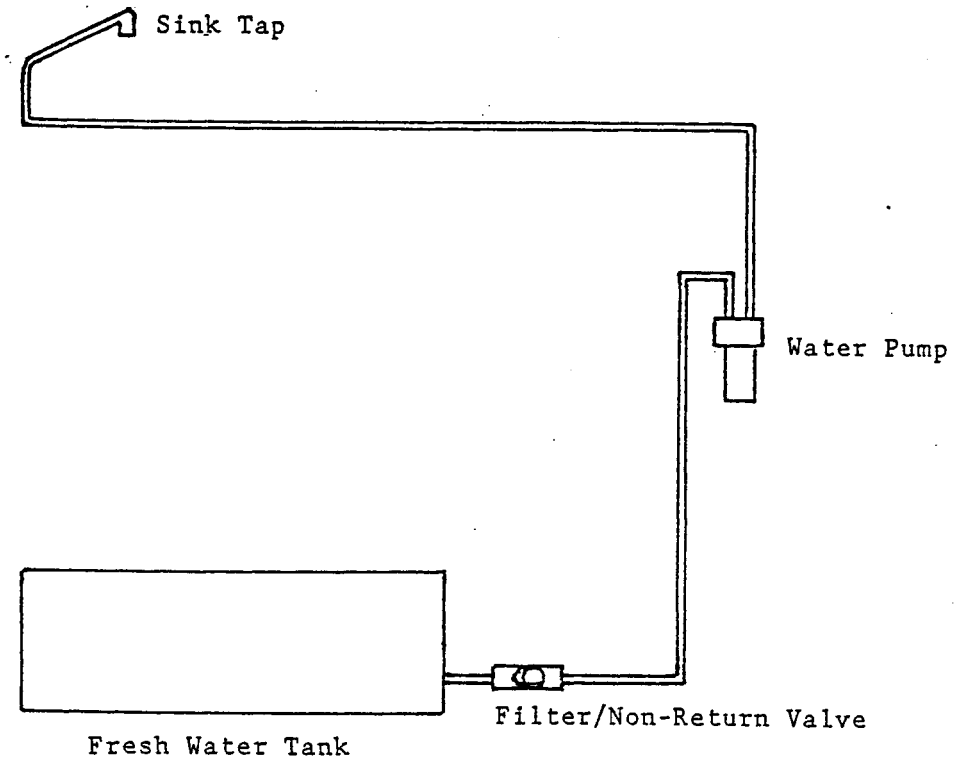
turn on the motor caravan 12 volt system, depress the button beneath the water level gauge and adjust the calibration knob with the water tank full. Please bear in mind the fact that the water level gauge is not precise in its accuracy and can vary with water from different areas of the country. Consequently, re-calibration may be necessary during your motor caravanning journeys.

The sink and cooker flaps are held up by means of the chrome anti-splash guards.

The electric water pump feeding water to the sink is operated by a foot switch on the floor, thus leaving the hands free for other tasks. Treat the foot switch with care; it will give years of trouble free operation if looked after, but is easily broken if kicked or heavy objects are dropped upon it.

The sink waste water drains to a point almost immediately below the sink and should be collected in a waste bucket. Alternatively, a waste tank can be fitted as original equipment during manufacture of your Vision.

WATER SYSTEM



ELECTRICAL SYSTEMS & FITTINGS

CARAVAN 12 VOLT ELECTRICAL SYSTEM:

Your Vision motor caravan is equipped with a comprehensive electrical system with both 12 volt and 220/240 volt circuits to provide comfortable motor caravanning under a wide variety of conditions. Naturally, the fluorescent lights consume the least electricity and these can be operated for some considerable time, along with the 12 volt water pump, without risking a 'dead' vehicle battery. However, if one is staying for along duration in one spot, it is wise to start the vehicle engine from time to time simply to make sure that there is enough reserve in the battery. Relatively short journeys in the vehicle will re-charge the battery.

The Vision can be fitted with an optional DCU/3 caravan battery charger unit which is connected to the SP-4 control panel by Peter Everard Limited, Cashes Green Road, Stroud, Glos GL5 4RA and separate instructions have been provided by the manufacturers. This unit is designed to ensure that the caravan (secondary) battery can be charged by the mains electrical supply if this is available. The unit automatically prevents overcharging and a battery condition warning light on the control panel indicates when the 12 volt system is switched on. The caravan battery is automatically charged from the alternator when the vehicle engine is running via the split charging relay fitted beneath the vehicle driver's seat.

The left hand rocker switch on the SP-4 distribution panel will dictate whether the caravan 12 volt appliances are operated from the vehicle battery (by pushing the switch at the top) or the caravan battery (bottom). The centre position for this switch turns off power to all 12 volt appliances. Once the left hand switch has been set, the appropriate 12 volt appliance can be operated with the use of the three other rocker switches plus - of course - the switches on each individual appliance. The following appliances are controlled by the switches:

PUMP	-	Water pump
LIGHTS	-	All fluorescent lights
AUX 1	-	Fridge ignition
		Heating systems (if fitted)
		Water level gauge

The main vehicle accessories (such as vehicle lights, windscreen wiper etc) are protected by fuses contained in a fuse box located behind the panel in the dashboard to the right of the driver. (see your Volkswagen manual for details). The caravan fuses are fitted in the engine compartment to the right of the main battery. There are two fuses - each of 25 amp (1) to protect the refrigerator and (2) the Zig control panel.

To remove the 25 amp line fuse, unscrew the white plastic bayonet fitting. To replace the 15 amp fuse on the DCU/3 charging unit, turn the black plastic caps and the fuse will be exposed. Carry spare fuses at all times. However, if fuses continually blow, an auto electrician - or your Vision supplier should be consulted for the root cause of the problem.

CARAVAN MAINS ELECTRICAL SYSTEM - 200-240 VOLT A.C.

The caravan is equipped with mains electrical equipment for use with a mains supply fed to the vehicle via a connector mounted on the rear corner of the vehicle, behind a white pull-up flap. The supply can be obtained from an ordinary domestic power socket when the vehicle is at home, or from a caravan site 'electrical hook-up' which many sites now make available, usually for a small fee.

This will enable use to be made of any ordinary 240 volt electrical mains equipment such as portable TV's, vacuum cleaners, razors, hair driers etc, always providing that the total current demanded by the equipment does not exceed the available supply current. This equipment is used from the domestic power socket mounted on the sink/cooker work unit.

The mains supply can also be used to re-charge the optional caravan battery through the Zig charging unit. Full protection is built into the design to ensure that the mains supply is isolated from the 12 volt caravan and vehicle battery circuits. The earth leakage circuit breaker gives protection against faults, this being located beneath the wardrobe. It is recommended that each time before using mains equipment, you should check the operation of this protection device. This is simply done by switching on the mains supply and the circuit breaker switch and pressing in the black tongue above the switch, when the switch should immediately fly 'off' again. This indicates the circuit breaker is operational and the switch can then be reset to 'on'.

NOTE: For additional protection, these three switches are of the industrial type for which the supply is 'on' when the switch is in the 'up' position - the opposite to most domestic switches.

TO USE FROM THE MAINS SUPPLY AT HOME: The motor caravan can be plugged into an ordinary domestic 240 volt supply before you leave for your holiday (you can 'cool down' your refrigerator in this way). To do this you will need to obtain the appropriate electrical lead from your supplying motor caravan dealer, or, alternatively, from a good caravan or motor caravan accessory shop. Please note that although the vehicle connector and flap provides splash protection, it should not be regarded as completely waterproof and it Is not recommended that it is used in the rain or when the vehicle is being washed.

TO USE THE MAINS SUPPLY FROM A CARAVAN SITE 'HOOK-UP':

It is necessary to purchase a suitable made up lead incorporating a plug to fit the vehicle socket and one to fit 'hook-up' supply points. These will be moulded into the cable so that they are waterproof. Nevertheless they should be used with care and should always be clean and dry when connected as camp sites often provide wet conditions due to rain, mist and dew. Again the earth leakage circuit breaker should be tested before use. These made-up leads can be purchased from good caravan supply shops.

Supply cables should always be fully uncoiled when they are used!

SWITCHING PROCEDURE: To use the van power socket connect up the supply cable and switch on as follows:

1) Switch on at the house or caravan site socket.
2) Switch on the earth leakage circuit breaker (ELCB), test as described above and switch on again.
3) Switch on the 15 amp switch (the centre one of the group of three on the ELCB unit).
4) Switch on the van power socket.
5) Switch on the appliance if necessary.

To use the domestic supply to charge the battery, connect up the supply cable and switch as follows..

