ELECTRICAL SYSTEM USING PSU 2005

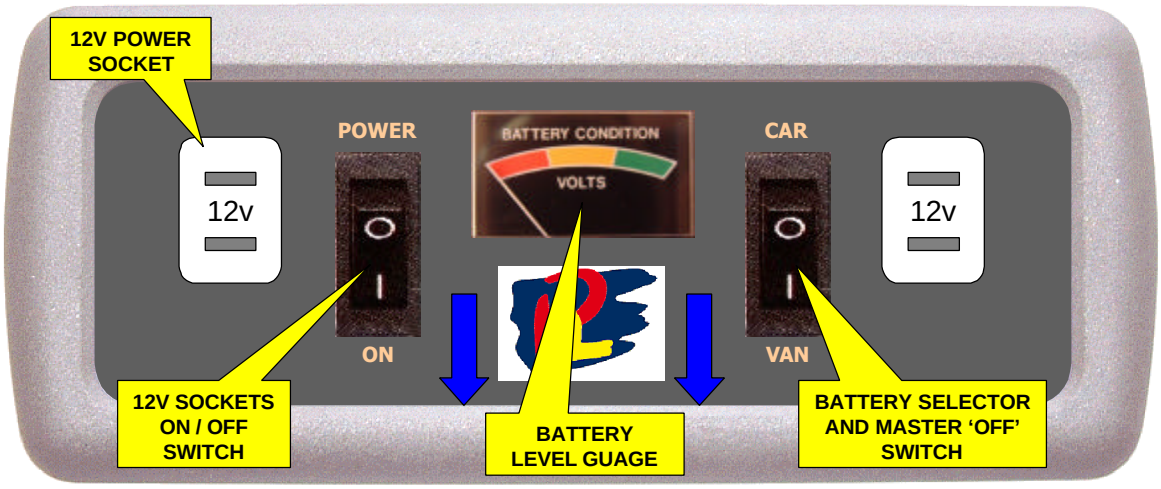
1 INTRODUCTION

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

Your Folding Camper has been fitted with an electrical system from Sargent Electrical Services Ltd. and incorporates the new PSU2005 power supply and DP20 control panel. This system provides protection for the 240v (mains) and 12v equipment, supplies 12v consumer power and charges the internal leisure battery. The electrical system complies with EN 1648-1 & -2 and BS7671.

2 CONTROL PANEL

The following diagram shows the DP20 control panel layout.



Note: to remove the decorative bezel, **pull down** and **lift forward** as indicated by the blue arrows.

Item	Function	Options / Notes
Battery SELECT / Master OFF	Used to select power from the Leisure or Vehicle battery, or to turn all 12v power OFF by placing in the centre position.	Up position - to select power from the Car battery (12S lead must be plugged into the car) Centre position - all power OFF Down position - to select power from the onboard Leisure battery
Power ON / OFF	Used to turn the 12v Sockets on the control panel ON or OFF	Up position - OFF Down Position - ON
12v Sockets	The 12v Accessory Sockets are switched on or off by the Power switch. Each socket is rated at 4A maximum.	Note: The power switch turns the 12v sockets on / off. The Car / Van switch turns all 12v power on or off.
Battery GAUGE	The battery gauge shows the level of the selected battery (Car or Van). With the battery select switch in the centre position the battery gauge will be switched off.	The green region indicates a battery with a good charge, the yellow region indicates a battery with an adequate charge, and the red region indicates a battery that requires charging.

3 BATTERY

A) Type / Selection

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

It is recommended that the leisure battery is always 'in circuit' when the system is in use.

The battery feed is fitted with an inline fuse between the battery and the electrical harness, this fuse is usually located immediately outside the battery compartment. The maximum rating of this fuse is 20A.

B) Installation & Removal

Always disconnect the 240v mains supply and turn the PSU 2005 charger switch to the OFF (0) position before removing or installing the battery.