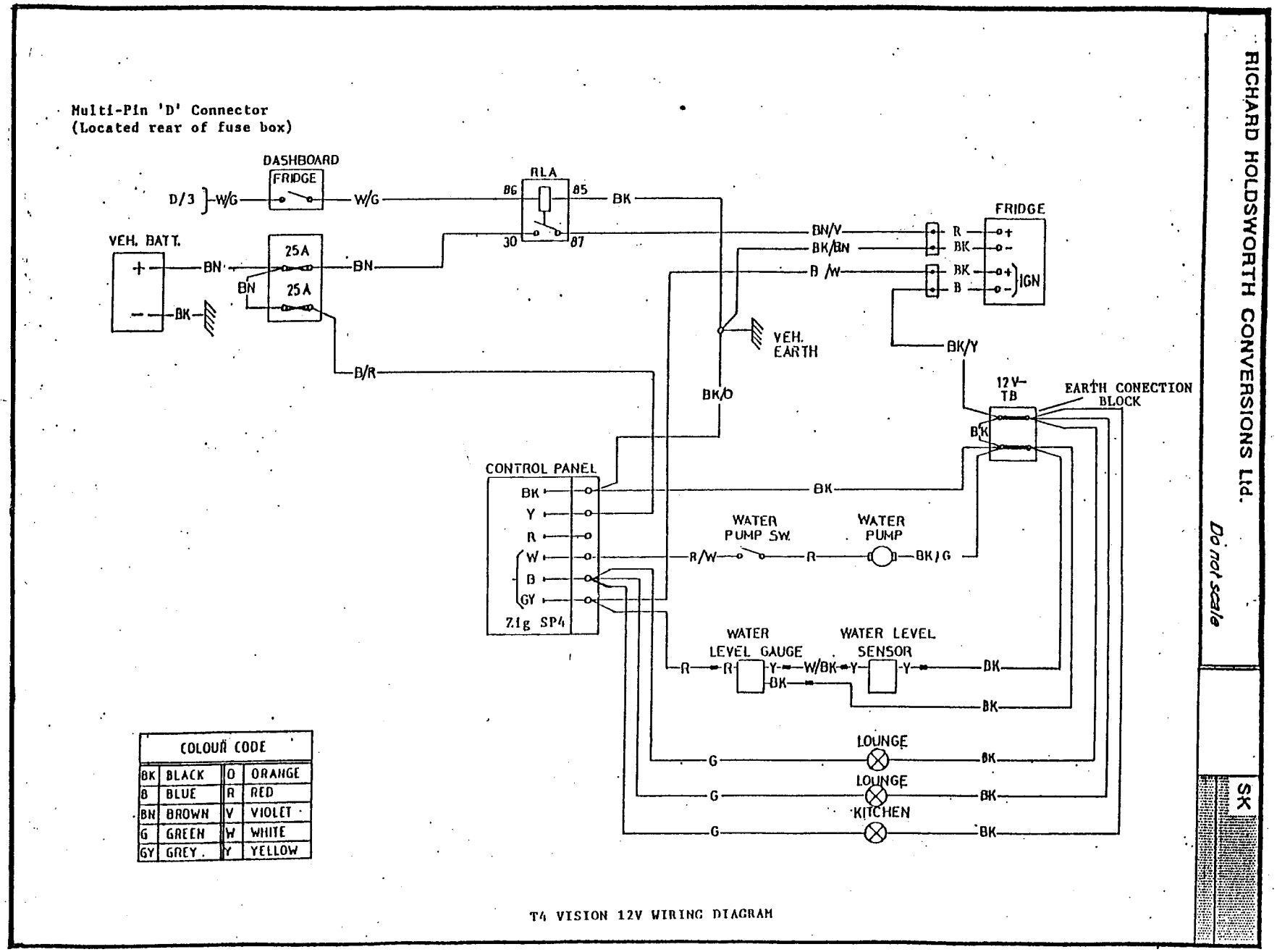
1) Switch on at the house or caravan site socket.
2) Switch and test the earth leakage circuit breaker and switch on again.
3) Switch on the 5 amp switch (the right one of the group of three on the ELCB unit).
4) Operate the switch of the charging unit which will illuminate amber.

The caravan battery should now be charging. An automatic cut-out is fitted if it should overheat, but charging will be interrupted.

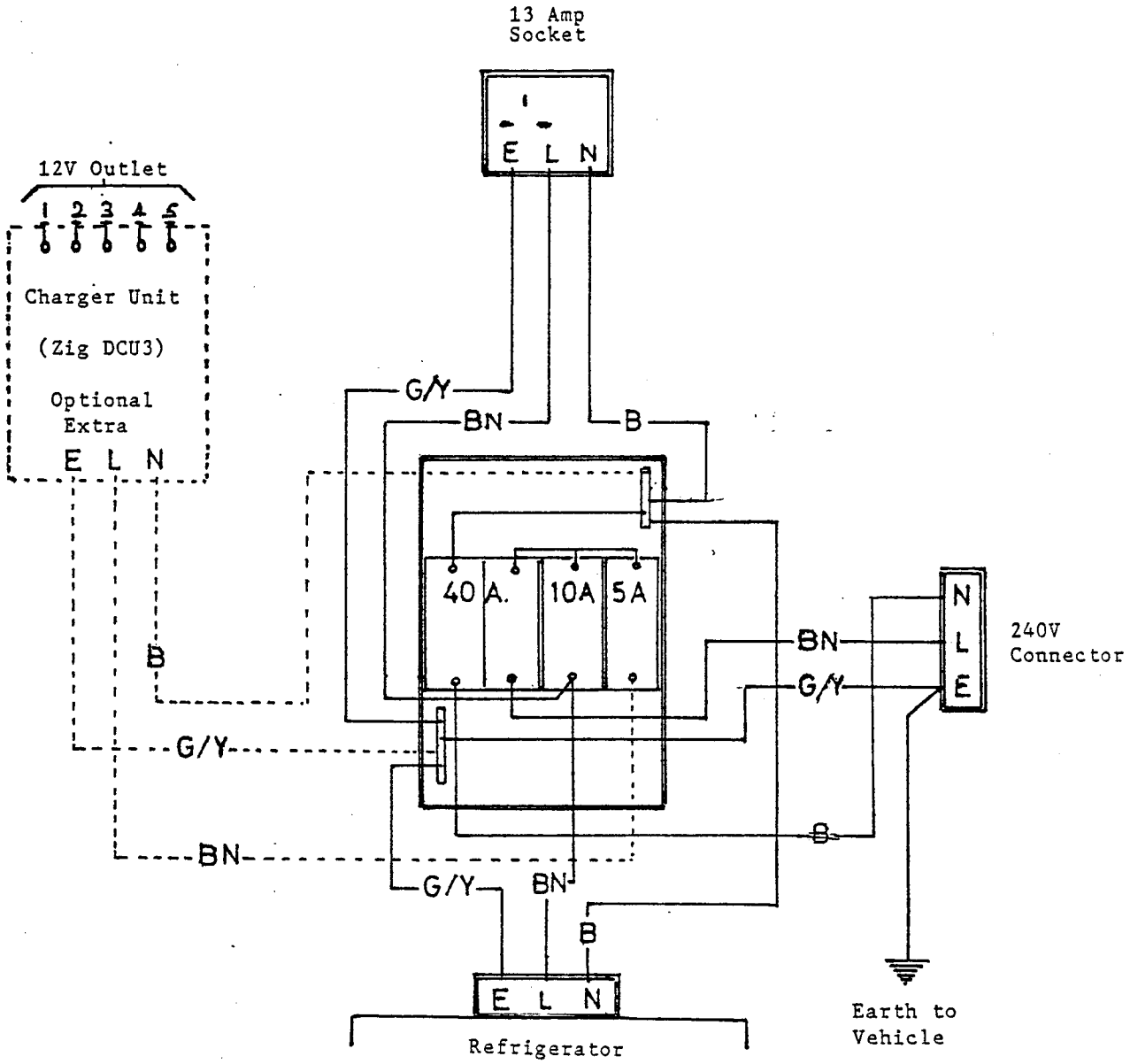
The Zig unit does not charge the main vehicle battery.

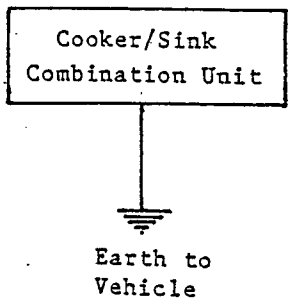
Provided the supply current is adequate, use of the power socket and battery charging can proceed simultaneously.
The 240 volt mains battery charging circuit is protected by a 2 amp fuse on the charging unit. The supply must be 'off' before the fuse is removed and it is necessary to use a screw driver to remove the fuse cap - this is to comply with electrical safety regulations.

After using the mains supply and removing the supply cable, close the white plastic flap cover to the connector on the outside of the vehicle to prevent it swinging and becoming damaged.



WIRING DIAGRAM 240VOLTS (MAINS)





Colour Code			
BN	Brown	L	Live
B	Blue	N	Neutral
G/Y	Green/Yellow	E	Earth

REFRIGERATOR:

The vehicle is fitted with an Electrolux 212 refrigerator of 2-litre capacity with a freezing compartment, and the manufacturer has supplied instructions regarding its use and these should be referred to. Briefly the refrigerator can be used in three ways:

a) Via the vehicle battery when in motion by putting the 3-position switch on refrigerator to  and then operating the switch on the dashboard marked 'fridge'.

b) The gas supply when the vehicle is stationary and the ignition switched off, by putting the 3 position switch on the refrigerator to '0' and then following the instruction manual.

c) By mains, if the 3-position switch on the refrigerator is put to  and a caravan hook-up or other mains supply is available.

The 12 volt supply is from the main vehicle battery circuit. There is a 25 amp fuse on the refrigerator circuit which is located in the fuse box in the vehicle engine compartment, next to fridge relay and vehicle battery.

WARNING:

It is vital that the exterior plastic ventilator cover for the refrigerator is removed when the refrigerator is operating - whether it is on 12 or 220 volts or camping gas. This cover is found on the outside of the vehicle, adjacent to the refrigerator at rear of offside of vehicle.

By removing the cover, air can pass across the rear of the refrigerator and keep it at the correct operating temperature. Replace the cover when the refrigerator is not operating - this prevents unnecessary draughts particularly during colder weather.

INSTRUCTIONS FOR USE

This Appliance conforms with E.E.C. Directive 82/499 relating to radio interference.

INTRODUCTION

To ensure satisfactory and economical operation, it is essential that the refrigerator is installed as directed in the Electrolux Installation Instructions, and is used in accordance with these instructions. The ventilation openings for air circulation over the cooling unit must not be reduced in size or obstructed in any way otherwise the performance of the cooling unit may be impaired and consumption increased.

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.

WARNING

Because of the hazards associated with the use of continuously operating bottled-gas appliances with open-flame burners in difficult-to-ventilate confined spaces, and other considerations, Electrolux do not recommend the installation of their bottled-gas caravan refrigerators on boats, and refrigerators so installed will not be covered by the Company's guarantee.

If, however, a boat installation is planned for the refrigerator, reference should be made to British Standard 5482, Part 3, 1979 and to the Thames Water Authority "'Launch Digest" and "Launch Specification". Also, current Guide Lines published by local Water Authorities, or the Ship and Boat Builders' National Federation.

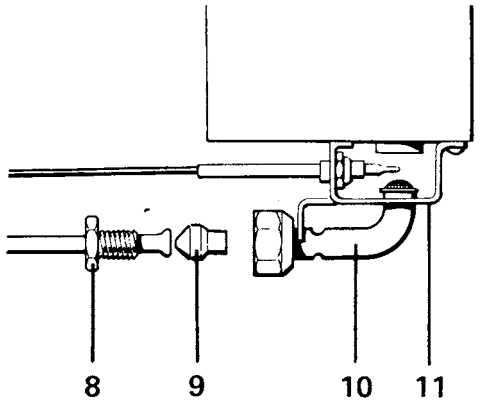
It should be noted that special Marine Refrigerators are available from Electrolux for use on boats.

LEVEL

When the refrigerator is operating, refrigerant trickles through the cooling unit under the influence of gravity. To enable a satisfactory flow to take place, the unit must be level in both directions, otherwise refrigerant can accumulate in pockets and the cooling process impaired.

A continuous rolling and pitching motion as occurs in a caravan on tow will not normally affect operation, but when the caravan is at rest for more than about half an hour it must be levelled, in both directions, so that the ice-tray shelf inside the frozen food storage compartment is level. (This can be checked with a small spirit level placed on the ice-tray shelf). If it is not convenient to level the vehicle and it is to stand out of level for more than half an hour, the refrigerator should be temporarily turned off.

GAS PRESSURE, BURNER, JET AND GAS CONTROL VALVE



8 Union
9 Jet
10 Burner
11 Burner Bracket

Fig. 4

The combined gas control valve and flame failure device (5, fig.2), and jet and burner (9 & 10, fig. 4), must be of the correct type or size for the gas and gas pressure which you use. The gas pressure is determined by the type of regulator fitted to your gas bottle, and this may vary according to the Standard adopted in the country concerned. In the United Kingdom, and most of Europe, the standard pressures used for butane and propane are as shown in section 1 of the table below. In Germany and Austria, the higher pressure shown in section 2 of the table usually applies.

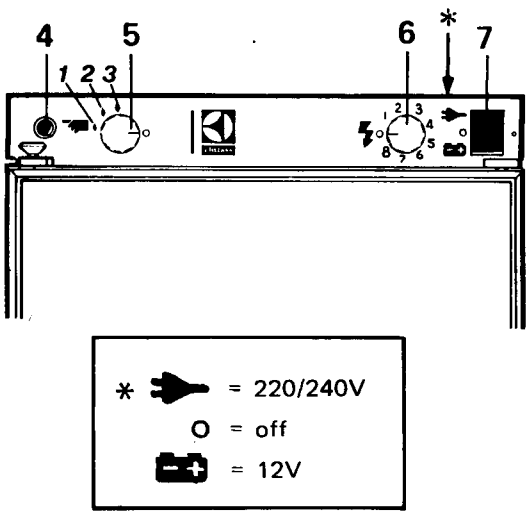
It is essential that a reliable pressure regulator, set to deliver no more than the appropriate pressure shown in the table, is fitted directly to the gas bottle. **Needle valve operated gas control taps are NOT suitable for use with this refrigerator and must not be used as a substitute for a pressure regulator.**

Before using the refrigerator, check from the label attached to it that the gas equipment is correct for the gas and gas pressure to be used. If it is not, the burner, jet, and combined gas control valve and flame failure device must be changed for the correct size or type in accordance with the table below. For future reference, any changes made should be recorded on or beside the data label.

	Type of Gas	Gas Supply Pressure (Water gauge)	Size of Burner Jet	Type of Burner	Type of Gas Control Valve
1	*Butane Propane	11"(280mm) (28mbar) 14"(37Omm)(37mbar)	4	With two aeration holes	Part No. 344002
2	Butane & Propane	20"(50Omm)(50mbar) (Usually in Germany and Austria	2	With one aeration hole	Part No. 344003 †

*e.g. Calor Gas, or Camping Gaz. †Identified by letter D on valve body

STARTING THE REFRIGERATOR (see fig.2)
Before using your refrigerator for the first time, it is advisable to wash the interior and its accessories as described later under 'Cleaning'.



4. Button for igniter
5. Combined gas control and flame failure device
6. Electric thermostat (220 or 240V)
7. Voltage selector switch

Fig. 2

The bottled gas equipment includes a Piezo crystal lighting device which creates a spark over the burner when the button (4) is pushed in fully. No batteries or flints are required to operate this lighter. **Before starting the refrigerator, always check that the alternative method of operation is off as the refrigerator should not be operated by both means at the same time. If the caravan is to be stationary for a period, check that the refrigerator is level.**

Bottled Gas Operation - Lighting the burner
1 See that the voltage selector switch (7) is set to '0', i.e. is in its centre position. Ensure that gas is available from the bottle and turn on any taps in the supply to the refrigerator.
2. Turn the gas control knob (5) so that '3' is opposite the indicator mark.
3. Push in fully the gas control knob (5) for about 5 seconds to allow air to clear from the pipe line. (When starting initially, or after changing a gas bottle, it may be necessary to push in the knob appreciably longer to clear all the air. Do not, however, allow too much gas to accumulate around the burner as an over-rich gas/air mixture may be difficult to ignite).
4. Still pressing in the knob (5), push in the button (4) which operates the Piezo igniter, several times in quick succession. (A click should be heard each time the button is pushed in). Continue to press in the gas control knob (5) for a further 15 seconds to allow time for the thermocouple tip (over the burner) to heat up.
5. Release the gas control knob then check that the burner is alight by looking directly through the flame viewer located inside the cabinet at the rear left-hand lower corner. If the burner has not lit, repeat the lighting procedure. **Note:-** The refrigerator has a flame failure device which will automatically

shut off the gas to the burner if the flame is blown out. While the knob (5) is being pressed in, this device is temporarily inoperative.

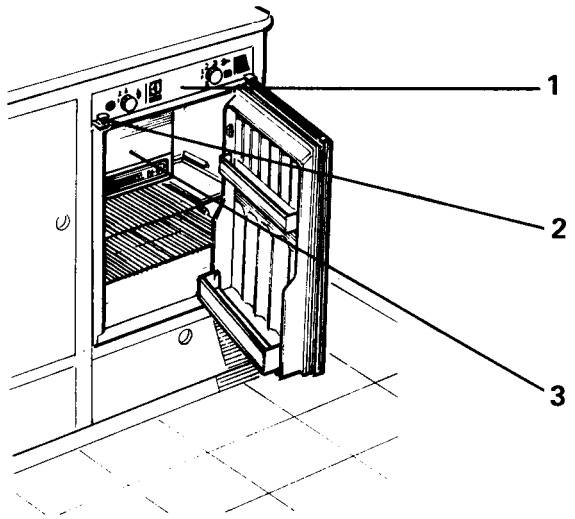
Electric operation
The dual voltage electric equipment is for operation from the main 12 volt battery in the car when the caravan is on tow, or from mains voltage electricity when a 220 to 240V a.c. supply, with satisfactory earthing, is available on a site. Before using the refrigerator on electricity, make sure that the electricity supply is suitable for the refrigerator.

It is important to understand that 12 volt operation is only intended to be used while the car engine is running and is charging the battery, otherwise the battery may be discharged, to a point where it will not restart the engine. (The current drain at 12V is 8 amps minimum). When at rest for more than a short period, the caravan should be levelled and the refrigerator switched over to mains voltage, if available, or the 12V supply switched off and the refrigerator started up on bottled gas.

Before connecting to a mains voltage supply, it is important to make certain that the circuit to, and in, the caravan is properly and effectively earthed.

When operating on mains voltage, the temperature in the refrigerator is thermostatically controlled and can be adjusted by means of the knob (6) of the thermostat. The 12V circuit is not thermostatically controlled and the cooling unit will operate all the time the refrigerator is connected to 12V and switched on. **12V operation is, therefore, only intended to be used for relatively short periods, i.e. when the caravan is on tow. It is not intended for extended periods of use from a continuous 12V supply, otherwise the fresh food compartment may become too cold for the satisfactory storage of fresh foods and drinks.**

For connection to the 12V supply, a two-way terminal block is located behind the right-hand end of the control panel (1, fig 1) at the top of the refrigerator.



1 Control Panel
2 Travel Catch
3 Frozen Food Storage Compartment ****

Fig. 1

For connection to a 220-240V electricity supply, the refrigerator is provided with a 3-core mains lead which is intended for connection to a properly earthed plug and socket outlet. In the United Kingdom, the following plug connection instructions must be observed.
IMPORTANT: The wires in the mains lead of this appliance are coloured in accordance with the following code.