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

WARNING

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

C) Servicing

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

Note: Do not over-discharge the battery. One of the most common causes of battery failure is when the battery is discharged below the recommended level of approximately 10.5v. Discharging a battery below this figure can cause permanent damage to one or more of the cells within the battery.

D) Charging

The Leisure battery can be charged by the PSU2005 power supply unit, as follows:

- The mains 240v supply is connected and switched ON
- The RCD and MCB's are turned ON (up position)
- The red charger switch is turned ON
- The battery selector switch is switched to VAN at the control panel

The Vehicle battery can be charged by the PSU2005 power supply unit, as follows:

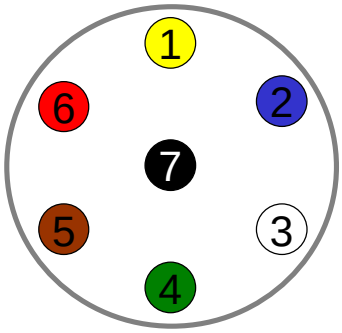
- The mains 240v supply is connected and switched ON
- The RCD and MCB's are turned ON (up position)
- The 12S connector is plugged into the CAR
- The red charger switch is turned ON
- The battery selector switch is switched to CAR at the control panel

4 12v CAR CONNECTIONS

To use your Folding Camper effectively you will need to ensure your vehicle has been wired in accordance with the following diagrams:

Please also ensure that the RED cable within the 12S auxiliary connector is controlled via a relay so that the cable is only 'live' when the engine is running, otherwise the vehicle battery may become discharged by the fridge.

12S Auxiliary Connector



Grey or White Connector

1 - YELLOW – Reverse Lamps / reverse Brake

2 - BLUE - (Not Used)

3 - WHITE - Car Battery Negative (Earth)

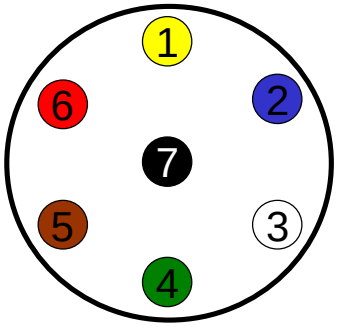
4 - GREEN - Car Battery Positive

5 - BROWN - (Not Used)

6 - RED - Refrigerator Positive
(Connected to Car Battery when engine is running)

7 - BLACK - Refrigerator Negative (Earth)
(Separate earth cable to Car Battery negative)

12N Lighting Connector



Black Connector

1 - YELLOW - Left Hand Indicator

2 - BLUE - Rear Fog Lamp

3 - WHITE - Car Battery Negative (Earth)