GREEN-AND-YELLOW: EARTH,
BLUE: NEUTRAL,
BROWN: LIVE
As the colours of the wires may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured green or green-and-yellow.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured red.
WARNING -THIS APPLIANCE MUST BE EARTHED.

In the United Kingdom, the plug or circuit to the refrigerator must be fitted with a fuse not greater than 5 amps. If a 13 amp. (B.S. 1363) fused plug is used, it should be fitted with a 3 amp fuse. In other countries, the fuse rating will depend on local practice.

During installation, a suitable socket outlet for the mains voltage supply should have been fitted in the caravan, near the refrigerator, in a position readily accessible to the user. In the United Kingdom, all mains voltage wiring in the caravan must be installed in accordance with I.E.E. regulations, including the use of an outlet and coupler to BS 4343/CEE17.

Voltage Selector Switch The voltage selector switch (7) can be set to three different positions, identified by the following symbols:


= Mains voltage, 220 or 240 V, (top of switch pushed in).
= off (centre position).
= 12V car battery, (bottom of switch pushed in).

To start the refrigerator on electricity, see that the gas control knob (5) is at '0' (off), set the voltage selector switch (7) to the voltage required, then connect the refrigerator to the appropriate voltage supply.
If on mains voltage (220-240), turn the thermostat knob (6) to setting No. 3 or 4.

TEMPERATURE REGULATION
After starting up the refrigerator, it. will take about an hour before there are signs of cooling. When operating on mains voltage electricity, the refrigerator is thermostatically controlled and the thermostat knob (6) should be set to No. 3 or 4. This will maintain a suitable temperature in the refrigerator and frozen food storage compartment for general use but, in hot weather, or if more cooling is required, the knob should be turned to a higher number. If less cooling is required, the knob should be turned to a lower number. (This does not apply to 12 volt operation which is not thermostatically controlled).
For operation on gas, the refrigerator should be started off with the gas control (5) set at '3'. This will provide suitable temperatures in the refrigerator in warm weather, but if the fresh food compartment becomes too cold, especially in cooler weather, turn the gas control knob to '2' or '1'. Remember to return it to a higher setting when necessary, if the weather becomes warm again for instance.

FROZEN FOOD STORAGE COMPARTMENT
The frozen food storage compartment has a net volume of 3.7 litres (0.13 cubic feet) and has a two-star classification. This means that, provided the electric thermostat or gas control is set as described under “Temperature Regulation", the frozen food storage compartment will be maintained at a temperature of -120C (10 F), or below.

Under these conditions, most types of frozen food can be stored in the compartment for up to one month.

When storing frozen food, do not set the gas control at too low a setting. Reduce it only if foodstuffs in the fresh food compartment become too cold.

The permissible length of storage time cannot be precisely stated as this varies very much with the nature of the packaged quick-frozen food stored - vegetables, fish, meat, fruit and dairy products. It is therefore important to take note of the food manufacturer's estimate of the permissible storage times of his products. This estimate, which should be marked on each frozen food package, takes into account inevitable variations during every-day operation which may lead to changes in taste and colour.

If frozen food is allowed to thaw, i.e. the packs become wet and limp, no attempt should be made to store or re-freeze - it should be consumed within 24 hours.

The frozen food storage compartment is for storing quick frozen foods, ice-cream and making ice. It is not intended for the quick freezing of foodstuffs.

Care should be taken when handling and consuming water, ices (.e.g. iced lollies) taken directly from the frozen food storage compartment because of the possibility of cold burn (frost bite) when such ices are at very low temperatures.

Never put bottles or cans of carbonated (gassy) drinks in the frozen food storage compartment as they may burst if the gas is forced out by freezing.

STORING FOOD IN THE REFRIGERATOR
To prevent drying out and the transfer of flavours from one food to another, always store foods in covered containers or plastic bags, or wrap them in waxed paper or aluminium foil.

Tall bottles can be placed in the lower door shelf by moving the upper door shelf to its storage position at the top of the door. The plastic tray can be removed from the upper cabinet shelf to make room for bottles and other tall items in the cabinet.

Do not leave the refrigerator door open longer than necessary.

NEVER PUT HOT FOOD IN THE REFRIGERATOR.

Whenever possible, it is of advantage to pre-cool your refrigerator with its contents by running it on bottled gas or mains, electricity for a few hours, or overnight, before starting out from home.

To prevent undue movement of bottles etc. in the refrigerator when “on the move", crumpled pieces of clean paper may be wedged temporarily between the various items.

TRAVEL CATCH
The travel catch (fig.3) is to keep the refrigerator door securely closed when the vehicle is on the move. Remember always to push the catch down so that its lower end fully engages the plastic bush in the top of the door, before moving off.

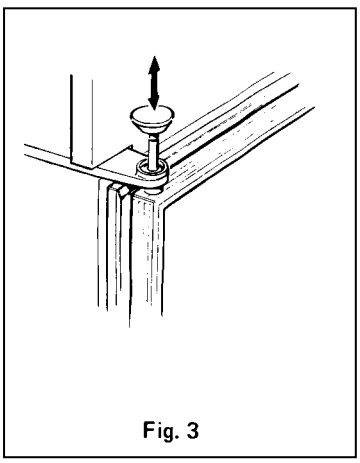


Fig. 3

ICE-MAKING
Fill the ice-tray with water to within 5mm from the top, and place it on the shelf in the top of the frozen food storage compartment. When ice has formed, the tray can be released from the shelf simply by lifting one corner.

Ice will be made more quickly if the gas control or electric thermostat (except on 12V) is turned to its highest setting. Remember to return the knob to its normal setting when ice has formed, otherwise food in the cabinet may become too cold.

DEFROSTING
Frost will gradually form on and in the frozen food storage compartment and on the fins at the side of the compartment. It is a mistake to assume that an accumulation of frost gives a colder cabinet therefore the refrigerator should be defrosted regularly - about once a week or ten days, depending on the conditions of use.

To defrost, turn the gas control knob (5) or the voltage selector switch (7) to '0' (off), depending on which operation is being used. Remove the ice-tray, food, etc., wrap frozen foods in several layers of clean newspaper and place the package in a cool place.

To defrost as quickly as possible, a small dish of hot (not boiling) water may be placed on the ice-tray shelf, and a bowl of hot water on a cabinet shelf, changing the hot water as necessary until all frost has melted.

Do not place dishes of hot water on the bottom of the frozen food storage compartment, and do not attempt to defrost more quickly with an electric fire or other form of heat as this may damage the plastic surfaces.

Defrost water will run via a tube at the back into the drip collector fixed to the rear of the refrigerator, where it will evaporate into the circulating air.

When all frost has melted, wipe dry the frozen food storage compartment and cabinet interior, then re-start the refrigerator, setting the gas control knob or voltage selector switch and thermostat knob to their respective positions.

Replace the fresh and frozen food, but wait until the cabinet has cooled down again before making ice.

Remember that if the temperature of frozen food is allow ed to rise unduly during defrosting, its storage life may be shortened.

CLEANING THE REFRIGERATOR
Clean the refrigerator thoroughly at intervals as necessary. Turn off the gas or disconnect from the electricity supply, depending on which is being used, empty the cabinet and defrost as described earlier.

The refrigerator and its accessories may then be cleaned with a soft cloth wrung out in a weak solution of bicarbonate of soda. Finally, wipe over with a cloth wrung out in warm water only and dry with a clean cloth. Do not wash any plastic parts in water that is more than hand hot and do not expose them to dry heat.

NEVER USE STRONG CHEMICALS OR ABRASIVE CLEANING MATERIALS ON ANY PART OF THE REFRIGERATOR.

Replace the accessories and restart the refrigerator.

WHEN NOT IN USE
Whenever your refrigerator is to be out of use for a period, turn off the gas, or disconnect from the electricity supply, as applicable. Empty the cabinet and defrost as described earlier. Clean and thoroughly dry the interior and accessories and *leave the door open.* If this is not done the air inside may go stale giving rise to an unpleasant odour which could be difficult to remove at a later date. Empty and dry the ice-tray.

CONSUMPTION
It is not possible to give precise consumption figures for mains voltage electricity, as these vary depending on individual conditions of use. The figures in the following table may, however, be taken as a guide.

	ROOM TEMPERATURE		
ELECTRICITY (220/24OV) kWh (units) per24 hours.	200C (680 F)	250C (7 70 F)	M A X
	1 .7	2.0	2.28

BOTTLED GAS.	GAS CONTROL SETTING		
	1	2	3
lb liquid/24 hours	0.42	0.53	0.79
kq per 24 hours	0.19	0.24	0-36

MAINTENANCE

CHECKING FOR GAS LEAKS

Periodically, and after service adjustments to the gas equipment, all connections should be checked for leaks by applying a soap/water solution (with the burner alight) and watching for bubbles. DO NOT USE A FLAME TO CHECK FOR LEAKS. Screw connections should be tight but not overtight. (To check at the back of the refrigerator it will be necessary to make a *temporary* connection with flexible tubing).

FLUE BAFFLE

The flue baffle must be in position in the central tube of the boiler, over the burner, suspended on its support wire so that the lower edge of the baffle is 75mm (3 inches) above the bottom of the tube. If the baffle is missing or incorrectly located, the cooling unit will not operate properly on bottled gas.

CLEANING FLUE, BURNER, AND JET (see fig.4)

The appearance of the burner flame should be checked at least once a year. To do this, turn the gas control knob to '3', when the colour of the flame should be predominantly blue. If this is not the case, the refrigerator should be emptied, disconnected, and removed from the recess, and the flue, burner and jet cleaned as described below. (The outer cover of the flue outlet will have to be removed and the flue extension tube withdrawn from the outside before the refrigerator can be moved). When the refrigerator is out of the recess, proceed as follows.

1. Remove the 'lazy T' flue top, then, from top of central flue tube of boiler, lift out the flue baffle on its support wire.
2. With door travel catch engaged, lay cabinet on left-hand side (i.e. burner near the floor) on sheets of newspaper.
3. Disconnect gas pipe from burner by undoing union (8), then pull out burner jet (9). Clean jet by washing it in White Spirit or alcohol, then blowing through with air. **Do not under any circumstance prick out the jet. The orifice in the jet has been carefully designed. It is very delicate and any damage to the orifice could affect safety and performance.**
4. Remove screw holding burner bracket (11) to boiler, release bracket tongues from slot in boiler, then carefully move burner bracket assembly to one side, clear of the flue tube.
5. Clean burner and adjacent components of soot etc. without disturbing their relative positions.
6. Clean flue tube of boiler - a special flue brush (part No. 151404) is available as an extra for this purpose.
7. Reassemble equipment, engaging tongues in top of burner bracket (11) in corresponding slot in bottom of boiler before replacing fixing screw. Gas unions must be tight but not overtightened.
8. Operate button (4) of igniter whilst watching to check that spark jumps from electrode to burner head. (See next section).
9. Referring to item 'Checking for Gas Leaks', re-install refrigerator, light burner and leave on test to ensure that it operates properly.

IGNITER SPARK GAP

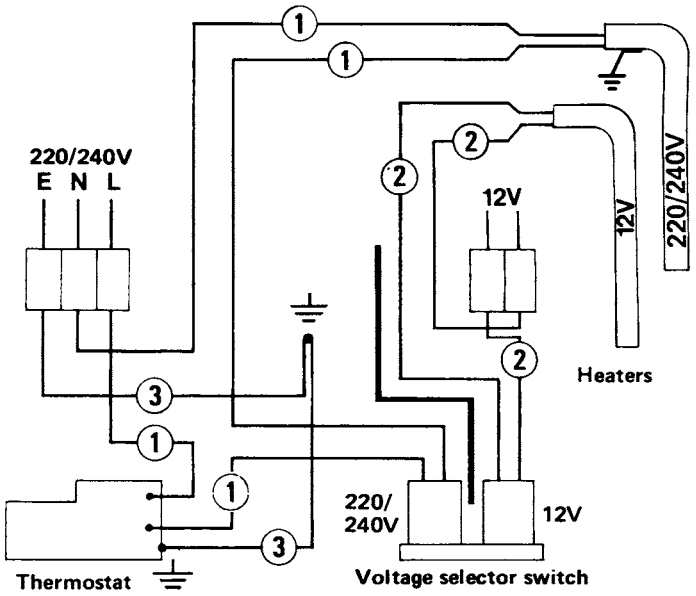
The distance between the tip of the igniter and the top edge of the burner head gauze should be a minimum of 3mm.

HEATERS FOR ELECTRIC OPERATION

For electric operation, the boiler of the cooling unit is fitted with two separate heaters. The one near the back of the refrigerator casing has black leads and is for use on 12V. The other has brown leads, and an earth connection tag, and is for use on 220 to 240V. The 12V heater is rated at 95 watts, and the mains voltage heater, 100 watts.

SERVICE

Should you require help or service in connection with your refrigerator, please refer to addresses on back pages.



L = Brown
N = Blue
E = Green-and-yellow

1 = Brown,
2 = Black
3 = Green-and-yellow

Fig. 5

PROPEX HEATER

Your Richard Holdsworth motor caravan is fitted with the optional Propex heater which is a useful feature for motor caravanning in colder conditions or in winter.

The heater manufacturers:

Propex Marketing Ltd
Unit 5
Blackmore Road
Ebblake Industrial Estate
Verwood Dorset
BH21 6BB Telephone:0202-82353819

OPERATION:

The heater is operated by two controls - the thermostat dial and the function switch.

The thermostat dial selects the temperature and has a range of about 35°C starting at approximately 0°C. The function is selected by the 3-way switch. If heat is to be selected, press the switch on the side of the small flame and if cool air is to be blown, press the switch on the side of the propeller. When heat is selected, the red power light will glow and if the thermostat dial is set high enough, the green light will come on and the heater will automatically ignite. If the cool air vent facility is selected, the red power light will turn green and the heaters fan will run without the burner.

WARNING:

The heater is a particularly safe unit in that the combustion area is completely sealed from the inside of the vehicle. In other words, the air to be warmed is drawn into the unit through the fixed (oblong) vent, passed over the combustion chamber and returned into the vehicle via the multi- directional (circular) vent. The combustion chamber is fed from air drawn in beneath the vehicle and returned by another pipe also beneath the vehicle.

Care should be taken at all times the unit is running, that neither the oblong or circular vents inside the vehicle are blocked, as this could lead to the unit running poorly or becoming over-heated.

In the same way, periodic checks should be made to make sure the inlet and exhaust pipes beneath the vehicle have not become blocked and if the motor caravan is used in snow IT IS ESSENTIAL THAT THE PIPES BENEATH THE VEHICLE BE KEPT FREE FROM SNOW AT ALL TIMES; failure to do this could cause inefficient operation of the heater or - at worst - a complete shutdown.

CARE & MAINTENANCE OF YOUR MOTORCARAVAN

We recommend that the outside of your vehicle is kept clean in the usual way. We also recommend that the vehicle is regularly serviced by a reputable garage.

THE INTERIOR: We recommend that the interior of the vehicle is cared for In the usual manner. Specifically the following can be referred to:

CARPETS: Vacuum as usual. A dry (powder) cleaner can be used if necessary.

CURTAINS: Curtains are washable on a 40 wash cycle.

WOODWORK: Use of a normal household polish is recommended, particularly to remove scuff marks.

WINDOWS: These can be cleaned using a normal household window cleaner. However, extreme care should be exercised when cleaning a heated rear window, and this should only be cleaned using a damp wash leather.

WALL /HEADLINING: The interior head lining should be kept clean by regular vacuuming.

WORK SURFACES: A damp cloth or household polish can be used.

UPHOLSTERY: This should be kept clean by regular vacuuming. Any stains should be removed as quickly as possible by soaking up any excess fluid, and then using a well wrung cloth. There are also proprietary cleaners on the market, but the labels should be read with care.

COOKER: Cleaning is best carried out when the hob is still warm but not hot. Never start cleaning the hob before all taps and isolation switch have been switched off. Do not keep aerosols or inflammable products in the cupboards and, drawers in the immediate vicinity of the hob. It is important that all burner ports are kept clean and free from blockage. Wash in soapy water only. To unblock the flame ports use a brush with hard bristles. Dry carefully before reassembly and ensure they are reseated in venturi correctly. Do not use abrasive cleaner. Polish with a dry cloth of chamois leather. Clean up spillages of acidic liquids immediately, i.e. lemon juice, vinegar etc.
LEAKAGE OF GAS - A leak will smell! If a leak is suspected, turn off all appliances and check connections with soapy water. Tighten if necessary. If smell persists, turn off gas at cylinder and contact your supplier.
IMPORTANT: Do not use penetrating oil on gas taps. If in doubt, contact the manufacturers.

EXTERIOR STRIPES: When cleaning the exterior of your motorcaravan care should be exercised so that the vehicle stripes and Richard Holdsworth names and logos are not damaged. In particular, care should be shown when cleaning around the area of the stripes and logos to prevent them from 'lifting'. The manufacturer will not wish to be held responsible for damage caused in this way.

IN GENERAL: Every new Richard Holdsworth motor caravan is supplied with a copy of the S.M.M.T. booklet giving advice on annual service and checks for your motor caravan conversion and we thoroughly recommend that the advice contained therein is followed in detail. Further copies of this booklet can be obtained from most motor caravan dealers or from Richard Holdsworth Conversion Ltd, at £1.20 each plus 50p handling charge.

Electrolux®

ELECTROLUX LIMITED,
LUTON, BEDS., ENGLAND.

RM212 CARAVAN REFRIGERATOR WITH ELECTRONIC RE-IGNITER

THE ELECTRONIC IGNITION SYSTEM FITTED TO THIS REFRIGERATOR IS IN PLACE OF THE PIEZO IGNITER USED ON STANDARD MODELS. IN OTHER RESPECTS, THE INFORMATION GIVEN IN THE SEPARATE INSTRUCTIONS FOR INSTALLATION AND USE STILL APPLY AND SHOULD BE REFERRED TO IN CONJUNCTION WITH THIS LEAFLET.

General Information.

The electronic ignition system is for permanent connection to a 12V car battery fitted in the caravan. The current drain is negligible therefore the battery can be the same one that is used in the caravan for operating other equipment such as lights, water pump, etc. The same battery must not, however, be used for operating the cooling unit of the refrigerator. Operation of the cooling unit on 12V electricity must be from a separate supply, i.e. from the main battery in the towing vehicle, as detailed in the refrigerator installation instructions.

The Electronic Igniter.

The spark generating components of the igniter are housed in a plastic box fitted at the left-hand side of the top of the refrigerator (see fig.1), connected to a neon-illuminated switch in the control panel at the front, and to a spark electrode located over the burner head at the bottom rear left hand side, under the boiler.

When the switch is switched on, the electronic circuit is activated producing a series of sparks between the electrode and the burner head. The neon light in the switch will flash on and off as sparking takes place. As soon as the burner lights, the flame is detected by the electrode, sparking ceases, and the neon light will go out.