4 - GREEN - Right Hand indicator

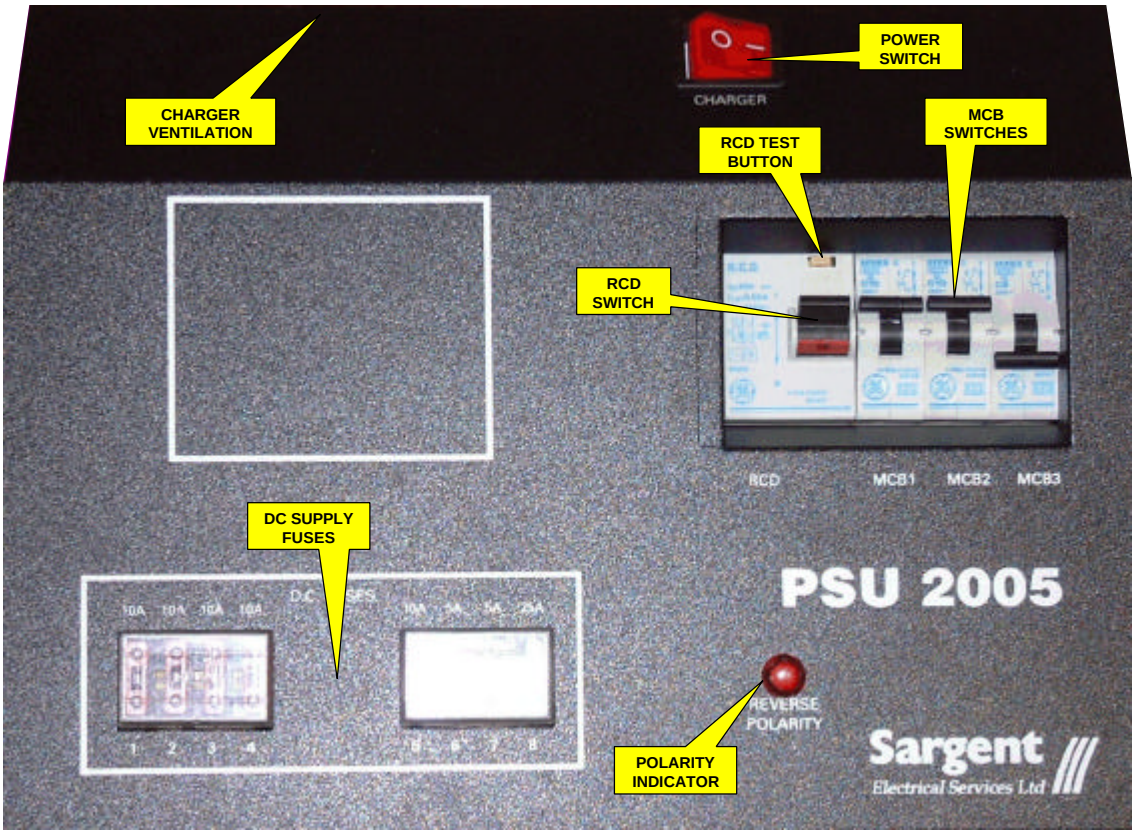
5 - BROWN - Right Hand Lights
(Side, Tail, Number Plate)

6 - RED - Stop lamps

7 - BLACK - Left Hand Lights
(Side, Tail, Number Plate)

5 MAINS CONNECTION

The following diagram shows the PSU2005 layout.



For your safety it is **IMPORTANT** that you follow these connections instructions each time your Folding Camper is connected to a mains supply.

A) **Ensure suitability of the Mains Supply**. Your Folding Camper should only be connected to an approved supply that meets the requirements of BS7671. In most cases the site warden will hold information regarding suitability of supply. If using a generator you also need to comply with the requirements / instructions supplied with the generator.

B) **Switch the PSU2005 unit OFF**. Locate the red power switch on the PSU2005 and ensure the switch is in the OFF (0) position before connection to the mains supply.

C) **Connect the Hook-up Lead**. Firstly connect the supplied hook-up lead (orange cable with blue connectors) to the Folding Camper and then connect to the mains supply. Ensure the cable is fully uncoiled before use.

D) **Check Residual Current Device operation**. Locate the RCD within the PSU2005 and ensure the RCD is switched on (lever in up position). Press the 'TEST' button and confirm that the RCD is turned off (lever in down position). Switch the RCD back to the on position (lever in up position). If the test button failed to operate the RCD see section 6.

E) **Check correct Polarity**. Locate the 'Reverse Polarity' indicator on the PSU2005 and ensure that the indicator is NOT illuminated. If the indicator is illuminated see section 6.

F) **Check Miniature Circuit Breakers**. Locate the MCB's within the PSU2005 (adjacent to the RCD) and ensure they are all in the ON (up) position.

G) **Turn the PSU2005 ON**. Locate the red power switch on the PSU2005 and turn to the ON (I) position. The switch will illuminate when turned on.

H) **Check operation of equipment**. It is now safe to check the operation of the 12v and 240v equipment.