After the burner has lit, the switch should be left in the `On' position so that, in the event of the burner going out (due to a gust of wind for instance) the igniter will automatically start sparking again and re-light the burner, provided of course that gas is present.

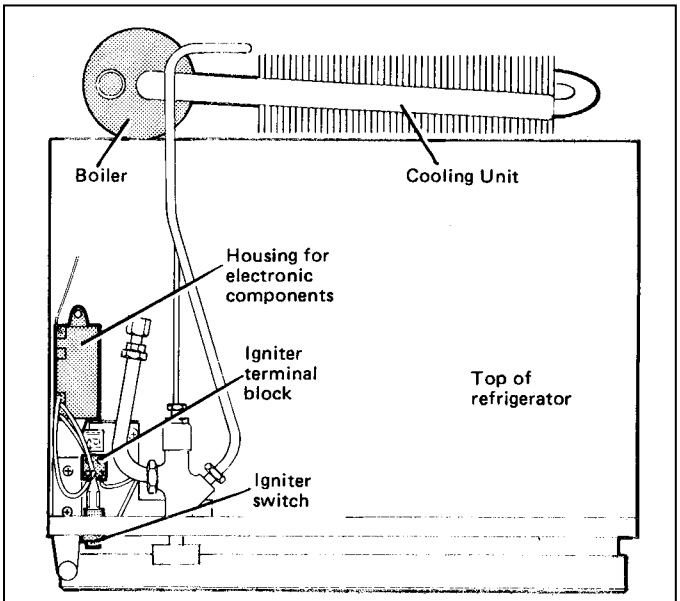


Fig. 1 View of top of refrigerator, showing Electronic Igniter layout.

If the burner does not re-ignite within 30 to 60 seconds, the flame failure valve will close and automatically shut off the flow of gas to the burner. If this happens, sparking will continue to take place and the neon light in the switch will flash continuously to alert the user that something is wrong, or that the gas bottle is empty and needs replacing.

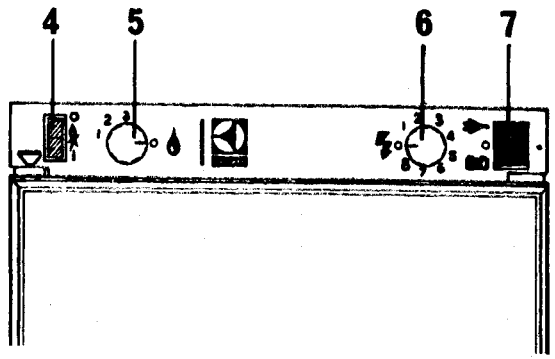
Installation
The refrigerator must be installed in the caravan as detailed in the separate installation instructions for Standard models. In addition, the electronic re-igniter must be connected to a 12V battery in the caravan, - see earlier information re this under the heading "General Information".

The size of the wire used to connect the battery to the igniter terminal block (fig.1), should be at least 0.75mm^2 in cross-sectional area. Correct polarity must be observed, - the '+' and '-' terminals of the battery must be connected to the similarly marked terminals of the terminal block.

All wiring must be kept clear of the pipework of the cooling unit at the top rear of the refrigerator as this becomes hot when it is operating and may damage the insulation of the wire if in contact.

Lighting the burner (see fig.2).
1. See that the voltage selector switch (7) is set at 'o', i.e. is at its central (off) position.

2. Turn on the valve of the gas bottle and open any gas taps in the supply pipe to the refrigerator.



4. Switch for electronic igniter. 'O' = off, '1' = on.
5. Combined gas control and flame failure device.
6. Electric thermostat (220 or 240V operation).
7. Voltage selector switch. (The meanings of the symbols are given below).

= 220/240V

O = off

= 12V

Fig. 2

3. Turn the knob (5) of the gas control valve so that the indicator mark is opposite setting No.3.

4. Switch on the ignition switch (4) by pushing in the bottom of the switch against the symbol 'I'. The neon light in the switch should start flashing indicating that spar king is taking place.

5. Push in fully the knob (5) of the gas control valve and keep it held in. When the burner lights, the neon in the switch will stop flashing and go out. When this happens, keep the knob (5) held in for a further 15 seconds or so for the thermocouple over the burner to heat up, then release the knob. If the neon starts flashing again, it indicates that the flame has gone out, in which case, repeat operation No.5.

6. After lighting the burner, leave the switch (4) in the `On' position. Refer to the separate Instructions for Use supplied regarding general use and care of the refrigerator.

Emergency Lighting Procedure
Although the refrigerator, ignition system is primarily designed to operate from a 12V car battery, it will, in practice, operate satisfactorily on d.c. voltages considerably below this. If, therefore, the situation arises where the recommended battery supply fails, the burner can, in an emergency, be lit by using a 9V dry cell (e.g. type PP3 or PP7 9V battery as used for radios etc.). If doing this, it is essential that the correct "+" and "-" polarity is observed when connecting up, otherwise the igniter will not operate.

VEHICLE AND MARINE BLOWN AIR HEATING

OPERATING INSTRUCTIONS

PROPEX COMPACT, 160OW X1 and 260OW X3

PROPEX MARKETING LTD Unit 5, 28 Blackmoor Road
Ebblake industrial Estate, Verwood, Dorset BH21 6BB, England
Tel: (0202) 82353819 Telex: 37441 PECK VHG

Technical Description

Propex Heaters are fuelled by butane or propane gas and are warm air systems designed to supply one or more outlets through hot air ducting. Air for combustion is taken from outside the vehicle, mixed with gas and ignited. It is then passed through a two stage stainless steel combustion chamber and exhausted through flexible aluminium tube to the outside.

Fresh air is taken in through a separate inlet orifice and collects heat off the three surfaces of the heat exchanger before being passed through the ducting to the hot air outlet(s). Fresh air is usually taken from inside the cabin for maximum efficiency, thermostat) will stay on although it may be taken from outside if preferred. The combustion side of the heater is totally sealed from the heating air side and at no time can the two mix.

Operation

(1) Check that the gas supply is switched on.

(2) Rotate the thermostat dial to zero and move the three position switch to the left. The red power light. Should illuminate.

(3) Rotate the thermostat dial until the green light (bottom light on the thermostat) illuminates. The heater should now go through its ignition sequence. The higher the thermostat dial is set the greater the temperature will be in the cabin when the thermostat switches the heater off.

(4) When the ignition sequence commences the fan will operate on a six-second pre-purge cycle to clean out the burner.

(5) After pre-purge the spark generator will automatically cut in and regular sparking will be heard for the next six seconds during which ignition will occur.

NOTE:(5a) If the heater switches off after the pre-purge cycle without the spark generator starting, this will indicate low voltage and the heater will be in the lock-out mode. The green light on the thermostat will have remained on and the fault will either be flat battery or faulty wiring. The unit can be reset by switching off and back on at the thermostat.

NOTE:(5b) If the heater switches off after the six seconds of the spark generator running it usually indicates ignition failure. Check that gas is switched on and if so that there is gas in the bottle. In cold conditions ignition failure could be caused by frozen butane gas.

(6) Ignition will usually occur shortly after the spark generator starts and a slight difference in tone will be apparent.

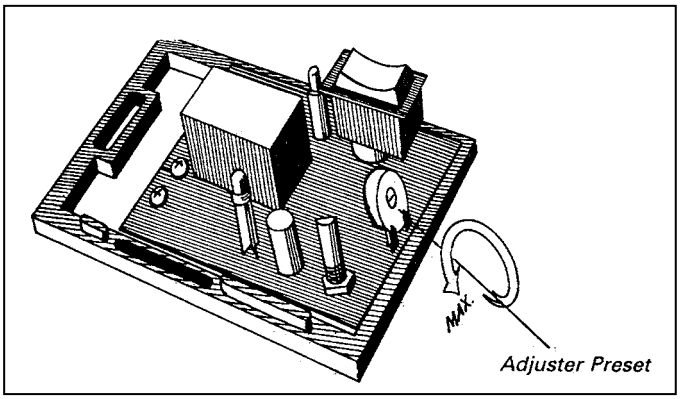
(7) When the cabin temperature reaches the set level the unit will switch off; this will be indicated by the green light on the thermostat switching off but the red light (top light on the

(8) *Propex Heaters* are fitted with a post-purge cycle for cooling the unit down after operation. This is controlled by a temperature sensor inside the heater which, when activated, will turn the red light green indicating that the heater will run on the "*fan only" mode after it has been switched off. The post-purge sensor may also be triggered after the unit has switched off. This is caused by heat radiating off the heat exchanger.

(9) If the thermostat switch is moved to the right, it will operate the fan on its own for blowing cool air. In this instance the red power light will turn green and the thermostat dial will be overridden.

Adjustment of Thermostat Sensitivity

The Adjuster preset is a hysteresis control which can alter the temperature differential from 4°C to 1/2°C. To adjust the thermostat, first pull the dial knob off and remove case by undoing the screw beneath the knob. The diagrarn overleaf shows the position of the adjuster. For maximum sensitivity turn the preset fully anticlockwise, and for minimum sensitivity turn it clockwise. The preset is designed to be adjusted using a small screwdriver. There is a small arrow in the centre to show which way it is adjusted.



Adjuster Preset

The preset is not a linear control and most of the adjustment is toward the anticlockwise endstop.

Maintenance

The heaters and their control's are designed to,require no periodic servicing as such, however we do recommend that the safety checks listed below are carried out. At very least a pre-season check should be carried out on the heater installation as well as **all** other gas appliances fitted. The heater should not be left for long periods without use. We recommend that the heater is periodically switched on for short periods throughout the summer.