6 FAULT TABLE

Fault	Possible Cause	Proposed Fix
No 240 volt output	Connecting lead between the site and Folding Camper not connected	Check and connect lead as per 5C Check also input connector at the base of the PSU 2005
	RCD switched off	Reset RCD as per 5D
	RCD not operating correctly	Check supply polarity
	MCB switched off	Reset MCB by switching OFF (down position) then back ON (up position)
	No or deficient supply from site	Contact site Warden for assistance
	Other fault	Contact your Dealer
No 12 volt output	No 240v supply	Check all above
	Charger not switched on	Switch charger switch on (I) position, switch will illuminate
	Battery not connected and / or charged	Install charged battery as per 3
	Power selector switch on control panel not switched to 'van' (where fitted)	Select 'van' on control panel
	Fuse blown	Check all fuses are intact and the correct value fuse is installed as per fuse table shown in 7
	Equipment switched off / unplugged	Check equipment switched is on and connected to the 12v supply
	Other fault	Contact your Dealer

7 FUSE / MCB TABLE

Fuse	Rating	Fuse Colour	Wire Colour	Description
1	10 Amps	Red	*	Not Used
2	10 Amps	Red	Slate	Lights (if fitted)
3	10 Amps	Red	*	Not Used
4	10 Amps	Red	Purple	Water pump / Toilet pump (if fitted)
5	10 Amps	Red	Yellow / White	12v Sockets
6	5 Amps	Tan	Yellow / Green	Water Heater Ignition (if fitted)
7	5 Amps	Tan	Black / Blue	Internal Heater
8	25 Amps	Clear	*	Charger (internally connected)
Battery	20 Amps	Yellow	Brown / Blue	Fuse remotely located near battery

MCB	Rating	Wire Colour	Description
1	10 Amps	White	240v Sockets
2	10 Amps	White (Orange for water heater)	240v Sockets / Water heater (if fitted)
3	6 Amps	Black	Fridge / 12v Charger

8 TECHNICAL DATA & APPROVALS

8.1 Outline Specification

INPUT 230v	230 Volts / 0 to 16 Amps	+ / - 10%
OUTPUT 230v	RCD protected, 3 x MCB outputs of 10, 10 and 6A via 2 x 9 way connectors	
INPUT 12v	1 x 20A battery input (selectable from the control panel)	
OUTPUT 12v	20A total output protected by 7 fused outputs via a 4 and 12 way connectors	
Integrated CHARGER	Input 220-240 Volts AC +/- 10%, Frequency 50 Hz +/- 6%, Current 3.15A max. DC Output 13.5 Volts nominal, Current 12 Amps max (150 Watts).	
Signal INPUT	1 x Engine running signal connected directly to externally mounted EMC isolation relay.	
IP rating	IP31	
Operating temperature	Ambient 0 to 35° Centigrade PSU case temperature with full load 65° C Max	

8.2 Dimensions

PSU2005	Overall size (HxWxD) 230 x 370 x 110mm	Fixing centres 195 x 360mm
	Weight 3.2 Kg	
CONTROL PANEL	Overall size (HxWxD) 80 x 193 x 40mm	Fixing centres 175mm
	Weight 170 g	

8.3 Approvals

System: BSEN 1648-1, BSEN1648-2 compliant, BS7671: 2001 compliant

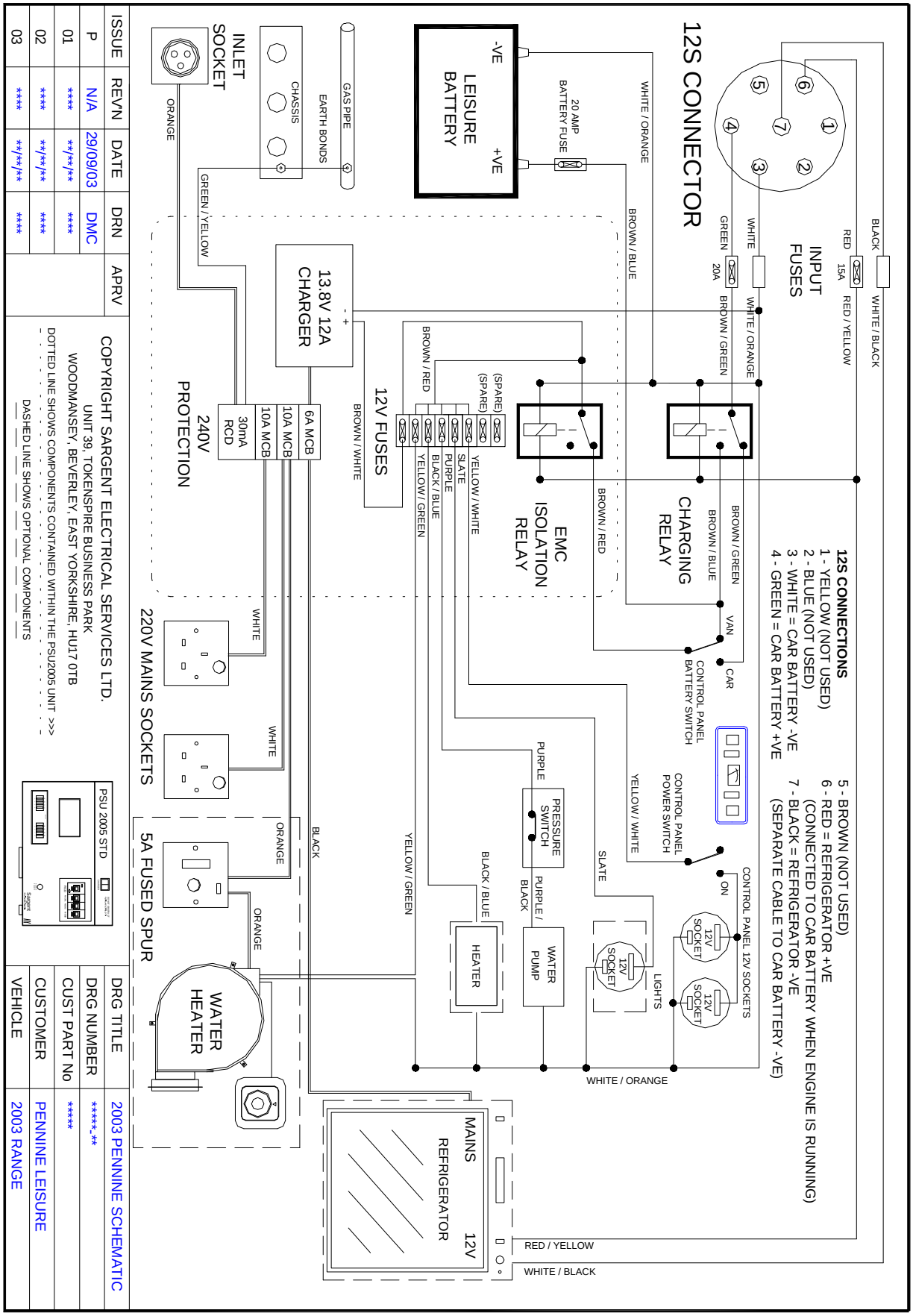
Residual Current Device: RCD 40A 30mA trip to BS EN 61008

Miniature Circuit Breakers: MCB's (10 & 6A) type C 6000A breaking capacity to BSEN 60898

Electro Magnetic Compatibility (EMC) directive 89/336/EEC

Integrated Charger: BS EN 60335-1/2.29, 89/336/EEC, IEC61000-3.2/3:1995, EMC certificate 5172TC 3rd party tested.

8.4 Typical Application Schematic Wiring Diagram



ISSUE	REVN	DATE	DRN	APRV
P	N/A	29/09/03	DMC	
01	****	**/**/**	****	
02	****	**/**/**	****	
03	****	**/**/**	****	

DOTTED LINE SHOWS COMPONENTS CONTAINED WITHIN THE PSU2005 UNIT >>>

DASHED LINE SHOWS OPTIONAL COMPONENTS

DRG TITLE	2003 PENNINE SCHEMATIC
DRG NUMBER	*****_**
CUST PART No	*****
CUSTOMER	PENNINE LEISURE
VEHICLE	2003 RANGE