Safety

(1) Use Butane (Calor) gas at 28mbar or Propane at 37mbar only. Other gases or pressures are not acceptable and may be hazardous. The use of adjustable type gas regulators is not permissible.

(2) Especially where a heater. is installed inside a vehicle, check flexible exhaust/combustion in the pipes regularly for splits, crushing, corrosion or other damage.

(3) The gas supply line should be checked for security and all joints leak tested whilst under pressure using soapy water or a proprietary leak detecting solution at regular intervals.

(4) If exhaust fumes are detected inside the vehicle from heater turn off immediately. Do not use until cause has been determined.

CONTROL PANEL SERIES

INSTRUCTIONS FOR USE

Zig Electronics Ltd.,
83, Cashes Green Road,
Stroud, Glos. GL5 4RA

CONTROLS

All the accessory switches are clearly marked with their functions, except the auxiliary switches, these outlets allow for a choice of equipment when the panels are fitted as standard by your caravan manufacturer. These switches, together with their separate fuses serve to isolate the various 12 volt outlets in your caravan and allow you to choose which circuits you wish to use at any time.

The main control switches are the "Caravan Battery/Car Battery" control and the "12V ON/OFF" control. This is in the centre position on some panels and their operation is as follows:

BATTERY SELECTOR (Caravan battery/Car battery)

This switch does exactly as its name implies; it allows you to choose the source of 12 volt supply to your caravan. It is a feature of all ZIG control panels and will be found very useful, especially when on sites without a mains supply for battery charging. The ability to utilise your car battery to run your caravan accessories will allow much longer time before recharging. At the same time the facility will allow you to be independent of your car by using the caravan battery only.

Note. Permanent use of the car battery only will inevitably result in the infuriating situation of a fully charged caravan battery and a car which won't start!

THE 12V ON/OFF SWITCH

This switch serves to isolate all 12V circuits in the caravan and also the ZIG battery condition indicator. it is similar to the main circuit breaker in your house. the one you turn off before you go away on holiday. NB. Some caravans which are fitted with electrically controlled heating systems need to have a permanent supply to thermostats etc., it you have such a system check your instruction book before turning off the 12V supply during periods when the caravan is in use.

THE BATTERY CONDITION INDICATOR

This device is fitted to all ZIG control panels. Its purpose is to warn that the batteries are becoming discharged and to allow remedial action to be taken. The red light will glow when the battery voltage is below 11 volts. Above this voltage the green light will glow. No harm will come to the system or the battery it the accessories are used when the red light is on and it will be found that possibly another few days reserve of current is available after the red light first appears. A true reading will only be given when all the 12 volt equipment is switched off and when no charging system is in operation. The red light may come on when an appliance is switched on, this is normal - current surges cause momentary voltage drop. It is important to remember that the battery monitor is not a charging indicator. The fact that the green light is on does not mean that the battery is fully charged. Even with a flat battery the green light will glow if a charging system is operating, due to the high terminal voltage present at the battery.

BATTERY CHARGING FROM THE MAINS

None of the ZIG Control Panels covered in this publication incorporate any facilities for battery charging, their function is confined to the safe control of the low voltage circuits in your caravan together with system and battery state indication. These products were, however, designed to be used in conjunction with the ZIG DCU3 and OCU15 AUTOMATIC REMOTE BATTERY CHARGERS.

BATTERY CHARGING FROM THE CAR

Most modern installations allow charging of the caravan battery when the vehicle is connected to the caravan (and the vehicle engine is running), the wiring for this is usually incorporated in the caravan during manufacture. However it is unfortunately true that very few car manufacturers make provisions for proper operation of caravan electrical supply and it is usually left to the owner of the vehicle to make his own modifications in order to take full advantage of the sophisticated electrical systems available in today's caravan. Fortunately these modifications are not too difficult or expensive and can be completed by the owner in a few hours. Full details follow in the next paragraph.

WIRING YOUR CAR

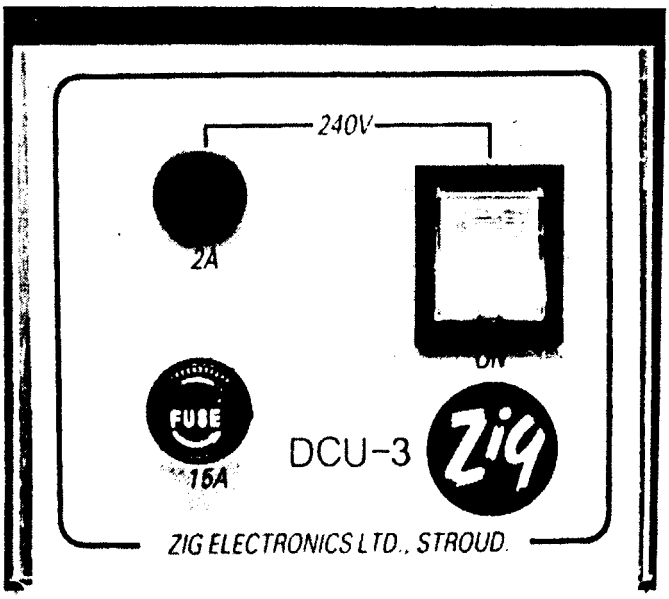
The most important aspect of any modification to your car's wiring is safety: there is no possibility of getting an electric shock from a 12 volt supply but low voltage/high current supplies are the ideal way to start fires, and a fire in a caravan is probably even more dangerous than one in a car. PROPER FUSING IS ESSENTIAL. The complete system requires three separate cables to be run from the car battery positive terminal to the 12S socket fitted on the towbar. It Is very important that the proper cable is used, the MINIMUM recommended size of cable is 2mmsq (27.02) and thicker cable will give higher current capability if physical space allows. Wiring should commence at the 12S socket by first ensuring a good earth connection to the car chassis to Pin 3 on the socket. This is most easily accomplished by running a cable direct to bare metal a short distance away from the socket. The other three wires should be run either underneath the vehicle or through an available channel directly back to the engine compartment. It is most important that these cables be protected by a proper fusing system and the easiest way to accomplish this is to fit an in-line-fuseholder in each cable before it is connected to a supply.

Note: The fuses must be fitted as close to the battery as possible, any cable between the battery and the fuse is unprotected and therefore a potential fire hazard.

The cables from No. 4 and No. 6 of the 12S socket should be connected through the previously fitted fuse links to the POSITIVE terminal of the vehicle battery, using proper terminations to the battery posts.

The cable from Pin No. 2 of the 12S socket should be connected through a relay switched via the ignition switch of the vehicle, fitting will depend on the relay used; (full fitting instructions are included with the ZIG RM12 relay. only four connections are required). When all the connections are completed and carefully checked, insert a 25 amp fuse in each fuseholder and checkout the system

THE ZIG DCU/3
REMOTE CHARGING UNIT & POWER SUPPLY FOR CARAVANS



INSTRUCTIONS FOR FITTING AND USE

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INSTRUCTIONS FOR USE AND FITTING

Please read these instructions carefully before operating the electrical equipment within your caravan.

Use of your DCU/3:

1. As a battery charger.

The DCU/3 is designed to charge and recharge your caravan or auxiliary battery, it can provide a maximum of 7.5 amps power.

2. As a mains to 12 volt converter.

The unit can provide 5 amps of smoothed usable DC to power the accessories, thus allowing a permanent hook-up situation for the duration of a holiday without worrying about the battery.

3. When mains power is not available we recommend the use of an auxiliary battery to gain full use of your Zig power supply. All manufacturers allocate a space for a new battery and the necessary cable connections. The battery must be of lead acid type, 6 cells and 12 volts. For most installations a 60 ampere/hour type will be sufficient although there may be occasions when a 90 ampere/hour is needed. One of the latest maintenance free batteries designed for this purpose will give the best service. Car batteries are designed for starting cars and little else; investment in a specialised "Leisure Battery" will reward you with longer life and less problems.

N.B. Under no circumstances employ an old battery, always purchase a new one which should give years of service.

To install the new battery, locate in the space provided and connect the RED cable to the positive terminal and the BLACK cable to the negative terminal.

N.B. If blue and white cables are used blue is positive, white is negative. It is important to maintain a proper connection to the battery using clamp on terminals and screws. Crocodile clips must never be used in a permanent situation, they deteriorate quickly and are a fire risk. Petroleum jelly should be smeared on the terminals to reduce corrosion.

If a space has not been allocated to accommodate the battery it should be mounted upright where it cannot tip over, on a surface which is corrosion free and MUST BE VENTILATED TO THE OUTSIDE.

Connect the battery using 2mm sq. (28/.03) to DCU/3 ensuring the in-line fuse is fitted in the positive line as near to the battery as possible.

Battery positive (via fuse) to terminal No.1 on DCU/3.
Battery negative (no fuse) to terminal No.5 on DCU/3.

The DCU/3 must be fixed securely to avoid any movement during towing, at the same time air must be allowed to flow freely over the unit to keep it cool, all electrical appliances generate heat and therefore run hot.

<u>Follow these instructions for installation of the unit.</u>

Choose a suitable position for the DCU/3, bearing in mind the following:

1 The minimum size of the compartment for the unit must be: 125mm H; 160mm W; 205mm; this will give the minimum clearance all round which must be allowed, i.e. 25mm.

2. Air should be allowed to circulate freely over the back of the unit. Ventilation to the compartment, in the form of two 25mm holes top and bottom must be provided.

3. Access to the battery and mains supply will be required.

4. WARNING: THIS APPLIANCE MUST BE EARTHED.

WIRING THE 12S SOCKET.

Do NOT under any circumstances use cable smaller than that recommended. The bigger the better!

a. Disconnect the 12S plug between the car and the van.
b. Using cable of at least 2mm sq. (28.03), connect the negative terminals (-)ve 4 to (-ve) 3 on the 12S plug.
c. Connect the positive terminals using the same size cable.
d. Connect terminal 2 of the 12S plug to the positive terminal of the battery.
e. Connect terminal 4 on the 12S plug to control panel CAR BATTERY input or to accessories (+)ve if no panel is fitted.

N.B. Accessories negative returns should be made to terminals 3, 4 or 5 on the D C U/3.

If you are wiring a motorised caravan connect No.4 to EARTH and No.1 to the main battery (+)ve VIA A SPLIT CHARGE RELAY (available from ZIG Electronics Ltd). Do not forget the 25amp line fuse which should be as near as possible to the battery (+)ve terminal.

See "WIRING THE CAR".

THE MAINS WIRING.

Please remember that the DCU/3 does not control the mains facilities in your caravan, it only uses the mains supply to do its work.

WARNING: Mains electricity is dangerous particularly in caravans and yachts, if you do not have the necessary electrical knowledge you should entrust this part of the installation to a qualified electrician. The connection to the mains supply must be made in accordance with the I.E.E. wiring regulations for caravans.

We recommend the installation of a Residual Current Circuit Breaker also known as an Earth Leakage Circuit Breaker. This is an inexpensive way of preventing electric shock. The device fitted must be of the current operated type to the following specification: 25 amp, 30 milliamp operating in approx. 30 milliseconds.

When all the necessary 12 volt connections have been made the mains wiring can be completed. The mains input plug and socket must be of the polarised type, (connection can only be made one way round), should you find yourself in a situation when the polarity of the supply is reversed, possibly on the continent, the operation of your Zig power supply will not be affected. You must however take immediate steps to rectify this situation because other electrical devices in your caravan could be a source of danger from electric shocks. We recommend that for touring on the continent a "Polarity tester" is used each time a connection is made on site.

The plugs and sockets are available from caravan dealers and chandlers and should be to B.S.4343. Different types may be required in Europe, but your site operator will usually be able to help.

The socket chosen may be flush or surface mounted, either must be situated near to the R.C.C.B. with the connections made between the two using 2.5mm cable not exceeding 2 metres in length. The input cable for the DCU/3 may now be connected preferably via a covered junction box as follows:

BROWN	to LIVE (marked L or red in colour)
BLUE	to NEUTRAL (marked N or black in colour) or green in colour)
GREEN/YELLOW	to EARTH (marked E

INPUT 200-240 VOLTS A.C. 50/60 Hz.

WARNING THIS APPLIANCE MUST BE EARTHED.

It is recommended that the unit is "built-in", the use of plug and socket connections is not advised.

If a 13 amp plug is used this must be connected as follows:

GREEN & YELLOW:	EARTH
BLUE:	NEUTRAL
BROWN:	LIVE

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire that is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter "E" or the earth symbol or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter "N" or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter "L" or coloured red.

Secure all mains cable with cable clips and inspect for damage only when the wiring has been carefully checked making sure no stray strands could short to earth.

Do not connect the mains supply yet.

WIRING THE CAR.

You are strongly recommended to fit a supplementary 12S plug and socket to your car. The 12N is dedicated for use with road lighting if fog lights are to be used; also the cable used in the 12S system is of larger diameter and better suited to large current demands.

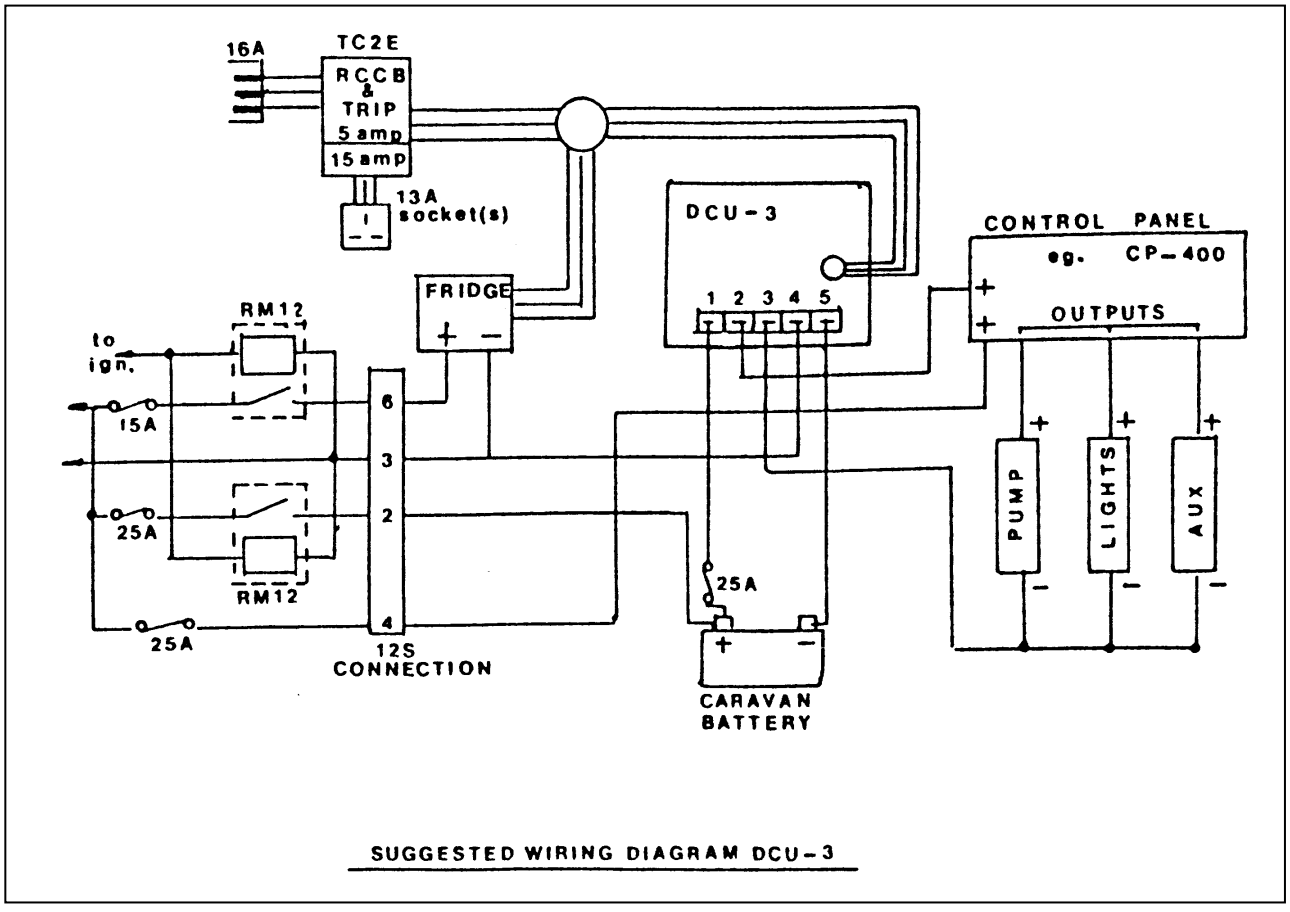
This cable must be at least 2mm sq. (28/M) and should be connected from terminal 4 on the 12S through to the vehicle battery via a 25 amp in line fuse fitted as near to the battery posts as possible. This is to protect the car and more important its passengers against fire and should NOT be omitted. The next connection should be made between terminal 3 on the 12S and an earth at the rear of the car.

The cable from Pin No.2 of the 12S socket should be connected through a relay, (available from ZIG Electronics Ltd.), and switched via the ignition switch of the vehicle, fitting will depend on the relay used. Fitting instructions are included with the ZIG RM12 and only four connections are necessary.

All the necessary car wiring is now complete and the car can be hooked to the caravan.

THE MAINS SUPPLY TO YOUR CARAVAN.

The mains to your caravan should be obtained from a domestic supply of 200 to 240 volts A.C. from a fused connection point. The mains hook up cable should be no less than 2.5mm sq. and should be regularly inspected for damage. To check the unit is functioning correctly hook the caravan to the mains supply and switch the DCU/3 on. If the 12 volt accessories work when the battery line fuse is removed all is in order.



SUGGESTED WIRING DIAGRAM DCU-3

THE FUSES

The DCU/3 is protected by 4 safety devices: two thermal trips to monitor overheating and two fuses, one protecting the mains supply and the other the 12V output.
The mains fuse is a standard 20mm x 5mm glass quick blow and can only be removed with a screwdriver or similar (this is in accordance with electrical safety regulations).

The 12V output fuse is a standard 11/4" (32mm) glass qui ck blow and can be removed without the aid of a tool. All fuses for the ZIG range are available worldwide from electrical and radio dealers.

WARNING: Under no circumstances should a fuse of different size or rating to that stated be fitted. Should a fuse blow for any reason the fault must be diagnosed before replacement.

While charging from the mains, due to the high output available from the DCU/3, the unit will run hot, this is quite normal. Should the power supply overheat it is protected by a thermal cutout which will reset automatically when normal conditions are resumed.
Your ZIG power supply is rigorously tested to the British Standard for battery chargers, B.S. 3456 part 2 section 3.25 to ensure safe use under all conditions.

WARNING

If the battery is discharged, the load drawn by the accessories in use must not exceed the rated output of the charging system.